Junos® OS

System Basics and Services Command Reference

Release

10.4

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Junos® OS System Basics and Services Command Reference
Release 10.4

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Abbreviated Table of Contents

Table of Contents

About This Guide

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

Junos Documentation and Release Notes

For a list of related Junos 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 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

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 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*

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

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

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

Using the Indexes

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

Documentation Conventions

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

Table 1: Notice Icons

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

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

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the **configure** command: user@host> **configure**
`Fixed-width text like this`	Represents output that appears on the terminal screen.	`user@host>` **show chassis alarms** `No alarms currently active`
Italic text like this	• Introduces important new terms. • Identifies book names. • Identifies RFC and Internet draft titles.	• A policy *term* is a named structure that defines match conditions and actions. • *Junos System Basics Configuration Guide* • RFC 1997, *BGP Communities Attribute*
Italic text like this	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# **set system domain-name** *domain-name*
Text like this	Represents names of configuration statements, commands, files, and directories; IP addresses; configuration hierarchy levels; or labels on routing platform components.	• To configure a stub area, include the **stub** statement at the **[edit protocols ospf area area-id]** hierarchy level. • The console port is labeled **CONSOLE**.
< > (angle brackets)	Enclose optional keywords or variables.	**stub** <**default-metric** *metric*>**;**

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.	**broadcast | multicast** (***string1*** **|** ***string2*** **|** ***string3***)
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	**rsvp { # Required for dynamic MPLS only**
[ ] (square brackets)	Enclose a variable for which you can substitute one or more values.	**community name members [** ***community-ids*** **]**

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

; (semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
J-Web GUI Conventions		
Bold text like this	Represents J-Web graphical user interface (GUI) items you click or select.	• In the Logical Interfaces box, select **All Interfaces**. • To cancel the configuration, click **Cancel**.
> (bold right angle bracket)	Separates levels in a hierarchy of J-Web selections.	In the configuration editor hierarchy, select **Protocols>Ospf**.

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

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

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

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- Find CSC offerings: http://www.juniper.net/customers/support/
- 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, visit us at http://www.juniper.net/support/requesting-support.html

PART 1

Monitoring and Testing Tools

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

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*>

Release Information

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

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**.

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

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

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.

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 hostname on page 6**

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

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.

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

Syntax

ping atm interface *interface-name* vci *vci*
<brief>
<count *count*>
<end-to-end | segment>
<interval *seconds*>
<sequence-number *sequence-number*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Check the reachability of a remote Asynchronous Transfer Mode (ATM) node. All packets are 53 bytes. Type Ctrl+c to interrupt a **ping atm** command.

Options

interface *interface-name*—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

vci *vci*—ATM point-to-point virtual circuit identifier. It can be a virtual circuit identifier (**vci**) or a virtual private identifier (**vpi.vci**).

brief—(Optional) Display only the ATM ping summary statistics. These are displayed after you type Ctrl+c to interrupt the **ping atm** command.

count *count*—(Optional) Number of ping requests to send. The range of values is **0** through **10,000**. The default value is an unlimited number of requests.

end-to-end—(Optional) Cells are sent to the end node. This is the default.

segment—(Optional) Cells are sent only to the intermediate node.

interval *seconds*—(Optional) How often to send ping requests. The range of values, in seconds, is **1** through **10,000**. The default value is **1**.

sequence-number *sequence-number*—(Optional) Starting sequence number (correlation tag). The range of values is **0** through **65,468**. The default value is **1**.

Required Privilege Level

network

List of Sample Output

ping atm on page 8

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.

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 10

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.

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).

v1—(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 12
ping mpls l2circuit virtual-circuit detail on page 12
ping mpls l2circuit interface <interface-name> reply-mode on page 12

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.

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

```
user@host> ping mpls l2circuit interface lt-1/2/0.21 reply-mode application-level-control-channel
```

<interface-name>
reply-mode

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

ping mpls l2vpn

Syntax

ping mpls l2vpn (instance *instance-name* local-site-id *local-site-id-number* remote-site-id *remote-site-id-number* | interface *interface-name*)
<bottom-label-ttl>
<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>

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 MPLS Layer 2 virtual private network (VPN) connections. Type Ctrl+c to interrupt a **ping mpls l2vpn** 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.

instance *instance-name* local-site-id *local-site-id-number* remote-site-id *remote-site-id-number*—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.

interface *interface-name*—Ping an interface configured for the Layer 2 VPN on the egress PE router or switch.

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.

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 15
ping mpls l2vpn instance detail on page 15
ping mpls l2vpn interface <interface-name> reply-mode on page 16

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.

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 interface <interface-name> reply-mode

```
user@host> ping mpls l2vpn interface lt-1/2/0.21 reply-mode ip-udp
!!!!!
--- lsping statistics ---
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).

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 l3vpn on page 18
ping mpls l3vpn detail on page 18

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.

ping mpls l3vpn

```
user@host> ping mpls l3vpn vpn1 prefix 10.255.245.122/32
!!!!!
--- lsping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
```

ping mpls l3vpn detail

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

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 20

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.

ping mpls ldp fec count

```
user@host> ping mpls ldp 10.255.245.222 count 10
!!!xxx...x--- lsping 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

Syntax

ping mpls lsp-end-point *prefix-name*
<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 label-switched path (LSP) endpoint 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.

instance *routing-instance-name*—(Optional) Ping a combination of the routing instance and forwarding equivalence class (FEC) associated with an LSP connection.

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

prefix-name—LDP forwarding equivalence class (FEC) prefix or RSVP LSP endpoint address.

size *bytes*—(Optional) Size of the LSP ping request packet. If the endpoint is LDP-based, the minimum size of the packet is **88** bytes. If the endpoint is RSVP-based, the minimum size of the packet is **100** bytes. The maximum size in either case is **65468** bytes.

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).

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 22

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.

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 an inaccurate one way ping trip times being reported.

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 25
ping mpls rsvp (Echo Reply with Error Code) on page 25
ping mpls rsvp detail on page 25
ping mpls rsvp multipoint egress detail count on page 25
ping mpls rsvp multipoint detail count on page 25

ping mpls rsvp destination detail count size on page 26
ping mpls rsvp destination detail sweep size on page 26

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.

ping mpls rsvp (Echo Reply Received)

```
user@host> ping mpls rsvp test1
!!!!!--- lsping statistics ---5 packets transmitted, 5 packets received, 0% packet
 loss
```

ping mpls rsvp (Echo Reply with Error Code)

```
user@host> 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.
```

ping mpls rsvp detail

```
user@host> ping mpls rsvp to-green detail
Request for seq 1, to interface 67, labels <100095, 0, 0>
Reply for seq 1, return code: Egress-ok
Request for seq 2, to interface 67, labels <100095, 0, 0>
Reply for seq 2, return code: Egress-ok
```

ping mpls rsvp multipoint egress detail count

```
user@host>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
```

ping mpls rsvp multipoint detail count

```
user@host>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

--- 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 29**

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.

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

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

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

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

Syntax test interface ds0-bert-start ds-*fpc/pic/port*

Release Information Command introduced before Junos OS Release 7.4.

Description Start a bit error rate test (BERT) on a DS0 interface.

Options ds-*fpc/pic/port*—DS0 interface name.

Additional Information Before starting a BERT, you must disable the interface. To do so, include the **disable** statement at the [**edit interfaces** ***interface-name***] hierarchy level. You can run a BERT on only one interface per PIC at a time.

Required Privilege Level view

List of Sample Output **test interface ds0-bert-start on page 33**

Output Fields To display the results of the BERT, use the **show interfaces extensive** command.

test interface ds0-bert-start

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

test interface ds0-bert-stop

Syntax test interface ds0-bert-stop ds-*fpc/pic/port*

Release Information Command introduced before Junos OS Release 7.4.

Description Stop a bit error rate test (BERT) on a DS0 interface.

Options ds-*fpc/pic/port*—DS0 interface name.

Required Privilege Level view

List of Sample Output **test interface ds0-bert-stop on page 34**

Output Fields To display the results of the BERT, use the **show interfaces extensive** command.

test interface ds0-bert-stop

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


test interface e1-bert-start

Syntax test interface e1-bert-start *interface-name*

Release Information Command introduced before Junos OS Release 7.4.

Description Start a bit error rate test (BERT) on an E1 interface.

Options *interface-name*—Interface name: **e1-*fpc/pic/port*** or **ce1-*fpc/pic/port* <:*channel*>**

Additional Information Before starting a BERT, you must disable the interface. To do this, include the **disable** statement at the [**edit interfaces *interface-name***] hierarchy level. You can run a BERT on only one interface per PIC at a time.

Required Privilege Level view

List of Sample Output **test interface e1-bert-start on page 35**

Output Fields To display the results of the BERT, use the **show interfaces extensive** command.

test interface e1-bert-start

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

test interface e1-bert-stop

Syntax test interface e1-bert-stop *interface-name*

Release Information Command introduced before Junos OS Release 7.4.

Description Stop a bit error rate test (BERT) on an E1 interface.

Options *interface-name*—Interface name: **e1-*fpc/pic/port*** or **ce1-*fpc/pic/port* <:*channel*>**.

Required Privilege Level view

List of Sample Output **test interface e1-bert-stop on page 36**

Output Fields To display the results of the BERT, use the **show interfaces extensive** command.

test interface e1-bert-stop

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

test interface e3-bert-start

Syntax test interface e3-bert-start e3-*fpc/pic/port*

Release Information Command introduced before Junos OS Release 7.4.

Description Start a bit error rate test (BERT) on an E3 interface.

Options e3-*fpc/pic/port*—E3 interface name.

Additional Information Before starting a BERT, you must disable the interface. To do so, include the **disable** statement at the [**edit interfaces** ***interface-name***] hierarchy level. You can run a BERT on only one interface per PIC at a time.

Required Privilege Level view

List of Sample Output **test interface e3-bert-start on page 37**

Output Fields To display the results of the BERT, use the **show interfaces extensive** command.

test interface e3-bert-start

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

test interface e3-bert-stop

Syntax test interface e3-bert-stop e3-*fpc/pic/port*

Release Information Command introduced before Junos OS Release 7.4.

Description Stop a bit error rate test (BERT) on an E3 interface.

Options e3-*fpc/pic/port*—E3 interface name.

Required Privilege Level view

List of Sample Output **test interface e3-bert-stop on page 38**

Output Fields To display the results of the BERT, use the **show interfaces extensive** command.

test interface e3-bert-stop

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


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 39

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.

test interface fdl-line-loop

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

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 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.

test interface fdl-payload-loop

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


test interface feac-loop-initiate

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

Release Information Command introduced before Junos OS Release 7.4.

Description 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.

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-initiate 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.

test interface feac-loop-initiate

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

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 42**

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.

test interface feac-loop-terminate

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

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 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.

test interface inband-line-loop

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

test interface inband-payload-loop

Syntax test interface inband-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 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.

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.

Additional Information See the ANSI T1.107 specification for more details.

Required Privilege Level view

List of Sample Output **test interface inband-payload-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.

test interface inband-payload-loop

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

test interface restart-auto-negotiation

Syntax test interface restart-auto-negotiation *interface-name*

Release Information Command introduced in Junos OS Release 7.6.
Command introduced in Junos OS Release 9.0 for EX Series switches.

Description Restarts auto-negotiation on a Fast Ethernet or Gigabit Ethernet interface.

Options *interface-name*—Interface name: **fe-*fpc/pic/port*** or **ge-*fpc/pic/port***.

Required Privilege Level view

List of Sample Output **test interface restart-auto-negotiation on page 45**

Output Fields Use the **show interfaces extensive** command to see the state for auto-negotiation.

test interface restart-auto-negotiation

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

test interface t1-bert-start

Syntax test interface t1-bert-start *interface-name*

Release Information Command introduced before Junos OS Release 7.4.

Description Start a bit error rate test (BERT) on a T1 interface.

Options *interface-name*—Interface name: **t1-*fpc/pic/port*** or **ct1-*fpc/pic/port* <:*channel*>**.

Additional Information Before starting a BERT, you must disable the interface. To do so, include the **disable** statement at the [**edit interfaces *interface-name***] hierarchy level. You can run a BERT on only one interface per PIC at a time.

Required Privilege Level view

List of Sample Output **test interface t1-bert-start on page 46**

Output Fields To display the results of the BERT, use the **show interfaces extensive** command.

test interface t1-bert-start

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

test interface t1-bert-stop

Syntax test interface t1-bert-stop *interface-name*

Release Information Command introduced before Junos OS Release 7.4.

Description Stop a bit error rate test (BERT) on a T1 interface.

Options *interface-name*—Interface name: **t1-*interface-name fpc/pic/port*** or **ct1-*fpc/pic/port* <:*channel*>**

Required Privilege Level view

List of Sample Output **test interface t1-bert-stop on page 47**

Output Fields To display the results of the BERT, use the **show interfaces extensive** command.

test interface t1-bert-stop

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

test interface t3-bert-start

Syntax test interface t3-bert-start *interface-name*

Release Information Command introduced before Junos OS Release 7.4.

Description Start a bit error rate test (BERT) on a T3 interface.

Options *interface-name*—Interface name: **t3-*fpc/pic/port*** or **ct3-*fpc/pic/port* <:*channel*>**.

Additional Information Before starting a BERT, you must disable the interface. To do this, include the **disable** statement at the [**edit interfaces *interface-name***] hierarchy level. You can run a BERT on only one interface per PIC at a time.

Required Privilege Level view

List of Sample Output **test interface t3-bert-start on page 48**

Output Fields To display the results of the BERT, use the **show interfaces extensive** command.

test interface t3-bert-start

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


test interface t3-bert-stop

Syntax test interface t3-bert-stop *interface-name*

Release Information Command introduced before Junos OS Release 7.4.

Description Stop a bit error rate test (BERT) on a T3 interface.

Options *interface-name*—Interface name: **t3-*fpc/pic/port*** or **ct3-*fpc/pic/port* <:*channel*>**.

Required Privilege Level view

List of Sample Output **test interface t3-bert-stop on page 49**

Output Fields To display the results of the BERT, use the **show interfaces extensive** command.

test interface t3-bert-stop

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

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	**test access profile**
Test RADIUS server authentication	**test access radius-server**

test access profile

Syntax test access profile *profile-name* user *username* password *password* <detail>

Release Information Command introduced in Junos OS Release 9.1.

Description Specify a profile to use to get information from a RADIUS server, which includes all the information from the **test access radius-server** command.

Options detail—(Optional) Show the RADIUS attributes returned by the server.

profile-name—Access profile name configured.

password—Password for the username.

username—User name to be authenticated to the RADIUS server.

Required Privilege Level view

List of Sample Output **test access profile on page 53**
test access profile detail on page 53

Output Fields Table 6 on page 52 lists the output fields for the **test access profile** command. Output fields are listed in the approximate order in which they appear.

Table 6: test access profile Output Fields

Field Name	Field Description
Profile Name	Name of the configured access profile.
Client Username	The user name authenticated by the RADIUS server.
Client Password	The user password authenticated by the RADIUS server.
Num Servers	Number of RADIUS servers in the configured access profile.
Server List	List of RADIUS servers in the configure access profile.
IP Address	The IP address of the RADIUS server authenticated.
UDP Port	The RADIUS server port utilized during the authentication test.
Source Address	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.
Timeout	The RADIUS server timeout period.
Retry Count	The number of authentication attempts allowed by the RADIUS server.

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

Field Name	Field Description
Secret	The shared secret used for authentication with the RADIUS server.
Status	The test result status (Accepted or Rejected) and the number of retransmits utilized during authentication.
Attempts	The number of authentication attempts on the RADIUS server.
Attribute List	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.
(Attribute) Name	The name of the attribute.
(Attribute) Length	The attribute length in bytes.
(Attribute) Value	The attribute value.

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
                 UDP      Source                  Retry
    IP Address   Port     Address         Timeout 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      SBR2CLÍ½¾¿ðÕ¾¿
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
Server	The IP address of the RADIUS server authenticated.
UDP port	The RADIUS server port utilized during the authentication test.
Source IP Address	"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.
Server timeout	The RADIUS server timeout period.
Sever retry count	The number of authentication attempts allowed by the RADIUS server.

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

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

test access radius-server user password secret

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
```

CHAPTER 4

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.	**clear services rpm twamp server connection**
Show configured probe servers.	**show services rpm active-servers**
Show the results of the last 50 completed probes for each RPM instance.	**show services rpm history-results**
Show probe results.	**show services rpm probe-results**
Show TWAMP connections.	**show services rpm twamp server connection**
Show TWAMP sessions.	**show services rpm twamp server session**

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

clear services rpm twamp server connection

Syntax

clear services rpm twamp server connection
<connection-id>

Release Information

Command introduced in Junos OS Release 9.3.

Description

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.

Options

connection-id—(Optional) Clear only the specified connection.

Required Privilege Level

clear

show services rpm active-servers

Syntax show services rpm active-servers

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

Description Display the protocols and corresponding ports for which a router or switch is configured as a real-time performance monitoring (RPM) server.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show services rpm active-servers on page 61**

Output Fields Table 9 on page 61 lists the output fields for the **show services rpm active-servers** 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
Protocol	Protocol configured on the receiving probe server. The protocol can be the User Datagram Protocol (UDP) or the Transmission Control Protocol (TCP).
Port	Port configured on the receiving probe server.
Destination interface name	Output interface name for the probes.

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

Syntax

show services rpm history-results
<brief | detail>
<owner *owner*>
<since *time*>
<test *name*>

Release Information

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

Description

Display standard information about the results of the last 50 probes for each real-time performance monitoring (RPM) instance.

Options

none—Display the results of the last 50 probes for all RPM instances.

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

owner *owner*—(Optional) Display information for the specified probe owner.

since *time*—(Optional) Display information from the specified time. Specify time as ***yyyy-mm-dd.hh:mm:ss***.

test *name*—(Optional) Display information for the specified test.

Required Privilege Level

view

List of Sample Output

show services rpm history-results on page 63
show services rpm history-results detail on page 64

Output Fields

Table 10 on page 62 lists the output fields for the **show services rpm history-results** 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
Owner	Probe owner.	All levels
Test	Name of a test for a probe instance.	All levels
Probe received	Timestamp when the probe result was determined.	All levels
Round trip time	Average ping round-trip time (RTT), in microseconds.	All levels
Probe results	Result of a particular probe performed by a remote host. The following information is contained in the results: • **Response received**—Timestamp when the probe result was determined. • **Rtt**—Average ping round-trip time (RTT), in microseconds.	**detail**

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

Field Name	Field Description	Level of Output
Results over current test	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.	**detail**
Probes sent	Number of probes sent with the current test.	**detail**
Probes received	Number of probe responses received within the current test.	**detail**
Loss percentage	Percentage of lost probes for the current test.	**detail**
Measurement	Increment of measurement. Possible values are round-trip time delay and, for the probe type icmp-pin-timestamp, the egress and ingress delay: • **Minimum**—Minimum RTT, ingress delay, or egress delay measured over the course of the current test. • **Maximum**—Maximum RTT, ingress delay, or egress delay measured over the course of the current test. • **Average**—Average RTT, ingress delay, or egress delay measured over the course of the current test. • **Jitter**—Difference, in microseconds, between the maximum and minimum RTT measured over the course of the current test. • **Stddev**—Standard deviation of the round-trip time, in microseconds, measured over the course of the current test.	**detail**

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

Syntax

show services rpm probe-results
<owner *owner*>
<test *name*>

Release Information

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

Description

Display the results of the most recent real-time performance monitoring (RPM) probes.

Options

none—Display all results of the most recent RPM probes.

owner *owner*—(Optional) Display information for the specified probe owner.

test *name*—(Optional) Display information for the specified test.

Required Privilege Level

view

List of Sample Output

show services rpm probe-results on page 68
show services rpm probe-results (BGP Neighbor Discovery) on page 69

Output Fields

Table 11 on page 65 lists the output fields for the **show services rpm probe-results** 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
Owner	Owner name. When you configure the probe owner statement at the **[edit services rpm]** hierarchy level, this field displays the configured owner name. When you configure BGP neighbor discovery through RPM, the output for this field is **Rpm-Bgp-Owner.**
Test	Name of a test representing a collection of probes. When you configure the test test-name statement at the **[edit services rpm probe owner]** hierarchy level, the field displays the configured test name. When you configure BGP neighbor discovery through RPM, the output for this field is **Rpm-BGP-Test-*n***, where *n* is a cumulative number.
Target address	Destination address used for the probes.
Source address	Source address used for the probes.
Probe type	Protocol configured on the receiving probe server: **http-get, http-metadata-get, icmp-ping, icmp-ping-timestamp, tcp-ping, udp-ping,** or **udp-ping-timestamp**.
Test size	Number of probes within a test.

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

Field Name	Field Description
Routing Instance Name	(BGP neighbor discovery) Name of the configured (if any) routing instance, logical system name, or both, in which the probe is configured: • 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 **R1** is configured within the logical system called **LS**, the name in the output field is **LS/R1**. • 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. • 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 **default**. A slash (/) is used to separate the two entities. For example, **LS/default**.
Probe results	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: • **Response received**—Timestamp when the probe result was determined. • **Client and server hardware timestamps**—If timestamps are configured, an entry appears at this point. • **Rtt**—Average ping round-trip time (RTT), in microseconds. • **Egress jitter**—Egress jitter, in microseconds. • **Ingress jitter**—Ingress jitter, in microseconds. • **Round trip jitter**—Round-trip jitter, in microseconds. • **Egress interarrival jitter**—Egress interarrival jitter, in microseconds. • **Ingress interarrival jitter**—Ingress interarrival jitter, in microseconds. • **Round trip interarrival jitter**—Round-trip interarrival jitter, in microseconds.

Results over current test	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.
	• **Probes sent**—Number of probes sent within the current test.
	• **Probes received**—Number of probe responses received within the current test.
	• **Loss percentage**—Percentage of lost probes for the current test.
	• **Measurement**—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 **icmp-ping-timestamp**, the egress delay and ingress delay.
	For each measurement type, the following individual calculated results are provided:
	  • **Samples**—Number of probes.
	  • **Minimum**—Minimum RTT, ingress delay, or egress delay measured over the course of the current test.
	  • **Maximum**—Maximum RTT, ingress delay, or egress delay measured over the course of the current test.
	  • **Average**—Average RTT, ingress delay, or egress delay measured over the course of the current test.
	  • **Peak to peak**—Peak-to-peak difference, in microseconds.
	  • **Stddev**—Standard deviation, in microseconds.
	  • **Sum**—Statistical sum.

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

Field Name	Field Description

Results over last test	Results for the most recently completed test. If the command is issued while the first test is in progress, this information is not displayed
	• **Probes sent**—Number of probes sent for the most recently completed test.
	• **Probes received**—Number of probe responses received for the most recently completed test.
	• **Loss percentage**—Percentage of lost probes for the most recently completed test.
	• **Test completed**—Time the most recent test was completed.
	• **Measurement**—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 **icmp-ping-timestamp**, the egress delay and ingress delay.
	For each measurement type, the following individual calculated results are provided:
	  • **Samples**—Number of probes.
	  • **Minimum**—Minimum RTT, ingress delay, or egress delay measured for the most recently completed test.
	  • **Maximum**—Maximum RTT, ingress delay, or egress delay measured for the most recently completed test.
	  • **Average**—Average RTT, ingress delay, or egress delay measured for the most recently completed test.
	  • **Peak to peak**—Peak-to-peak difference, in microseconds.
	  • **Stddev**—Standard deviation, in microseconds.
	  • **Sum**—Statistical sum.

Results over all tests	Displays statistics made for all the probes, independently of the grouping into tests, as well as statistics for the current test.
	• **Probes sent**—Number of probes sent in all tests.
	• **Probes received**—Number of probe responses received in all tests.
	• **Loss percentage**—Percentage of lost probes in all tests.
	• **Measurement**—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 **icmp-ping-timestamp** and **udp-ping-timestamp**, the egress delay and ingress delay.
	For each measurement type, the following individual calculated results are provided:
	  • **Samples**—Number of probes.
	  • **Minimum**—Minimum RTT, ingress delay, or egress delay measured over the course of the current test.
	  • **Maximum**—Maximum RTT, ingress delay, or egress delay measured over the course of the current test.
	  • **Average**—Average RTT, ingress delay, or egress delay measured over the course of the current test.
	  • **Peak to peak**—Peak-to-peak difference, in microseconds.
	  • **Stddev**—Standard deviation, in microseconds.
	  • **Sum**—Statistical sum.

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

Syntax

show services rpm twamp server connection
<connection-id>

Release Information

Command introduced in Junos OS Release 9.3.

Description

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.

Options

connection-id—(Optional) Display only information about the specified connection ID.

Required Privilege Level

view

List of Sample Output

show services rpm twamp server connection on page 70

Output Fields

Table 12 on page 70 lists the output fields for the **show services rpm twamp server connection** 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
Connection ID	Connection ID that uniquely identifies the connection between the TWAMP server and a particular client.
Client address	Client IP address.
Client port	Client port number.
Server address	Server IP address.
Server port	Server port number.
Session count	Session count.
Auth mode	Authentication mode.

show services rpm twamp server connection

```
user@host> show services rpm twamp server connection
    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 72

Output Fields

Table 13 on page 72 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.

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
```

CHAPTER 5

Real-Time Router Monitoring Operational Mode Commands

Table 14 on page 73 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)	**monitor ethernet delay-measurement**
Monitor statistics for a physical interface.	**monitor interface**
Monitor a RSVP label-switched path (LSP).	**monitor label-switched-path**
Display the status of monitored log and trace files.	**monitor list**
Start displaying the system log or trace file and additional entries being added to those files.	**monitor start**
Stop displaying the system log or trace file.	**monitor stop**
Monitor packet headers transmitted through network interfaces sent from or received by the Routing Engine.	**monitor traffic**
Display trace information about an IP multicast path.	**mtrace**
Display trace information about a IP multicast path from a source to the router.	**mtrace from-source**
Listen passively for IP multicast responses.	**mtrace monitor**
Display trace information about an IP multicast path from the router to a gateway router.	**mtrace to-gateway**
Determine the route to a network system.	**traceroute**

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

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

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*>

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.1731Ethernet 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. 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—Perform 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 (1DM) frame and the time at which the receiver MEP receives the frame.

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 8192.

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.

two-way—Perform 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.

count ***frame-count***—(Optional) Number of frames to send to the specified peer MEP. The range of values is 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.

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*.

Required Privilege Level

trace and maintenance

List of Sample Output

monitor ethernet delay-measurement one-way on page 78
monitor ethernet delay-measurement two-way on page 78

monitor ethernet delay-measurement two-way (Invalid DMR Frames Received) on page 78

Output Fields The **monitor ethernet delay-measurement** command displays different output at the CLI, depending on whether you start a one-way or two-way frame delay measurement:

- Table 15 on page 77 lists the run-time output fields for the **monitor ethernet delay-measurement one-way** command.
- Table 16 on page 77 lists the run-time output fields for the **monitor ethernet delay-measurement two-way** command.

Output fields are listed in the approximate order in which they appear.

Table 15: monitor ethenet delay-measurement one-way Output Fields

Output Field Name	Output Field Description
One-way ETH-DM 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.
1DM Frames sent	PDU frames sent to the remote MEP in this ETH-DM session.
Packets transmitted	Total number of 1DM PDU frames sent to the remote MEP during 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.
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 ethenet 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.

Table 16: monitor ethenet delay-measurement two-way Output Fields *(continued)*

Output Field Name	Output Field Description
Delay variation	Difference, in microseconds, between the current and previous delay values. This is also known as *jitter*.
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.

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 interface

Syntax

monitor interface
<*interface-name* | traffic <detail>>

Release Information

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

Description

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.

Options

none—Display real-time statistics for all interfaces.

interface-name—(Optional) Display real-time statistics for the specified interface.

traffic—(Optional) Display traffic data for all active interfaces.

detail—(Optional) With traffic option only, display detailed output.

Additional Information

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 **show interfaces extensive** command for a particular interface type in the *Junos OS Interfaces Command Reference*. To control the output of the **monitor interface *interface-name*** command while it is running, use the keys listed in Table 17 on page 80. The keys are not case-sensitive.

Table 17: Output Control Keys for the monitor interface interface-name Command

Key	Action
c	Clears (returns to zero) the delta counters since **monitor interface** was started. This does not clear the accumulative counter. To clear the accumulative counter, use the **clear interfaces interval** 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 **monitor interface** command displays the physical or logical interfaces in the same order as the **show interfaces terse** 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 18 on page 81. The keys are not case-sensitive.

Table 18: 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 **Current Delta** column. The statistics counters are not cleared.
d	Displays the **Current Delta** 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 **Current Delta** column) in bps and pps.

Required Privilege Level trace

List of Sample Output

monitor interface (Physical) on page 82
monitor interface (OTN Interface) on page 84
monitor interface (Logical) on page 85
monitor interface traffic on page 85
monitor interface traffic detail on page 86

Output Fields Table 19 on page 81 describes the output fields for the **monitor interface** command. Output fields are listed in the approximate order in which they appear.

Table 19: 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. • *x*—Time taken for the last polling (in milliseconds). • *y*—Minimum time taken across all pollings (in milliseconds). • *z*—Maximum time taken across all pollings (in milliseconds).	All levels
Interface	Short description of the interface, including its name, status, and encapsulation.	All levels
Link	State of the link: **Up**, **Down**, or **Test**.	All levels

Table 19: monitor interface Output Fields *(continued)*

Field Name	Field Description	Level of Output
Current delta	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
Local Statistics	(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.: • **Input bytes**—Number of bytes received on the interface. • **Output bytes**—Number of bytes transmitted on the interface. • **Input packets**—Number of packets received on the interface. • **Output packets**—Number of packets transmitted on the interface.	All levels
Remote Statistics	(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.: • **Input bytes**—Number of bytes received on the interface. • **Output bytes**—Number of bytes transmitted on the interface. • **Input packets**—Number of packets received on the interface. • **Output packets**—Number of packets transmitted on the interface.	All levels
Traffic statistics	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. • **Input bytes**—Number of bytes received on the interface. • **Output bytes**—Number of bytes transmitted on the interface. • **Input packets**—Number of packets received on the interface. • **Output packets**—Number of packets transmitted on the interface.	All levels
Description	With the **traffic** option, displays the interface description configured at the **[edit interfaces *interface-name*]** hierarchy level.	**detail**

monitor interface (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: OC48
Traffic statistics:                                       Current Delta
  Input packets:                    6045 (0 pps)                  [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    APSPCC 0-3:              0
```

monitor interface (Logical)

```
user@host> monitor interface so-1/0/0.0
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:                                          Current delta
  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 traffic

```
user@host> monitor interface 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 traffic detail

```
user@host> monitor interface 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 20 on page 87. The keys are not case-sensitive.

Table 20: 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 l, 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 88**

Output Fields Table 21 on page 88 describes the output fields for the **monitor label-switched-path** command. Output fields are listed in the approximate order in which they appear.

Table 21: monitor label-switched-path Output Fields

Field Name	Field Description
(1)	Displays the following information: • *hostname*—Name of the router. • **Seconds**—Time elapsed since this display was started. • **Time**—Current local time.
(2)	**Delay**—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: • **To**—Destination address of the LSP. • **From**—Originating address of the LSP. • **State**—Current state of the LSP: **Up** or **Down**.
(4)	Displays the following: • **LSPName**—Name of the LSP. • **Type**—Type of LSP: **Ingress**, **Egress**, or **Transit**.
(5)	Displays the following: • **Label in**—Incoming label of the LSP. • **Label out**—Outgoing label of the LSP.
(6)	**Port number**—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)	**Record route**—All intermediate and egress router addresses for this LSP.
(9/10/11)	Displays traffic statistics: • **Output packets**—Number of packets that have traversed this LSP, and the change (delta) in the number since the last sample, typically 1 second ago. • **Output bytes**—Number of bytes that have traversed this LSP, and the change (delta) in the number since the last sample, typically 1 second ago.
(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 20 on page 87.

monitor label-switched-path

```
user@host> monitor 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

Syntax monitor list

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

Description Display the status of monitored log and trace files.

Options This command has no options.

Additional Information Log files are generated by the routing protocol process or by system logging. The log files generated by system logging are configured with the **syslog** statement at the **[edit system]** hierarchy level and the **options** statement at the **[edit routing-options]** hierarchy level. The trace files generated by the routing protocol process are those configured with **traceoptions** statements at the **[edit routing-options]**, **[edit interfaces]**, and **[edit protocols *protocol*]** hierarchy levels.

Required Privilege Level trace

Related Documentation

- **monitor start on page 91**
- **monitor stop on page 92**

List of Sample Output **monitor list on page 90**

Output Fields Table 22 on page 90 describes the output fields for the **monitor list** command. Output fields are listed in the approximate order in which they appear.

Table 22: monitor list Output Fields

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

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

Syntax monitor start *filename*

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

Description Start displaying the system log or trace file and additional entries being added to those files.

Options *filename*—Specific log or trace file.

Additional Information Log files are generated by the routing protocol process or by system logging. The log files generated by system logging are configured with the **syslog** statement at the **[edit system]** hierarchy level and the **options** statement at the **[edit routing-options]** hierarchy level. The trace files generated by the routing protocol process are configured with **traceoptions** statements at the **[edit routing-options]**, **[edit interfaces]**, and **[edit protocols *protocol*]** hierarchy levels.

Required Privilege Level trace

Related Documentation

- **monitor list on page 90**
- **monitor stop on page 92**

List of Sample Output **monitor start on page 91**

Output Fields Table 23 on page 91 describes the output fields for the **monitor start** command. Output fields are listed in the approximate order in which they appear.

Table 23: monitor start Output Fields

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

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

Syntax monitor stop *filename*

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

Description Stop displaying the system log or trace file.

Options *filename*—Specific log or trace file.

Additional Information 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 **syslog** statement at the **[edit system]** hierarchy level and the **options** statement at the **[edit routing-options]** hierarchy level. The trace files generated by the routing protocol process are those configured with **traceoptions** statements at the **[edit routing-options]**, **[edit interfaces]**, and **[edit protocols *protocol*]** hierarchy levels.

Required Privilege Level trace

Related Documentation

- **monitor list on page 90**
- **monitor start on page 91**

List of Sample Output **monitor stop on page 92**

Output Fields This command produces no output.

monitor stop

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


monitor traffic

Syntax

monitor traffic
<absolute-sequence>
<brief | detail | extensive>
<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.

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 between 1 and 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 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 24 on page 95.

Table 24: Match Conditions for the monitor traffic Command

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

Table 24: Match Conditions for the monitor traffic Command *(continued)*

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

To combine expressions, use the logical operators listed in Table 25 on page 96.

Table 25: Logical Operators for the monitor traffic Command

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

Table 25: 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 26 on page 98.

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 24 on page 95.
- The 802.1Q VLAN tag information included in the Layer 2 header is removed from all inbound traffic packets. As 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 26: Arithmetic and Relational Operators for the monitor traffic Command

Arithmetic or Relational Operator	Description
Arithmetic Operator	
+	Addition operator.
-	Subtraction operator.
/	Division operator.
&	Bitwise AND.
*	Bitwise exclusive OR.
|	Bitwise inclusive OR.
Relational Operator (Highest to Lowest Precedence)	
<=	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 and maintenance

List of Sample Output

monitor traffic count on page 98
monitor traffic detail count on page 99
monitor traffic extensive (Absolute Sequence) on page 99
monitor traffic extensive (Relative Sequence) on page 99
monitor traffic extensive count on page 99
monitor traffic interface on page 100
monitor traffic matching on page 100
monitor traffic (TX Matrix Plus Router) on page 100

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

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 count

```
user@host> monitor traffic detail count 2
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 extensive (Absolute Sequence)

```
user@host> monitor traffic extensive no-domain-names no-resolve no-timestamp count 20
matching "tcp" 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 extensive (Relative Sequence)

```
user@host> monitor traffic extensive no-domain-names no-resolve no-timestamp count 20
matching "tcp"
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 extensive count

```
user@host>  monitor traffic extensive count 5 no-domain-names no-resolve
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-shell1.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-shell1.juniper.net.46182: P 1:6(5)
```

```
ack 48 win 33304
<nop,nop,timestamp 993809 1308555294>
04:12:00.141572
In IP ipg-lnx-shell1.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-shell1.juniper.net.46182: P 6:10(4) ack 48 win 33304
<nop,nop,timestamp 993810 1308555294>
04:12:00.141821
In IP ipg-lnx-shell1.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-shell1.juniper.net.46182: P 10:20(10) ack 48 win 33304
<nop,nop,timestamp 993810 1308555294>
04:12:00.142072
In IP ipg-lnx-shell1.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-shell1.juniper.net.46182: P 20:28(8) ack 48 win 33304 <nop,nop,timestamp
 993810 1308555294>
04:12:00.142321
In IP ipg-lnx-shell1.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-shell1.juniper.net.46182: P 28:37(9) ack 48 win 33304 <nop,nop,timestamp
 993810 1308555294>
...
```

mtrace

Syntax

mtrace *source*
<routing-instance *routing-instance-name*>

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.

Options

source—Source hostname or address.

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

Additional Information

The **mtrace** command for multicast traffic is similar to the **traceroute** command used for unicast traffic. Unlike **traceroute**, **mtrace** traces traffic backwards, from the receiver to the source.

Required Privilege Level

view

List of Sample Output

mtrace source on page 103

Output Fields

Table 27 on page 102 describes the output fields for the **mtrace** command. Output fields are listed in the approximate order in which they appear.

Table 27: mtrace 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.
number-of-hops	Number of hops from the source to the named router or switch.
router-name	Name of the router or switch for this hop.
address	Address of the router or switch for this hop.
protocol	Protocol used (for example, PIM).
Round trip time	Average round-trip time, in milliseconds (ms).
total ttl of	Time-to-live (TTL) threshold.

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*>
<ttl *ttl*>
<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.

ttl *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 106**

Output Fields Table 28 on page 105 describes the output fields for the **mtrace from-source** command. Output fields are listed in the approximate order in which they appear.

Table 28: mtrace from-source 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.
number-of-hops	Number of hops from the source to the named router or switch.
router-name	Name of the router or switch for this hop.
address	Address of the router or switch for this hop.
protocol	Protocol used (for example, PIM).
Round trip time	Average round-trip time, in milliseconds (ms).
total ttl of	Time-to-live (TTL) threshold.
source	Source address.
Response Dest	Response destination address.
Overall	Average packet rate for all traffic at each hop.
Packet Statistics for Traffic From	Number of packets lost, number of packets sent, percentage of packets lost, and average packet rate at each hop.

Table 28: mtrace from-source Output Fields *(continued)*

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

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

Syntax mtrace monitor

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

Description Listen passively for IP multicast responses.To exit **mtrace monitor**, type Ctrl+c.

Options none—Trace the master instance.

Required Privilege Level view

List of Sample Output **mtrace monitor on page 108**

Output Fields Table 29 on page 107 describes the output fields for the **mtrace monitor** command. Output fields are listed in the approximate order in which they appear.

Table 29: mtrace monitor Output Fields

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

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*>
<ttl *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 *ttl*—(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 110

Output Fields

Table 30 on page 110 describes the output fields for the **mtrace to-gateway** command. Output fields are listed in the approximate order in which they appear.

Table 30: 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.
number-of-hops	Number of hops from the source to the named router or switch.
router-name	Name of the router or switch for this hop.
address	Address of the router or switch for this hop.
protocol	Protocol used (for example, PIM).
Round trip time	Average round-trip time, in milliseconds (ms).
total ttl of	Time-to-live (TTL) threshold.

mtrace to-gateway

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

Mrace 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*>

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.

Description

Display the route 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.

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

List of Sample Output

traceroute on page 113
traceroute as-number-lookup host on page 114
traceroute noresolve on page 114
traceroute (Between CE Routers, Layer 3 VPN) on page 114
traceroute (Through an MPLS LSP) on page 114

Output Fields

Table 31 on page 113 describes the output fields for the **traceroute** command. Output fields are listed in the approximate order in which they appear.

Table 31: traceroute Output Fields

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

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 as-number-lookup host

```
user@host> traceroute as-number-lookup 10.100.1.1
traceroute to 10.100.1.1 (10.100.1.1), 30 hops max, 40 byte packets
 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 noresolve

```
user@host> traceroute santacruz noresolve
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 CE Routers, Layer 3 VPN)

```
user@host> traceroute vpn09
traceroute to vpn09.skybank.net (10.255.14.179), 30 hops max, 40
      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 (Through an MPLS LSP)

```
user@host> traceroute mpls1
traceroute to 10.168.1.224 (10.168.1.224), 30 hops max, 40 byte packets
 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-lo0.company.net (10.168.1.224)  0.420 ms  0.394 ms  0.401 ms
```

traceroute monitor

Syntax

traceroute monitor *host*
<count *value*>
<inet | inet 6>
<interval *seconds*>
<no resolve>
<size *value*>
<source *source-address*>
<summary>

Release Information

Command introduced in Junos OS Release 8.0

Description

Displays live monitoring of each hop in the route packets take to a specified network host. Use **traceroute monitor** as a debugging tool to locate points of failure in a network.

Options

host—IP address or name of remote host.

count *value*—Number of ping requests, in packets, to send in summary mode. The default value is **10**.

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

interval *seconds*—(Optional) Number of seconds to wait before sending ping requests. The default value is **1**.

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

size *value*—(Optional) Receive the specified number of bytes for each packet. The range is **0** through **65468** bytes. The default value is **64**.

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

summary—(Optional) Generate and display a summary of live monitoring of each hop the route packets take to a specified network host.

Required Privilege Level

network

List of Sample Output

traceroute monitor on page 116

Output Fields

Table 32 on page 115 describes the output fields for the **traceroute monitor** command. Output fields are listed in the approximate order in which they appear.

Table 32: traceroute monitor Output Fields

Field Name	Field Description
Host	Hostname or IP address of the router at each hop.
Loss%	Percent of packet loss. The number of ping responses divided by the number of ping requests, specified as a percentage.

Table 32: traceroute monitor Output Fields *(continued)*

Field Name	Field Description
Snt	Number of ping requests sent to the router at this hop.
Last	Most recent round-trip time, in milliseconds, to the router at this hop.
Avg	Average round-trip time, in milliseconds, to the router at this hop.
Best	Shortest round-trip time, in milliseconds, to the router at this hop.
Wrst	Longest round-trip time, in milliseconds, to the router at this hop.
StDev	Standard deviation of round-trip times, in milliseconds, to the router at this hop.

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 119
traceroute mpls ldp detail on page 119

Output Fields

Table 33 on page 118 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 33: traceroute mpls ldp Output Fields

Field Name	Field Description	Level of Output
Probe options	Probe options specified in the **traceroute mpls ldp *fec*** 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 **null**.	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.	**detail**
Parent	Address of the previous hop. Parent value for the first hop is **null**.	**detail**
Return Code	Return code for reporting the result of processing the echo request by the receiver.	**detail**
Response time	Time for the echo request to reach the receiver.	**detail**
Multipath type	Labels or addresses used by the specified multipath type. If multipaths are not used, the value is **none**.	**detail**

Table 33: traceroute mpls ldp Output Fields *(continued)*

Field Name	Field Description	Level of Output
Label Stack	Label stack used to forward the packet.	**detail**

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 detail

```
user@router> traceroute mpls ldp 4.4.4.4 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 121
traceroute mpls rsvp detail on page 122

Output Fields

Table 34 on page 120 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 34: traceroute mpls rsvp Output Fields

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

Table 34: 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 **null**.	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.	**detail**
Parent	Address of the previous hop. Parent value for the first hop is **null**.	**detail**
Return Code	Return code for reporting the result of processing the echo request by the receiver.	**detail**
Sender timestamp	Display the timestamp when the MPLS echo request is sent to the next hop.	**detail**
Receiver timestamp	Timestamp when the echo request from the previous hop is received and acknowledged with an echo response by the next hop.	**detail**
Response time	Time for the echo request to reach the receiver.	**detail**
MTU	Size of the largest packet that includes the label stack forwarded to the next hop.	**detail**
Multipath type	Labels or addresses used by the specified multipath type. If multipaths are not used, the value is **none**.	**detail**
Label stack	Label stack used to forward the packet.	**detail**

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
```

traceroute mpls rsvp detail

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

CHAPTER 6

Accounting Operational Mode Commands

Table 35 on page 125 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 35: Accounting Operational Mode Commands

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

clear lldp neighbor

Syntax

clear lldp neighbor
<interface *interface-name*>

Release Information

Command introduced in Junos OS Release 9.6.

Description

On MX Series routers, clear information regarding all Link Layer Discovery Protocol (LLDP) neighbors or LLDP neighbors of the specified interface.

Options

interface *interface-name*—(Optional) Clear the LLDP neighbors on the specified interface.

Required Privilege Level

clear

Related Documentation

- **clear lldp statistics on page 127**

List of Sample Output

clear lldp statistics on page 126

Output Fields

When you enter this command, you are provided no feedback on the status of your request. You can enter the **show lldp neighbors** command before and after clearing the LLDP neighbors to verify the clear operation.

clear lldp statistics

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

clear lldp statistics

Syntax

clear lldpp neighbor
<interface *interface-name*>

Release Information

Command introduced in Junos OS Release 9.6.

Description

On MX Series routers, clear all Link Layer Discovery Protocols (LLDP) statistics or LLDP statistics associated with the specified interface.

Options

interface *interface-name*—(Optional) Clear LLDP statistics on the specified interface.

Required Privilege Level

clear

Related Documentation

- **clear lldp neighbor on page 126**

List of Sample Output

clear lldp neighbor on page 127

Output Fields

When you enter this command, you are provided no feedback on the status of your request. You can enter the **show lldp statistics** command before and after clearing the LLDP statistics to verify the clear operation.

clear lldp neighbor

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

show lldp

Syntax

show lldp
<detail>

Release Information

Command introduced in Junos OS Release 9.6.

Description

On MX Series routers, display information about the Link Layer Discovery Protocol (LLDP).

Options

detail—(Optional) Display the detailed output level.

Required Privilege Level

view

List of Sample Output

show lldp on page 129
show lldp detail on page 129

Output Fields

Table 36 on page 128 describes the output fields for the **show lldp** command. Output fields are listed in the approximate order in which they appear.

Table 36: show lldp Output Fields

Field Name	Field Description
LLDP	Status of LLDP: **Enabled** or **Disabled**.
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 (**Enabled** or **Disabled**) and **Neighbor count** (**detail** only).
LLDP basic TLVs supported	List of basic LLDP TLVs supported by this device (**detail** only).
LLDP 802 TLVs supported	List of IEEE 802.1 LLDP TLVs supported by this device (**detail** only).

show lldp

```
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
```

show lldp detail

```
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

Syntax show lldp local-information

Release Information Command introduced in Junos OS Release 9.6.

Description On MX Series routers, display local Link Layer Discovery Protocol (LLDP) information.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show lldp local-information on page 131**

Output Fields Table 37 on page 130 describes the output fields for the **show lldp local-information** command. Output fields are listed in the approximate order in which they appear.

Table 37: show lldp local-information Output Fields

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

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 9.4I0.1, 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

Syntax

show lldp neighbors
<interface *interface-name*>

Release Information

Command introduced in Junos OS Release 9.6.

Description

On MX Series routers, display information about LLDP neighbors.

Options

interface *interface-name*—(Optional) Display the neighbor information about a particular physical interface.

Required Privilege Level

view

Related Documentation

- **clear lldp neighbor on page 126**

List of Sample Output

show lldp neighbors on page 134
show lldp neighbors interface ge-0/0/4 on page 134

Output Fields

Table 38 on page 132 describes the output fields for the **show lldp neighbors** command. Output fields are listed in the approximate order in which they appear.

Table 38: 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 **interface** option is used).
Local Information	Information about local systems on the interface (appears when the **interface** option is used).
Neighbor Information	Information about both local and neighbor system on the interface (appears when the **interface** option is used).
Index	Local interface index (appears when the **interface** option is used).

Table 38: show lldp neighbors Output Fields *(continued)*

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

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
```

show lldp neighbors interface ge-0/0/4

```
user@host> show lldp neighbors 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

Syntax show lldp remote-global-statistics

Release Information Command introduced in Junos OS Release 9.6.

Description On MX Series routers, display remote Link Layer Discovery Protocol (LLDP) global statistics.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show lldp remote-global-statistics on page 137**

Output Fields Table 39 on page 136 describes the output fields for the **show lldp remote-global-statistics** command. Output fields are listed in the approximate order in which they appear.

Table 39: 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.

show lldp remote-global-statistics

```
user@host> 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

Syntax

show lldp statistics
<interface *interface-name*>

Release Information

Command introduced in Junos OS Release 9.6.

Description

On MX Series routers, display information about Link Layer Discovery Protocol (LLDP) statistics.

Options

interface *interface-name*—(Optional) Display the statistics about a particular physical interface.

Required Privilege Level

view

Related Documentation

- **clear lldp statistics on page 127**

List of Sample Output

show lldp statistics on page 139
show lldp statistics interface ge-0/1/1 on page 139

Output Fields

Table 40 on page 138 describes the output fields for the **show lldp statistics** command. Output fields are listed in the approximate order in which they appear.

Table 40: show lldp statistics Output Fields

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

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
```

show lldp statistics interface ge-0/1/1

```
user@host> show lldp statistics 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

Syntax show accounting profile *profile-name*

Release Information Command introduced before Junos OS Release 7.4.

Description Display accounting profile information.

Options *profile-name*—Name of the accounting profile.

Required Privilege Level view

List of Sample Output
show accounting profile (Interface) on page 141
show accounting profile (Filter) on page 142
show accounting profile (Destination Class) on page 142
show accounting profile (Routing Engine) on page 143

Output Fields Table 41 on page 140 lists the output fields for the **show accounting profile** command. Output fields are listed in the approximate order in which they appear.

Table 41: show accounting profile Output Fields

Field Name	Field Description
Profile	Name of the accounting profile.
Sampling interval	Configured interval, in minutes, for statistic collection.
Profile Usage Count	Number of items configured for collecting accounting statistics.
file information	Information about the accounting profile log, including: • **File**—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 **/var/log** directory. • **maximum size**—Configured size. When the size is exceeded, the log file closes and a new log file opens. • **maximum number**—Configured maximum number of log files. • **bytes written**—Number of bytes written to the log file.
Transfer Interval	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.
Next Scheduled Transfer	Time at which the next transfer occurs.

Table 41: show accounting profile Output Fields *(continued)*

Field Name	Field Description
Column Labels	Names of sampled statistics. This list varies depending on the configuration: • **profile-layout**—List of data fields reported, in the order they appear in the output. • **epoch-timestamp**—Number of seconds since the epoch. • **interfaces**—(For interface, filter, and destination class profiles) Name of the interfaces on which the filter is applied. • **filter-name**—(For filter profiles) Name of the filter. • **counter-name**—(For filter profiles) Name of the counter. • **packet-count**—(For filter and destination class profiles) Number of packets for the counter. • **byte-count**—(For filter and destination class profiles) Number of bytes for the counter. • **input-bytes**—(For interface profiles) Input bytes. • **input-errors**—(For interface profiles) Generic input error packets. • **input-multicast**—(For interface profiles) Input packets arriving by multicast. • **input-packets**—(For interface profiles) Input packets. • **input-unicast**—(For interface profiles) Input unicast packets. • **output-bytes**—(For interface profiles) Output bytes. • **output-errors**—(For interface profiles) Generic output error packets. • **output-multicast**—(For interface profiles) Output packets sent by multicast. • **output-packets**—(For interface profiles) Output packets. • **output-unicast**—(For interface profiles) Output unicast packets. • **no-proto**—(For interface profiles) Packets for unsupported protocol. • **snmp-index**—(For interface profiles) SNMP index. • **destination-class-name**—(For destination class profiles) Configured destination class name. • **host name**—(For Routing Engine profiles) Hostname for the router. • **date-*yyyymmdd***—(For Routing Engine profiles) Date. • **timeofday-*hhmmss***—(For Routing Engine profiles) Time of day. • **uptime**—(For Routing Engine profiles) Time since the last reboot, in seconds. • **cpu1min**—(For Routing Engine profiles) Average system load over the last 1 minute. • **cpu5min**—(For Routing Engine profiles) Average system load over the last 5 minutes. • **cpu15min**—(For Routing Engine profiles) Average system load over the last 15 minutes.
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.

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-yyyymmdd
  timeofday-hhmmss
  uptime
  cpu1min
  cpu5min
  cpu15min


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

show accounting records

Syntax

show accounting records *profile-name*
<since *time*>
<utc_timestamp>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display accounting records for the specified accounting profile.

Options

profile-name—Name of the accounting profile.

since *time*—(Optional) Display accounting statistics since the specified time (***YYYY-MM-DD-HH:MM:SS***)

utc_timestamp—(Optional) Display the timestamp in Coordinated Universal Time (UTC) format.

Required Privilege Level

view

List of Sample Output

show accounting records on page 145
show accounting records utc-timestamp on page 147
show accounting records (Since Time) on page 147
show accounting records (Filter Profile) on page 147
show accounting records (Destination Class Profile) on page 147
show accounting records (Routing Engine Profile) on page 147

Output Fields

Table 42 on page 144 lists the output fields for the **show accounting records** command. Output fields are listed in the approximate order in which they appear.

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

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

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 records utc-timestamp

```
user@host> show accounting records if_prof 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 records (Since Time)

```
user@host> show accounting records if_prof since 2000-10-03-00:10:41
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 records (Filter Profile)

```
user@host> show accounting 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 records (Destination Class Profile)

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

show accounting records (Routing Engine Profile)

```
user@host> show accounting records rep1
Timestamp: 2000-10-03-00:30:41
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 43 on page 149 summarizes the command-line interface (CLI) commands you can use to monitor the router chassis. Commands are listed in alphabetical order.

Table 43: Chassis Operational Mode Commands

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

Table 43: Chassis Operational Mode Commands *(continued)*

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

Table 43: Chassis Operational Mode Commands *(continued)*

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

Table 43: 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.	**show chassis ethernet-switch**
(MX Series routers only) Display information about the fan and fan trays.	**show chassis fan**
(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.	**show chassis fabric feb**
(TX Matrix Plus routers only) Display chassis fabric errors for FPCs and SIBs.	**show chassis fabric errors**
(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.	**show chassis fabric fpcs**
(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.	**show chassis fabric map**
(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)	**show chassis fabric plane**
(M120, MX Series, T1600, and TX Matrix Plus router only) Display the CB location of each plane.	**show chassis fabric plane-location**
(T Series routers only) Display the state of the electrical and optical switch fabric links: • Between the SIBs in the TX Matrix router and the SIBs in the T640 routers. • Between the T640 SIBs and the FPCs in a T640 router.	**show chassis fabric sibs**
(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.	**show chassis fabric topology**
(M5, M10, and M120 routers only). Display FEB status information.	**show chassis feb**
Display the version levels of the firmware running on the SCB, SFM, SSB, FEB, and FPCs.	**show chassis firmware**
(J Series Services Routers only) Display status of the forwarding process (fwdd).	**show chassis forwarding**

Table 43: 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.	**show chassis fpc**
(M120 router only) Display the FPC and FEB mapping and their respective states.	**show chassis fpc-feb-connectivity**
Display hardware inventory.	**show chassis hardware**
Display the status of the most recent unified in-service software upgrade (ISSU).	**show chassis in-service-upgrade**
(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.	**show chassis lccs**
Display chassis location information.	**show chassis location**
Display MAC address information.	**show chassis mac-addresses**
Display the network services mode.	**show chassis network services**
Display PIC status information.	**show chassis pic**
(J Series routers only) Display PIM power ratings.	**show chassis power-ratings**
(MX Series Ethernet Services routers only) Display power limits and usage.	**show chassis power**
(MX Series Ethernet Services routers only) Show power-on sequence for the chassis DPCs.	**show chassis power sequence**
(Root System Domain [RSD] only) Display information about Protected System Domains (PSDs).	**show chassis psd**
(M120 routers only) Display status information about configured FEB redundancy groups.	**show chassis redundancy feb**
Display the information about one or more Routing Engines.	**show chassis routing-engine**
(M40 router only) Display System Control Board (SCB) status information.	**show chassis scb**
(M40e and M160 routers only) Change and display SFM status information.	**show chassis sfm**
(M320 routers and T Series routers only) Display SIB status information.	**show chassis sibs**

Table 43: Chassis Operational Mode Commands *(continued)*

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

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

Syntax

clear chassis display message

Syntax (TX Matrix Router)

clear chassis display message
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)

clear chassis display message
<lcc *number* | sfc *number*>

Release Information

Command introduced in Junos OS Release 7.5.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option for the TX Matrix Plus routers introduced in Junos OS Release 9.6.

Description

(M40e, M160, and M320, T Series routers, and EX Series switches only) Clear 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.

Options

none—Clear or stop a text message on the craft interface display.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

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).

sfc *number*—(TX Matrix Plus routers only) (Optional) Clear or stop a text message on the craft interface on the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with 0.

Required Privilege Level

clear

Related Documentation

- Configuring the LCD Panel on EX Series Switches (CLI Procedure)
- **set chassis display message on page 189**
- **show chassis craft-interface on page 199**

List of Sample Output

clear chassis display message on page 156

Output Fields

See **show chassis craft-interface** for an explanation of output fields.

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

Syntax

request chassis cb (offline | online) slot *slot-number*

Syntax (TX Matrix Router)

request chassis cb (offline | online) <slot *slot-number* | lcc *number* slot *cb-slot-number* | scc *number* slot *cb-slot-number*>

Syntax (TX Matrix Plus Router)

request chassis cb (offline | online) <slot *slot-number* | lcc *number* slot *cb-slot-number* | sfc *number* slot *cb-slot-number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS 9.4 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

(M120, M320, and MX Series routers and T Series routers and EX8200 switches only) 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.

Options

offline—Take the CB offline.

online—Bring the CB online.

slot *slot-number*—CB slot number:

- (TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, if you specify the number of the T640 router by using the **lcc *number*** option (the recommended method), replace ***cb-slot-number*** with a value from 0 through 1.

  Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 router by using the **lcc *number*** option (the recommended method), replace ***cb-slot-number*** with a value from 0 through 1.
- M320 router—Replace ***slot-number*** with a value from 0 through 1.
- MX480/MX240 routers—Replace ***slot-number*** with a value from 0 through 1.
- MX960 router—Replace ***slot-number*** with a value from 0 through 2.
- EX8208 switch—Replace ***slot-number*** with a value from 0 through 2.
- EX8216 switch—Replace ***slot-number*** with a value from 0 through 1.

sfc *number*—(TX Matrix Plus routers only) (Optional) Change the CB status for the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with 0.

Required Privilege Level

maintenance

List of Sample Output

request chassis cb on page 158

Output Fields

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

request chassis cb

```
user@host> request chassis cb offline slot 1
Backup CB 1 cannot be set offline, backup RE is online
```

request chassis cfeb

Syntax request chassis cfeb (offline | online | restart)

Release Information Command introduced before Junos OS Release 7.4.

Description (M7i and M10i routers only) Control the operation of the Compact Forwarding Engine Board (CFEB).

Options offline—Take the CFEB offline.

online—Bring the CFEB online.

restart—Restart the CFEB.

Required Privilege Level maintenance

Related Documentation

- show chassis cfeb on page 195

List of Sample Output request chassis cfeb on page 159

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

request chassis cfeb

```
user@host> request chassis cfeb offline
CFEB Offlined
```

request chassis cip

Syntax request chassis cip (offline | online) slot *slot-number*

Release Information Command introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description (TX Matrix Plus routers only) Control the operation of the Connector Interface Panel (CIP).

Options offline—Take the CIP offline.

online—Bring the CIP online.

slot *slot-number*—CIP slot number. Replace ***slot-number*** with a value ranging from 0 through 1.

Required Privilege Level maintenance

List of Sample Output

request chassis cip offline slot (TX Matrix Plus Router) on page 160
request chassis cip offline slot (TX Matrix Plus Router) on page 160

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

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

Syntax request chassis fabric plane *plane-number* (offline | online)

Release Information Command introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.4 for EX Series switches.

Description (M120 and MX Series routers and EX8200 switches only) Control the operation of the specified fabric plane.

Options offline—Take the fabric plane offline. Use the **request chassis fabric plane *plane-number* offline** command to clear a **FAULT** state on a fabric plane. To bring the fabric plane back online, use the **request chassis fabric plane *plane-number* online** command.

online—Bring the fabric plane online.

plane *plane-number*—Fabric plane number.

- For the M120 router, replace ***plane-number*** with a value from 0 through 3.
- For the MX480 and MX240 routers, replace ***plane-number*** with a value from 0 through 7.
- For the MX960 router, replace ***plane-number*** with a value from 0 through 5.
- For the EX8208 switch, replace ***plane-number*** with a value from 0 through 11.
- For the EX8216 switch, replace ***plane-number*** with a value from 0 through 7.

Required Privilege Level maintenance

List of Sample Output
request chassis fabric plane 0 online on page 161
request chassis fabric plane 0 offline on page 161
request chassis fabric plane 0 online (EX8200 switch) on page 161

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

request chassis fabric plane 0 online

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

request chassis fabric plane 0 offline

```
user@host> request chassis fabric plane 0 offline
Offline initiated, use “show chassis fabric plane” to verify
```

request chassis fabric plane 0 online (EX8200 switch)

```
user@host> request chassis fabric plane 0 online

Plane 0 is already active
```

request chassis feb

Syntax request chassis feb (offline | online | restart) slot *slot-number*

Release Information Command introduced in Junos OS Release 8.0.

Description (M120 router only) Control the operation of the specified Forwarding Engine Board (FEB).

Options

offline—Take the specified FEB offline.

online—Bring the specified FEB online.

restart—Restart the specified FEB.

slot *slot-number*—FEB slot number. Replace ***slot-number*** with a value from 0 through 5.

Required Privilege Level maintenance

List of Sample Output

request chassis feb offline slot 0 on page 162
request chassis feb online slot 0 on page 162
request chassis feb restart slot 0 on page 162

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

request chassis feb offline slot 0

```
user@host> request chassis feb offline slot 0
Offline initiated, use “show chassis feb” to verify
```

request chassis feb online slot 0

```
user@host> request chassi feb online slot 0
Online initiated, use “show chassis feb” to verify
```

request chassis feb restart slot 0

```
user@host> request chassis feb restart slot 0
Restart initiated, use “show chassis feb” to verify
```

request chassis fpc

Syntax

request chassis fpc (offline | online | restart) slot *slot-number*

Syntax (TX Matrix and TX Matrix Plus Router)

request chassis fpc (offline | online | restart) slot *slot-number*
<lcc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches that have multiple FPCs.

Description

(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.

Options

offline—Take the FPC offline.

online—Bring the FPC online.

restart—Restart the FPC.

slot *slot-number*—FPC slot number:

- M20 router—0 through 3.
- M120 router—0 through 5.
- MX240 router—0 through 2. On the MX240 router, slot-number corresponds to the Dense Port Concentrator (DPC) slot number. If an MPC is installed, slot-number corresponds to the MPC slot number.
- MX480 router—0 through 5. On the MX480 router, slot-number corresponds to the Dense Port Concentrator (DPC) slot number. If an MPC is installed, slot-number corresponds to the MPC slot number.
- MX960 router—0 through 11. On the MX960 router, slot-number corresponds to the Dense Port Concentrator (DPC) slot number. If an MPC is installed, slot-number corresponds to the MPC slot number.
- TX Matrix and TX Matrix Plus routers only—On the TX Matrix router, if you specify the number of the T640 router by using the **lcc *number*** option (the recommended method), replace ***slot-number*** with a value from 0 through 7. Otherwise, replace ***slot-number*** with a value from 0 through 31.

  Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 router by using the **lcc *number*** option (the recommended method), replace ***slot-number*** with a value from 0 through 7. Otherwise, replace ***slot-number*** with a value from 0 through 31. For example, the following commands have the same result:

  ```
  user@host> request chassis fpc lcc 1 slot 1 offline
  user@host> request chassis fpc slot 9 offline
  ```

- Other routers—0 through 7.
- 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 389**

List of Sample Output **request chassis fpc on page 164**

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

request chassis fpc

```
user@host> request chassis fpc online slot 0
FPC 0 already online
```


request chassis fpm resync

Syntax
request chassis fpm resync

Syntax (TX Matrix Router)
request chassis fpm resync (lcc *number* | scc)

Syntax (TX Matrix Plus Router)
request chassis fpm resync (lcc *number* | sfc *number*)

Release Information
Command introduced before Junos OS Release 7.4.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description
(M40e, M120, M160, M320, MX Series, and T Series routers only) Resynchronize the craft interface status.

Options
lcc *number*—(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 ***number*** with a value from **0** through **3**.

scc—(TX Matrix routers only) Resynchronize the craft interface status on the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) Resynchronize the craft interface status on the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with **0**.

Required Privilege Level
maintenance

List of Sample Output
request chassis fpm resync on page 165

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

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 449**

List of Sample Output

request chassis lcc on page 166

Output Fields

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

request chassis lcc

```
user@host> request chassis lcc offline slot 0
```

request chassis mcs

Syntax request chassis mcs (offline | online | restart) slot *slot-number*

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e and M160 routers only) Control the operation of the Miscellaneous Control Subsystem (MCS).

Options offline—Take the MCS offline.

online—Bring the MCS online.

restart—Restart the MCS.

slot *slot-number*—MCS slot number. Replace ***slot-number*** with 0 or 1.

Required Privilege Level maintenance

List of Sample Output **request chassis mcs on page 167**

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

request chassis mcs

```
user@host> request chassis mcs online slot 0
MCS 0 appears to be online already
```

request chassis pcg

Syntax request chassis pcg (offline | online) slot *slot-number*

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e and M160 routers) Control the operation of the Packet Forwarding Engine (PFE) clock generator (PCG).

Options offline—Take the PCG offline.

online—Bring the PCG online.

slot *slot-number*—PCG slot number. Replace ***slot-number*** with **0** or **1**.

Required Privilege Level maintenance

List of Sample Output **request chassis pcg on page 168**

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

request chassis pcg

```
user@host> request chassis pcg online slot 0
PCG 1 appears to be already online
```


request chassis pic

Syntax request chassis pic (offline | online) fpc-slot *slot-number* pic-slot *slot-number*

Syntax (TX Matrix and TX Matrix Plus Router) request chassis pic (offline | online) fpc-slot *slot-number* pic-slot *slot-number* <lcc *number*>

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

Description Control the operation of the PIC.

NOTE: The **request chassis pic (offline | online) fpc-slot** *slot number* **pic-slot** *slot-number* command is not supported for built-in PICs on MX Series routers.

To view a list of built-in PICs on the router or switch chassis, use the **show chassis hardware** command.

NOTE: T1600 routers and TX Matrix Plus routers with 100-Gigabit Ethernet PICs require two adjacent PIC slots, 0 and 1, for each PIC. Therefore, only **online** and **offline** command options to PIC slot 0 are allowed. Use of the **online** and **offline** command options for PIC slot 1 with the described router and PIC combination is not allowed.

Options offline—Take the PIC offline.

online—Bring the PIC online.

fpc-slot *slot-number*—Flexible PIC Concentrator (FPC) slot number. Replace ***slot-number*** with a value appropriate for your router or switch:

- EX Series switches:
  - EX3200 switches and EX4200 standalone switches—0.
  - EX4200 switches in a Virtual Chassis configuration—0 through 9 (switch's member ID).
  - EX8208 switches—0 through 7 (line card).
  - EX8216 switches—0 through 15 (line card).
- M5, M7i, M10, and M10i routers—0 or 1.
- M20 routers—0 through 3.
- M120 routers—0 through 5.
- MX960 routers—0 through 11.

- 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 404**
- **show chassis pic on page 457**

List of Sample Output

request chassis pic on page 170

Output Fields

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

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

Syntax request chassis mic (offline | online) fpc-slot *slot-number* mic-slot *slot-number*

Release Information Command introduced in Junos OS Release 10.1.

Description (MX Series routers only) Control the operation of the Modular Interface Cards (MICs) installed on a Modular Port Concentrator (MPC).

Options offline—Take the MIC offline.

online—Bring the MIC online.

fpc-slot *slot-number*—FPC slot number where the MIC is installed:

- MX80 router—Replace ***fpc-slot*** with the value **1**. This command is not supported on FPC slot 0.
- MX240 router—Replace ***fpc-slot*** with a value from **0** through **2**.
- MX480 router—Replace ***fpc-slot*** with a value from **0** through **5**.
- MX-960 router—Replace ***fpc-slot*** with a value from **0** through **11**.

mic-slot *slot-number*—MIC slot number. Replace ***slot-number*** with **0** or **1**.

Required Privilege Level maintenance

Related Documentation

- **show chassis hardware on page 404**

List of Sample Output **request chassis mic online on page 171**

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

request chassis mic online

```
user@host> request chassis mic online fpc-slot 1 mic-slot 1
```

request chassis redundancy feb slot

Syntax request chassis redundancy feb slot *slot-number* (switch-to-backup | revert-from-backup)

Release Information Command introduced in Junos OS Release 8.2.

Description (M120 routers only) Control the operation of the specified Forwarding Engine Board (FEB) in a redundancy group.

Options *slot-number*—FEB slot number. Replace ***slot-number*** with a value from **0** through **5**.

switch-to-backup—Initiate a switchover from the specified active FEB to the backup FEB for the redundancy group.

revert-from-backup—Initiate a revert to the specified FEB following a switchover to the backup FEB for a redundancy group.

Required Privilege Level maintenance

List of Sample Output **request chassis redundancy feb slot 2 switch-to-backup on page 172**
request chassis redundancy feb slot 3 revert-to-backup on page 172

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

request chassis redundancy feb slot 2 switch-to-backup

```
user@host> request chassis redundancy feb slot 2 switch-to-backup
Switch initiated, use “show chassis redundancy febs” to verify
```

request chassis redundancy feb slot 3 revert-to-backup

```
user@host> request chassis redundancy feb slot 3 revert-to-backup
Revert initiated, use “show chassis redundancy febs” to verify
```


request chassis routing-engine master

Syntax

```
request chassis routing-engine master (acquire | release | switch)
<force>
<no-confirm>
```

Syntax (TX Matrix Router)

```
request chassis routing-engine master (acquire | release | switch) (lcc number |
  scc | all-chassis)
<force>
<no-confirm>
```

Syntax (TX Matrix Plus Router)

```
request chassis routing-engine master (acquire | release | switch) (lcc number |
  sfc | all-chassis | all-lcc)
<force>
<no-confirm>
```

Release Information

Command introduced before Junos OS Release 7.4.
all-chassis option added in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

For routers or switches with multiple Routing Engines, control which Routing Engine is the master.

CAUTION: (Routing matrix based on the TX Matrix or TX Matrix Plus routers only) Within the routing matrix, we recommend that all Routing Engines run the same Junos OS Release. If you run different releases on the Routing Engines and a change in mastership occurs on any backup Routing Engine in the routing matrix, one or all 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.

Required Privilege Level

maintenance

Related Documentation

- **show chassis routing-engine on page 475**

List of Sample Output

request chassis routing-engine master acquire on page 175
request chassis routing-engine master switch on page 175

Output Fields

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

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

Syntax

request chassis scg (offline | online) slot *slot-number*

Syntax (TX Matrix and TX Matrix Plus Routers)

request chassis scg lcc *number* (offline | online) slot *slot-number*

Release Information

Command introduced before Junos OS Release 7.4.

Description

(T Series routers only) Control the operation of the specified SONET Clock Generator (SCG).

Options

lcc *number*—(TX Matrix 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 ***number*** with a value from 0 through 3.

offline—Take the SCG offline. When you change the SCG status to offline, the unit is not powered down.

online—Bring the SCG online.

slot *slot-number*—SCG slot number. Replace ***slot-number*** with 0 or 1.

Required Privilege Level

maintenance

Related Documentation

- **show chassis environment scg on page 264**

List of Sample Output

request chassis scg on page 176

Output Fields

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

request chassis scg

```
user@host> request chassis scg online slot 0
Online initiated, use "show chassis environment scg" to verify
```

request chassis sfm

Syntax request chassis sfm (offline | online | restart) slot *slot-number*

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e and M160 routers only) Control the operation of the specified Switching and Forwarding Module (SFM).

Options offline—Take the SFM offline.

online—Bring the SFM online.

restart—Restart the SFM.

slot *slot-number*—SFM slot number. Replace ***slot-number*** with a value from **0** through **3**.

Required Privilege Level maintenance

Related Documentation

- **show chassis sfm on page 488**

List of Sample Output

request chassis sfm (M40e) on page 177
request chassis sfm (M160) on page 177

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

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

Syntax

request chassis sfm master switch
<no-confirm>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M40e and M160 routers only) Control which Switching and Forwarding Module (SFM) is master.

Options

no-confirm—(Optional) Do not display a switch warning or query.

Additional Information

By default, the SFM in slot 0 (SFM0) is the master and the SFM in slot 1 (SFM1) is the backup. If you use this command to change the master, and then restart the chassis software for any reason, the master reverts to the default setting. To change the default master SFM, include the **sfm** statement at the **[edit chassis redundancy]** hierarchy level in the configuration. For more information, see the *Junos OS System Basics Configuration Guide*.

All installed SFMs are always working together to forward packets. If an SFM fails, the other SFMs take over and traffic continues to flow uninterrupted.

Required Privilege Level

maintenance

Related Documentation

- show chassis sfm on page 488

List of Sample Output

request chassis sfm master switch on page 178
request chassis sfm master switch no-confirm on page 178

Output Fields

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

request chassis sfm master switch

```
user@host> request chassis sfm master switch
warning: Traffic will be interrupted while the PFE is re-initialized
Toggle mastership between system forwarding module? [yes,no] (no) yes

Switch initiated, use “show chassis sfm” to verify
```

request chassis sfm master switch no-confirm

```
user@host> request chassis sfm master switch no-confirm
Switch initiated, use “show chassis sfm” to verify
```

request chassis sib

Syntax

request chassis sib (offline | online) slot *slot-number*

Syntax (TX Matrix Router)

request chassis sib (lcc *number* | scc) (offline | online) slot *slot-number* (start-receiver *number* | stop-receiver *number*)

Syntax (TX Matrix Plus Router)

request chassis sib (all-lcc | f13 *slot-number* | f2s *sib-slot/sib-f2s-slot-number* | lcc *number* | (offline | online) slot *slot-number*)

Release Information

Command introduced before Junos OS Release 7.4.
f13 and **f2s** options for the TX Matrix Plus router introduced in Junos OS Release 9.6.

Description

(M320 routers and T Series routers only) Control the operation of the specified Switch Interface Board (SIB).

Options

all-lcc—(TX Matrix Plus routers only) Control the operation of the SIB on all T1600 routers connected to the TX Matrix Plus router.

f13 ***slot-number***—Control the operation of F13 SIBs. Replace ***slot-number*** with a value **0**, **1**, **3**, **4**, **6**, **7**, **8**, **9**, **11**, or **12**.

f2s *sib-slot/sib-f2s-slot-number*—(TX Matrix Plus routers only) (Optional) Control the operation of the SIB F2s. Replace ***sib-slot*** with a value from **0** through **4**, followed by a ***sib-f2s-slot-number*** value **0**, **2**, **4** or **6**.

lcc *number*—(TX Matrix 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 ***number*** with a value from 0 through 3.

scc—(TX Matrix router only) TX Matrix router (or switch-card chassis) on a routing matrix.

offline—Take the SIB offline.

online—Bring the SIB online.

slot *slot-number*—SIB slot number. For the T320 router, replace ***slot-number*** with a value from 0 through 2. For the T640 router, TX Matrix router, and T1600 router in a routing matrix, replace ***slot-number*** with a value from 0 through 4.

start-receiver *number*—(TX Matrix routers only) Start the SIB optical receiver. Replace ***number*** with a value from **0** through **3**.

stop-receiver *number*—(TX Matrix routers only) Stop the SIB optical receiver. Replace ***number*** with a value from **0** through **3**.

Required Privilege Level

maintenance

Related Documentation

- show chassis sibs on page 492

List of Sample Output

request chassis sib on page 180
request chassis sib on page 180

Output Fields

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

request chassis sib

```
user@host> request chassis sib slot 0 online
Online initiated, use "show chassis sibs" to verify
```

request chassis sib

```
user@host> request chassis sib f13 slot 0 offline
Offline initiated, use "show chassis sibs" to verify
```

request chassis sib f13 train-link-receive slot

Syntax

request chassis sib f13 train-link-receive slot *SFC-SIB-F13–slot-num*

Syntax (TX Matrix Plus Routing)

request chassis sib f13 train-link-receive slot *SFC-SIB-F13-slot-num*

Release Information

Command introduced in Junos OS Release 10.1.

Description

(TX Matrix Plus routing platform only) Control the receiving link of the specified Switch Interface Board (SIB) of the SFC.

Options

slot *SFC-SIB-F13-slot-num*— SFC SIB slot number. Replace it with 0, 3, 6, 8 or 11.

Required Privilege Level

maintenance

Related Documentation

- **request chassis sib f13 train-link-transmit slot on page 182**

List of Sample Output

request chassis sib f13 train-link-receive slot on page 181

Output Fields

When you enter this command, the SFC is ready to receive traffic from the T1600 router (LCC).

request chassis sib f13 train-link-receive slot

```
user@host> request chassis sib f13 train-link-receive slot 0
```

request chassis sib f13 train-link-transmit slot

Syntax request chassis sib f13 train-link-transmit slot *SFC-SIB-F13-slot-num*

Release Information Command introduced in Junos OS Release 10.1.

Description (TX Matrix Plus routing platform only) Control the transmission link of the specified Switch Interface Board (SIB) of the SFC.

Options slot *SFC-SIB-F13-slot-num*—SFC SIB slot number. Replace it with 0, 3, 6, 8 or 11.

Required Privilege Level maintenance

Related Documentation

- **request chassis sib f13 train-link-receive slot on page 181**

List of Sample Output **request chassis sib f13 train-link-transmit slot on page 182**

Output Fields When you enter this command, the SFC is ready to transmit traffic to the T1600 router (LCC).

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

Syntax request chassis sib train-link-receive slot *LCC-SIB-ST-SIB-L-slot-num*

Release Information Command introduced in Junos OS Release 10.1.

Description (T1600 Router [LCC] and TX Matrix Plus routing platform only) Control the receiving link of the specified Switch Interface Board (SIB) of the LCC.

Options slot *LCC-SIB-ST-SIB-L-slot-num*— LCC SIB slot number. Replace it with a value from 0 through 4.

Required Privilege Level maintenance

Related Documentation

- **request chassis sib train-link-transmit slot on page 184**

List of Sample Output **request chassis sib train-link-receive slot on page 183**

Output Fields When you enter this command, the LCC is ready to receive traffic from the SFC.

request chassis sib train-link-receive slot

```
user@host> request chassis sib train-link-receive slot 0
```

request chassis sib train-link-transmit slot

Syntax request chassis sib train-link-transmit slot *LCC-SIB-ST-SIB-L-slot-num*

Syntax (TX Matrix Plus Routing Platform) request chassis sib train-link-receive slot *LCC-SIB-ST-SIB-L-slot-num*

Release Information Command introduced in Junos OS Release 10.1.

Description (T1600 Router (LCC) and TX Matrix Plus routing platform only) Control the transmission link of the specified Switch Interface Board (SIB) of the LCC.

Options slot *LCC-SIB-ST-SIB-L-slot-num*— LCC SIB slot number. Replace it with a value from 0 through 4.

Required Privilege Level maintenance

Related Documentation

- **request chassis sib train-link-receive slot on page 183**

List of Sample Output **request chassis sib train-link-transmit slot on page 184**

Output Fields When you enter this command, the LCC is ready to transmit traffic to the SFC.

request chassis sib train-link-transmit slot

```
user@host> request chassis sib train-link-transmit slot 0
```


request chassis spmb restart

Syntax

request chassis spmb restart slot *slot-number*

Syntax (TX Matrix Router)

request chassis spmb restart (lcc *number* | scc) slot *slot-number*

Syntax (TX Matrix Plus Router)

request chassis spmb restart (lcc *number* | sfc *number*) slot *slot-number*

Release Information

Command introduced before Junos OS Release 7.4.
sfc option for the TX Matrix Plus router introduced in Junos OS Release 9.6.

Description

Restart the specified Switch Processor Mezzanine Board (SPMB) on the Control Board (CB).

Options

lcc *number*—(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 ***number*** with a value from **0** through **3**.

scc—(TX Matrix routers only) TX Matrix router (or switch-card chassis) in the routing matrix.

sfc—(TX Matrix Plus routers only) TX Matrix Plus router (or switch-fabric chassis) in the routing matrix.

slot *slot-number*—CB slot number. Replace ***slot-number*** with **0** or **1**.

Required Privilege Level

maintenance

Related Documentation

- **show chassis spmb on page 498**
- **show chassis spmb sibs on page 505**

List of Sample Output

request chassis spmb restart on page 185

Output Fields

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

request chassis spmb restart

```
user@host> request chassis spmb restart slot 0
```

request chassis ssb master switch

Syntax

request chassis ssb master switch
<no-confirm>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M20 router only) Control which System and Switch Board (SSB) is master.

Options

no-confirm—(Optional) Do not request confirmation for the switch.

Additional Information

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 **ssb** statement at the [**edit chassis redundancy**] hierarchy level in the configuration. For more information, see the *Junos OS System Basics Configuration Guide*.

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.

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.

Required Privilege Level

maintenance

Related Documentation

- **show chassis ssb on page 509**

List of Sample Output

request chassis ssb master switch on page 186
request chassis ssb master switch no-confirm on page 186

Output Fields

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

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

Syntax request chassis synchronization mode (free-run | holdover | auto-select)

Release Information Command introduced in Junos OS Release 10.4.

Description (MX80 and MX240 routers only) Change the chassis synchronization source used for synchronized Ethernet (Sync-E) configuration.

Options freerun—Change chassis synchronization to freerun mode.

holdover—Change chassis synchronization to holdover mode.

auto-select—Change chassis synchronization to auto-select mode.

Required Privilege Level maintenance

Related Documentation

- Configuring an External Clock Synchronization Interface for MX Series Routers
- synchronization

List of Sample Output

request chassis synchronization mode freerun on page 187
request chassis synchronization mode holdover on page 187
request chassis synchronization mode auto-select on page 187

Output Fields When you enter this command, you are provided feedback on the status of your request. **Not configured** indicates that the source is not configured. **Present** indicates that the source is configured and present. **Qualified** indicates that the source is being used for synchronization.

request chassis synchronization mode freerun

```
user@host> request chassis synchronization mode freerun
mode is freerun, status: qualified
```

request chassis synchronization mode holdover

```
user@host> request chassis synchronization mode holdover
mode is holdover, status: qualified
```

request chassis synchronization mode auto-select

```
user@host> request chassis synchronization mode auto-select
mode is auto-select, status: qualified
```

request chassis synchronization switch

Syntax request chassis synchronization switch (external-a | external-b)

Release Information Command introduced in Junos OS Release 7.6.
Command introduced in Junos OS Release 8.3 for M40e routers.
Command introduced in Junos OS Release 9.3 for M120 routers.
Command introduced in Junos OS Release 10.2 for T320, T640, and T1600 routers.

Description (M320, M40e, M120, T320, T640, and T1600 routers only) Change the external clock source used for chassis synchronization.

Options external-a—(Routing matrix only) Change the synchronization source to external source A.

external-b—(Routing matrix only) Change the synchronization source to external source B.

Required Privilege Level maintenance

Related Documentation

- **show chassis synchronization on page 511**

List of Sample Output **request chassis synchronization switch external-a on page 188**

Output Fields When you enter this command, you are provided feedback on the status of your request. **Not configured** indicates that the source is not configured. **Present** indicates that the source is configured and present. **Qualified** indicates that the source is being used for synchronization.

request chassis synchronization switch external-a

```
user@host> request chassis synchronization switch external-a
switching to external-a, status: qualified
```


set chassis display message

Syntax

set chassis display message "*message*"
<permanent>

Syntax (TX Matrix Router)

set chassis display message "*message*" (lcc *number* | scc)
<permanent>

Syntax (TX Matrix Plus Router)

set chassis display message "*message* " (fpc-slot *slot-number* | lcc *number* | sfc *number*)
<permanent>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option for TX Matrix Plus router introduced in Junos OS Release 9.6.

Description

Display or stop a text message on the craft interface display, which is on the front of the router, or on the LCD panel display on the switch. The craft interface alternates the display of text messages with standard craft interface messages, switching between messages every 2 seconds. By default, on both the router and the switch, the text message is displayed for 5 minutes. The craft interface display has four 20-character lines. The LCD panel display has two 16-character lines, and text messages appear only on the second line.

Options

"*message*"—Message to display. On the craft interface display, if the message is longer than 20 characters, it wraps onto the next line. If a word does not fit on one line, the entire word moves down to the next line. Any portion of the message that does not fit on the display is truncated. An empty pair of quotation marks (" ") deletes the text message from the craft interface display. On the LCD panel, display, the message is limited to 16 characters.

fpc-slot *slot-number*—(TX Matrix Plus routers and EX4200 switches only) On the router, display the text message on the craft interface for a specific Flexible PIC Concentrator (FPC). Replace ***slot-number*** with a value from **0** through **31**. On the switch, display the text message for a specific member of a virtual chassis, where **fpc-slot *slot-number*** corresponds to the member ID. Replace ***slot-number*** with a value from 0 through 9.

lcc *number* —(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 ***number*** with a value from **0** through **3**.

permanent—(Optional) Display a text message on the craft interface display or LCD panel display permanently.

scc—(TX Matrix routers only) Display the text message on the craft interface display of the TX Matrix router (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).

Required Privilege Level

clear

Related Documentation

- Configuring the LCD Panel on EX Series Switches (CLI Procedure)
- **clear chassis display message on page 155**
- **show chassis craft-interface on page 199**

List of Sample Output

set chassis display message (Creating) on page 190
set chassis display message (Deleting) on page 190

Output Fields

See **show chassis craft-interface** for an explanation of output fields.

set chassis display message (Creating)

The following example shows how to set the display message and verify the result:

```
user@host> set chassis display message "NOC contact Dusty (888) 555-1234"
message sent

user@host> show chassis craft-interface
Red alarm:     LED off, relay off
Yellow alarm:  LED off, relay off
Host OK LED:   On
Host fail LED: Off
FPCs     0  1  2  3  4  5  6  7
-------------------------------
Green  ..  *..  *  *.
Red    ........
LCD screen:
     +--------------------+
     |NOC contact Dusty   |
     |(888) 555-1234      |
     +--------------------+
```

set chassis display message (Deleting)

The following example shows how to delete the display message and verify that the message is removed:

```
user@host> set chassis display message ""
message sent


user@host> show chassis craft-interface
Red alarm:     LED off, relay off
Yellow alarm:  LED off, relay off
Host OK LED:   On
Host fail LED: Off
FPCs     0  1  2  3  4  5  6  7
-------------------------------
Green  ..  *..  *  *.
Red    ........
LCD screen:
     +--------------------+
     |host                |
     |Up: 0+17:05:47      |
     |                    |
```

```
|Temperature OK      |
+--------------------+
```

show chassis alarms

Syntax

show chassis alarms

Syntax (TX Matrix Router)

show chassis alarms
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show chassis alarms
<lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option for the TX Matrix Plus router introduced in Junos OS Release 9.6.

Description

Display information about the conditions that have been configured to trigger alarms.

Options

none—Display information about the conditions that have been configured to trigger alarms.

lcc *number* — (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 ***number*** with a value from **0** through **3**.

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

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

Additional Information

You cannot clear the alarms for chassis components. Instead, you must remedy the cause of the alarm. When a chassis alarm is lit, it indicates that you are running the router or switch in a manner that we do not recommend.

On the 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.

Required Privilege Level

view

List of Sample Output

show chassis alarms (Alarms Active) on page 193
show chassis alarms (No Alarms Active) on page 193
show chassis alarms (Alarms Active on a TX Matrix Router) on page 193
show chassis alarms (Backup Routing Engine) on page 194
show chassis alarms (Alarms Active on a TX Matrix Plus Router) on page 194

Output Fields

Table 44 on page 193 lists the output fields for the **show chassis alarms** command. Output fields are listed in the approximate order in which they appear.

Table 44: show chassis alarms Output Fields

Field Name	Field Description
Alarm time	Date and time the alarm was first recorded.
Class	Severity class for this alarm: **Minor** or **Major**.
Description	Information about the alarm.

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 (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 a TX Matrix Plus Router)

```
user@host> show chassis alarms
sfc0-re0:
--------------------------------------------------------------------------
22 alarms currently active
Alarm time               Class  Description
2009-05-06 17:33:51 PDT  Major  LCC 0 Major Errors
2009-05-06 17:33:49 PDT  Minor  Check SIB F13 0
2009-05-06 17:33:49 PDT  Minor  SIB F13 0 LOL
2009-05-06 17:33:47 PDT  Major  SIB F2S 4/6 Absent
2009-05-06 17:33:47 PDT  Major  SIB F2S 4/4 Absent
2009-05-06 17:33:47 PDT  Major  SIB F2S 4/2 Absent
2009-05-06 17:33:47 PDT  Major  SIB F2S 4/0 Absent
2009-05-06 17:33:47 PDT  Major  SIB F2S 3/6 Absent
2009-05-06 17:33:47 PDT  Major  SIB F2S 3/4 Absent
2009-05-06 17:33:47 PDT  Major  SIB F2S 3/2 Absent
2009-05-06 17:33:47 PDT  Major  SIB F2S 3/0 Absent
2009-05-06 17:33:47 PDT  Major  SIB F2S 2/6 Absent
2009-05-06 17:33:47 PDT  Major  SIB F13 12 Absent
2009-05-06 17:33:47 PDT  Major  SIB F13 11 Absent
2009-05-06 17:33:47 PDT  Major  SIB F13 9 Absent
2009-05-06 17:33:47 PDT  Major  SIB F13 8 Absent
2009-05-06 17:33:47 PDT  Major  SIB F13 7 Absent
2009-05-06 17:33:47 PDT  Major  SIB F13 6 Absent
2009-05-06 17:33:47 PDT  Major  SIB F13 4 Absent
2009-05-06 17:33:47 PDT  Major  SIB F13 3 Absent
2009-05-06 17:32:40 PDT  Minor  LCC 0 Minor Errors
2009-05-06 17:31:49 PDT  Minor  PEM 1 Absent

lcc0-re0:
--------------------------------------------------------------------------
5 alarms currently active
Alarm time               Class  Description
2009-05-06 17:33:53 PDT  Minor  Check SIB 0
2009-05-06 17:33:51 PDT  Major  SIB_L - Fan Revision mismatch
2009-05-06 17:33:49 PDT  Minor  SIB 0 Fbr Bndls
2009-05-06 17:33:49 PDT  Minor  SIB 0 LOL
2009-05-06 17:31:58 PDT  Minor  PEM 1 Absent
```

show chassis cfeb

Syntax show chassis cfeb

Release Information Command introduced before Junos OS Release 7.4.

Description (M7i and M10i routers only) Display status information about the Compact Forwarding Engine Board (CFEB).

Options This command has no options.

Required Privilege Level view

Related Documentation

- **request chassis cfeb on page 159**

List of Sample Output

show chassis cfeb (M7i) on page 196
show chassis cfeb (M10i) on page 196

Output Fields Table 45 on page 195 lists the output fields for the **show chassis cfeb** command. Output fields are listed in the approximate order in which they appear.

Table 45: show chassis cfeb Output Fields

Field Name	Field Description
State	Status of the CFEB: • **Online**—CFEB is online and running. • **Offline**—CFEB is powered down.
Intake Temperature	Temperature of the air before flowing past the CFEB.
Exhaust Temperature	Temperature of the air after flowing past the CFEB.
CPU utilization	Percentage of CPU being used by the CFEB processor.
Interrupt utilization	Of the total CPU being used by the CFEB processor, the percentage being used for interrupts
Heap Utilization	Percentage of heap space (dynamic memory) being used by the CFEB processor. If this number exceeds 80 percent, there may be a software problem (memory leak).
Buffer Utilization	Percentage of buffer space being used by the CFEB processor for buffering internal messages
Total CPU DRAM	Amount of DRAM available to the CFEB CPU.
Internet Processor II	Information about the CFEB processor.

Table 45: show chassis cfeb Output Fields *(continued)*

Field Name	Field Description
Start time	Time when the Routing Engine detected that the CFEB was running.
Uptime	How long the Routing Engine has been connected to the CFEB and, therefore, how long the Flexible PIC Concentrator (FPC) has been up and running.

show chassis cfeb (M7i)

```
user@host> show chassis cfeb
CFEB status:
  State                          Online
  Intake Temperature          27 degrees C / 80 degrees F
  Exhaust Temperature         33 degrees C / 91 degrees F
  CPU utilization              3 percent
  Interrupt utilization        0 percent
  Heap utilization             8 percent
  Buffer utilization          21 percent
  Total CPU DRAM             128 MB
  Internet Processor II          Version 1, Foundry IBM, Part number 164
  Start time:                    2003-06-11 11:41:22 PDT
  Uptime:                        1 hour, 39 minutes, 31 seconds
```

show chassis cfeb (M10i)

```
user@host> show chassis cfeb
CFEB status:
Slot 0 information:
  StateMaster
  Intake temperature                 35 degrees C / 95 degrees F
  Exhaust temperature                43 degrees C / 109 degrees F
  CPU utilization                     3 percent
  Interrupt utilization               0 percent
  Heap utilization                   10 percent
  Buffer utilization                 22 percent
  Total CPU DRAM                    128 MB
  Internet Processor II                 Version 1, Foundry IBM, Part number 164
  Start time:                           2004-11-01 03:24:15 PST
  Uptime:                              12 hours, 56 minutes, 18 seconds
Slot 1 information:
  State                                 Backup
```

show chassis cip

Syntax (TX Matrix Plus Router) show chassis cip

Release Information Command introduced in Junos OS Release 9.6.

Description (TX Matrix Plus routers only) Display environmental information about the Connector Interface Panel (CIP) that provides Ethernet Control Plane connectivity to line-card chassis (LCCs), switch fabric chassis, and other devices.

Options This command has no options.

Required Privilege Level view

Related Documentation

- **request chassis cip on page 160**

Output Fields Table 46 on page 197 lists the output fields for the **show chassis cip** command. Output fields are listed in the approximate order in which they appear.

Table 46: show chassis cip Output Fields

Field Name	Field Description
Eswitch	Ethernet switch used to connect to the LCC or to a JCS1200: **0** or **1**.
Port	Physical port number of the Ethernet switch: • Port numbers: **4** to **8** on Ethernet switch **0** can be used to connect up to four (reserved for future use) other SFCs or optional JCS1200s. NOTE: The current configuration of the routing matrix based on a TX Matrix Plus router supports only one SFC. • Port numbers **0** to **15** on Ethernet switch **1** can be used to connect up to 16 LCCs. NOTE: The current configuration of a routing matrix based on a TX Matrix Plus router supports only up to four LCCs. You can connect the four LCCs to any of the ports (**0** to **15**) on the Ethernet switch **1**.
Type	Type of CIP: • **XE**—Ethernet switch **0** ports used for connections to the SFC control plane or other devices such as JCS1200. • **GE**—Ethernet switch **1** ports used for connections to the LCC control plane.
Connected-to	Show control plane connection to a specific LCC or SFC.
Link	State of the connection to an LCC control plane, SFC control plane, or other devices: **Up** or **Down.**
Speed	Ethernet link speed.
Duplex	Type of Ethernet link: **Full** or **Half Duplex**.

Table 46: show chassis cip Output Fields *(continued)*

Field Name	Field Description
Auto-neg	Status of autonegotiation for the CIP connection to the LCC, SFC, or other devices: **On** or **Off**.

show chassis cip (TX Matrix Plus Router)

```
user@host> show chassis cip
sfc0-cip0
Eswitch Port Type Connected-to     Link  Speed       Duplex Auto-Neg
0       4    XE   SFC1             Down  0           Full   Off
0       5    XE   SFC0             Down  0           Full   Off
0       6    XE   SFC3             Down  0           Full   Off
0       7    XE   SFC2             Down  0           Full   Off
0       8    XE   SFC4             Down  0           Full   Off
1       0    GE   LCC0             Up    1000Mbps    Full   On
1       1    GE   LCC8             Down  0           Half   On
1       2    GE   LCC1             Up    1000Mbps    Full   On
1       3    GE   LCC9             Down  0           Half   On
1       4    GE   LCC2             Up    1000Mbps    Full   On
1       5    GE   LCC10            Down  0           Half   On
1       6    GE   LCC3             Up    1000Mbps    Full   On
1       7    GE   LCC11            Down  0           Half   On
1       8    GE   LCC4             Down  0           Half   On
1       9    GE   LCC12            Down  0           Half   On
1       10   GE   LCC5             Down  0           Half   On
1       11   GE   LCC13            Down  0           Half   On
1       12   GE   LCC6             Down  0           Half   On
1       13   GE   LCC14            Down  0           Half   On
1       14   GE   LCC7             Down  0           Half   On
1       15   GE   LCC15            Down  0           Half   On
1       16   GE   GE16             Down  0           Half   On
1       17   GE   GE17             Down  0           Half   On
```

show chassis craft-interface

Syntax

show chassis craft-interface

Syntax (TX Matrix Router)

show chassis craft-interface
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show chassis craft-interface
<lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
sfc option for the TX Matrix Plus router introduced in Junos OS Release 9.6.

Description

For routers that have a display on the craft interface, show the messages that are currently displayed. On all routers, except for the M20, you must enter this command on the master Routing Engine.

Options

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.

lcc *number* —(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 ***number*** with a value from **0** through **3**.

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).

sfc *number*—(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 ***number*** with **0**.

Required Privilege Level

view

Related Documentation

- **clear chassis display message on page 155**
- **set chassis display message on page 189**

List of Sample Output

Output Fields Table 47 on page 200 lists the output fields for the **show chassis craft-interface** command. Output fields are listed in the approximate order in which they appear.

Table 47: show chassis craft-interface Output Fields

Field Name	Field Description
LCD screen or **FPM Display Contents**	Contents of the Front Panel Module display: • *router-name*—Name of the router. • **Up**—How long the router has been operational, in days, hours, minutes, and seconds. • *message*—Information about the router traffic load, the power supply status, the fan status, and the temperature status. The display of this information changes every 2 seconds. If a text message has been created with the**set chassis display** command, this message appears on all four lines of the craft interface display. The display alternates between the text message and the standard system status messages every 2 seconds.
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.

show chassis craft-interface (M20)

```
user@host> show chassis craft-interface
Red alarm:     LED off, relay off
Yellow alarm:  LED on, relay on
Host OK LED:   On
Host fail LED: Off
FPCs     0  1  2  3
-------------------
Green  .  *  *.
Red    ....
LCD screen:
     +--------------------+
     |host                |
     |1 Alarm active      |
     |Y: FERF             |
```



```
|                      |
+----------------------+
```

show chassis craft-interface (M40)

```
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)

```
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)

```
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

Syntax

show chassis environment

Syntax (TX Matrix Router)

show chassis environment
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show chassis environment
<lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display environmental information about the router or switch chassis, including the temperature and information about the fans, power supplies, and Routing Engine.

Options

none—Display environmental information about the router or switch chassis. On a TX Matrix router, display environmental information about the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the TX Matrix Plus router and its attached T1600 routers.

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

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

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

For information about the remaining options, see the Related Topics.

Required Privilege Level

view

Related Documentation

- **show chassis environment cb on page 225**
- **show chassis environment cip on page 236**
- **show chassis environment fpc on page 238**
- **show chassis environment fpm on page 248**
- **show chassis environment mcs on page 252**
- **show chassis environment pcg on page 254**

- show chassis environment pem on page 256
- show chassis environment routing-engine on page 262

List of Sample Output

Output Fields Table 48 on page 209 lists the output fields for the **show chassis environment** command. Output fields are listed in the approximate order in which they appear.

Table 48: show chassis environment Output Fields

Field Name	Field Description
Class	Item, Status, Measurement
Power	Power information: • (M5, M10, M20, and M40 routers and EX Series switches only) Information about each power supply. **Status** can be **OK**, **Testing** (during initial power-on), **Failed**, or **Absent**. • (M7i, M10i, M40e, M120, M160, M320, T Series routers and EX Series switches only) Information about the Power Entry Modules. **Status** can be **OK**, **Testing** (during initial power-on), **Check**, **Failed**, or **Absent**.
Temp	Temperature of air flowing through the chassis. **Measurement** indicates degrees in Celsius (C) and Fahrenheit (F).
Fan	Information about the fans. **Status** can be **OK**, **Testing** (during initial power-on), **Failed**, or **Absent**. **Measurement** indicates if fans are spinning at normal or high speed.

Table 48: show chassis environment Output Fields *(continued)*

Field Name	Field Description
Misc	Information about other components of the chassis: • On some routers, this field indicates the status of one or more additional components. • On the M160 router, **Misc** includes **CIP** (Connector Interface Panel). **OK** indicates the **CIP** is present. • On the T640 router, **Misc** includes **CIP** and **SPMB** (Switch Processor Mezzanine Board). **OK** indicates the item is present.

show chassis environment (J2300 Router)

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

show chassis environment (J4300 or J6300 Router)

```
user@host> show chassis environment
Class Item                  Status     Measurement
Temp  Routing Engine        OK         41 degrees C / 105 degrees F
Fan   Fan 0                 OK
      Fan 1                 OK
```

show chassis environment (M5 Router)

```
user@host> show chassis environment
Class Item                  Status     Measurement
Power Power Supply A        OK
      Power Supply B        Absent
Temp  FPC 0                 OK         30 degrees C / 86 degrees F
      FEB                   OK         33 degrees C / 91 degrees F
      PS Intake             OK         27 degrees C / 80 degrees F
      PS Exhaust            OK         27 degrees C / 80 degrees F
      Routing Engine        OK         34 degrees C / 93 degrees F
Fans  Left Fan 1            OK         Spinning at normal speed
      Left Fan 2            OK         Spinning at normal speed
      Left Fan 3            OK         Spinning at normal speed
      Left Fan 4            OK         Spinning at normal speed
Misc  Craft Interface       OK
```

show chassis environment (M7i Router)

```
user@host> show chassis environment
Class Item                  Status     Measurement
Power Power Supply 0        OK
      Power Supply 1        Absent
Temp  Intake                OK         22 degrees C / 71 degrees F
      FPC 0                 OK         23 degrees C / 73 degrees F
      Power Supplies        OK         23 degrees C / 73 degrees F
      CFEB Intake           OK         24 degrees C / 75 degrees F
      CFEB Exhaust          OK         29 degrees C / 84 degrees F
      Routing Engine        OK         26 degrees C / 78 degrees F
Fans  Fan 1                 OK         Spinning at normal speed
      Fan 2                 OK         Spinning at normal speed
      Fan 3                 OK         Spinning at normal speed
      Fan 4                 OK         Spinning at normal speed
```

show chassis environment (M10 Router)

```
user@host> show chassis environment
Class Item                  Status     Measurement
Power Power Supply A        OK
```

```
      Power Supply B         Failed
Temp  FPC 0                  OK         36 degrees C / 96 degrees F
      FPC 1                  OK         35 degrees C / 95 degrees F
      FEB                    OK         34 degrees C / 93 degrees F
      PS Intake              OK         31 degrees C / 87 degrees F
      PS Exhaust             OK         34 degrees C / 93 degrees F
      Routing Engine         OK         35 degrees C / 95 degrees F
Fans  Left Fan 1             OK         Spinning at normal speed
      Left Fan 2             OK         Spinning at normal speed
      Left Fan 3             OK         Spinning at normal speed
      Left Fan 4             OK         Spinning at normal speed
Misc  Craft Interface        OK
```

show chassis environment (M10i Router)

```
user@host> show chassis environment
Class Item                   Status     Measurement
Power Power Supply 0         OK
      Power Supply 1         OK
      Power Supply 2         Absent
      Power Supply 3         Absent
Temp  Intake                 OK         26 degrees C / 78 degrees F
      FPC 0                  OK         27 degrees C / 80 degrees F
      FPC 1                  OK         28 degrees C / 82 degrees F
      Lower Power Supplies   OK         29 degrees C / 84 degrees F
      Upper Power Supplies   OK         28 degrees C / 82 degrees F
      CFEB Intake            OK         27 degrees C / 80 degrees F
      CFEB Exhaust           OK         36 degrees C / 96 degrees F
      Routing Engine 0       OK         31 degrees C / 87 degrees F
      Routing Engine 1       OK         27 degrees C / 80 degrees F
Fans  Fan Tray 0 Fan 1       OK         Spinning at normal speed
      Fan Tray 0 Fan 2       OK         Spinning at normal speed
      Fan Tray 0 Fan 3       OK         Spinning at normal speed
      Fan Tray 0 Fan 4       OK         Spinning at normal speed
      Fan Tray 0 Fan 5       OK         Spinning at normal speed
      Fan Tray 0 Fan 6       OK         Spinning at normal speed
      Fan Tray 0 Fan 7       OK         Spinning at normal speed
      Fan Tray 0 Fan 8       OK         Spinning at normal speed
      Fan Tray 1 Fan 1       Absent
      Fan Tray 1 Fan 2       Absent
      Fan Tray 1 Fan 3       Absent
      Fan Tray 1 Fan 4       Absent
      Fan Tray 1 Fan 5       Absent
      Fan Tray 1 Fan 6       Absent
      Fan Tray 1 Fan 7       Absent
      Fan Tray 1 Fan 8       Absent
```

show chassis environment (M20 Router)

```
user@host> show chassis environment
Class Item                   Status     Measurement
Power Power Supply A         OK
      Power Supply B         Absent
Temp  FPC 0                  OK         28 degrees C / 82 degrees F
      FPC 1                  OK         27 degrees C / 80 degrees F
      Power Supply A         OK         22 degrees C / 71 degrees F
      Power Supply B         Absent
      SSB 0                  OK         30 degrees C / 86 degrees F
      Backplane              OK         22 degrees C / 71 degrees F
      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 environment (MX480 Router)

```
user@host> show chassis environment
Class Item                          Status     Measurement
Temp  PEM 0                         OK         35 degrees C / 95 degrees F
      PEM 1                         OK         40 degrees C / 104 degrees F
      PEM 2                         Absent
      PEM 3                         Absent
      Routing Engine 0              OK         44 degrees C / 111 degrees F
      Routing Engine 1              OK         45 degrees C / 113 degrees F
      CB 0 Intake                   OK         36 degrees C / 96 degrees F
      CB 0 Exhaust A                OK         38 degrees C / 100 degrees F
      CB 0 Exhaust B                OK         39 degrees C / 102 degrees F
      CB 0 ACBC                     OK         37 degrees C / 98 degrees F
      CB 0 SF A                     OK         51 degrees C / 123 degrees F
      CB 0 SF B                     OK         44 degrees C / 111 degrees F
      CB 1 Intake                   OK         36 degrees C / 96 degrees F
      CB 1 Exhaust A                OK         39 degrees C / 102 degrees F
      CB 1 Exhaust B                OK         40 degrees C / 104 degrees F
      CB 1 ACBC                     OK         37 degrees C / 98 degrees F
      CB 1 SF A                     OK         50 degrees C / 122 degrees F
      CB 1 SF B                     OK         43 degrees C / 109 degrees F
      FPC 0 Intake                  OK         36 degrees C / 96 degrees F
      FPC 0 Exhaust A               OK         39 degrees C / 102 degrees F
      FPC 0 Exhaust B               OK         51 degrees C / 123 degrees F
      FPC 0 I3 0 TSensor            OK         49 degrees C / 120 degrees F
      FPC 0 I3 0 Chip               OK         56 degrees C / 132 degrees F
      FPC 0 I3 1 TSensor            OK         47 degrees C / 116 degrees F
      FPC 0 I3 1 Chip               OK         52 degrees C / 125 degrees F
      FPC 0 I3 2 TSensor            OK         46 degrees C / 114 degrees F
      FPC 0 I3 2 Chip               OK         48 degrees C / 118 degrees F
      FPC 0 I3 3 TSensor            OK         42 degrees C / 107 degrees F
      FPC 0 I3 3 Chip               OK         45 degrees C / 113 degrees F
      FPC 0 IA 0 TSensor            OK         45 degrees C / 113 degrees F
      FPC 0 IA 0 Chip               OK         45 degrees C / 113 degrees F
      FPC 0 IA 1 TSensor            OK         44 degrees C / 111 degrees F
      FPC 0 IA 1 Chip               OK         48 degrees C / 118 degrees F
      FPC 1 Intake                  OK         37 degrees C / 98 degrees F
      FPC 1 Exhaust A               OK         41 degrees C / 105 degrees F
      FPC 1 Exhaust B               OK         52 degrees C / 125 degrees F
      FPC 1 I3 0 TSensor            OK         51 degrees C / 123 degrees F
      FPC 1 I3 0 Chip               OK         57 degrees C / 134 degrees F
      FPC 1 I3 1 TSensor            OK         48 degrees C / 118 degrees F
      FPC 1 I3 1 Chip               OK         52 degrees C / 125 degrees F
      FPC 1 I3 2 TSensor            OK         46 degrees C / 114 degrees F
      FPC 1 I3 2 Chip               OK         50 degrees C / 122 degrees F
      FPC 1 I3 3 TSensor            OK         42 degrees C / 107 degrees F
      FPC 1 I3 3 Chip               OK         46 degrees C / 114 degrees F
      FPC 1 IA 0 TSensor            OK         49 degrees C / 120 degrees F
      FPC 1 IA 0 Chip               OK         48 degrees C / 118 degrees F
      FPC 1 IA 1 TSensor            OK         46 degrees C / 114 degrees F
      FPC 1 IA 1 Chip               OK         50 degrees C / 122 degrees F
Fans  Top Rear Fan                  OK         Spinning at normal speed
      Bottom Rear Fan               OK         Spinning at normal speed
      Top Middle Fan                OK         Spinning at normal speed
      Bottom Middle Fan             OK         Spinning at normal speed
      Top Front Fan                 OK         Spinning at normal speed
      Bottom Front Fan              OK         Spinning at normal speed
```

show chassis environment (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 environment (T1600 Router)

```
user@host> show chassis environment
Class Item                          Status     Measurement
Temp  PEM 0                         OK         27 degrees C / 80 degrees F
      PEM 1                         Absent
      SCG 0                         OK         31 degrees C / 87 degrees F
      SCG 1                         OK         35 degrees C / 95 degrees F
      Routing Engine 0              OK         30 degrees C / 86 degrees F
      Routing Engine 1              OK         30 degrees C / 86 degrees F
      CB 0                          OK         31 degrees C / 87 degrees F
      CB 1                          OK         31 degrees C / 87 degrees F
      SIB 0                         OK         41 degrees C / 105 degrees F
      SIB 0 (B)                     OK         34 degrees C / 93 degrees F
```

```
      SIB 1                          OK         0 degrees C / 32 degrees F
      SIB 1 (B)                      OK         0 degrees C / 32 degrees F
      SIB 2                          OK         0 degrees C / 32 degrees F
      SIB 2 (B)                      OK         0 degrees C / 32 degrees F
      SIB 3                          OK         0 degrees C / 32 degrees F
      SIB 3 (B)                      OK         0 degrees C / 32 degrees F
      SIB 4                          OK         0 degrees C / 32 degrees F
      SIB 4 (B)                      OK         0 degrees C / 32 degrees F
      FPC 0 Top                      OK         49 degrees C / 120 degrees F
      FPC 0 Bottom                   OK         50 degrees C / 122 degrees F
      FPC 1 Top                      OK         48 degrees C / 118 degrees F
      FPC 1 Bottom                   OK         49 degrees C / 120 degrees F
      FPM GBUS                       OK         27 degrees C / 80 degrees F
      FPM Display                    OK         30 degrees C / 86 degrees F
Fans  Top Left Front fan             OK         Spinning at normal speed
      Top Left Middle fan            OK         Spinning at normal speed
      Top Left Rear fan              OK         Spinning at normal speed
      Top Right Front fan            OK         Spinning at normal speed
      Top Right Middle fan           OK         Spinning at normal speed
      Top Right Rear fan             OK         Spinning at normal speed
      Bottom Left Front fan          OK         Spinning at normal speed
      Bottom Left Middle fan         OK         Spinning at normal speed
      Bottom Left Rear fan           OK         Spinning at normal speed
      Bottom Right Front fan         OK         Spinning at normal speed
      Bottom Right Middle fan        OK         Spinning at normal speed
      Bottom Right Rear fan          OK         Spinning at normal speed
      Rear Tray Top fan              OK         Spinning at normal speed
      Rear Tray Second fan           OK         Spinning at normal speed
      Rear Tray Third fan            OK         Spinning at normal speed
      Rear Tray Fourth fan           OK         Spinning at normal speed
      Rear Tray Fifth fan            OK         Spinning at normal speed
      Rear Tray Sixth fan            OK         Spinning at normal speed
      Rear Tray Seventh fan          OK         Spinning at normal speed
      Rear Tray Bottom fan           OK         Spinning at normal speed
Misc  CIP                            OK
      SPMB 0                         OK
      SPMB 1                         OK
```

show chassis environment (TX Matrix Plus Router)

```
user@host> show chassis environment
sfc0-re0:
--------------------------------------------------------------------------
Class Item                           Status     Measurement
Temp  PEM 0                          OK         28 degrees C / 82 degrees F
      PEM 1                          Absent
      Routing Engine 0               OK         27 degrees C / 80 degrees F
      Routing Engine 1               OK         29 degrees C / 84 degrees F
      CB 0 Intake                    OK         26 degrees C / 78 degrees F
      CB 0 Exhaust A                 OK         25 degrees C / 77 degrees F
      CB 0 Exhaust B                 OK         25 degrees C / 77 degrees F
      CB 1 Intake                    OK         26 degrees C / 78 degrees F
      CB 1 Exhaust A                 OK         26 degrees C / 78 degrees F
      CB 1 Exhaust B                 OK         26 degrees C / 78 degrees F
      SIB F13 0                      OK         47 degrees C / 116 degrees F
      SIB F13 0 (B)                  OK         48 degrees C / 118 degrees F
      SIB F13 1                      OK         38 degrees C / 100 degrees F
      SIB F13 1 (B)                  OK         37 degrees C / 98 degrees F
      SIB F2S 0/0                    OK         27 degrees C / 80 degrees F
      SIB F2S 0/2                    OK         28 degrees C / 82 degrees F
      SIB F2S 0/4                    OK         27 degrees C / 80 degrees F
      SIB F2S 0/6                    OK         28 degrees C / 82 degrees F
      SIB F2S 1/0                    OK         26 degrees C / 78 degrees F
```

```
        SIB F2S 1/2                     OK         26 degrees C / 78 degrees F
        SIB F2S 1/4                     OK         26 degrees C / 78 degrees F
        SIB F2S 1/6                     OK         26 degrees C / 78 degrees F
        SIB F2S 2/0                     OK         25 degrees C / 77 degrees F
        SIB F2S 2/2                     OK         25 degrees C / 77 degrees F
        SIB F2S 2/4                     OK         23 degrees C / 73 degrees F
        CIP 0 Intake                    OK         23 degrees C / 73 degrees F
        CIP 0 Exhaust A                 OK         24 degrees C / 75 degrees F
        CIP 0 Exhaust B                 OK         24 degrees C / 75 degrees F
        CIP 1 Intake                    OK         24 degrees C / 75 degrees F
        CIP 1 Exhaust A                 OK         25 degrees C / 77 degrees F
        CIP 1 Exhaust B                 OK         25 degrees C / 77 degrees F
Fans    Fan Tray 0 Fan 1                OK         Spinning at normal speed
        Fan Tray 0 Fan 2                OK         Spinning at normal speed
        Fan Tray 0 Fan 3                OK         Spinning at normal speed
        Fan Tray 0 Fan 4                OK         Spinning at normal speed
        Fan Tray 0 Fan 5                OK         Spinning at normal speed
        Fan Tray 0 Fan 6                OK         Spinning at normal speed
        Fan Tray 1 Fan 1                OK         Spinning at normal speed
        Fan Tray 1 Fan 2                OK         Spinning at normal speed
        Fan Tray 1 Fan 3                OK         Spinning at normal speed
        Fan Tray 1 Fan 4                OK         Spinning at normal speed
        Fan Tray 1 Fan 5                OK         Spinning at normal speed
        Fan Tray 1 Fan 6                OK         Spinning at normal speed
        Fan Tray 2 Fan 1                OK         Spinning at normal speed
        Fan Tray 2 Fan 2                OK         Spinning at normal speed
        Fan Tray 2 Fan 3                OK         Spinning at normal speed
        Fan Tray 2 Fan 4                OK         Spinning at normal speed
        Fan Tray 2 Fan 5                OK         Spinning at normal speed
        Fan Tray 2 Fan 6                OK         Spinning at normal speed
        Fan Tray 2 Fan 7                OK         Spinning at normal speed
        Fan Tray 2 Fan 8                OK         Spinning at normal speed
        Fan Tray 2 Fan 9                OK         Spinning at normal speed
        Fan Tray 3 Fan 1                OK         Spinning at normal speed
        Fan Tray 3 Fan 2                OK         Spinning at normal speed
        Fan Tray 3 Fan 3                OK         Spinning at normal speed
        Fan Tray 3 Fan 4                OK         Spinning at normal speed
        Fan Tray 3 Fan 5                OK         Spinning at normal speed
        Fan Tray 3 Fan 6                OK         Spinning at normal speed
        Fan Tray 3 Fan 7                OK         Spinning at normal speed
        Fan Tray 3 Fan 8                OK         Spinning at normal speed
        Fan Tray 3 Fan 9                OK         Spinning at normal speed
        Fan Tray 4 Fan 1                OK         Spinning at normal speed
        Fan Tray 4 Fan 2                OK         Spinning at normal speed
        Fan Tray 4 Fan 3                OK         Spinning at normal speed
        Fan Tray 4 Fan 4                OK         Spinning at normal speed
        Fan Tray 4 Fan 5                OK         Spinning at normal speed
        Fan Tray 4 Fan 6                OK         Spinning at normal speed
        Fan Tray 4 Fan 7                OK         Spinning at normal speed
        Fan Tray 4 Fan 8                OK         Spinning at normal speed
        Fan Tray 4 Fan 9                OK         Spinning at normal speed
        Fan Tray 5 Fan 1                OK         Spinning at normal speed
        Fan Tray 5 Fan 2                OK         Spinning at normal speed
        Fan Tray 5 Fan 3                OK         Spinning at normal speed
        Fan Tray 5 Fan 4                OK         Spinning at normal speed
        Fan Tray 5 Fan 5                OK         Spinning at normal speed
        Fan Tray 5 Fan 6                OK         Spinning at normal speed
        Fan Tray 5 Fan 7                OK         Spinning at normal speed
        Fan Tray 5 Fan 8                OK         Spinning at normal speed
        Fan Tray 5 Fan 9                OK         Spinning at normal speed
Misc    SPMB 0                          OK
```

```
      SPMB 1                        OK

lcc0-re0:
--------------------------------------------------------------------------
Class Item                          Status     Measurement
Temp  PEM 0                         OK         27 degrees C / 80 degrees F
      PEM 1                         Absent
      SCG 0                         OK         31 degrees C / 87 degrees F
      SCG 1                         OK         35 degrees C / 95 degrees F
      Routing Engine 0              OK         30 degrees C / 86 degrees F
      Routing Engine 1              OK         30 degrees C / 86 degrees F
      CB 0                          OK         31 degrees C / 87 degrees F
      CB 1                          OK         31 degrees C / 87 degrees F
      SIB 0                         OK         41 degrees C / 105 degrees F
      SIB 0 (B)                     OK         34 degrees C / 93 degrees F
      SIB 1                         OK         0 degrees C / 32 degrees F
      SIB 1 (B)                     OK         0 degrees C / 32 degrees F
      SIB 2                         OK         0 degrees C / 32 degrees F
      SIB 2 (B)                     OK         0 degrees C / 32 degrees F
      SIB 3                         OK         0 degrees C / 32 degrees F
      SIB 3 (B)                     OK         0 degrees C / 32 degrees F
      SIB 4                         OK         0 degrees C / 32 degrees F
      SIB 4 (B)                     OK         0 degrees C / 32 degrees F
      FPC 0 Top                     OK         49 degrees C / 120 degrees F
      FPC 0 Bottom                  OK         50 degrees C / 122 degrees F
      FPC 1 Top                     OK         48 degrees C / 118 degrees F
      FPC 1 Bottom                  OK         49 degrees C / 120 degrees F
      FPM GBUS                      OK         27 degrees C / 80 degrees F
      FPM Display                   OK         30 degrees C / 86 degrees F
Fans  Top Left Front fan            OK         Spinning at normal speed
      Top Left Middle fan           OK         Spinning at normal speed
      Top Left Rear fan             OK         Spinning at normal speed
      Top Right Front fan           OK         Spinning at normal speed
      Top Right Middle fan          OK         Spinning at normal speed
      Top Right Rear fan            OK         Spinning at normal speed
      Bottom Left Front fan         OK         Spinning at normal speed
      Bottom Left Middle fan        OK         Spinning at normal speed
      Bottom Left Rear fan          OK         Spinning at normal speed
      Bottom Right Front fan        OK         Spinning at normal speed
      Bottom Right Middle fan       OK         Spinning at normal speed
      Bottom Right Rear fan         OK         Spinning at normal speed
      Rear Tray Top fan             OK         Spinning at normal speed
      Rear Tray Second fan          OK         Spinning at normal speed
      Rear Tray Third fan           OK         Spinning at normal speed
      Rear Tray Fourth fan          OK         Spinning at normal speed
      Rear Tray Fifth fan           OK         Spinning at normal speed
      Rear Tray Sixth fan           OK         Spinning at normal speed
      Rear Tray Seventh fan         OK         Spinning at normal speed
      Rear Tray Bottom fan          OK         Spinning at normal speed
Misc  CIP                           OK
      SPMB 0                        OK
      SPMB 1                        OK
```

show chassis environment (EX4200 Standalone Switch)

```
user@host> show chassis environment
Class Item                          Status     Measurement
Power FPC 0 Power Supply 0          OK
      FPC 0 Power Supply 1          Absent
Temp  FPC 0 CPU                     OK         41 degrees C / 105 degrees F
      FPC 0 EX-PFE1                 OK         42 degrees C / 107 degrees F
      FPC 0 EX-PFE2                 OK         46 degrees C / 114 degrees F
      FPC 0 GEPHY Front Left        OK         25 degrees C / 77 degrees F
```

```
      FPC 0 GEPHY Front Right        OK         27 degrees C / 80 degrees F
      FPC 0 Uplink Conn              OK         29 degrees C / 84 degrees F
Fans  FPC 0 Fan 1                    OK         Spinning at normal speed
      FPC 0 Fan 2                    OK         Spinning at normal speed
      FPC 0 Fan 3                    OK         Spinning at normal speed
```

show chassis environment cb

Syntax

show chassis environment cb
<*slot*>

Syntax (TX Matrix Routers)

show chassis environment cb
<lcc *number* | scc>
<*slot*>

Syntax (TX Matrix Plus Routers)

show chassis environment cb
<lcc *number* | sfc *number* >
<*slot*>

Release Information

Command introduced before Junos Release 7.4.
Command introduced in Junos OS Release 9.4 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos Release 9.6.

Description

(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.

Options

none—Display environmental information about all CBs. For a TX Matrix router, display environmental information about all CBs on the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display environmental information about all CBs on the TX Matrix Plus router and its attached T1600 routers.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) For a TX Matrix router, display environmental information about the CBs in a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. For a TX Matrix Plus router, display environmental information about the CBs in a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace ***number*** with a value from **0** through **3**.

scc —(TX Matrix router only) (Optional) Display environmental information about the CBs in the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Display environmental information about the CBs in the TX Matrix Plus router (or switch-fabric chassis).

slot—(Optional) Display environmental information about the specified CB. On the routers, replace ***slot*** with **0** or **1**. On the switches, replace ***slot*** with **0**, **1**, or **2**.

slot—(Optional) Display environmental information about the specified CB. On EX8200 switches, replace ***slot*** with **0** or **1** or **2**.

Required Privilege Level

view

List of Sample Output

show chassis environment cb (M120 Router) on page 226
show chassis environment cb (M320 Router) on page 227

show chassis environment cb (MX80 Router) on page 227
show chassis environment cb (MX240 Router) on page 227
show chassis environment cb (MX480 Router) on page 228
show chassis environment cb (MX960 Router) on page 228
show chassis environment cb (TX Matrix Router) on page 229
show chassis environment cb (TX Matrix Plus Router) on page 229
show chassis environment cb (EX8200 Switch) on page 233
show chassis environment cb (EX8208 Switch) on page 234

Output Fields Table 49 on page 226 lists the output fields for the **show chassis environment cb** command. Output fields are listed in the approximate order in which they appear.

Table 49: show chassis environment cb Output Fields

Field Name	Field Description
State	Status of the CB. If two CBs are installed and online, one is functioning as the master, and the other is the standby. • **Online**—CB is online and running. • **Offline**— CB is powered down. NOTE: On the EX8208 switch, the installation can include three CBs. See EX Series Switches Hardware and CLI Terminology Mapping.
Temperature	Temperature in Celsius (C) and Fahrenheit (F) of the air flowing past the CB. • **Temperature Intake**—Measures the temperature of the air intake to cool the power supplies. • **Temperature Exhaust**—Measures the temperature of the hot air exhaust.
Power	Power required and measured on the CB. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
BUS Revision	Revision level of the generic bus device. (Not on switches.)
FPGA Revision	Revision level of the field-programmable gate array (FPGA). (Not on switches.)

show chassis environment cb (M120 Router)

```
user@host> show chassis environment cb
CB 0 status:
  State                      Online Master
  Temperature                33 degrees C / 91 degrees F
  Power
    1.2 V                     1214 mV
    1.5 V                     1495 mV
    2.5 V                     2494 mV
    3.3 V                     3319 mV
    5.0 V                     5085 mV
    3.3 V bias                3296 mV
  Bus Revision               12
  FPGA Revision              17
CB 1 status:
  State                      Online Standby
  Temperature                34 degrees C / 93 degrees F
  Power
    1.2 V                     1195 mV
```



```
    1.5 V                      1495 mV
    2.5 V                      2504 mV
    3.3 V                      3312 mV
    5.0 V                      5111 mV
    3.3 V bias                 3296 mV
  Bus Revision                12
  FPGA Revision               17
```

show chassis environment cb (M320 Router)

```
user@host> show chassis environment cb
CB 0 status:
  State                           Online Master
  Temperature                   29 degrees C / 84 degrees F
  Power:
    1.8 V                     1805 mV
    2.5 V                     2501 mV
    3.3 V                     3293 mV
    4.6 V                     4725 mV
    5.0 V                     5032 mV
    12.0 V                   11975 mV
    3.3 V bias                3286 mV
    8.0 V bias                7589 mV
  BUS Revision                  40
  FPGA Revision                  7
CB 1 status:
  State                           Online Standby
  Temperature                   32 degrees C / 89 degrees F
  Power:
    1.8 V                     1802 mV
    2.5 V                     2482 mV
    3.3 V                     3289 mV
    4.6 V                     4720 mV
    5.0 V                     5001 mV
    12.0 V                   11946 mV
    3.3 V bias                3274 mV
    8.0 V bias                7562 mV
  BUS Revision                  40
  FPGA Revision                  7
```

show chassis environment cb (MX80 Router)

```
user@host> show chassis environment cb
CB 0 status:
  State                      Online Master
  Temperature                36 degrees C / 96 degrees F
  Power 1
    1.0 V                     1034 mV
    1.0 V MQ                  1037 mV
    1.0 V LU                  1005 mV
    1.2 V                     1218 mV
    1.5 V                     1524 mV
    1.8 V                     1814 mV
    2.5 V                     2558 mV
    3.3 V                     3296 mV
    5.0 V                     5233 mV
    5.0 V bias                5207 mV
    12.0 V                   12162 mV
```

show chassis environment cb (MX240 Router)

```
user@host> show chassis environment cb
CB 0 status:
  State                      Online Standby
  Temperature                37 degrees C / 98 degrees F
  Power 1
```

```
    1.2 V                      1208 mV
    1.5 V                      1521 mV
    1.8 V                      1811 mV
    2.5 V                      2513 mV
    3.3 V                      3332 mV
    5.0 V                      5059 mV
    12.0 V                    12162 mV
    1.25 V                     1260 mV
    3.3 V SM3                  3306 mV
    5.0 V RE                   5085 mV
    12.0 V RE                 11872 mV
  Power 2
    11.3 V bias PEM           11272 mV
    4.6 V bias MidPlane        4827 mV
    11.3 V bias FPD           11272 mV
    11.3 V bias POE 0         11292 mV
    11.3 V bias POE 1         11253 mV
  Bus Revision                42
  FPGA Revision               1
```

show chassis environment cb (MX480 Router)

```
user@host> show chassis environment cb
CB 0 status:
  State                       Online Master
  Temperature                 41 degrees C / 105 degrees F
  Power 1
    1.2 V                      1202 mV
    1.5 V                      1511 mV
    1.8 V                      1798 mV
    2.5 V                      2507 mV
    3.3 V                      3312 mV
    5.0 V                      5027 mV
    12.0 V                    12200 mV
    1.25 V                     1260 mV
    3.3 V SM3                  3293 mV
    5 V RE                     5040 mV
    12 V RE                   11910 mV
  Power 2
    11.3 V bias PEM           11156 mV
    4.6 V bias MidPlane        4801 mV
    11.3 V bias FPD           11214 mV
    11.3 V bias POE 0         11098 mV
    11.3 V bias POE 1         11330 mV
  Bus Revision                42
  FPGA Revision               1
```

show chassis environment cb (MX960 Router)

```
user@host> show chassis environment cb
CB 0 status:
  State                       Online Master
  Temperature                 24 degrees C / 75 degrees F
  Power 1
    1.2 V                      1965 mV
    1.5 V                      2465 mV
    1.8 V                      2990 mV
    2.5 V                      3296 mV
    3.3 V                      3296 mV
    5.0 V                      6593 mV
    12.0 V                    13187 mV
    3.3 V bias                 3296 mV
    1.25 V                     1994 mV
    3.3 V SM3                  3296 mV
    5 V RE                     6593 mV
```

```
    12 V RE                  13174 mV
  Power 2                    Sensor failure
  Bus Revision               4
  FPGA Revision              3
```

show chassis environment cb (TX Matrix Router)

```
user@host> show chassis environment cb
--------------------------------------------------------------------------
CB 0 status:
  State                          Online Master
  Temperature                  32 degrees C / 89 degrees F
  Power:
    1.8 V                    1797 mV
    2.5 V                    2477 mV
    3.3 V                    3311 mV
    4.6 V                    4727 mV
    5.0 V                    5015 mV
    12.0 V                  12185 mV
    3.3 V bias               3304 mV
    8.0 V bias               7870 mV
  BUS Revision                 40
  FPGA Revision                 1
CB 1 status:
  State                          Online Standby
...

lcc0-re0:
--------------------------------------------------------------------------
CB 0 status:
  State                          Online Master
  Temperature                  32 degrees C / 89 degrees F
  Power:
    1.8 V                    1787 mV
    2.5 V                    2473 mV
    3.3 V                    3306 mV
    4.6 V                    4793 mV
    5.0 V                    5025 mV
    12.0 V                  12156 mV
    3.3 V bias               3289 mV
    8.0 V bias               7609 mV
  BUS Revision                 40
  FPGA Revision                 5
CB 1 status:
  State                          Online Standby
 ....
  BUS Revision                 40
  FPGA Revision                 5

lcc2-re0:
--------------------------------------------------------------------------
CB 0 status:
  State                          Online Master
 ...
CB 1 status:
  State                          Online Standby
 ...
```

show chassis environment cb (TX Matrix Plus Router)

```
user@host> show chassis environment cb
sfc0-re0:
--------------------------------------------------------------------------
CB 0 status:
  State                      Online Master
```

```
  Temperature                38 degrees C / 100 degrees F
  Power 1
    1.0 V                     1005 mV
    1.1 V                     1108 mV
    1.2 V                     1205 mV
    1.25 V                    1269 mV
    1.5 V                     1508 mV
    1.8 V                     1814 mV
    2.5 V                     2507 mV
    3.3 V                     3306 mV
    3.3 V bias                3300 mV
    9.0 V                     9058 mV
    9.0 V RE                  9107 mV
  Power 2
    3.9 V                     3963 mV
    5.0 V                     5020 mV
    9.0 V                     9087 mV
  Bus Revision               79
  FPGA Revision              23
CB 1 status:
  State                      Online Standby
  Temperature                39 degrees C / 102 degrees F
  Power 1
    1.0 V                     1002 mV
    1.1 V                     1105 mV
    1.2 V                     1198 mV
    1.25 V                    1276 mV
    1.5 V                     1504 mV
    1.8 V                     1804 mV
    2.5 V                     2507 mV
    3.3 V                     3300 mV
    3.3 V bias                3293 mV
    9.0 V                     9039 mV
    9.0 V RE                  9049 mV
  Power 2
    3.9 V                     3892 mV
    5.0 V                     5040 mV
    9.0 V                     9058 mV
  Bus Revision               79
  FPGA Revision              23

lcc0-re0:
--------------------------------------------------------------------------
CB 0 status:
  State                      Online Master
  Temperature                39 degrees C / 102 degrees F
  Power 1
    1.8 V                     1799 mV
    2.5 V                     2499 mV
    3.3 V                     3327 mV
    3.3 V bias                3299 mV
    4.6 V                     4673 mV
    5.0 V                     4918 mV
    8.0 V bias                7308 mV
    12.0 V                   11887 mV
  Power 2
    1.0 V                      996 mV
    1.2 V                     1199 mV
    3.3 V RE                  3319 mV
  Bus Revision               51
  FPGA Revision              3
```



```
CB 1 status:
  State                      Online Standby
  Temperature                40 degrees C / 104 degrees F
  Power 1
    1.8 V                     1800 mV
    2.5 V                     2496 mV
    3.3 V                     3322 mV
    3.3 V bias                3284 mV
    4.6 V                     4680 mV
    5.0 V                     4954 mV
    8.0 V bias                7284 mV
    12.0 V                   11902 mV
  Power 2
    1.0 V                      998 mV
    1.2 V                     1205 mV
    3.3 V RE                  3327 mV
  Bus Revision               51
  FPGA Revision              3

lcc1-re0:
--------------------------------------------------------------------------
CB 0 status:
  State                      Online Master
  Temperature                41 degrees C / 105 degrees F
  Power 1
    1.8 V                     1804 mV
    2.5 V                     2517 mV
    3.3 V                     3300 mV
    3.3 V bias                3284 mV
    4.6 V                     4681 mV
    5.0 V                     4927 mV
    8.0 V bias                7357 mV
    12.0 V                   11907 mV
  Power 2
    1.0 V                      991 mV
    1.2 V                     1202 mV
    3.3 V RE                  3301 mV
  Bus Revision               51
  FPGA Revision              3
CB 1 status:
  State                      Online Standby
  Temperature                40 degrees C / 104 degrees F
  Power 1
    1.8 V                     1805 mV
    2.5 V                     2528 mV
    3.3 V                     3324 mV
    3.3 V bias                3289 mV
    4.6 V                     4694 mV
    5.0 V                     4959 mV
    8.0 V bias                7311 mV
    12.0 V                   11926 mV
  Power 2
    1.0 V                      998 mV
    1.2 V                     1200 mV
    3.3 V RE                  3313 mV
  Bus Revision               51
  FPGA Revision              3

lcc2-re0:
--------------------------------------------------------------------------
CB 0 status:
```

```
  State                       Online Master
  Temperature                 41 degrees C / 105 degrees F
  Power 1
    1.8 V                      1805 mV
    2.5 V                      2494 mV
    3.3 V                      3333 mV
    3.3 V bias                 3296 mV
    4.6 V                      4673 mV
    5.0 V                      4901 mV
    8.0 V bias                 7343 mV
    12.0 V                    11916 mV
  Power 2
    1.0 V                       993 mV
    1.2 V                      1213 mV
    3.3 V RE                   3328 mV
  Bus Revision                51
  FPGA Revision               3
CB 1 status:
  State                       Online Standby
  Temperature                 41 degrees C / 105 degrees F
  Power 1
    1.8 V                      1804 mV
    2.5 V                      2523 mV
    3.3 V                      3334 mV
    3.3 V bias                 3291 mV
    4.6 V                      4697 mV
    5.0 V                      4969 mV
    8.0 V bias                 7308 mV
    12.0 V                    11936 mV
  Power 2
    1.0 V                       996 mV
    1.2 V                      1200 mV
    3.3 V RE                   3328 mV
  Bus Revision                51
  FPGA Revision               3

lcc3-re0:
--------------------------------------------------------------------------
CB 0 status:
  State                       Online Master
  Temperature                 37 degrees C / 98 degrees F
  Power 1
    1.8 V                      1809 mV
    2.5 V                      2510 mV
    3.3 V                      3296 mV
    3.3 V bias                 3291 mV
    4.6 V                      4670 mV
    5.0 V                      4905 mV
    8.0 V bias                 7211 mV
    12.0 V                    11882 mV
  Power 2
    1.0 V                       996 mV
    1.2 V                      1188 mV
    3.3 V RE                   3326 mV
  Bus Revision                51
  FPGA Revision               5
CB 1 status:
  State                       Online Standby
  Temperature                 38 degrees C / 100 degrees F
  Power 1
    1.8 V                      1813 mV
```



```
    2.5 V                      2510 mV
    3.3 V                      3322 mV
    3.3 V bias                 3289 mV
    4.6 V                      4692 mV
    5.0 V                      4967 mV
    8.0 V bias                 7194 mV
    12.0 V                    11916 mV
  Power 2
    1.0 V                       996 mV
    1.2 V                      1205 mV
    3.3 V RE                   3273 mV
  Bus Revision                51
  FPGA Revision               5
```

show chassis environment cb (EX8200 Switch)

```
user@host> show chassis environment cb

CB 0 status:
  State                       Online Master
  Temperature Intake          20 degrees C / 68 degrees F
  Temperature Exhaust         24 degrees C / 75 degrees F
  Power 1
    1.1 V                      1086 mV
    1.2 V                      1179 mV
    1.2 V *                    1182 mV
    1.2 V *                    1182 mV
    1.25 V                     1211 mV
    1.5 V                      1472 mV
    1.8 V                      1756 mV
    2.5 V                      2449 mV
    3.3 V                      3254 mV
    3.3 V bias                 3300 mV
    5.0 V                      4911 mV
    12.0 V                    11891 mV
  Power 2
    3.3 V bias *               3615 mV
    3.3 V bias *               3615 mV
    3.3 V bias *               3567 mV
    3.3 V bias *               3664 mV
    4.3 V bias *               4224 mV
    4.3 V bias *               4215 mV
    4.3 V bias *               4224 mV
    4.3 V bias *               4205 mV
    4.3 V bias *               4195 mV
    4.3 V bias *               4215 mV
    5.0 V bias                 4920 mV
CB 1 status:
  State                       Online Standby
  Temperature Intake          19 degrees C / 66 degrees F
  Temperature Exhaust         23 degrees C / 73 degrees F
  Power 1
    1.1 V                      1082 mV
    1.2 V                      1169 mV
    1.2 V *                    1179 mV
    1.2 V *                    1179 mV
    1.25 V                     1214 mV
    1.5 V                      1482 mV
    1.8 V                      1759 mV
    2.5 V                      2481 mV
    3.3 V                      3248 mV
    3.3 V bias                 3306 mV
    5.0 V                      4911 mV
```

```
    12.0 V                    11910 mV
  Power 2
    3.3 V bias *               3644 mV
    3.3 V bias *               3664 mV
    3.3 V bias *               3586 mV
    3.3 V bias *               3654 mV
    4.3 V bias *               4224 mV
    4.3 V bias *               4215 mV
    4.3 V bias *               4224 mV
    4.3 V bias *               4205 mV
    4.3 V bias *               4244 mV
    4.3 V bias *               4215 mV
    5.0 V bias                 4930 mV
CB 2 status:
  State                       Online
  Temperature Intake          19 degrees C / 66 degrees F
  Temperature Exhaust         23 degrees C / 73 degrees F
  Power 1
    1.2 V                      1195 mV
    1.5 V                      1511 mV
    1.8 V                      1804 mV
    2.5 V                      2526 mV
    3.3 V                      3300 mV
    3.3 V bias                 3306 mV
    12.0 V                    12220 mV
```

show chassis environment cb (EX8208 Switch)

```
user@host> show chassis environment cb
CB 0 status:
  State                       Online Master
  Temperature Intake          20 degrees C / 68 degrees F
  Temperature Exhaust         24 degrees C / 75 degrees F
  Power 1
    1.1 V                      1086 mV
    1.2 V                      1179 mV
    1.2 V *                    1182 mV
    1.2 V *                    1182 mV
    1.25 V                     1211 mV
    1.5 V                      1466 mV
    1.8 V                      1759 mV
    2.5 V                      2455 mV
    3.3 V                      3261 mV
    3.3 V bias                 3300 mV
    5.0 V                      4930 mV
    12.0 V                    11891 mV
  Power 2
    3.3 V bias *               3606 mV
    3.3 V bias *               3615 mV
    3.3 V bias *               3567 mV
    3.3 V bias *               3673 mV
    4.3 V bias *               4224 mV
    4.3 V bias *               4215 mV
    4.3 V bias *               4234 mV
    4.3 V bias *               4205 mV
    4.3 V bias *               4186 mV
    4.3 V bias *               4215 mV
    5.0 V bias                 4940 mV
CB 1 status:
  State                       Online Standby
  Temperature Intake          19 degrees C / 66 degrees F
  Temperature Exhaust         23 degrees C / 73 degrees F
  Power 1
```



```
    1.1 V                     1086 mV
    1.2 V                     1169 mV
    1.2 V *                   1179 mV
    1.2 V *                   1179 mV
    1.25 V                    1211 mV
    1.5 V                     1479 mV
    1.8 V                     1759 mV
    2.5 V                     2475 mV
    3.3 V                     3235 mV
    3.3 V bias                3306 mV
    5.0 V                     4930 mV
    12.0 V                   11891 mV
  Power 2
    3.3 V bias *              3644 mV
    3.3 V bias *              3664 mV
    3.3 V bias *              3586 mV
    3.3 V bias *              3654 mV
    4.3 V bias *              4215 mV
    4.3 V bias *              4224 mV
    4.3 V bias *              4215 mV
    4.3 V bias *              4215 mV
    4.3 V bias *              4234 mV
    4.3 V bias *              4224 mV
    5.0 V bias                4920 mV
CB 2 status:
  State                      Online
  Temperature Intake         20 degrees C / 68 degrees F
  Temperature Exhaust        24 degrees C / 75 degrees F
  Power 1
    1.2 V                     1202 mV
    1.5 V                     1508 mV
    1.8 V                     1804 mV
    2.5 V                     2520 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    12.0 V                   12200 mV
```

show chassis environment cip

Syntax (TX Matrix Plus Router)

show chassis environment cip
<slot-number>

Release Information

Command introduced in Junos OS Release 9.6 for the TX Matrix Plus router.

Description

(TX Matrix Plus router only) Display environmental information about the Connector Interface Panel (CIP).

Options

none—Display environmental information about all the CIP.

slot—Display environmental information about a specific CIP. Replace ***slot*** with a value from **0** through **1**.

Required Privilege Level

view

Output Fields

Table 50 on page 236 lists the output fields for the **show chassis environment cip** command. Output fields are listed in the approximate order in which they appear.

Table 50: show chassis environment cip Output Fields

Field Name	Field Description
State	State of the CIP: • **Online Active**: CIP is online and there is active control plane data transfer between the SFC and LCCs in the routing matrix. • **Online Inactive**: CIP is online, but inactive. • **Offline**: CIP is offline.
Temp	Temperature of the CIP in Celsius (C) and Fahrenheit (F).
Power	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.
Bus Revision	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

Syntax

show chassis environment fpc
<*slot*>

Syntax (TX Matrix and TX Matrix Plus Router)

show chassis environment fpc
<lcc *number*>
<*slot*>

Release Information

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

Description

(M40e, M120, M160, M320, MX Series, and T Series routers and EX Series switches only) Display environmental information about Flexible PIC Concentrators (FPCs).

Options

none—Display environmental information about all FPCs. On a TX Matrix router, display environmental information about all FPCs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router,display environmental information about all FPCs on the TX Matrix Plus router and its attached T1600 routers.

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

slot—(Optional) Display environmental information about an individual FPC:

- (TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, if you specify the number of the T640 router by using only the **lcc *number*** option (the recommended method), replace ***slot*** with a value from **0** through **7**. Similarly, on a TX Matrix Plus router, if you specify the number of the T1600 router by using only the **lcc *number*** option (the recommended method), replace ***slot*** with a value from **0** through **7**. Otherwise, replace ***slot*** with a value from **0** through **31**. For example, the following commands have the same result:

  user@host> **show chassis environment fpc 1 lcc 1**
  user@host> **show chassis environment fpc 9**

- M120 router—Replace ***slot*** with a value from **0** through **5.**
- MX240 router—Replace ***slot*** with a value from **0** through **2**.
- MX480 router—Replace ***slot*** with a value from **0** through **5**.
- MX960 router—Replace ***slot*** with a value from **0** through **11**.
- Other routers—Replace ***slot*** with a value from **0** through **7**.
- EX Series switches:

- EX3200 switches and EX4200 standalone switches—Replace ***slot*** with 0.
- EX4200 switches in a Virtual Chassis configuration—Replace ***slot*** with a value from 0 through 9 (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).

Required Privilege Level view

List of Sample Output

show chassis environment fpc (M120 Router) on page 240
show chassis environment fpc (M160 Router) on page 241
show chassis environment fpc (M320 Router) on page 241
show chassis environment fpc (MX240 Router) on page 242
show chassis environment fpc (MX480 Router) on page 243
show chassis environment fpc (MX960 Router) on page 244
show chassis environment fpc (T Series Core Routers) on page 245
show chassis environment fpc lcc (TX Matrix Router) on page 245
show chassis environment fpc lcc (TX Matrix Plus Router) on page 246

Output Fields Table 51 on page 239 lists the output fields for the **show chassis environment fpc** command. Output fields are listed in the approximate order in which they appear.

Table 51: show chassis environment fpc Output Fields

Field Name	Field Description
State	Status of the FPC: • **Unknown**—FPC is not detected by the router. • **Empty**—No FPC is present. • **Present**—FPC is detected by the chassis daemon but is either not supported by the current version of the Junos OS, or the FPC is coming up but not yet online. • **Ready**—FPC is in intermediate or transition state. • **Announce online**—Intermediate state during which the FPC is coming up but not yet online, and the chassis manager acknowledges the chassisd FPC online initiative. • **Online**—FPC is online and running. • **Offline**—FPC is powered down. • **Diagnostics**—FPC is set to operate in diagnostics mode.
Temperature	(M40e and M160 routers only) Temperature of the air flowing past the FPC.
Temperature Intake	(M320 routers only) Temperature of the air flowing into the chassis.
Temperature Top	(T Series routers only) Temperature of the air flowing past the top of the FPC.
Temperature Exhaust	(M120 and M320 routers 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.

Table 51: show chassis environment fpc Output Fields *(continued)*

Field Name	Field Description
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).

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 environment fpm

Syntax

show chassis environment fpm

Syntax (TX Matrix Router)

show chassis environment fpm
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show chassis environment fpm
<lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

(M40e, M120, M160, M320, MX Series, and T Series routers only) Display environmental information about the front panel module in the router.

Options

none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display environmental information about the front panel modules (craft interfaces) on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the front panel modules (craft interfaces) on the TX Matrix Plus router and its attached T1600 routers.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

scc—(TX Matrix router only) (Optional) Display environmental information about the front panel module (craft interface) on the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Display environmental information about the front panel module (craft interface) on the TX Matrix Plus router (or switch-fabric chassis).

Required Privilege Level

view

List of Sample Output

Output Fields Table 52 on page 249 lists the output fields for the **show chassis environment fpm** command. Output fields are listed in the approximate order in which they appear.

Table 52: show chassis environment fpm Output Fields

Field Name	Field Description
State	FPM status: • **Online**—FPM is online and running. • **Offline**—FPM is powered down.
FPM CMB Voltage	(M40e and M160 routers only) Information about the voltage supplied to the FPM chassis management bus (CMB) device. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM GBUS Voltage	(M320 and T Series routers only) Information about the voltage supplied to the FPM generic bus (GBUS) device. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM 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.

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

Syntax

show chassis environment mcs
<slot>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M40e and M160 routers only) Display environmental information about the Miscellaneous Control Subsystems (MCSs).

Options

none—Display environmental information about both MCSs.

slot —(Optional) Display environmental information about an individual MCS. Replace ***slot*** with **0** or **1**

Required Privilege Level

view

List of Sample Output

show chassis environment mcs (M40e Router) on page 253
show chassis environment mcs (M160 Router) on page 253

Output Fields

Table 53 on page 252 lists the output fields for the **show chassis environment mcs** command. Output fields are listed in the approximate order in which they appear.

Table 53: show chassis environment mcs Output Fields

Field Name	Field Description
State	Status of the MCS: • **Present**—MCS is detected by the chassis daemon but is either not supported by the current version of Junos or MCS is coming up but not yet online. • **Online**—MCS is online and running. • **Offline**—MCS is powered down. • **Empty**—No MCS is present. • **Master**—MCS is online, operating as master. • **Standby**—MCS is online, operating as standby.
Temperature	Temperature of the air flowing past the MCS.
Power	Information about the voltage supplied to the MCS. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
BUS Revision	Revision level of the generic bus device.
FPGA Revision	Revision level of the field-programmable gate array (FPGA) revision.

show chassis environment mcs (M40e Router)

```
user@host> show chassis environment mcs
MCS 0 status:
  State                            Online Master
  Temperature                   45 degrees C / 113 degrees F
  Power:
    3.3 V                     3283 mV
    5.0 V                     5013 mV
    12.0 V                   11721 mV
    5.0 V bias                5025 mV
    8.0 V bias                8229 mV
  BUS Revision                  12
  FPGA Revision                 13
MCS 1 status:
  State                            Online Standby
  Temperature                   42 degrees C / 107 degrees F
  Power:
    3.3 V                     3296 mV
    5.0 V                     4971 mV
    12.0 V                   11814 mV
    5.0 V bias                4976 mV
    8.0 V bias                8241 mV
  BUS Revision                  12
  FPGA Revision                 13
```

show chassis environment mcs (M160 Router)

```
user@host> show chassis environment mcs
MCS 0 status:
  State                            Online Master
  Temperature                   50 degrees C / 122 degrees F
  Power:
    3.3 V                     3306 mV
    5.0 V                     4993 mV
    12.0 V                   11799 mV
    5.0 V bias                4993 mV
    8.0 V bias                8288 mV
  BUS Revision                  12
  FPGA Revision                 13
```

show chassis environment pcg

Syntax

show chassis environment pcg
<slot>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M40e and M160 routers only) Display environmental information about the Packet Forwarding Engine clock generators (PCGs).

Options

none—Display environmental information about both PCGs.

slot—(Optional) Display environmental information about an individual PCG. Replace ***slot*** with 0 or 1.

Required Privilege Level

view

List of Sample Output

show chassis environment pcg (M40e Router) on page 255
show chassis environment pcg (M160 Router) on page 255

Output Fields

Table 54 on page 254 lists the output fields for the **show chassis environment pcg** command. Output fields are listed in the approximate order in which they appear.

Table 54: show chassis environment pcg Output Fields

Field Name	Field Description
PCG slot status	Slot number: **0** or **1**.
State	Status of PCG: • **Present**—PCG is detected by the chassis process but is either not supported by the current version of Junos OS or PCG is coming up but is not yet online. • **Online**—PCG is powered down. If **Online**, it can be the **Master clock** or the **Standby clock**. • **Offline**—PCG is powered down. • **Empty**—No PCG is present.
Temperature	Temperature of the air flowing past the PCG.
Frequency	Frequency setting and measurement for the PCG.
Power	Information about the voltage supplied to the PCG. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
BUS Revision	Revision level of the generic bus device.

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

Syntax

show chassis environment pem
<*slot*>

Syntax (TX Matrix Routers)

show chassis environment pem
<lcc *number* | scc>
<*slot*>

Syntax (TX Matrix Plus Routers)

show chassis environment pem
<lcc *number* | sfc *number*>
<*slot*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M40e, M120, M160, M320, MX Series, and T Series routers only) Display Power Entry Module (PEM) environmental status information.

Options

none—Display environmental information about both PEMs. For the TX Matrix router, display environmental information about the PEMs, the TX Matrix router, and its attached T640 routers. For the TX Matrix Plus router, display environmental information about the PEMs, the TX Matrix Plus router, and its attached T1600 routers.

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 ***number*** with a value from **0** through **3**.

scc—(TX Matrix routers only) (Optional) Display environmental information about the PEM in the TX Matrix router (or switch-card chassis).

sfc—(TX Matrix Plus routers only) (Optional) Display environmental information about the PEM in the TX Matrix Plus router (or switch-fabric chassis).

slot —(Optional) Display environmental information about an individual PEM. Replace ***slot*** with **0** or **1**.

Required Privilege Level

view

List of Sample Output

show chassis environment pem (M40e Router) on page 257
show chassis environment pem (M120 Router) on page 257
show chassis environment pem (M160 Router) on page 258
show chassis environment pem (M320 Router) on page 258
show chassis environment pem (MX240 Router) on page 258
show chassis environment pem (MX480 Router) on page 259
show chassis environment pem (MX960 Router) on page 259
show chassis environment pem (T320 Router) on page 259

show chassis environment pem (T640 Router) on page 259
show chassis environment pem lcc (TX Matrix Routing Matrix) on page 259
show chassis environment pem scc (TX Matrix Routing Matrix) on page 260
show chassis environment pem sfc (TX Matrix Plus Routing Matrix) on page 260
show chassis environment pem lcc (TX Matrix Plus Routing Matrix) on page 260

Output Fields Table 55 on page 257 lists the output fields for the **show chassis environment pem** command. Output fields are listed in the approximate order in which they appear.

Table 55: show chassis environment pem Output Fields

Field Name	Field Description
PEM *slot* status	Number of the PEM slot.
State	Status of the PEM.
Temperature	Temperature of the air flowing past the PEM.
AC Input	Status of the AC input for the specified component
AC Output	Status of the AC output for the specified component.
DC input	Status of the DC input for the specified component.
DC output	Status of the DC output for the specified component.
Load	(Not available on M40e or M160 routers) Information about the load on supply, in percentage of rated current being used.
Voltage	(M120, M160, M320, T640, T1600, TX Matrix, and TX Matrix Plus routers only) Information about voltage supplied to the PEM.
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.

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 (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

Syntax

show chassis environment routing-engine
<*slot*>

Syntax (TX Matrix Routers)

show chassis environment routing-engine
<lcc *number* | scc>
<*slot*>

Syntax (TX Matrix Plus Routers)

show chassis environment routing-engine
<lcc *number* | sfc *number*>
<*slot*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display Routing Engine environmental status information.

Options

none—Display environmental information about all Routing Engines. For a TX Matrix router, display environmental information about all Routing Engines on the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display environmental information about all Routing Engines on the TX Matrix Plus router and its attached T1600 routers.

lcc *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 ***number*** with a value from **0** through **3**.

scc—(TX Matrix router only) (Optional) Display environmental information about the Routing Engine in the TX Matrix router (or switch-card chassis).

sfc—(TX Matrix Plus router only) (Optional) Display environmental information about the Routing Engine in the TX Matrix Plus router (or switch-fabric chassis).

slot—(Optional) Display environmental information about an individual Routing Engine. On M10i, M20, M40e, M120, M160, M320, MX Series, and T Series routers, replace ***slot*** with **0** or **1**. On M5, M7i, M10, and M40 routers and on the J Series router, replace ***slot*** with **0**. On EX3200 switches and EX4200 standalone switches, replace ***slot*** with 0. On EX4200 switches in a Virtual Chassis configuration and on EX8208 and EX8216 switches, replace ***slot*** with 0 or 1.

Required Privilege Level

view

List of Sample Output

show chassis environment routing-engine (Nonredundant) on page 263
show chassis environment routing-engine (Redundant) on page 263
show chassis environment routing-engine (TX Matrix Plus Router) on page 263

Output Fields

Table 56 on page 263 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 56: show chassis environment routing-engine Output Fields

Field Name	Field Description
Routing engine *slot* status	Number of the Routing Engine slot: **0** or **1**.
State	Status of the Routing Engine: • **Online Master**—MCS is online, operating as Master. • **Online Standby**—MCS is online, operating as Standby.
Temperature	Temperature of the air flowing past the Routing Engine.

show chassis environment routing-engine (Nonredundant)

```
user@host> show chassis environment routing-engine
Routing Engine 0 status:
  State                           Online Master
  Temperature                  27 degrees C / 80 degrees
```

show chassis environment routing-engine (Redundant)

```
user@host> show chassis environment routing-engine
Route Engine 0 status:
  State:                      Online Master
  Temperature:              26 degrees C / 78 degrees F
Route Engine 1 status:
  State:                      Online Standby
  Temperature:              26 degrees C / 78 degrees F
```

show chassis environment routing-engine (TX Matrix Plus Router)

```
user@host> show chassis environment routing-engine
sfc0-re0:
--------------------------------------------------------------------------
Routing Engine 0 status:
  State                      Online Master
  Temperature                26 degrees C / 78 degrees F
Routing Engine 1 status:
  State                      Online Standby
  Temperature                28 degrees C / 82 degrees F

lcc0-re0:
--------------------------------------------------------------------------
Routing Engine 0 status:
  State                      Online Master
  Temperature                30 degrees C / 86 degrees F
Routing Engine 1 status:
  State                      Online Standby
  Temperature                29 degrees C / 84 degrees F
```

show chassis environment scg

Syntax

show chassis environment scg
<slot>

Syntax (TX Matrix and TX Matrix Plus Router)

show chassis environment scg
<lcc *number*>
<slot>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display SONET Clock Generator (SCG) environmental information.

Options

none—(TX Matrix and TX Matrix Plus routers only) Display environmental information about all SCGs. On a TX Matrix router, display environmental information about all SCGs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all SCGs on the TX Matrix Plus router and its attached T1600 routers.

lcc *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 ***number*** with a value from **0** through **3**.

slot—(Optional) Display environmental information about the SCG. Replace ***slot*** with **0** or **1**.

Required Privilege Level

view

List of Sample Output

show chassis environment scg (T Series Routers) on page 265
show chassis environment scg lcc (TX Matrix Router) on page 265
show chassis environment scg lcc (TX Matrix Plus Router) on page 266
show chassis environment scg (TX Matrix Plus Router) on page 266

Output Fields

Table 57 on page 264 lists the output fields for the **show chassis environment scg** command. Output fields are listed in the approximate order in which they appear.

Table 57: show chassis environment scg Output Fields

Field Name	Field Description
SCG *slot* **status**	Number of the SCG slot: **0** or **1**.

Table 57: show chassis environment scg Output Fields *(continued)*

Field Name	Field Description
State	Status of the SCG: • **Online**—SCG is online and running. • **Offline**—SCG is powered down. If two SCGs are installed and online, one is functioning as the master, and the other is the standby.
Temperature	Temperature of the air flowing past the SCG.
Power	Power on the SCG. The left column displays required power, in volts. The right column displays measured power, in millivolts.
BUS Revision	Revision level of the generic bus device.

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

lcc3-re0:
--------------------------------------------------------------------------
SCG 0 status:
  State                      Online -  Master clock
  Temperature                39 degrees C / 102 degrees F
  Power
    GROUND                        0 mV
    1.8 V bias                 1800 mV
    3.3 V                      3290 mV
    3.3 V bias                 3294 mV
    5.0 V                      5050 mV
    5.0 V bias                 4984 mV
    5.6 V                      5780 mV
    8.0 V bias                 7716 mV
  Bus Revision               40
```

show chassis environment sfm

Syntax

show chassis environment sfm
<slot>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M40e and M160 routers only) Display Switching and Forwarding Module (SFM) environmental information.

Options

none—Display environmental information about all SFMs.

slot—(Optional) Display environmental information about an individual SFM. Replace ***slot*** with a value from **0** through **3**.

Required Privilege Level

view

List of Sample Output

show chassis environment sfm (M40e Router) on page 269
show chassis environment sfm (M160 Router) on page 269

Output Fields

Table 58 on page 268 lists the output fields for the **show chassis environment sfm** command. Output fields are listed in the approximate order in which they appear.

Table 58: show chassis environment sfm Output Fields

Field Name	Field Description
SFM *slot* status	SFM slot number: **0** or **1** on an M40e router, or **0**, **1**, **2**, or **3** on an M160 router.
State	Status of the SFM: • **Online**—SFM is online and running. • **Offline**—SFM is powered down. If two SFMs are installed and online, one is functioning as the master, and the other is marked as the **Standby**.
SPP Temperature	Temperature of the air flowing past the Switch Plane Processor card.
SPR Temperature	Temperature of the air flowing past the Switch Plane Router card.
SPP Power	Information about the voltage supplied to the Switch Plane Processor card. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
SPR Power	Information about the voltage supplied to the Switch Plane Router. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
CMB Revision	Revision level of the Chassis Management Bus (CMB) device.

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

Syntax

show chassis environment sib
<*slot*>

Syntax (TX Matrix Router)

show chassis environment sib
<lcc *number*| scc>
<*slot*>

Syntax (TX Matrix Plus Router)

show chassis environment sib
<lcc *number*| sfc *number*>
<*slot*>
<f13 *sib-slot*>
<f2s *sib-slot/sib-f2s-slot-number*>

Release Information

Command introduced before Junos OS Release 7.4.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

(M320, T Series routers, TX Matrix and TX Matrix Plus only) Display Switch Interface Boards (SIB) environmental information.

Options

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.

f13 *sib-slot*—(TX Matrix Plus routers only) (Optional) Display SIB F13 environmental information only. Replace ***sib-slot*** with one of the following values: **0**, **1**, **3**, **4**, **6**, **7**, **8**, **9**, **11**, or **12**.

f2s *sib-slot/sib-f2s-slot-number*—(TX Matrix Plus routers only) (Optional) Display SIB F2s environmental information only. Replace ***sib-slot*** with a value from **0** through **4**, followed by a ***sib-f2s-slot-number*** value of **0**, **2**, **4** or **6**.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the SIB in a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the SIB in a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace ***number*** with a value from **0** through **4**.

scc—(TX Matrix routers only) (Optional) Display environmental information about the SIB in the TX Matrix router (or switch-card chassis).

sfc—(TX Matrix Plus routers only) (Optional) Display environmental information about the SIB in the TX Matrix Plus router (or switch-fabric chassis).

slot—(Optional) Display environmental information about the specified SIB. For the M320 router, replace ***slot*** with a value from **0** through **3**. For the T640, T1600, and TX Matrix routers, replace ***slot*** with a value from **0** through **4**. For the TX Matrix Plus router,

replace ***slot*** with a value from **0** through **15**. For the T320 router, replace ***slot*** with a value from **0** through **2**.

Required Privilege Level view

List of Sample Output

show chassis environment sib (M320 Router) on page 272
show chassis environment sib 1 (T640 Router) on page 273
show chassis environment sib scc (TX Matrix Router) on page 273
show chassis environment sib (TX Matrix Plus Router) on page 274
show chassis environment sib sfc (TX Matrix Plus Router) on page 284
show chassis environment sib f13 (TX Matrix Plus Router) on page 289
show chassis environment sib f2s (TX Matrix Plus Router) on page 290

Output Fields Table 59 on page 272 lists the output fields for the **show chassis environment sib** command. Output fields are listed in the approximate order in which they appear.

Table 59: show chassis environment sib Output Fields

Field Name	Field Description
SIB slot status	SIB slot number: • **0** through **3** on an M320 router. • **0** or **2** on a T320 router. • **0** through **4** on a T640 or T1600 router. • **0** through **15** on a TX Matrix or TX Matrix Plus router. • **0**, **1**, **3**, **4**, **6**, **7**, **8**, **9**, **11**, or **12** for F13 SIBs on a TX Matrix Plus router. • **0** through **4**, followed by **0**, **2**, **4**, or **6** for an F2S SIB on a TX Matrix Plus router. For example, **SIB F2S 0/4**.
State	Status of the SIB: • **Online**—SIB is online and running. • **Offline**—SIB is powered down. • **Spare** (T640 router only)—SIB is redundant and will move to active state if one of the working SIBs fails. Only four of the five T640 router SIBs are active at any time. The fifth one is marked **Spare**. It is activated if there is a fault on one of the active SIBs.
Temperature	Temperature of the air flowing past the SIB.
Power	Information about the voltage supplied to the SIB. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.

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                      Online
  Temperature                46 degrees C / 114 degrees F
  Temperature (B)            41 degrees C / 105 degrees F
  Power
    1.2 V_0                   1208 mV
```



```
    1.2 V_1                    1202 mV
    1.2 V_2                    1208 mV
    1.2 V_3                    1202 mV
    1.5 V_0                    1504 mV
    1.5 V_1                    1504 mV
    1.8 V                      1817 mV
    2.5 V                      2516 mV
    3.3 V                      3312 mV
    9.0 V                      9009 mV
    9.0 V bias                    0 mV
  Power (B)
    2.5 V                      2510 mV
    3.3 V                      3312 mV
    9.0 V                      9024 mV
SIB F13 11 status:
  State                       Online
  Temperature                 47 degrees C / 116 degrees F
  Temperature (B)             42 degrees C / 107 degrees F
  Power
    1.2 V_0                    1202 mV
    1.2 V_1                    1205 mV
    1.2 V_2                    1202 mV
    1.2 V_3                    1202 mV
    1.5 V_0                    1501 mV
    1.5 V_1                    1501 mV
    1.8 V                      1801 mV
    2.5 V                      2510 mV
    3.3 V                      3312 mV
    9.0 V                      8979 mV
    9.0 V bias                    0 mV
  Power (B)
    2.5 V                      2252 mV
    3.3 V                      5014 mV
    9.0 V                      9954 mV
SIB F13 12 status:
  State                       Online
  Temperature                 45 degrees C / 113 degrees F
  Temperature (B)             40 degrees C / 104 degrees F
  Power
    1.2 V_0                    1211 mV
    1.2 V_1                    1208 mV
    1.2 V_2                    1205 mV
    1.2 V_3                    1205 mV
    1.5 V_0                    1511 mV
    1.5 V_1                    1501 mV
    1.8 V                      1817 mV
    2.5 V                      2504 mV
    3.3 V                      3318 mV
    9.0 V                      9027 mV
    9.0 V bias                    0 mV
 Power (B)
    2.5 V                      2520 mV
    3.3 V                      3338 mV
    9.0 V                      9006 mV
SIB F2S 0/0 status:
  State                       Online - Standby
  Temperature                 40 degrees C / 104 degrees F
  Power
    1.2 V_1                       0 mV
    1.2 V_ASF                  1198 mV
    1.2 V_ASF_B                1198 mV
```

```
    1.2 V_ASF_D               1202 mV
    1.5 V                     1498 mV
    1.8 V                     1814 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3286 mV
    9.0 V                     8250 mV
SIB F2S 0/2 status:
  State                      Online - Standby
  Temperature                40 degrees C / 104 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1498 mV
    1.8 V                     1807 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3286 mV
    9.0 V                     8250 mV
SIB F2S 0/4 status:
  State                      Online - Standby
  Temperature                40 degrees C / 104 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1202 mV
    1.2 V_ASF_B               1198 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1504 mV
    1.8 V                     1817 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3306 mV
    9.0 V                     8250 mV
SIB F2S 0/6 status:
  State                      Online - Standby
  Temperature                39 degrees C / 102 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1202 mV
    1.2 V_ASF_B               1198 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1495 mV
    1.8 V                     1814 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3280 mV
    9.0 V                     8250 mV
SIB F2S 1/0 status:
  State                      Online
  Temperature                39 degrees C / 102 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1195 mV
    1.2 V_ASF_B               1192 mV
    1.2 V_ASF_D               1195 mV
    1.5 V                     1488 mV
    1.8 V                     1798 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
```

```
    3.3 V ASF                 3280 mV
    9.0 V                     8250 mV
SIB F2S 1/2 status:
  State                      Online
  Temperature                39 degrees C / 102 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                 1205 mV
    1.2 V_ASF_B               1202 mV
    1.2 V_ASF_D               1205 mV
    1.5 V                     1501 mV
    1.8 V                     1820 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3306 mV
    9.0 V                     8250 mV
SIB F2S 1/4 status:
  State                      Online
  Temperature                39 degrees C / 102 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1195 mV
    1.5 V                     1498 mV
    1.8 V                     1811 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3300 mV
    9.0 V                     8250 mV
SIB F2S 1/6 status:
  State                      Online
  Temperature                39 degrees C / 102 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                 1195 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1198 mV
    1.5 V                     1498 mV
    1.8 V                     1807 mV
    3.3 V                     3306 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3292 mV
    9.0 V                     8250 mV
SIB F2S 2/0 status:
  State                      Online
  Temperature                39 degrees C / 102 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                 1195 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1198 mV
    1.5 V                     1498 mV
    1.8 V                     1804 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3286 mV
    9.0 V                     8250 mV
SIB F2S 2/2 status:
  State                      Online
Temperature                38 degrees C / 100 degrees F
```

```
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1195 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1198 mV
    1.5 V                     1495 mV
    1.8 V                     1807 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3300 mV
    9.0 V                     8250 mV
SIB F2S 2/4 status:
  State                      Online
  Temperature                38 degrees C / 100 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1198 mV
    1.5 V                     1501 mV
    1.8 V                     1804 mV
    3.3 V                     3286 mV
    3.3 V bias                3292 mV
    3.3 V ASF                 3300 mV
    9.0 V                     8230 mV
SIB F2S 2/6 status:
  State                      Online
  Temperature                38 degrees C / 100 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1202 mV
    1.2 V_ASF_B               1198 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1501 mV
    1.8 V                     1817 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3318 mV
    9.0 V                     8250 mV
SIB F2S 3/0 status:
  State                      Online
  Temperature                38 degrees C / 100 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1195 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1198 mV
    1.5 V                     1501 mV
    1.8 V                     1814 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3274 mV
    9.0 V                     8250 mV
SIB F2S 3/2 status:
  State                      Online
  Temperature                37 degrees C / 98 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1202 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1195 mV
```



```
    1.5 V                     1495 mV
    1.8 V                     1804 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3286 mV
    9.0 V                     8250 mV
SIB F2S 3/4 status:
  State                      Online
  Temperature                37 degrees C / 98 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1205 mV
    1.2 V_ASF_B               1198 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1501 mV
    1.8 V                     1811 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3318 mV
    9.0 V                     8250 mV
SIB F2S 3/6 status:
  State                      Online
  Temperature                37 degrees C / 98 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1205 mV
    1.2 V_ASF_B               1202 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1511 mV
    1.8 V                     1820 mV
    3.3 V                     3306 mV
    3.3 V bias                3306 mV
    3.3 V ASF                 3318 mV
    9.0 V                     8265 mV
SIB F2S 4/0 status:
  State                      Online
  Temperature                36 degrees C / 96 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1198 mV
    1.2 V_ASF_D               1198 mV
    1.5 V                     1501 mV
    1.8 V                     1814 mV
    3.3 V                     3292 mV
    3.3 V bias                3292 mV
    3.3 V ASF                 3312 mV
    9.0 V                     8230 mV
SIB F2S 4/2 status:
  State                      Online
  Temperature                37 degrees C / 98 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1192 mV
    1.2 V_ASF_D               1195 mV
    1.5 V                     1495 mV
    1.8 V                     1807 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3300 mV
```

```
    9.0 V                     8250 mV
SIB F2S 4/4 status:
  State                      Online
  Temperature                36 degrees C / 96 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                 1202 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1202 mV
   1.5 V                      1501 mV
    1.8 V                     1814 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3312 mV
    9.0 V                     8250 mV
SIB F2S 4/6 status:
  State                      Online
  Temperature                36 degrees C / 96 degrees F
  Power
    1.2 V_1                     0 mV
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1198 mV
    1.5 V                     1498 mV
    1.8 V                     1820 mV
    3.3 V                     3292 mV
    3.3 V bias                3292 mV
    3.3 V ASF                 3286 mV
    9.0 V                     8230 mV

lcc0-re0:
--------------------------------------------------------------------------
SIB 0 status:
  State                      Online - Standby
  Temperature                49 degrees C / 120 degrees F
  Temperature (B)            42 degrees C / 107 degrees F
  Power
    1.2 V                     1204 mV
    1.5 V                     1484 mV
    2.5 V                     2500 mV
    3.3 V                     3312 mV
    3.3 V bias                3312 mV
    5.0 V bias                4956 mV
    8.0 V bias                7740 mV
    9.0 V                     8880 mV
  Power (B)
    1.2 V                     1206 mV
    2.5 V                     2500 mV
    3.3 V                     3316 mV
    9.0 V                     8988 mV
SIB 1 status:
  State                      Online
  Temperature                49 degrees C / 120 degrees F
  Temperature (B)            42 degrees C / 107 degrees F
  Power
    1.2 V                     1202 mV
    1.5 V                     1482 mV
    2.5 V                     2500 mV
    3.3 V                     3296 mV
    3.3 V bias                3288 mV
    5.0 V bias                4986 mV
```



```
    8.0 V bias                7800 mV
    9.0 V                     8868 mV
  Power (B)
    1.2 V                     1206 mV
    2.5 V                     2512 mV
    3.3 V                     3312 mV
    9.0 V                     8952 mV
SIB 2 status:
  State                      Online
  Temperature                49 degrees C / 120 degrees F
  Temperature (B)            42 degrees C / 107 degrees F
  Power
    1.2 V                     1202 mV
  1.5 V                      1480 mV
    2.5 V                     2476 mV
    3.3 V                     3292 mV
    3.3 V bias                3308 mV
    5.0 V bias                5010 mV
    8.0 V bias                7800 mV
    9.0 V                     8880 mV
  Power (B)
    1.2 V                     1204 mV
    2.5 V                     2516 mV
    3.3 V                     3308 mV
    9.0 V                     8988 mV
SIB 3 status:
  State                      Online
  Temperature                48 degrees C / 118 degrees F
  Temperature (B)            42 degrees C / 107 degrees F
  Power
    1.2 V                     1204 mV
    1.5 V                     1480 mV
    2.5 V                     2500 mV
    3.3 V                     3292 mV
    3.3 V bias                3292 mV
    5.0 V bias                4986 mV
    8.0 V bias                7812 mV
    9.0 V                     8892 mV
  Power (B)
    1.2 V                     1198 mV
    2.5 V                     2512 mV
    3.3 V                     3308 mV
    9.0 V                     8892 mV
SIB 4 status:
  State                      Online
  Temperature                48 degrees C / 118 degrees F
  Temperature (B)            42 degrees C / 107 degrees F
  Power
    1.2 V                     1206 mV
    1.5 V                     1482 mV
    2.5 V                     2484 mV
    3.3 V                     3324 mV
    3.3 V bias                3340 mV
    5.0 V bias                4980 mV
    8.0 V bias                7764 mV
    9.0 V                     8784 mV
  Power (B)
    1.2 V                     1202 mV
    2.5 V                     2504 mV
    3.3 V                     3308 mV
    9.0 V                     8820 mV
```

```
lcc1-re0:
--------------------------------------------------------------------------
SIB 0 status:
  State                      Online - Standby
  Temperature                49 degrees C / 120 degrees F
  Temperature (B)            43 degrees C / 109 degrees F
  Power
    1.2 V                     1206 mV
    1.5 V                     1506 mV
    2.5 V                     2496 mV
    3.3 V                     3308 mV
    3.3 V bias                3296 mV
    5.0 V bias                4974 mV
    8.0 V bias                7884 mV
    9.0 V                     8820 mV
  Power (B)
    1.2 V                     1200 mV
    2.5 V                     2508 mV
    3.3 V                     3292 mV
    9.0 V                     8892 mV
...
```

show chassis environment sib sfc (TX Matrix Plus Router)

```
user@host> show chassis environment sib sfc
sfc0-re0:
--------------------------------------------------------------------------
SIB F13 0 status:
  State                      Online - Standby
  Temperature                54 degrees C / 129 degrees F
  Temperature (B)            50 degrees C / 122 degrees F
  Power
    1.2 V_0                   1205 mV
    1.2 V_1                   1205 mV
    1.2 V_2                   1208 mV
    1.2 V_3                   1208 mV
    1.5 V_0                   1501 mV
    1.5 V_1                   1508 mV
    1.8 V                     1804 mV
    2.5 V                     2504 mV
    3.3 V                     3312 mV
    9.0 V                     8991 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2516 mV
    3.3 V                     3318 mV
    9.0 V                     9048 mV
SIB F13 1 status:
  State                      Online - Standby
  Temperature                45 degrees C / 113 degrees F
  Temperature (B)            42 degrees C / 107 degrees F
  Power
    1.2 V_0                   1202 mV
    1.2 V_1                   1205 mV
    1.2 V_2                   1198 mV
    1.2 V_3                   1205 mV
    1.5 V_0                   1498 mV
    1.5 V_1                   1495 mV
    1.8 V                     1801 mV
    2.5 V                     2507 mV
    3.3 V                     3306 mV
    9.0 V                     8970 mV
    9.0 V bias                   0 mV
```

```
  Power (B)
    2.5 V                     2507 mV
    3.3 V                     3306 mV
    9.0 V                     8970 mV
SIB F13 3 status:
  State                      Online
  Temperature                48 degrees C / 118 degrees F
  Temperature (B)            43 degrees C / 109 degrees F
  Power
    1.2 V_0                   1208 mV
    1.2 V_1                   1195 mV
    1.2 V_2                   1202 mV
    1.2 V_3                   1198 mV
    1.5 V_0                   1504 mV
    1.5 V_1                   1504 mV
    1.8 V                     1801 mV
    2.5 V                     2510 mV
    3.3 V                     3312 mV
    9.0 V                     8970 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2500 mV
    3.3 V                     3332 mV
    9.0 V                     8970 mV
SIB F13 4 status:
  State                      Online
  Temperature                44 degrees C / 111 degrees F
  Temperature (B)            40 degrees C / 104 degrees F
  Power
    1.2 V_0                   1205 mV
    1.2 V_1                   1202 mV
    1.2 V_2                   1205 mV
    1.2 V_3                   1202 mV
    1.5 V_0                   1508 mV
    1.5 V_1                   1511 mV
    1.8 V                     1811 mV
    2.5 V                     2510 mV
    3.3 V                     3312 mV
    9.0 V                     8952 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2510 mV
    3.3 V                     3306 mV
    9.0 V                     9024 mV
SIB F13 6 status:
  State                      Online
  Temperature                49 degrees C / 120 degrees F
  Temperature (B)            46 degrees C / 114 degrees F
  Power
    1.2 V_0                   1195 mV
    1.2 V_1                   1198 mV
    1.2 V_2                   1202 mV
    1.2 V_3                   1202 mV
    1.5 V_0                   1501 mV
    1.5 V_1                   1495 mV
    1.8 V                     1801 mV
    2.5 V                     2507 mV
    3.3 V                     3306 mV
    9.0 V                     8979 mV
    9.0 V bias                   0 mV
  Power (B)
```

```
    2.5 V                     2497 mV
    3.3 V                     3318 mV
    9.0 V                     9006 mV
SIB F13 7 status:
  State                      Online
  Temperature                52 degrees C / 125 degrees F
  Temperature (B)            48 degrees C / 118 degrees F
  Power
    1.2 V_0                   1198 mV
    1.2 V_1                   1198 mV
    1.2 V_2                   1202 mV
    1.2 V_3                   1189 mV
    1.5 V_0                   1498 mV
    1.5 V_1                   1498 mV
    1.8 V                     1804 mV
    2.5 V                     2491 mV
    3.3 V                     3292 mV
    9.0 V                     8904 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2500 mV
    3.3 V                     3306 mV
    9.0 V                     8952 mV
SIB F13 8 status:
  State                      Online
  Temperature                54 degrees C / 129 degrees F
  Temperature (B)            49 degrees C / 120 degrees F
  Power
    1.2 V_0                   1211 mV
    1.2 V_1                   1208 mV
    1.2 V_2                   1208 mV
    1.2 V_3                   1211 mV
    1.5 V_0                   1508 mV
    1.5 V_1                   1511 mV
    1.8 V                     1801 mV
    2.5 V                     2513 mV
    3.3 V                     3324 mV
    9.0 V                     9048 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2516 mV
    3.3 V                     3318 mV
    9.0 V                     9102 mV
SIB F13 9 status:
  State                      Online
  Temperature                46 degrees C / 114 degrees F
  Temperature (B)            41 degrees C / 105 degrees F
  Power
    1.2 V_0                   1205 mV
    1.2 V_1                   1202 mV
    1.2 V_2                   1205 mV
    1.2 V_3                   1198 mV
    1.5 V_0                   1504 mV
    1.5 V_1                   1504 mV
    1.8 V                     1817 mV
    2.5 V                     2507 mV
    3.3 V                     3306 mV
    9.0 V                     8991 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2510 mV
```

```
    3.3 V                     3332 mV
    9.0 V                     9006 mV
SIB F13 11 status:
  State                      Online
  Temperature                47 degrees C / 116 degrees F
  Temperature (B)            42 degrees C / 107 degrees F
  Power
    1.2 V_0                   1202 mV
    1.2 V_1                   1205 mV
    1.2 V_2                   1202 mV
    1.2 V_3                   1198 mV
    1.5 V_0                   1501 mV
    1.5 V_1                   1504 mV
    1.8 V                     1807 mV
    2.5 V                     2510 mV
    3.3 V                     3306 mV
    9.0 V                     8991 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2249 mV
    3.3 V                     4994 mV
    9.0 V                     9936 mV
SIB F13 12 status:
  State                      Online
  Temperature                44 degrees C / 111 degrees F
  Temperature (B)            40 degrees C / 104 degrees F
  Power
    1.2 V_0                   1208 mV
    1.2 V_1                   1202 mV
    1.2 V_2                   1208 mV
    1.2 V_3                   1205 mV
    1.5 V_0                   1511 mV
    1.5 V_1                   1508 mV
    1.8 V                     1814 mV
    2.5 V                     2507 mV
    3.3 V                     3318 mV
    9.0 V                     9039 mV
    9.0 V bias                   0 mV
  Power (B)
    2.5 V                     2516 mV
    3.3 V                     3344 mV
    9.0 V                     9006 mV
SIB F2S 0/0 status:
  State                      Online - Standby
  Temperature                40 degrees C / 104 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1198 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1498 mV
    1.8 V                     1814 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3286 mV
    9.0 V                     8250 mV
SIB F2S 0/2 status:
  State                      Online - Standby
  Temperature                40 degrees C / 104 degrees F
  Power
    1.2 V_1                      0 mV
```

```
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1498 mV
    1.8 V                     1807 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3292 mV
    9.0 V                     8250 mV
SIB F2S 0/4 status:
  State                      Online - Standby
  Temperature                40 degrees C / 104 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1198 mV
    1.2 V_ASF_B               1195 mV
    1.2 V_ASF_D               1202 mV
    1.5 V                     1501 mV
    1.8 V                     1817 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3306 mV
    9.0 V                     8250 mV
SIB F2S 0/6 status:
  State                      Online - Standby
  Temperature                39 degrees C / 102 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1202 mV
    1.2 V_ASF_B               1198 mV
    1.2 V_ASF_D               1198 mV
    1.5 V                     1495 mV
    1.8 V                     1814 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3280 mV
    9.0 V                     8250 mV
SIB F2S 1/0 status:
  State                      Online
  Temperature                39 degrees C / 102 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1195 mV
    1.2 V_ASF_B               1192 mV
    1.2 V_ASF_D               1195 mV
    1.5 V                     1492 mV
    1.8 V                     1798 mV
    3.3 V                     3300 mV
    3.3 V bias                3300 mV
    3.3 V ASF                 3280 mV
    9.0 V                     8250 mV
SIB F2S 1/2 status:
  State                      Online
  Temperature                39 degrees C / 102 degrees F
  Power
    1.2 V_1                      0 mV
    1.2 V_ASF                 1205 mV
    1.2 V_ASF_B               1202 mV
    1.2 V_ASF_D               1205 mV
    1.5 V                     1504 mV
    1.8 V                     1820 mV
```



```
    3.3 V                      3300 mV
    3.3 V bias                 3300 mV
    3.3 V ASF                  3306 mV
    9.0 V                      8250 mV
SIB F2S 1/4 status:
  State                       Online
  Temperature                 39 degrees C / 102 degrees F
  Power
    1.2 V_1                       0 mV
    1.2 V_ASF                  1202 mV
    1.2 V_ASF_B                1195 mV
    1.2 V_ASF_D                1198 mV
    1.5 V                      1498 mV
    1.8 V                      1811 mV
    3.3 V                      3300 mV
    3.3 V bias                 3300 mV
    3.3 V ASF                  3300 mV
    9.0 V                      8250 mV
SIB F2S 1/6 status:
  State                       Online
  Temperature                 39 degrees C / 102 degrees F
  Power
    1.2 V_1                       0 mV
    1.2 V_ASF                  1195 mV
    1.2 V_ASF_B                1192 mV
    1.2 V_ASF_D                1198 mV
    1.5 V                      1498 mV
    1.8 V                      1807 mV
    3.3 V                      3306 mV
    3.3 V bias                 3300 mV
    3.3 V ASF                  3292 mV
    9.0 V                      8250 mV
SIB F2S 2/0 status:
  State                       Online
  Temperature                 38 degrees C / 100 degrees F
  Power
    1.2 V_1                       0 mV
    1.2 V_ASF                  1195 mV
    1.2 V_ASF_B                1195 mV
    1.2 V_ASF_D                1198 mV
    1.5 V                      1498 mV
    1.8 V                      1804 mV
    3.3 V                      3300 mV
    3.3 V bias                 3300 mV
    3.3 V ASF                  3292 mV
    9.0 V                      8250 mV
...
```

show chassis environment sib f13 (TX Matrix Plus Router)

```
user@host> show chassis environment sib f13 0
SIB F13 0 status:
  State                       Online - Standby
  Temperature                 54 degrees C / 129 degrees F
  Temperature (B)             50 degrees C / 122 degrees F
  Power
    1.2 V_0                    1202 mV
    1.2 V_1                    1202 mV
    1.2 V_2                    1208 mV
    1.2 V_3                    1208 mV
    1.5 V_0                    1501 mV
    1.5 V_1                    1504 mV
    1.8 V                      1801 mV
```

```
    2.5 V                      2504 mV
    3.3 V                      3318 mV
    9.0 V                      8991 mV
    9.0 V bias                    0 mV
  Power (B)
    2.5 V                      2510 mV
    3.3 V                      3318 mV
    9.0 V                      9024 mV
```

show chassis environment sib f2s (TX Matrix Plus Router)

```
user@host> show chassis environment sib f2s 0/2
SIB F2S 0/2 status:
  State                       Online - Standby
  Temperature                 40 degrees C / 104 degrees F
  Power
    1.2 V_1                       0 mV
    1.2 V_ASF                  1198 mV
    1.2 V_ASF_B                1195 mV
    1.2 V_ASF_D                1202 mV
    1.5 V                      1501 mV
    1.8 V                      1807 mV
    3.3 V                      3300 mV
    3.3 V bias                 3300 mV
    3.3 V ASF                  3286 mV
    9.0 V                      8250 mV
```

show chassis ethernet-switch

Syntax

show chassis ethernet-switch
<errors <*port*>>

Syntax (EX8200 Switch)

show chassis ethernet-switch
<statistics <*port*> | switch <*number*>

Syntax (TX Matrix Router)

show chassis ethernet-switch
<errors <*port*> | statistics <*port*>>
<lcc <*number*> | scc>

Syntax (TX Matrix Plus Router)

show chassis ethernet-switch
<errors <*port*> | switch <*number*>
<lcc *number* | sfc *number*>
<statistics <*port*> | switch <*number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.4 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

(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.

Options

none—Display information about each connected port on the Ethernet switch. On a TX Matrix router, display information about each connected port on the Ethernet switch on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display information about each connected port on the Ethernet switch on the TX Matrix Plus router and its attached T1600 routers.

errors—(Optional) Display the numbers and types of errors accumulated on all ports of the Ethernet switch.

errors *port*—(Optional) Display the numbers and types of errors accumulated on the specified port (0 through 15) of the Ethernet switch. On the TX Matrix router, replace ***port*** with a value from **0** through **15**. On the TX Matrix Plus router and EX8200 switch, replace ***port*** with a value from **0** through **27**.

errors switch *number*—(TX Matrix Plus router only) (Optional) Display the numbers and types of errors accumulated on the specified switch. Replace ***number*** with a value from **0** through **2**.

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

scc—(TX Matrix router only) (Optional) Display information about the ports on the CB's Ethernet switch on the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Display information about the ports on the CB's Ethernet switch on the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with **0**.

statistics—(Optional) Display traffic statistics for each connected port on the Ethernet switch.

statistics *port*—(Optional) Display traffic statistics for the specified port on the Ethernet switch. On the TX Matrix router, replace ***port*** with a value from **0** through **25**. On the TX Matrix Plus router or EX8200 switch, replace ***port*** with a value from **0** through **27**.

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 294
show chassis ethernet-switch (TX Matrix Router) on page 294
show chassis ethernet-switch errors on page 295
show chassis ethernet-switch statistics on page 296
show chassis ethernet-switch errors (TX Matrix Plus Router) on page 297
show chassis ethernet-switch sfc errors (TX Matrix Plus Router) on page 298
show chassis ethernet-switch statistics (TX Matrix Plus Router) on page 299

Output Fields Table 60 on page 292 lists the output fields for the **show chassis ethernet-switch** command. Output fields are listed in the approximate order in which they appear.

Table 60: show chassis ethernet-switch Output Fields

Field Name	Field Description
Link is good on port n connected to device or **Link is good on FE port n connected to device**	Information about the link between each port on the CB's Ethernet switch and one of the following devices: • FPC0 (Flexible PIC Concentrator 0) through FPC7 • Local controller • Other RE (on a system with two Routing Engines) • SPMB (Switch Processor Mezzanine Board) • (TX Matrix router only) LCCO (line-card chassis 0) through LCC3
Speed is	Speed at which the Ethernet link is running: **10 Mb** or **100 Mb.** When the device is **Other RE** on the TX Matrix router, the speed is **1000 Mb**.
Duplex is	Duplex type of the Ethernet link: **full** or **half**.

Table 60: show chassis ethernet-switch Output Fields *(continued)*

Field Name	Field Description
Auto-negotiate is enabled	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 **no-concatenate** statement at the **[edit chassis]** hierarchy level, as described in the *JUNOS System Basics Configuration Guide*).
MLT3	Number of multilevel threshold-3 (MLT-3) Fast Ethernet errors detected.
Accumulated error counts for port n connected to device FPCn: (error output only)	
Lock	Number of lock errors detected.
Xmit	Number of transmission errors detected.
ESD	Number of electrostatic discharge (ESD) errors detected.
False Carrier	Number of false carrier errors detected.
Disconnects	Number of disconnect errors detected.
FX mode	Number of errors detected on an Ethernet link over optical fiber.
Statistics for port n connected to device FPCn (statistics output only)	
TX Unicast packets	Number of unicast packets sent.
TX Multicast packets	Number of multicast packets sent.
TX Broadcast packets	Number of broadcast packets sent.
TX Late collisions	Number of packets aborted during sending because of collisions after 64 bytes.
TX Excessive collisions	Number of packets not sent because of too many collisions.
TX Dropped packets	Number of transmitted packets that were dropped.
RX Unicast packets	Number of unicast packets received.
RX Multicast packets	Number of multicast packets received.
RX Broadcast packets	Number of broadcast packets received.
RX FCS Errors	Number of packets discarded because of frame check sequence errors.
RX Alignment Errors	Number of incomplete octets received.
RX Dropped Packets	Number of incoming packets that were dropped.
RX Fragments	Number of fragmented packets received.

Table 60: 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.

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

lcc2-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 sfc errors (TX Matrix Plus Router)

```
user@host> show chassis ethernet-switch errors switch sfc
sfc0-re0:
--------------------------------------------------------------------------
Displaying error for switch 1
Accumulated error counts for port 0 connected to device LCC0:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  0
  Disconnects    0
  FX mode        0
Accumulated error counts for port 2 connected to device LCC1:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  0
  Disconnects    0
  FX mode        0
Accumulated error counts for port 4 connected to device LCC2:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  0
  Disconnects    0
  FX mode        0
Accumulated error counts for port 6 connected to device LCC3:
  MLT3           0
  Lock           0
  Xmit           0
  ESD            0
  False carrier  0
  Disconnects    0
  FX mode        0

lcc0-re0:
--------------------------------------------------------------------------
error: command is not valid on the t1600

lcc1-re0:
--------------------------------------------------------------------------
error: command is not valid on the t1600

lcc2-re0:
--------------------------------------------------------------------------
error: command is not valid on the t1600

lcc3-re0:
--------------------------------------------------------------------------
error: command is not valid on the t1600
```


show chassis ethernet-switch statistics (TX Matrix Plus Router)

```
user@host> show chassis ethernet-switch statistics
sfc0-re0:
--------------------------------------------------------------------------
Displaying port statistics for switch 0
Statistics for port 1 connected to device 1GSW:
  TX Packets 64 Octets        5183577
  TX Packets 65-127 Octets    67820
  TX Packets 128-255 Octets   772
  TX Packets 256-511 Octets   136
  TX Packets 512-1023 Octets  68
  TX Packets 1024-1518 Octets  10881
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX Packets 9217-16383 Octets  0
  TX Octets                   5263254
  TX Multicast Packets        16
  TX Broadcast Packets        723403
  TX PAUSEMAC Ctrl Frames     0
  TX Oversize Packets         0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             349922253
  TX Packet OK Counter        5263254
  TX Pause Packet Counter     0
  TX Unicast Counter          4539835
  RX Packets 64 Octets        6513629
  RX Packets 65-127 Octets    88761
  RX Packets 128-255 Octets   6382
  RX Packets 256-511 Octets   22027
  RX Packets 512-1023 Octets  4319
  RX Packets 1024-1518 Octets  49922
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Packets 9217-16383 Octets  0
  RX Octets                   6685040
  RX Multicast Packets        4
  RX Broadcast Packets        2137376
  RX FCS Errors               0
  RX Fragments                0
  RX MAC Control Packets      0
  RX Out of Range Length      0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             509224602
  RX Unicast Frame Count      4547660
  RX Packet OK Count          6685040
Statistics for port 9 connected to device RE1:
  TX Packets 64 Octets        2500318
  TX Packets 65-127 Octets    443
  TX Packets 128-255 Octets   0
  TX Packets 256-511 Octets   0
  TX Packets 512-1023 Octets  0
  TX Packets 1024-1518 Octets  0
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
```

```
  TX Packets 9217-16383 Octets  0
  TX Octets                   2500761
  TX Multicast Packets        4
  TX Broadcast Packets        2500757
  TX PAUSEMAC Ctrl Frames     0
  TX Oversize Packets         0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             160049670
  TX Packet OK Counter        0
  TX Pause Packet Counter     0
  TX Unicast Counter          0
  RX Packets 64 Octets        701191
  RX Packets 65-127 Octets    5882
  RX Packets 128-255 Octets   2
  RX Packets 256-511 Octets   0
  RX Packets 512-1023 Octets  17965
  RX Packets 1024-1518 Octets  7
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Packets 9217-16383 Octets  0
  RX Octets                   725047
  RX Multicast Packets        8
  RX Broadcast Packets        2500757
  RX FCS Errors               0
  RX Fragments                0
  RX MAC Control Packets      0
  RX Out of Range Length      0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             62402656
  RX Unicast Frame Count      0
  RX Packet OK Count          0
Statistics for port 17 connected to device RE0:
  TX Packets 64 Octets        7214818
  TX Packets 65-127 Octets    94640
  TX Packets 128-255 Octets   6384
  TX Packets 256-511 Octets   22027
  TX Packets 512-1023 Octets  22284
  TX Packets 1024-1518 Octets  49929
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX Packets 9217-16383 Octets  0
  TX Octets                   7410082
  TX Multicast Packets        12
  TX Broadcast Packets        2497247
  TX PAUSEMAC Ctrl Frames     0
  TX Oversize Packets         0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             571626932
  TX Packet OK Counter        0
  TX Pause Packet Counter     0
  TX Unicast Counter          0
  RX Packets 64 Octets        4823701
  RX Packets 65-127 Octets    67812
```



```
  RX Packets 128-255 Octets   772
  RX Packets 256-511 Octets   136
  RX Packets 512-1023 Octets  68
  RX Packets 1024-1518 Octets  10881
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Packets 9217-16383 Octets  0
  RX Octets                   4903370
  RX Multicast Packets        8
  RX Broadcast Packets        2497247
  RX FCS Errors               0
  RX Fragments                0
  RX MAC Control Packets      0
  RX Out of Range Length      0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             326889517
  RX Unicast Frame Count      0
  RX Packet OK Count          0

Displaying port statistics for switch 1
Statistics for port 0 connected to device LCC0:
  TX Packets 64 Octets        5053443
  TX Packets 65-127 Octets    59737
  TX Packets 128-255 Octets   768
  TX Packets 256-511 Octets   87
  TX Packets 512-1023 Octets  68
  TX Packets 1024-1518 Octets  85
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX 1519-1522 Good Vlan frms  0
  TX Octets                   5114188
  TX Multicast Packets        16
  TX Broadcast Packets        1125742
  TX Single Collision frames  0
  TX Mult. Collision frames   0
  TX Late Collisions          0
  TX Excessive Collisions     0
  TX Collision frames         0
  TX PAUSEMAC Ctrl Frames     0
  TX MAC ctrl frames          0
  TX Frame deferred Xmns      0
  TX Frame excessive deferl   0
  TX Oversize Packets         0
  TX Jabbers                  0
  TX FCS Error Counter        0
  TX Fragment Counter         0
  TX Byte Counter             329291449
  RX Packets 64 Octets        5640175
  RX Packets 65-127 Octets    79875
  RX Packets 128-255 Octets   6338
  RX Packets 256-511 Octets   165
  RX Packets 512-1023 Octets  4317
  RX Packets 1024-1518 Octets  10
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
```

```
  RX Packets 4096-9216 Octets  0
  RX Octets                    5730880
  RX Multicast Packets         4
  RX Broadcast Packets         1735007
  RX FCS Errors                0
  RX Align Errors              0
  RX Fragments                 0
  RX Symbol errors             0
  RX Unsupported opcodes       0
  RX Out of Range Length       0
  RX False Carrier Errors      0
  RX Undersize Packets         0
  RX Oversize Packets          0
  RX Jabbers                   0
  RX 1519-1522 Good Vlan frms 0
  RX MTU Exceed Counter        0
  RX Control Frame Counter     0
RX Pause Frame Counter      0
  RX Byte Counter              371282850
Statistics for port 18 connected to device SPMB:
  TX Packets 64 Octets         2990326
  TX Packets 65-127 Octets     8572
  TX Packets 128-255 Octets    4
  TX Packets 256-511 Octets    49
  TX Packets 512-1023 Octets   0
  TX Packets 1024-1518 Octets  10793
  TX Packets 1519-2047 Octets  0
  TX Packets 2048-4095 Octets  0
  TX Packets 4096-9216 Octets  0
  TX 1519-1522 Good Vlan frms  0
  TX Octets                    3009744
  TX Multicast Packets         20
  TX Broadcast Packets         2458322
  TX Single Collision frames   0
  TX Mult. Collision frames    0
  TX Late Collisions           0
  TX Excessive Collisions      0
  TX Collision frames          0
  TX PAUSEMAC Ctrl Frames      0
  TX MAC ctrl frames           0
  TX Frame deferred Xmns       0
  TX Frame excessive deferl    0
  TX Oversize Packets          0
  TX Jabbers                   0
  TX FCS Error Counter         0
  TX Fragment Counter          0
  TX Byte Counter              203712524
  RX Packets 64 Octets         873454
  RX Packets 65-127 Octets     8886
  RX Packets 128-255 Octets    44
  RX Packets 256-511 Octets    21862
  RX Packets 512-1023 Octets   2
  RX Packets 1024-1518 Octets  49912
  RX Packets 1519-2047 Octets  0
  RX Packets 2048-4095 Octets  0
  RX Packets 4096-9216 Octets  0
  RX Octets                    954160
  RX Multicast Packets         0
  RX Broadcast Packets         402369
  RX FCS Errors                0
  RX Align Errors              0
```



```
  RX Fragments                0
  RX Symbol errors            0
  RX Unsupported opcodes      0
  RX Out of Range Length      0
  RX False Carrier Errors     0
  RX Undersize Packets        0
  RX Oversize Packets         0
  RX Jabbers                  0
  RX 1519-1522 Good Vlan frms 0
  RX MTU Exceed Counter       0
  RX Control Frame Counter    0
  RX Pause Frame Counter      0
  RX Byte Counter             137941752
...
```

show chassis fan

Syntax show chassis fan

Release Information Command introduced in Junos OS Release 10.0.

Description (MX Series Ethernet Services Routers only) Show information about the fan tray and fans.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show chasis fan on page 304**

Output Fields Table 61 on page 304 lists the output fields for the **show chassis fan** command. Output fields are listed in the approximate order in which they appear.

Table 61: show chassis fan Output Fields

Field Name	Field Description
Item	Fan item identifier.
Status	Status of the fan: • **OK**-Fan is running properly and within the normal range. • **Check**-Fan is in **Check** state because of some fault or alarm condition.
RPM	Fan speed in revolutions per minute (RPM).
Measurement	Fan speed status based on different chassis cooling requirements: • Spinning at high speed • Spinning at intermediate-speed • Spinning at low speed

show chassis 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

Syntax show chassis fabric feb

Release Information Command introduced in Junos OS Release 8.0.

Description (M120 router only) Display the state of the electrical and optical switching fabric links between the Forwarding Engine Boards (FEBs) and the fabric planes, as interpreted by the FEB.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show chassis fabric feb on page 306**

Output Fields Table 62 on page 306 lists the output fields for the **show chassis fabric feb** command.

Table 62: 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**.

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 308
show chassis fabric errors (F2S SIB Errors on a TX Matrix Plus Router) on page 308
show chassis fabric errors (SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router) on page 308
show chassis fabric errors (FPC Errors Specific to an LCC Connected to a TX Matrix Plus Router) on page 309

Output Fields Table 63 on page 308 lists the output fields for the **show chassis fabric errors** command. Output fields are listed in the approximate order in which they appear.

Table 63: 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.

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

Syntax

show chassis fabric fpcs
<lcc *number*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M320, MX Series, and T Series routers only) Display the state of the electrical and optical switch fabric links between the Flexible PIC Concentrators (FPCs) and the Switch Interface Boards (SIBs).

Options

none—Display the switch fabric link state. On a TX Matrix router, display the switching fabric link states for the FPCs in all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display the switching fabric link states for the FPCs in all T1600 routers connected to the TX Matrix Plus router.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

Required Privilege Level

view

List of Sample Output

Output Fields

Table 64 on page 311 lists the output fields for the **show chassis fabric fpcs** command. Output fields are listed in the approximate order in which they appear.

Table 64: show chassis fabric fpcs Output Fields

Field Name	Field Description

Fabric management FPC state	Switching fabric link (link from SIB to FPC) state for each FPC:
	• **Unused**—FPC is not present.
	• **Destination error on PFEs *list of PFE numbers***—Destination errors to the listed Packet Forwarding Engines. Indicates that the link is not carrying traffic to the listed Packet Forwarding Engines.
	NOTE: In Junos OS Release 9.6 and later, the list of Packet Forwarding Engines with destination errors is displayed in the output.
	In Junos OS Releases before 9.6, the output only indicates that there are destination errors. However, the list of Packet Forwarding Engines with destination errors is not displayed.
	• **Links ok**—Link between the spare SIB and FPC is eligible to carry traffic.
	• **Link error**—Link between the SIB and FPC has CRC errors. However, the link is still eligible to carry traffic.
	• **Plane disabled**—Fabric plane has been disabled for the following reasons:
	  • Destination errors have exceeded the thresholds.
	  • Run-time link errors have exceeded the thresholds.
	  • Initialization time link errors detected, and link training was unsuccessful.
	• **Plane enabled**—Link between the active SIB and FPC is eligible to carry traffic.

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

show chassis fabric fpcs (TX Matrix Router)

```
user@host> show chassis fabric fpcs
lcc0-re0:
--------------------------------------------------------------------------
Fabric management FPC state:
FPC #0
  PFE #1
    SIB #0
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #2
  PFE #1
    SIB #0
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok  FPC #3
  PFE #1
    SIB #2
           Plane enabled
    SIB #3
           Link error
           Destination error on PFEs       0    1    2    3    4    5    6    7
             8    9   10   11   12   13   14   15   16   17   18   19   20   21
    SIB #4
           Destination error on PFEs       0    1    2    3    4    5    6    7
             8    9   10   11   12   13   14   15   16   17   18   19   20   21
...
FPC #4
```

```
  PFE #0
    SIB #4 Links ok
  PFE #1
    SIB #4 Links ok
FPC #5
  PFE #1
    SIB #4 Links ok
FPC #6
  PFE #1
    SIB #4 Links ok

lcc2-re0:
--------------------------------------------------------------------------
Fabric management FPC state:
FPC #0
  PFE #1
    SIB #4 Links ok
FPC #1
  PFE #1
    SIB #4 Links ok
FPC #2
  PFE #0
    SIB #4 Links ok
  PFE #1
    SIB #4 Links ok
FPC #4
  PFE #0
    SIB #4 Links ok
  PFE #1
    SIB #4 Links ok
FPC #5
  PFE #1
    SIB #4 Links ok
```

show chassis fabric fpcs (T1600 Router)

```
user@host> show chassis fabric fpcs
Fabric management FPC state:
FPC #0
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
FPC #1
  PFE #0
```



```
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
FPC #2
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
FPC #4
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Plane enabled
    SIB #2
            Plane enabled
    SIB #3
            Plane enabled
    SIB #4
            Plane enabled
FPC #3
  PFE #1
    SIB #2
           Plane enabled
    SIB #3
```

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

show chassis fabric fpcs (TX Matrix Plus Router)

```
user@host> show chassis fabric fpcs
lcc0-re0:
--------------------------------------------------------------------------
Fabric management FPC state:
FPC #0
  PFE #1
    SIB #0
            Unused
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #2
  PFE #0
    SIB #0
            Unused
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Unused
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #3
  PFE #1
    SIB #2
            Plane enabled
    SIB #3
            Link error
            Destination error on PFEs       0    1    2    3    4    5    6    7
              8    9   10   11   12   13   14   15   16   17   18   19   20   21
    SIB #4
            Destination error on PFEs       0    1    2    3    4    5    6    7
              8    9   10   11   12   13   14   15   16   17   18   19   20   21
FPC #4
  PFE #0
    SIB #0
            Unused
```



```
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Unused
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #6
  PFE #0
    SIB #0
            Unused
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Unused
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #7
  PFE #0
    SIB #0
            Unused
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok

lcc1-re0:
--------------------------------------------------------------------------
Fabric management FPC state:
FPC #2
  PFE #0
    SIB #0
```

```
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok
      PFE #1
        SIB #0
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok
    FPC #4
      PFE #0
        SIB #0
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok
      PFE #1
        SIB #0
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Destination error on PFEs       1    8    9   29   40   65   72   73

                 93  104
        SIB #4
                Links ok
    FPC #6
      PFE #0
        SIB #0
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok
      PFE #1
        SIB #0
                Links ok
        SIB #1
```

```
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok
    FPC #7
      PFE #0
        SIB #0
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok

    lcc2-re0:
    --------------------------------------------------------------------------
    Fabric management FPC state:
    FPC #0
      PFE #0
        SIB #0
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok
      PFE #1
        SIB #0
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok
    FPC #2
      PFE #0
        SIB #0
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok
      PFE #1
        SIB #0
                Links ok
```

```
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #4
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #5
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #6
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
```



```
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok
    FPC #7
      PFE #0
        SIB #0
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok

    lcc3-re0:
    --------------------------------------------------------------------------
    Fabric management FPC state:
    FPC #0
      PFE #0
        SIB #0
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok
      PFE #1
        SIB #0
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok
    FPC #2
      PFE #0
        SIB #0
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok
      PFE #1
        SIB #0
                Links ok
        SIB #1
                Links ok
```

```
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #4
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #5
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
  PFE #1
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
            Links ok
    SIB #4
            Links ok
FPC #6
  PFE #0
    SIB #0
            Links ok
    SIB #1
            Links ok
    SIB #2
            Links ok
    SIB #3
```

```
                Links ok
        SIB #4
                Links ok
      PFE #1
        SIB #0
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok
    FPC #7
      PFE #0
        SIB #0
                Links ok
        SIB #1
                Links ok
        SIB #2
                Links ok
        SIB #3
                Links ok
        SIB #4
                Links ok
```

show chassis fabric fpcs lcc (TX Matrix Plus Router)

```
user@host> show chassis fabric fpcs lcc 0
lcc0-re1:
--------------------------------------------------------------------------
Fabric management FPC state:
FPC #3
  PFE #1
    SIB #2
           Plane enabled
    SIB #3
           Link error
           Destination error on PFEs       0    1    2    3    4    5    6    7
             8    9   10   11   12   13   14   15   16   17   18   19   20   21
    SIB #4
           Destination error on PFEs       0    1    2    3    4    5    6    7
             8    9   10   11   12   13   14   15   16   17   18   19   20   21
FPC #4
  PFE #0
    SIB #0 Links ok
    SIB #1 Links ok
    SIB #2 Links ok
    SIB #3 Links ok
    SIB #4 Links ok
  PFE #1
    SIB #0 Links ok
    SIB #1 Links ok
    SIB #2 Links ok
    SIB #3 Links ok
    SIB #4 Links ok
FPC #6
  PFE #0
    SIB #0 Links ok
    SIB #1 Links ok
    SIB #2 Links ok
    SIB #3 Links ok
```

```
    SIB #4 Links ok
  PFE #1
    SIB #0 Links ok
    SIB #1 Links ok
    SIB #2 Links ok
    SIB #3 Links ok
    SIB #4 Links ok
FPC #7
  PFE #0
    SIB #0 Links ok
    SIB #1 Links ok
    SIB #2 Links ok
    SIB #3 Links ok
    SIB #4 Links ok
```

show chassis fabric map

Syntax

show chassis fabric map
plane <*plane-number*>

Release Information

Command introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.4 for EX Series switches.

Description

(M120 and MX Series routers and EX8200 switches only) On the M120 router, display the state of the switching fabric map for connections from the Forwarding Engine Boards (FEBs) to the ports on the fabric planes, as interpreted by the fabric plane. On the MX Series router and the EX8200 switch, display the state of the switching fabric map for connections from each Packet Forwarding Engine on the Dense Port Concentrators (DPCs) to the ports on the fabric planes, as interpreted by the fabric plane. For information about the meaning of "fabric plane", "DPCs", and "SIBs" on the switches, see EX Series Switches Hardware and CLI Terminology Mapping.

Options

none—Display the switching fabric map state for the M120 or MX Series router or EX8200 switch.

plane*plane-number*—(Optional) Display the state of the fabric link for the specified plane number.

- For the M120 router, replace ***plane-number*** with a value from 0 through 3.
- For the MX480 and MX240 routers, replace ***plane-number*** with a value from 0 through 7.
- For the MX960 router, replace ***plane-number*** with a value from 0 through 5.
- For the EX8208 switch, replace ***plane-number*** with a value from 0 through 11.
- For the EX8216 switch, replace ***plane-number*** with a value from 0 through 7.

Required Privilege Level

view

List of Sample Output

show chassis fabric map (M120 Router) on page 328
show chassis fabric map (MX Series Routers) on page 328
show chassis fabric map plane 1 (EX8200 Switch) on page 331

Output Fields

Table 65 on page 327 lists the output fields for the **show chassis fabric map** command. Output fields are listed in the approximate order in which they appear.

Table 65: 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 65: show chassis fabric map Output Fields *(continued)*

Field Name	Field Description

state	State of the fabric link:
	• **RESET**—Link between SIB and FPC/DPC is powered down on purpose. This is done in all non-dual PFE based boards.
	• **UP**—Link between SIB and FPC/DPC is up and running.
	• **DOWN**—Link between SIB and FPC/DPC is powered down.
	• **FAULT**—SIB is in alarmed state where the SIB's plane is not operational for the following reasons:
	  ◦ On-board F-chip is not operational.
	  ◦ Fiber optic connector faults.
	  ◦ FPC connector faults.
	  ◦ SIB midplane connector faults.

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

Syntax

show chassis fabric plane

Syntax (TX Matrix Plus Router)

show chassis fabric plane
<detail | extensive | terse>
<lcc *number* | sfc *number*>

Release Information

Command introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.4 for EX Series switches.
detail, **extensive**, **lcc**, **sfc**, and **terse** options introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

(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.

Options

detail—(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.

extensive—(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.

lcc *number*—(TX Matrix Plus router only) (Optional) T1600 router (LCC) that is connected to a TX Matrix Plus router. Replace ***number*** with a value from 0 through 3.

sfc *number*—(TX Matrix Plus router only) (Optional) Show information about the TX Matrix Plus router (SFC). Replace ***number*** with **0**.

terse—(TX Matrix Plus router only) (Optional) Display terse output for the fabric management plane.

Required Privilege Level

view

List of Sample Output

show chassis fabric plane (M120 Router) on page 339
show chassis fabric plane (MX240 Router) on page 339
show chassis fabric plane (MX480 Router) on page 341
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show chassis fabric plane (TX Matrix Plus Router) on page 343
show chassis fabric plane detail (TX Matrix Plus Router) on page 343

show chassis fabric plane extensive (TX Matrix Plus Router) on page 344
show chassis fabric plane terse (TX Matrix Plus Router) on page 346
show chassis fabric plane lcc (TX Matrix Plus Router) on page 346
show chassis fabric plane sfc (TX Matrix Plus Router) on page 347
show chassis fabric plane (T1600 Router) on page 347
show chassis fabric plane extensive (T1600 Router) on page 347
show chassis fabric plane detail (T1600 Router) on page 350
show chassis fabric plane extensive (TX Matrix Plus Router) on page 350
show chassis fabric plane (EX8200 Switch) on page 353

Output Fields Table 66 on page 334 lists the output fields for the **show chassis fabric plane** command. Output fields are listed in the approximate order in which they appear.

Table 66: show chassis fabric plane Output Fields

Field Name	Field Description	Level of output
Plane	(TX Matrix Plus, MX Series, and M120 routers and EX8200 switches only) Number of the plane.	none

Plane state	(MX Series and M120 routers and EX8200 switches only) State of each plane:
	• **ACTIVE**—SIB is operational and running.
	• **OFFLINE**—SIB is powered down.
	• **FAULTY**— SIB is in alarmed state where the SIB's plane is not operational for the following reasons:
	  ◦ On-board fabric ASIC is not operational.
	  ◦ Fiber optic connector faults.
	  ◦ FPC connector faults.
	  ◦ SIB midplane connector faults.
		none

FEB	(M120 routers only) FEB number and state of links to each FEB: • **Link error**—Link between SIB and FPC is not operational. • **Links ok**—Link between SIB and FPC is active. • **Unused**—No FPC is present.	none
FPC	(MX Series routers only) Slot number of each Dense Port Concentrator (DPC) or Flexible PIC Concentrator (FPC). An FPC occupies two DPC slots on an MX Series router. The interface corresponds to the lowest numbered DPC slot for which the FPC is installed.	none
PFE	(MX Series and M120 routers only) Slot number of each Packet Forwarding Engine and the state of the links to the DCP: **Links ok**, **Link error**, or **Unused**. Each DPC includes four Packet Forwarding Engines. **Links ok**: Link between SIB and FPC is active. **Link error**: Link between SIB and FPC is not operational. **Unused**: No FPC is present.	none

Table 66: show chassis fabric plane Output Fields *(continued)*

Field Name	Field Description	Level of output

State	(TX Matrix Plus and T1600 routers in a routing matrix only)—State of the fabric plane:
	• **Online**: Fabric plane is operational and running and links on the SIB are operational.
	• **Offline**: Fabric plane state is **Offline** because the plane does not have four or more F2S and one F13 online.
	• Empty: Fabric plane state is **Empty** if all SIBs in the plane are absent.
	• **Spare**: Fabric plane is redundant and can be operational if the operational fabric plane encounters an error.
	• **Check**: Fabric plane is in alarmed state due to the following reason and the cause of the error must be resolved:
	  ◦ One or more SIBs (belonging to the fabric plane) in the **Online** or **Spare** states has transitioned to the **Check** state. **Check** state of the SIB can be caused by link errors or destination errors.
	• **Fault**: Fabric plane is in alarmed state if one or more SIBs belonging to the plane are in the **Fault** state. A SIB can be in the **Fault** state because of the following reasons:
	  ◦ On-board fabric ASIC is not operational.
	  ◦ Fiber optic connector faults.
	  ◦ FPC connector faults.
	  ◦ SIB midplane connector faults.
	  ◦ Link errors have exceeded the threshold.
		none

Uptime	(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 66: show chassis fabric plane Output Fields *(continued)*

Field Name	Field Description	Level of output

PLANE *number*	State of the fabric plane:
	• **Online**: Fabric plane is operational and running and links on the SIB are operational.
	• **Offline**: Fabric plane state is **Offline** because the plane does not have 4 or more F2S and 1 F13 online.
	• Empty: Fabric plane state is **Empty** if all SIBs in the plane are absent.
	• **Spare**: Fabric plane is redundant and can be operational if the operational fabric plane encounters an error.
	• **Check**: Fabric plane is in alarmed state due to the following reasons and the cause of the error must be resolved:
	  ◦ One or more SIBs (belonging to the fabric plane) in the **Online** or **Spare** states has transitioned to the **Check** state. **Check** state of the SIB can be caused because of link errors or destination errors.
	• **Fault**: Fabric plane is in alarmed state if one or more SIBs belonging to the plane are in the **Fault** state. A SIB can be in the **Fault** state because of the following reasons:
	  ◦ On-board fabric ASIC is not operational.
	  ◦ Fiber optic connector faults.
	  ◦ FPC connector faults.
	  ◦ SIB midplane connector faults.
	  ◦ Link errors have exceeded the threshold.
		extensive

SIB F13/F2S *slot-number*	State of the TXP-F13 SIB or TXP-F2S SIB:
	• **Activating**—Transitional state when the SIB is transitioning to the **Online** or **Spare** state.
	• **Deactivating**—Transitional state when the SIB is going offline.
	• **Online**—SIB is operational and running.
	• **Offline**—SIB is powered down.
	• **Spare**—SIB is redundant and will move to active state if one of the working SIBs fails to pass traffic.
	• **Empty**—No SIB is present.
	• **Fault**— SIB is in alarmed state because of the following reasons and the cause of the error must be resolved:
	  ◦ On-board fabric ASIC is not operational.
	  ◦ Fiber optic connector faults.
	  ◦ FPC connector faults.
	  ◦ SIB midplane connector faults.
	  ◦ Link errors have exceeded the threshold
	• **Check**—SIB is in alarmed state where the SIB is partially operational because of link or destination errors. Only a SIB that is **Online** or **Spare** can transition to the **Check** state.
	NOTE: If a SIB is not inserted properly, the SIB cannot transition to the **Online** or **Spare** state, and therefore cannot transition to the **Check** state.
		extensive

Table 66: show chassis fabric plane Output Fields *(continued)*

Field Name	Field Description	Level of output
SIB F13 ***slot-number Odd/Even***	State of the TXP-F13 SIB even and odd port connection optical links from the TX Matrix Plus router (SFC) to the T1600 router (LCC) in the routing matrix . The left four ports on the SFC are labeled **Even** and provide connections to one even-numbered LCC—LCC0 or LCC2. The right four ports on the SFC are labeled **Odd** and provide connections to one odd-numbered LCC—LCC1 or LCC3.	**extensive**
LCC ***number*****,** **SIB** ***slot-number***	State of the SIB on the LCC that is connected to the **Even** or **Odd** port on the TXP-F13 SIB faceplate: • **Links ok**—Links between the TXP-F13 SIB on the SFC and the LCC is active. • **Link error**—Link between the TXP-F13 SIB on the SFC and the LCC is not operational. • **Unused**—No SIB is present.	**extensive**
SG ***number*** **Port** ***number***	State of the SG chip ports on the LCC: • **Links ok**—Link is active. • **Link error**—Link is not operational. • **Unused**—Port is not in use.	**extensive**
SIB F2S ***slot-number***	State of the intra-chassis links between the TXP-F2S and TXP-F13 SIB.	**extensive**

Fabric Management SIB State Output Fields for the show chassis fabric plane extensive Command on a TX Matrix Plus Router

Table 66: show chassis fabric plane Output Fields *(continued)*

Field Name	Field Description	Level of output

SIB ***slot-number***	State of the SIBs on the T1600 router (LCC) in the routing matrix:
	• **Activating**—Transitional state when the SIB is coming online.
	• **Deactivating**—Transitional state when the SIB is going offline.
	• **Connected**—SIBS on an LCC are connected and trained, but are either not online or are spare, because the plane on the the TX Matrix Plus router (SFC) is still offline.
	The LCC SIB transitions to the **Connected** state when the F13 SIB to which it connects is online but the SFC plane (to which the LCC SIB connects) is offline for some reason; for instance, when there are insufficient number of F2 SIBs in the plane.
	• **Disconnected**—If an F13 SIB on the TX Matrix Plus router (SFC) goes offline, then the SIBs on the LCCs connected to the F13 SIB get disconnected.
	The **Disconnected** state is valid only for SIBs on an LCC. An LCC SIB transitions to the **Disconnected** state when the F13 SIB to which it connects goes **Offline**, irrespective of the state of the SFC plane.
	SFC Error—If an F13 SIB on the TX Matrix Plus router (SFC) transitions to the **Fault** state (because of link errors, for instance), and if an LCC SIB connected to the F13 SIB comes online, the LCC SIB transitions to the **SFC Error** state. This state indicates that the F13 SIB to which the LCC SIB is connected has errors
	NOTE: The **Connected**, **Disconnected**, and **SFC Error** states are only applicable to the SIBs on an LCC.
	• **Online**—SIB is operational and running.
	• **Offline**—SIB is powered down.
	• **Spare**—SIB is redundant and will move to active state if one of the working SIBs fails to pass traffic.
	• **Empty**—No SIB is present.
	• **Fault**— SIB is in alarmed state where the SIB's plane is not operational for the following reasons:
	  • On-board fabric ASIC is not operational.
	  • Fiber optic connector faults.
	  • FPC connector faults.
	  • SIB midplane connector faults.
	  • Link errors have exceeded the threshold
	• **Check**—SIB is in alarmed state where the SIB is partially operational because of link or destination errors. Only a SIB that is **Online** or **Spare** can transition to the **Check** state.
	NOTE: If a SIB is not inserted properly, the SIB cannot transition to the **Online** or **Spare** state, and therefore cannot transition to the **Check** state.
		extensive

Table 66: show chassis fabric plane Output Fields *(continued)*

Field Name	Field Description	Level of output
LCC SIB Link State	State of the LCC SIB link: • **Links ok**—Link is active. • **Link error**—Link is not operational. • **Unused**—SIB is not in use.	**extensive**
SG *number* Port *number*	State of the SG chip ports on the LCC: • **Links ok**—Link is active. • **Link error**—Link is not operational. • **Unused**—Port is not in use.	**extensive**

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 1
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

lcc0-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

lcc1-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

Syntax show chassis fabric plane-location

Release Information Command introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.4 for EX Series switches.

Description (M120 and MX Series routers and 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.

Options This command has no options.

Required Privilege Level view

List of Sample Output

show chassis fabric plane-location (M120 Router) on page 355
show chassis fabric plane-location (MX240 and MX480 Routers) on page 356
show chassis fabric plane-location (MX960 Router) on page 356
show chassis fabric plane-location (TX Matrix Plus Router) on page 356
show chassis fabric plane-location (EX8200 Switch) on page 356

Output Fields Table 67 on page 355 lists the output fields for the **show chassis fabric plane location** command. Output fields are listed in the approximate order in which they appear.

Table 67: show chassis fabric plane location Output Fields

Field Name	Field Description
Plane *n*	Plane number.
Control Board *n*	Control board number.
SFC ABS-SIB-F13	(TX Matrix Plus routers only) Switch Interface Board (SIB) slot number on the F13 SIB.
SFC ABS-SIB-F2S	(TX Matrix Plus routers only) SIB slot number on the F2S.
LCC ST-SIB-L	(TX Matrix Plus routers only) Line-card chassis (LCC) SIB slot number.

show chassis fabric plane-location (M120 Router)

```
user@host> show chassis fabric plane-location
------------Fabric Plane Locations-------------
Plane 0                         Control Board 0
Plane 1                         Control Board 0
Plane 2                         Control Board 1
Plane 3                         Control Board 1
```

show chassis fabric plane-location (MX240 and MX480 Routers)

```
user@host> show chassis fabric plane-location
------------Fabric Plane Locations-------------
Plane 0                         Control Board 0
Plane 1                         Control Board 0
Plane 2                         Control Board 0
Plane 3                         Control Board 0
Plane 4                         Control Board 1
Plane 5                         Control Board 1
Plane 6                         Control Board 1
Plane 7                         Control Board 1
```

show chassis fabric plane-location (MX960 Router)

```
user@host> show chassis fabric plane-location
------------Fabric Plane Locations-------------
Plane 0                         Control Board 0
Plane 1                         Control Board 0
Plane 2                         Control Board 1
Plane 3                         Control Board 1
Plane 4                         Control Board 2
Plane 5                         Control Board 2
```

show chassis fabric plane-location (TX Matrix Plus Router)

```
user@host> show chassis fabric plane-location
Fabric Plane Locations :
Plane       SFC ABS-SIB-F13        SFC ABS-SIB-F2        LCC ST-SIB-L
 0            0, 1              0/0, 0/2, 0/4, 0/6           0
 1            3, 4              1/0, 1/2, 1/4, 1/6           1
 2            6, 7              2/0, 2/2, 2/4, 2/6           2
 3            8, 9              3/0, 3/2, 3/4, 3/6           3
 4            11, 12            4/0, 4/2, 4/4, 4/6           4
```

show chassis fabric plane-location (EX8200 Switch)

```
user@host> show chassis fabric plane-location
------------Fabric Plane Locations-------------
Plane  0                        Control Board 0
Plane  1                        Control Board 0
Plane  2                        Control Board 0
Plane  3                        Control Board 0
Plane  4                        Control Board 1
Plane  5                        Control Board 1
Plane  6                        Control Board 1
Plane  7                        Control Board 1
Plane  8                        Control Board 2
Plane  9                        Control Board 2
Plane 10                        Control Board 2
Plane 11                        Control Board 2
```

show chassis fabric sibs

Syntax

show chassis fabric sibs
<lcc *number* | scc>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(T Series routers only) Display the state of the electrical and optical switch fabric links:

- Between the Switch Interface Boards (SIBs) in the TX Matrix router (TX SIBs) and the SIBs in the T640 routers (T640 SIBs).
- Between the T640 SIBs and the Flexible PIC Concentrators (FPCs) in a T640 router.

Options

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.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

scc—(Optional) Display the switching fabric link state for the TX SIBs on the TX Matrix router (or switch-card chassis).

Required Privilege Level

view

List of Sample Output

show chassis fabric sibs (T640 Router) on page 358
show chassis fabric sibs (T1600 Router) on page 359
show chassis fabric sibs (TX Matrix Router) on page 360
show chassis fabric sibs lcc (TX Matrix Router) on page 363
show chassis fabric sibs scc (TX Matrix Router) on page 363

Output Fields

Table 68 on page 357 lists the output fields for the**show chassis fabric sibs** command. Output fields are listed in the approximate order in which they appear.

Table 68: show chassis fabric sibs Output Fields

Field Name	Field Description
Fabric management SIB state	Switching fabric link (link from FPC to SIB) state for each SIB: • **Unused**—SIB is not present. • **Links ok**—Link between the SIB and the FPC is active. • **Link error**—Link between the SIB and the FPC is not operational.

Table 68: show chassis fabric sibs Output Fields *(continued)*

Field Name	Field Description
Plane state	In a routing matrix composed of the TX Matrix router, state of the TX SIB or T640 SIB: • **S_ACTIVE**—Links on the SIB are operational, and the fabric plane (SIB) is operational and running. • **S_SPARE**—Links on the SIB are operational and the fabric plane (SIB) is redundant and can be operational if any of the fabric planes in the **S_ACTIVE** state encounters an error. NOTE: If the plane is unusable by any of the Packet Forwarding Engines, the command output displays an additional string, **plane has link errors on # pfes**, where, **#** indicates the total number of links (both from SIB to FPC, and from FPC to SIB) having link errors (detected either during initialization time or runtime) in this particular plane. This does not count links having destination errors.

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

Syntax show chassis fabric summary

Release Information Command introduced in Junos OS Release 8.4.
Command introduced in Junos OS Release 9.4 for EX Series switches.

Description (MX Series routers and EX8200 switches only) Display the state of all fabric planes and the elapsed uptime.

Options This command has no options.

Required Privilege Level view

List of Sample Output
show chassis fabric summary (MX240 Router) on page 366
show chassis fabric summary (MX480 Router) on page 366
show chassis fabric summary (MX960 Router) on page 366
show chassis fabric summary (EX8200 Switch) on page 366

Output Fields Table 69 on page 365 lists the output fields for the **show chassis fabric summary** command. Output fields are listed in the approximate order in which they appear.

Table 69: show chassis fabric summary Output Fields

Field Name	Field Description
Plane	Plane number.

State	State of each plane:
	• **Online**—Switch Interface Board (SIB) is operational and running.
	• **Offline**—SIB is powered down.
	• **Check**—SIB is in the **Check** state because of the following reasons:
	  ◦ SIB is not inserted properly.
	  ◦ Some destination errors are detected on the SIB. In this case, the Packet Forwarding Engine stops using the SIB to send traffic to the affected destination Packet Forwarding Engine.
	  ◦ Some link errors are detected on the channel between the SIB and a Packet Forwarding Engine. Link errors can be detected at initialization time or runtime:
	  ◦ Link errors caused by a link training failure at initialization time—The Packet Forwarding Engine does not use the SIB to send traffic. The **show chassis fabric fpcs** command shows **Plane disabled** as status for this link.
	  ◦ Link errors caused by CRC errors detected at runtime—The Packet Forwarding Engine continues to use the SIB to send traffic. The **show chassis fabric fpcs** command shows **Link error** as the status for this link.
	For information about link and destination errors, issue the **show chassis fabric fpcs** commands.
	• **Spare**—SIB is redundant and will move to active state if one of the working SIBs fails.

Table 69: show chassis fabric summary Output Fields *(continued)*

Field Name	Field Description
Uptime	Elapsed time the plane has been online.

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

Syntax

show chassis fabric topology
<lcc *number* | scc>
<*sib-slot-number*>

Syntax (TX Matrix Router)

show chassis fabric topology
<lcc *number* | scc>
<*sib-slot-number*>

Syntax (TX Matrix Plus Router)

show chassis fabric topology
<lcc *number* | sfc *number*>
<*sib-slot-number*>

Release Information

Command introduced before Junos OS Release 7.4.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

(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.

Options

none—Display the fabric topology state for the TX Matrix router and for all the T640 routers connected to it.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the fabric topology state for a specified T640 router (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 ***number*** with a value from **0** through **3**.

scc—(TX Matrix routers only) (Optional) Display the fabric topology state for the TX Matrix router (or switch-card chassis).

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

sib-slot-number—(Optional) Display the fabric topology state for a specified SIB slot. Replace ***sib-slot-number*** with a value from **0** through **4**. On a TX Matrix Plus router, replace ***sib-slot-number*** with a value from **0** through **15**.

Required Privilege Level

view

List of Sample Output

show chassis fabric topology scc (TX Matrix Router) on page 370
show chassis fabric topology lcc on page 372
show chassis fabric topology (TX Matrix Plus Router) on page 374
show chassis fabric topology sfc (TX Matrix Plus Router) on page 376
show chassis fabric topology lcc (TX Matrix Plus Router) on page 377

Output Fields Table 70 on page 368 lists the output fields for the **show chassis fabric topology** command. Output fields are listed in the approximate order in which they appear.

Table 70: show chassis fabric topology Output Fields

Field Name	Field Description
in-links	Fabric topology for receive side links.
out-links	Fabric topology for transmit side links.

state	State of the fabric link:
	• **RESET**—Link between the SIB and the FPC/DPC is powered down on purpose. This is done in all non-dual Packet Forwarding Engine–based boards.
	• **UP**—Link between the SIB and the FPC/DCP is up and running.
	• **DOWN**—Link between the SIB and the FPC/DCP is powered down.
	• **FAULT**—SIB is in the alarmed state, in which the SIB's plane is not operational for the following reasons:
	  ◦ On-board F-chip is not operational.
	  ◦ Fiber-optic connector faults.
	  ◦ FPC connector faults.
	  ◦ SIB midplane connector faults.

Table 70: show chassis fabric topology Output Fields *(continued)*

Out-Links: and **In-Links** (TX Matrix Plus router only)	State of the links from the F13 SIB to the LCC or vice-versa. Out-Links indicate Tx links. In-Links indicate an Rx link. The following additional fields are displayed for each SIB:
	• **VCSEL Status**—Optical (VCSEL channel) link status for the corresponding electrical (HSL2) link. The states include:
	  • **OK**—Optical signal power is good.
	  • **Error**—Internal error.
	  • **LOS**—Loss of Signal detected.
	  • **High Cur**—The Tx Bias-current is higher than threshold on this channel. This is applicable only to Tx Channels.
	  • **Low Cur** —The Tx Bias-current is lower than threshold on this channel. This is applicable only to Tx Channels.
	• **HSL2 Channel**—HSL2 is the electrical link used to connect ASICs to the in-link and out-link. The channel number corresponds to the link and varies based on the ASIC or configuration.
	• **HSL2 Status** —The status of the HSL2 Channel. Includes the following states:
	• **Up**—Channel is up.
	• **Down**—Channel is down.
	• **Reset**—Channel has been reset.
	• **Fault**—Channel has faults.
	The following is a sample output with description of the fields displayed in the output for Out-Links:
	`Out-Links:`
	`=========`
	`SF_3_13_FB_A(21,09) -> FPC7_B_SG(3,3,6)_FB_A(18,09)  OK`
	`203  Up`

Table 70: 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.

---

show chassis fabric topology scc (TX Matrix Router)

```
user@host> show chassis fabric topology scc
scc-re1:
--------------------------------------------------------------------------------
fchip (mode)
in-links        state   out-links         state
--------------------------------------------------------------------------------

Sib #0 :
---------
SIB0_F0 (F2 ):
LCC0_SIB-L0_F0,03->SIB-S0_F0,00  UP         SIB-S0_F0,00->LCC0_SIB-L0_F1,00  UP
LCC1_SIB-L0_F0,03->SIB-S0_F0,01  UP         SIB-S0_F0,01->LCC1_SIB-L0_F1,08  UP
LCC2_SIB-L0_F0,03->SIB-S0_F0,02  RESET       SIB-S0_F0,02->LCC2_SIB-L0_F1,08  UP
LCC3_SIB-L0_F0,03->SIB-S0_F0,03  RESET       SIB-S0_F0,03->LCC3_SIB-L0_F1,00  UP
LCC0_SIB-L0_F0,02->SIB-S0_F0,04  UP         SIB-S0_F0,04->LCC0_SIB-L0_F1,01  UP
LCC1_SIB-L0_F0,02->SIB-S0_F0,05  UP         SIB-S0_F0,05->LCC1_SIB-L0_F1,09  UP
LCC2_SIB-L0_F0,02->SIB-S0_F0,06  RESET       SIB-S0_F0,06->LCC2_SIB-L0_F1,09  UP
LCC3_SIB-L0_F0,02->SIB-S0_F0,07  RESET       SIB-S0_F0,07->LCC3_SIB-L0_F1,01  UP
LCC0_SIB-L0_F0,07->SIB-S0_F0,08  UP         SIB-S0_F0,08->LCC0_SIB-L0_F1,04  UP
LCC1_SIB-L0_F0,07->SIB-S0_F0,09  UP         SIB-S0_F0,09->LCC1_SIB-L0_F1,12  UP
LCC2_SIB-L0_F0,07->SIB-S0_F0,10  RESET       SIB-S0_F0,10->LCC2_SIB-L0_F1,12  UP
LCC3_SIB-L0_F0,07->SIB-S0_F0,11  RESET       SIB-S0_F0,11->LCC3_SIB-L0_F1,04  UP
LCC0_SIB-L0_F0,06->SIB-S0_F0,12  UP         SIB-S0_F0,12->LCC0_SIB-L0_F1,05  UP
LCC1_SIB-L0_F0,06->SIB-S0_F0,13  UP         SIB-S0_F0,13->LCC1_SIB-L0_F1,13  UP
LCC2_SIB-L0_F0,06->SIB-S0_F0,14  RESET       SIB-S0_F0,14->LCC2_SIB-L0_F1,13  UP
LCC3_SIB-L0_F0,06->SIB-S0_F0,15  RESET       SIB-S0_F0,15->LCC3_SIB-L0_F1,05  UP
SIB0_F1 (F2 ):
LCC0_SIB-L0_F0,11->SIB-S0_F1,00  UP         SIB-S0_F1,00->LCC0_SIB-L0_F1,08  UP
```



```
LCC1_SIB-L0_F0,11->SIB-S0_F1,01  UP         SIB-S0_F1,01->LCC1_SIB-L0_F1,00  UP
LCC2_SIB-L0_F0,11->SIB-S0_F1,02  RESET       SIB-S0_F1,02->LCC2_SIB-L0_F1,00  UP
LCC3_SIB-L0_F0,11->SIB-S0_F1,03  RESET       SIB-S0_F1,03->LCC3_SIB-L0_F1,08  UP
LCC0_SIB-L0_F0,10->SIB-S0_F1,04  UP         SIB-S0_F1,04->LCC0_SIB-L0_F1,09  UP
LCC1_SIB-L0_F0,10->SIB-S0_F1,05  UP         SIB-S0_F1,05->LCC1_SIB-L0_F1,01  UP
LCC2_SIB-L0_F0,10->SIB-S0_F1,06  RESET       SIB-S0_F1,06->LCC2_SIB-L0_F1,01  UP
LCC3_SIB-L0_F0,10->SIB-S0_F1,07  RESET       SIB-S0_F1,07->LCC3_SIB-L0_F1,09  UP
LCC0_SIB-L0_F0,15->SIB-S0_F1,08  UP         SIB-S0_F1,08->LCC0_SIB-L0_F1,12  UP
LCC1_SIB-L0_F0,15->SIB-S0_F1,09  UP         SIB-S0_F1,09->LCC1_SIB-L0_F1,04  UP
LCC2_SIB-L0_F0,15->SIB-S0_F1,10  RESET       SIB-S0_F1,10->LCC2_SIB-L0_F1,04  UP
LCC3_SIB-L0_F0,15->SIB-S0_F1,11  RESET       SIB-S0_F1,11->LCC3_SIB-L0_F1,12  UP
LCC0_SIB-L0_F0,14->SIB-S0_F1,12  UP         SIB-S0_F1,12->LCC0_SIB-L0_F1,13  UP
LCC1_SIB-L0_F0,14->SIB-S0_F1,13  UP         SIB-S0_F1,13->LCC1_SIB-L0_F1,05  UP
LCC2_SIB-L0_F0,14->SIB-S0_F1,14  RESET        SIB-S0_F1,14->LCC2_SIB-L0_F1,05
UP
LCC3_SIB-L0_F0,14->SIB-S0_F1,15  RESET        SIB-S0_F1,15->LCC3_SIB-L0_F1,13
UP
SIB0_F2 (F2 ):
LCC3_SIB-L0_F0,13->SIB-S0_F2,00   RESET      SIB-S0_F2,00->LCC3_SIB-L0_F1,14  UP
LCC2_SIB-L0_F0,13->SIB-S0_F2,01  RESET        SIB-S0_F2,01->LCC2_SIB-L0_F1,06
UP
LCC1_SIB-L0_F0,13->SIB-S0_F2,02  UP         SIB-S0_F2,02->LCC1_SIB-L0_F1,06  UP
LCC0_SIB-L0_F0,13->SIB-S0_F2,03  UP         SIB-S0_F2,03->LCC0_SIB-L0_F1,14  UP
LCC3_SIB-L0_F0,12->SIB-S0_F2,04  RESET        SIB-S0_F2,04->LCC3_SIB-L0_F1,15
UP
LCC2_SIB-L0_F0,12->SIB-S0_F2,05  RESET       SIB-S0_F2,05->LCC2_SIB-L0_F1,07  UP
LCC1_SIB-L0_F0,12->SIB-S0_F2,06  UP         SIB-S0_F2,06->LCC1_SIB-L0_F1,07  UP
LCC0_SIB-L0_F0,12->SIB-S0_F2,07  UP         SIB-S0_F2,07->LCC0_SIB-L0_F1,15  UP
LCC3_SIB-L0_F0,09->SIB-S0_F2,08  RESET        SIB-S0_F2,08->LCC3_SIB-L0_F1,10
UP
LCC2_SIB-L0_F0,09->SIB-S0_F2,09  RESET        SIB-S0_F2,09->LCC2_SIB-L0_F1,02
UP
LCC1_SIB-L0_F0,09->SIB-S0_F2,10  UP         SIB-S0_F2,10->LCC1_SIB-L0_F1,02  UP
LCC0_SIB-L0_F0,09->SIB-S0_F2,11  UP         SIB-S0_F2,11->LCC0_SIB-L0_F1,10  UP
LCC3_SIB-L0_F0,08->SIB-S0_F2,12  RESET        SIB-S0_F2,12->LCC3_SIB-L0_F1,11
UP
LCC2_SIB-L0_F0,08->SIB-S0_F2,13  RESET        SIB-S0_F2,13->LCC2_SIB-L0_F1,03
UP
LCC1_SIB-L0_F0,08->SIB-S0_F2,14  UP         SIB-S0_F2,14->LCC1_SIB-L0_F1,03  UP
LCC0_SIB-L0_F0,08->SIB-S0_F2,15  UP         SIB-S0_F2,15->LCC0_SIB-L0_F1,11  UP
SIB0_F3 (F2 ):
LCC3_SIB-L0_F0,05->SIB-S0_F3,00  RESET        SIB-S0_F3,00->LCC3_SIB-L0_F1,06
UP
LCC2_SIB-L0_F0,05->SIB-S0_F3,01  RESET        SIB-S0_F3,01->LCC2_SIB-L0_F1,14
UP
LCC1_SIB-L0_F0,05->SIB-S0_F3,02  UP         SIB-S0_F3,02->LCC1_SIB-L0_F1,14  UP
LCC0_SIB-L0_F0,05->SIB-S0_F3,03  UP         SIB-S0_F3,03->LCC0_SIB-L0_F1,06  UP
LCC3_SIB-L0_F0,04->SIB-S0_F3,04  RESET        SIB-S0_F3,04->LCC3_SIB-L0_F1,07
UP
LCC2_SIB-L0_F0,04->SIB-S0_F3,05  RESET        SIB-S0_F3,05->LCC2_SIB-L0_F1,15
UP
LCC1_SIB-L0_F0,04->SIB-S0_F3,06  UP         SIB-S0_F3,06->LCC1_SIB-L0_F1,15  UP
LCC0_SIB-L0_F0,04->SIB-S0_F3,07  UP         SIB-S0_F3,07->LCC0_SIB-L0_F1,07  UP
LCC3_SIB-L0_F0,01->SIB-S0_F3,08  RESET        SIB-S0_F3,08->LCC3_SIB-L0_F1,02
UP
LCC2_SIB-L0_F0,01->SIB-S0_F3,09  RESET        SIB-S0_F3,09->LCC2_SIB-L0_F1,10
UP
LCC1_SIB-L0_F0,01->SIB-S0_F3,10  UP         SIB-S0_F3,10->LCC1_SIB-L0_F1,10  UP
LCC0_SIB-L0_F0,01->SIB-S0_F3,11  UP         SIB-S0_F3,11->LCC0_SIB-L0_F1,02  UP
LCC3_SIB-L0_F0,00->SIB-S0_F3,12  RESET        SIB-S0_F3,12->LCC3_SIB-L0_F1,03
UP
```

```
LCC2_SIB-L0_F0,00->SIB-S0_F3,13  RESET        SIB-S0_F3,13->LCC2_SIB-L0_F1,11
UP
LCC1_SIB-L0_F0,00->SIB-S0_F3,14  UP         SIB-S0_F3,14->LCC1_SIB-L0_F1,11  UP
LCC0_SIB-L0_F0,00->SIB-S0_F3,15  UP         SIB-S0_F3,15->LCC0_SIB-L0_F1,03  UP
Sib #1 :
---------
SIB1_F0 (F2 ):
LCC0_SIB-L1_F0,03->SIB-S1_F0,00 RESET        SIB-S1_F0,00->LCC0_SIB-L1_F1,00  UP
LCC1_SIB-L1_F0,03->SIB-S1_F0,01 RESET        SIB-S1_F0,01->LCC1_SIB-L1_F1,08  UP
LCC2_SIB-L1_F0,03->SIB-S1_F0,02 RESET        SIB-S1_F0,02->LCC2_SIB-L1_F1,08  UP
LCC3_SIB-L1_F0,03->SIB-S1_F0,03 RESET        SIB-S1_F0,03->LCC3_SIB-L1_F1,00  UP
LCC0_SIB-L1_F0,02->SIB-S1_F0,04 RESET        SIB-S1_F0,04->LCC0_SIB-L1_F1,01  UP
LCC1_SIB-L1_F0,02->SIB-S1_F0,05 RESET        SIB-S1_F0,05->LCC1_SIB-L1_F1,09  UP
LCC2_SIB-L1_F0,02->SIB-S1_F0,06 RESET        SIB-S1_F0,06->LCC2_SIB-L1_F1,09  UP
LCC3_SIB-L1_F0,02->SIB-S1_F0,07 RESET        SIB-S1_F0,07->LCC3_SIB-L1_F1,01  UP
LCC0_SIB-L1_F0,07->SIB-S1_F0,08 RESET        SIB-S1_F0,08->LCC0_SIB-L1_F1,04  UP
LCC1_SIB-L1_F0,07->SIB-S1_F0,09 RESET        SIB-S1_F0,09->LCC1_SIB-L1_F1,12  UP
LCC2_SIB-L1_F0,07->SIB-S1_F0,10 RESET        SIB-S1_F0,10->LCC2_SIB-L1_F1,12  UP
LCC3_SIB-L1_F0,07->SIB-S1_F0,11 RESET        SIB-S1_F0,11->LCC3_SIB-L1_F1,04  UP
LCC0_SIB-L1_F0,06->SIB-S1_F0,12 RESET        SIB-S1_F0,12->LCC0_SIB-L1_F1,05  UP
LCC1_SIB-L1_F0,06->SIB-S1_F0,13 RESET        SIB-S1_F0,13->LCC1_SIB-L1_F1,13  UP
LCC2_SIB-L1_F0,06->SIB-S1_F0,14 RESET        SIB-S1_F0,14->LCC2_SIB-L1_F1,13  UP
LCC3_SIB-L1_F0,06->SIB-S1_F0,15 RESET        SIB-S1_F0,15->LCC3_SIB-L1_F1,05  UP
SIB1_F1 (F2 ):
LCC0_SIB-L1_F0,11->SIB-S1_F1,00 RESET        SIB-S1_F1,00->LCC0_SIB-L1_F1,08  UP
LCC1_SIB-L1_F0,11->SIB-S1_F1,01 RESET        SIB-S1_F1,01->LCC1_SIB-L1_F1,00  UP
LCC2_SIB-L1_F0,11->SIB-S1_F1,02 RESET        SIB-S1_F1,02->LCC2_SIB-L1_F1,00  UP
LCC3_SIB-L1_F0,11->SIB-S1_F1,03 RESET        SIB-S1_F1,03->LCC3_SIB-L1_F1,08  UP
LCC0_SIB-L1_F0,10->SIB-S1_F1,04 RESET        SIB-S1_F1,04->LCC0_SIB-L1_F1,09  UP
LCC1_SIB-L1_F0,10->SIB-S1_F1,05 RESET        SIB-S1_F1,05->LCC1_SIB-L1_F1,01  UP
LCC2_SIB-L1_F0,10->SIB-S1_F1,06 RESET        SIB-S1_F1,06->LCC2_SIB-L1_F1,01  UP
LCC3_SIB-L1_F0,10->SIB-S1_F1,07 RESET        SIB-S1_F1,07->LCC3_SIB-L1_F1,09  UP
LCC0_SIB-L1_F0,15->SIB-S1_F1,08 RESET        SIB-S1_F1,08->LCC0_SIB-L1_F1,12  UP
LCC1_SIB-L1_F0,15->SIB-S1_F1,09 RESET        SIB-S1_F1,09->LCC1_SIB-L1_F1,04  UP
LCC2_SIB-L1_F0,15->SIB-S1_F1,10 RESET        SIB-S1_F1,10->LCC2_SIB-L1_F1,04  UP
LCC3_SIB-L1_F0,15->SIB-S1_F1,11 RESET        -S1_F1,11->LCC3_SIB-L1_F1,12,05  UP
LCC0_SIB-L1_F0,14->SIB-S1_F1,12 RESET        SIB-S1_F1,12->LCC0_SIB-L1_F1,13  UP
LCC1_SIB-L1_F0,14->SIB-S1_F1,13 RESET        SIB-S1_F1,13->LCC1_SIB-L1_F1,05  UP
LCC2_SIB-L1_F0,14->SIB-S1_F1,14 RESET        SIB-S1_F1,14->LCC2_SIB-L1_F1,05  UP
```

show chassis fabric topology lcc

```
user@host> show chassis fabric topology lcc 0
lcc0-re0:
--------------------------------------------------------------------------
   fchip (mode)
in-links                state         out-links               state
-------------------------------------------------------------------
Sib #2 :
---------
SIB2_F0  (F1 ):
FPC0_T->SIB-L2_F0,00    DOWN       SIB-L2_F0,00->SIB-S2_F3,15 DOWN
FPC0_B->SIB-L2_F0,01    UP         SIB-L2_F0,01->SIB-S2_F3,11 DOWN
FPC1_T->SIB-L2_F0,02    DOWN       SIB-L2_F0,02->SIB-S2_F0,04 DOWN
FPC1_B->SIB-L2_F0,03    DOWN       SIB-L2_F0,03->SIB-S2_F0,00 DOWN
FPC2_T->SIB-L2_F0,04    DOWN       SIB-L2_F0,04->SIB-S2_F3,07 DOWN
FPC2_B->SIB-L2_F0,05    DOWN       SIB-L2_F0,05->SIB-S2_F3,03 DOWN
FPC3_T->SIB-L2_F0,06    DOWN       SIB-L2_F0,06->SIB-S2_F0,12 DOWN
FPC3_B->SIB-L2_F0,07    DOWN       SIB-L2_F0,07->SIB-S2_F0,08 DOWN
FPC4_T->SIB-L2_F0,08    DOWN       SIB-L2_F0,08->SIB-S2_F2,15 DOWN
FPC4_B->SIB-L2_F0,09    DOWN       SIB-L2_F0,09->SIB-S2_F2,11 DOWN
FPC5_T->SIB-L2_F0,10    DOWN       SIB-L2_F0,10->SIB-S2_F1,04 DOWN
FPC5_B->SIB-L2_F0,11    DOWN       SIB-L2_F0,11->SIB-S2_F1,00 DOWN
```

```
FPC6_T->SIB-L2_F0,12    DOWN       SIB-L2_F0,12->SIB-S2_F2,07 DOWN
FPC6_B->SIB-L2_F0,13    UP         SIB-L2_F0,13->SIB-S2_F2,03 DOWN
FPC7_T->SIB-L2_F0,14    DOWN       SIB-L2_F0,14->SIB-S2_F1,12 DOWN
FPC7_B->SIB-L2_F0,15    DOWN       SIB-L2_F0,15->SIB-S2_F1,08 DOWN
SIB2_F1  (F3 ):
SIB-S2_F0,00->SIB-L2_F1,00 UP      SIB-L2_F1,00->FPC7_B    DOWN
SIB-S2_F0,04->SIB-L2_F1,01 UP      SIB-L2_F1,01->FPC7_T    DOWN
SIB-S2_F3,11->SIB-L2_F1,02 UP      SIB-L2_F1,02->FPC6_B    DOWN
SIB-S2_F3,15->SIB-L2_F1,03 UP      SIB-L2_F1,03->FPC6_T    DOWN
SIB-S2_F0,08->SIB-L2_F1,04 UP      SIB-L2_F1,04->FPC5_B    DOWN
SIB-S2_F0,12->SIB-L2_F1,05 UP      SIB-L2_F1,05->FPC5_T    DOWN
SIB-S2_F3,03->SIB-L2_F1,06 UP      SIB-L2_F1,06->FPC4_B    DOWN
SIB-S2_F3,07->SIB-L2_F1,07 UP      SIB-L2_F1,07->FPC4_T    DOWN
SIB-S2_F1,00->SIB-L2_F1,08 UP      SIB-L2_F1,08->FPC3_B    DOWN
SIB-S2_F1,04->SIB-L2_F1,09 UP      SIB-L2_F1,09->FPC3_T    DOWN
SIB-S2_F2,11->SIB-L2_F1,10 UP      SIB-L2_F1,10->FPC2_B    DOWN
SIB-S2_F2,15->SIB-L2_F1,11 UP      SIB-L2_F1,11->FPC2_T    DOWN
SIB-S2_F1,08->SIB-L2_F1,12 UP      SIB-L2_F1,12->FPC1_B    DOWN
SIB-S2_F1,12->SIB-L2_F1,13 UP      SIB-L2_F1,13->FPC1_T    DOWN
SIB-S2_F2,03->SIB-L2_F1,14 UP      SIB-L2_F1,14->FPC0_B    DOWN
SIB-S2_F2,07->SIB-L2_F1,15 UP      SIB-L2_F1,15->FPC0_T    DOWN
Sib #4 :
---------
SIB4_F0  (F1 ):
FPC0_T->SIB-L4_F0,00    RESET      SIB-L4_F0,00->SIB-S4_F3,15 UP
FPC0_B->SIB-L4_F0,01    UP         SIB-L4_F0,01->SIB-S4_F3,11 UP
FPC1_T->SIB-L4_F0,02    RESET      SIB-L4_F0,02->SIB-S4_F0,04 UP
FPC1_B->SIB-L4_F0,03    RESET      SIB-L4_F0,03->SIB-S4_F0,00 UP
FPC2_T->SIB-L4_F0,04    RESET      SIB-L4_F0,04->SIB-S4_F3,07 UP
FPC2_B->SIB-L4_F0,05    RESET      SIB-L4_F0,05->SIB-S4_F3,03 UP
FPC3_T->SIB-L4_F0,06    RESET      SIB-L4_F0,06->SIB-S4_F0,12 UP
FPC3_B->SIB-L4_F0,07    RESET      SIB-L4_F0,07->SIB-S4_F0,08 UP
FPC4_T->SIB-L4_F0,08    RESET      SIB-L4_F0,08->SIB-S4_F2,15 UP
FPC4_B->SIB-L4_F0,09    RESET      SIB-L4_F0,09->SIB-S4_F2,11 UP
FPC5_T->SIB-L4_F0,10    RESET      SIB-L4_F0,10->SIB-S4_F1,04 UP
FPC5_B->SIB-L4_F0,11    RESET      SIB-L4_F0,11->SIB-S4_F1,00 UP
FPC6_T->SIB-L4_F0,12    RESET      SIB-L4_F0,12->SIB-S4_F2,07 UP
FPC6_B->SIB-L4_F0,13    UP         SIB-L4_F0,13->SIB-S4_F2,03 UP
FPC7_T->SIB-L4_F0,14    RESET      SIB-L4_F0,14->SIB-S4_F1,12 UP
FPC7_B->SIB-L4_F0,15    RESET      SIB-L4_F0,15->SIB-S4_F1,08 UP
SIB4_F1  (F3 ):
SIB-S4_F0,00->SIB-L4_F1,00 UP      SIB-L4_F1,00->FPC7_B    UP
SIB-S4_F0,04->SIB-L4_F1,01 UP      SIB-L4_F1,01->FPC7_T    UP
SIB-S4_F3,11->SIB-L4_F1,02 UP      SIB-L4_F1,02->FPC6_B    UP
SIB-S4_F3,15->SIB-L4_F1,03 UP      SIB-L4_F1,03->FPC6_T    UP
SIB-S4_F0,08->SIB-L4_F1,04 UP      SIB-L4_F1,04->FPC5_B    UP
SIB-S4_F0,12->SIB-L4_F1,05 UP      SIB-L4_F1,05->FPC5_T    UP
SIB-S4_F3,03->SIB-L4_F1,06 UP      SIB-L4_F1,06->FPC4_B    UP
SIB-S4_F3,07->SIB-L4_F1,07 UP      SIB-L4_F1,07->FPC4_T    UP
SIB-S4_F1,00->SIB-L4_F1,08 UP      SIB-L4_F1,08->FPC3_B    UP
SIB-S4_F1,04->SIB-L4_F1,09 UP      SIB-L4_F1,09->FPC3_T    UP
SIB-S4_F2,11->SIB-L4_F1,10 UP      SIB-L4_F1,10->FPC2_B    UP
SIB-S4_F2,15->SIB-L4_F1,11 UP      SIB-L4_F1,11->FPC2_T    UP
SIB-S4_F1,08->SIB-L4_F1,12 UP      SIB-L4_F1,12->FPC1_B    UP
SIB-S4_F1,12->SIB-L4_F1,13 UP      SIB-L4_F1,13->FPC1_T    UP
SIB-S4_F2,03->SIB-L4_F1,14 UP      SIB-L4_F1,14->FPC0_B    UP
SIB-S4_F2,07->SIB-L4_F1,15 UP      SIB-L4_F1,15->FPC0_T    UP
```

show chassis fabric topology (TX Matrix Plus Router)

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

lcc0-re0:
--------------------------------------------------------------------------

SIB0
=========

Out-Links:
=========
LCC00_ST_SIB_L00              -> SFC0_F13_SIB_00         VCSEL    HSL2    HSL2
                                                         Status   Channel Status
================================================================================
FPC0_T_SG(0,0,0)_FB_D(04,11)  -> SF_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:
--------------------------------------------------------------------------

F13_SIB0
=========

Out-Links:
=========
SFC0_F13_SIB_00     -> LCC00_ST_SIB_L00                  VCSEL    HSL2    HSL2
                                                         Status   Channel 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
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SF_3_06_FB_C(11,07) -> FPC3_T_SG(1,2,1)_FB_C(08,07)      OK       154     Up
SF_3_06_FB_C(11,06) -> FPC3_T_SG(1,2,2)_FB_C(08,06)      OK       154     Up
SF_3_06_FB_C(11,05) -> FPC3_T_SG(1,2,3)_FB_C(08,05)      OK       154     Up
SF_3_06_FB_C(11,03) -> FPC3_T_SG(1,2,4)_FB_C(08,03)      OK       154     Up
SF_3_06_FB_C(11,02) -> FPC3_T_SG(1,2,5)_FB_C(08,02)      OK       154     Up
SF_3_06_FB_C(11,01) -> FPC3_T_SG(1,2,6)_FB_C(08,01)      OK       154     Up
...
```

show chassis fabric topology lcc (TX Matrix Plus Router)

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

SIB0
=========

Out-Links:
=========
LCC00_ST_SIB_L00              -> SFC0_F13_SIB_00         VCSEL    HSL2    HSL2
                                                         Status   Channel Status
==================================================================================
FPC0_T_SG(0,0,0)_FB_D(04,11)  -> SF_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

Syntax show chassis feb

Release Information Command introduced before Junos OS Release 7.4.

Description (M5, M10, and M120 routers only) Display Forwarding Engine Board (FEB) status information.

Options This command has no options.

Required Privilege Level view

List of Sample Output
show chassis feb (M10 Router) on page 380
show chassis feb (M120 Router) on page 380
show chassis feb detail (M120 Router) on page 380

Output Fields Table 71 on page 379 lists the output fields for the **show chassis feb** command. Output fields are listed in the approximate order in which they appear.

Table 71: show chassis feb

Field Name	Field Description

State	State of the FEB:
	• **Offline**—FEB is powered down.
	• **Online**—FEB is operational and running.
	• **Check**—FEB is in alarmed state where the Switch Interface Board (SIB) plane is partially operational for the following reasons:
	  ◦ FEB is not inserted properly.
	  ◦ Two or more links between the FEB and Packet Forwarding Engine fail.

Temp (C) or Intake temperature	Temperature of the air passing by the FEB, in degrees Celsius or in both degrees Celsius and degrees Fahrenheit.
CPU Utilization (%)	Percentage of CPU being used: • **Total**—Total percentage of CPU being used by the FEB processor. • **Interrupt**—Of the total CPU being used by the FEB processor, the percentage being used for interrupts.
Memory DRAM (MB)	Total DRAM, in megabytes, available to the FEB processor.
Utilization (%)	Percentage of memory utilization: • **Heap**—Percentage of heap space (dynamic memory) being used by the FEB processor. If this number exceeds 80 percent, you might experience a software problem (memory leak). • **Buffer**—Percentage of buffer space being used by the FPC processor for buffering internal messages.
Exhaust A temperature	Temperature of the air flowing past Exhaust A.

Table 71: show chassis feb *(continued)*

Field Name	Field Description
Exhaust B temperature	Temperature of the air flowing past Exhaust B.
Total DDR DRAM	Amount of double data rate dynamic random access memory (DDR DRAM) available to the FEB CPU.
Total RLDRAM	Amount of reduced latency dynamic random access memory (RLDRAM) available to the FEB CPU.
Start time (Detail output only)	Time when the Routing Engine detected that the FEB was running.
Uptime (Detail output only)	How long the Routing Engine has been connected to the FEB, and therefore, how long the Flexible PIC Concentrator (PIC) has been up and running.

show chassis feb (M10 Router)

```
user@host> show chassis feb
FEB status:
  Temperature                        27 degrees C / 80 degrees F
  CPU utilization                     3 percent
  Interrupt utilization               0 percent
  Heap utilization                   26 percent
  Buffer utilization                 50 percent
  Total CPU DRAM                     64 MB
  Internet Processor II                 Version 1, Foundry IBM, Part number 9
  Start time:                           2010-05-23 13:59:51 PDT
  Uptime:                               6 hours, 33 minutes, 11 seconds
```

show chassis feb (M120 Router)

```
user@host> show chassis feb
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State             (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online             47      4          0       512         7         60
  1  Online             54      3          0       512         7         59
  2  Online             50      4          0       512         7         59
  3  Online             49      4          0       512         7         59
  4  Online             46      3          0       512         7         59
  5  Online             35      3          0       512         7         59
```

show chassis feb detail (M120 Router)

```
user@host> show chassis feb detail
Slot 0 information:
  State                                 Online
  Intake temperature                 48 degrees C / 118 degrees F
  Exhaust A temperature              51 degrees C / 123 degrees F
  Exhaust B temperature              52 degrees C / 125 degrees F
  Total DDR DRAM                    512 MB
  Total RLDRAM                       32 MB
  Start time:                           2006-06-28 15:00:40 PDT
  Uptime:                               10 minutes, 21 seconds
Slot 1 information:
  State                                 Online
  Intake temperature                 55 degrees C / 131 degrees F
  Exhaust A temperature              46 degrees C / 114 degrees F
  Exhaust B temperature              45 degrees C / 113 degrees F
  Total DDR DRAM                    512 MB
  Total RLDRAM                       32 MB
  Start time:                           2006-06-28 15:00:33 PDT
  Uptime:                               10 minutes, 28 seconds
```

```
Slot 2 information:
  State                                 Online
  Intake temperature                 50 degrees C / 122 degrees F
  Exhaust A temperature              47 degrees C / 116 degrees F
  Exhaust B temperature              47 degrees C / 116 degrees F
  Total DDR DRAM                    512 MB
  Total RLDRAM                       32 MB
  Start time:                           2006-06-28 15:00:35 PDT
  Uptime:                               10 minutes, 26 seconds
Slot 3 information:
  State                                 Online
  Intake temperature                 49 degrees C / 120 degrees F
  Exhaust A temperature              47 degrees C / 116 degrees F
  Exhaust B temperature              49 degrees C / 120 degrees F
  Total DDR DRAM                    512 MB
  Total RLDRAM                       32 MB
  Start time:                           2006-06-28 15:00:43 PDT
  Uptime:                               10 minutes, 18 seconds
Slot 4 information:
  State                                 Online
  Intake temperature                 45 degrees C / 113 degrees F
  Exhaust A temperature              42 degrees C / 107 degrees F
  Exhaust B temperature              42 degrees C / 107 degrees F
  Total DDR DRAM                    512 MB
  Total RLDRAM                       32 MB
  Start time:                           2006-06-28 15:00:29 PDT
  Uptime:                               10 minutes, 32 seconds
Slot 5 information:
  State                                 Online
  Intake temperature                 35 degrees C / 95 degrees F
  Exhaust A temperature              33 degrees C / 91 degrees F
  Exhaust B temperature              40 degrees C / 104 degrees F
  Total DDR DRAM                    512 MB
  Total RLDRAM                       32 MB
  Start time:                           2006-06-28 15:00:27 PDT
  Uptime:                               10 minutes, 34 seconds
```

show chassis firmware

Syntax

show chassis firmware

Syntax (TX Matrix Router)

show chassis firmware
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show chassis firmware
<lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.4 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
Command introduced for EX8200 switches in Junos OS Release 10.2 for EX Series switches.

Description

On the routers, 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), and Flexible PIC Concentrators (FPCs). On a TX Matrix Plus router, display the version levels of the firmware running on the FPCs and the Switch Processor Mezzanine Board (SPMBs).

On EX2200, EX3200, and EX4200 switches, display the version levels of the firmware running on the switch. On an EX8208 switch, display the version levels of the firmware running on the Switch Fabric and Routing Engine (SRE) modules and on the line cards (shown as FPCs). On an EX8216 switch, display the version levels of the firmware running on the Routing Engine (RE) modules and on the line cards (shown as FPCs).

Options

none—Display the version levels of the firmware running. For an EX4200 switch that is a member of a Virtual Chassis, display version levels for all members. For a TX Matrix router, display version levels for the firmware on the TX Matrix router and on all the T640 routers connected to the TX Matrix router. For a TX Matrix Plus router, display version levels for the firmware on the TX Matrix Plus router and on all the T1600 routers connected to the TX Matrix Plus router.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display version levels for the firmware on a specified T640 router (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 ***number*** with a value from **0** through **3**.

scc—(TX Matrix router only) (Optional) Display version levels for the firmware on the TX Matrix router (or switch-card chassis).

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

Required Privilege Level

view

List of Sample Output

Output Fields

Table 72 on page 383 lists the output fields for the **show chassis firmware** command. Output fields are listed in the approximate order in which they appear.

Table 72: show chassis firmware Output Fields

Field Name	Field Description
Part	Chassis part name.
Type	Type of firmware: On routers: **ROM** or **O/S.** On switches: **uboot** or **loader**.
Version	Version of firmware running on the chassis part.

show chassis firmware (M10 Router)

```
user@host> show chassis firmware
Part                    Type       Version
Forwarding engine board ROM        Juniper ROM Monitor Version 4.1b2
                        O/S        Version 4.1I1 by tlim on 2000-04-24 11:27
```

show chassis firmware (M20 Router)

```
user@host> show chassis firmware
Part                    Type       Version
System switch board     ROM        Juniper ROM Monitor Version 3.4b26
                        O/S        Version 3.4I16 by smackie on 2000-02-29 2
FPC 1                   ROM        Juniper ROM Monitor Version 3.0b1
                        O/S        Version 3.4I4 by smackie on 2000-02-25 21
FPC 2                   ROM        Juniper ROM Monitor Version 3.0b1
                        O/S        Version 3.4I4 by smackie on 2000-02-25 21
```

show chassis firmware (M40 Router)

```
user@host> show chassis firmware
Part                    Type       Version
System control board    ROM        Juniper ROM Monitor Version 2.0i126Copyri
                        O/S        Version 2.0i1 by root on Thu Jul 23 00:51
FPC 5                   ROM        Juniper ROM Monitor Version 2.0i49Copyrig
                        O/S        Version 2.0i1 by root on Thu Jul 23 00:59
```

show chassis firmware (M120 Router)

```
user@host> show chassis firmware
FPC 2                   ROM        Juniper ROM Monitor Version 8.0b29
                        O/S        Version 8.2B1 by builder on 2006-10-18 16:2
```

```
FPC 3                     ROM        Juniper ROM Monitor Version 8.0b29
                          O/S        Version 8.2B1 by builder on 2006-10-18 16:2
FPC 4                     ROM        Juniper ROM Monitor Version 8.0b29
                          O/S        Version 8.2B1 by builder on 2006-10-18 16:2
FEB 3                     ROM        Juniper ROM Monitor Version 8.0b29
                          O/S        Version 8.2B1 by builder on 2006-10-18 16:1
FEB 4                     ROM        Juniper ROM Monitor Version 8.0b29
                          O/S        Version 8.2B1 by builder on 2006-10-18 16:1
```

show chassis firmware (M160 Router)

```
user@host> show chassis firmware
Part                      Type       Version
SFM 0                     ROM        Juniper ROM Monitor Version 4.0b2
                          O/S        Version 4.0I1 by tlim on 2000-02-29 11:50
SFM 1                     ROM        Juniper ROM Monitor Version 4.0b2
                          O/S        Version 4.0I1 by tlim on 2000-02-29 11:50
FPC 0                     ROM        Juniper ROM Monitor Version 4.0b2
                          O/S        Version 4.0I1 by tlim on 2000-02-29 11:56
FPC 1                     ROM        Juniper ROM Monitor Version 4.0b2
                          O/S        Version 4.0I1 by tlim on 2000-02-29 11:56
FPC 2                     ROM        Juniper ROM Monitor Version 4.0b3
                          O/S        Version 4.0I1 by tlim on 2000-02-29 11:56
```

show chassis firmware (MX240 Router)

```
user@host> show chassis firmware
Part                      Type       Version
FPC 1                     ROM        Juniper ROM Monitor Version 8.3b1
                          O/S        Version 9.0-20080103.0 by builder on 2008-0
FPC 2                     ROM        Juniper ROM Monitor Version 8.3b1
                          O/S        Version 9.0-20080103.0 by builder on 2008-0
```

show chassis firmware (MX480 Router)

```
user@host> show chassis firmware
Part                      Type       Version
FPC 1                     ROM        Juniper ROM Monitor Version 8.3b1
                          O/S        Version 9.0-20070916.3 by builder on 2007-0
```

show chassis firmware (MX960 Router)

```
user@host> show chassis firmware
Part                      Type       Version
FPC 4                     ROM        Juniper ROM Monitor Version 8.0b8
                          O/S        Version 8.2I59 by artem on 2006-10-31 19:22
FPC 7                     ROM        Juniper ROM Monitor Version 8.2b1
                          O/S        Version 8.2-20061026.1 by builder on 2006-1
```

show chassis firmware (EX4200 Switch)

```
user@host> show chassis firmware

Part                    Type       Version
FPC 0                   uboot      U-Boot 1.1.6 (Feb  6 2008 - 11:27:42)
                        loader     FreeBSD/PowerPC U-Boot bootstrap loader 2.1
FPC 1                   uboot      U-Boot 1.1.6 (Feb  6 2008 - 11:27:42)
                        loader     FreeBSD/PowerPC U-Boot bootstrap loader 2.1
FPC 2                   uboot      U-Boot 1.1.6 (Feb  6 2008 - 11:27:42)
                        loader     FreeBSD/PowerPC U-Boot bootstrap loader 2.1
```

show chassis firmware (EX8200 Switch)

```
user@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
                                       FreeBSD/PowerPC U-Boot bootstrap loader 2.2
                            loader
Routing Engine 1            U-Boot     U-Boot 1.1.6 (Mar 25 2009 - 06:13:12) 2.4.0
                            loader     FreeBSD/PowerPC U-Boot bootstrap loader 2.2
```

show chassis firmware lcc (TX Matrix Router)

```
user@host> show chassis firmware lcc 0
lcc0-re0:
--------------------------------------------------------------------------
Part                        Type       Version
FPC 1                       ROM        Juniper ROM Monitor Version 6.4b18
                            O/S        Version 7.0-20040804.0 by builder on 2004-0
FPC 2                       ROM        Juniper ROM Monitor Version 6.4b20
                            O/S        Version 7.0-20040804.0 by builder on 2004-0
SPMB 0                      ROM        Juniper ROM Monitor Version 6.4b18
                            O/S        Version 7.0-20040804.0 by builder on 2004-0
```

show chassis firmware scc (TX Matrix Router)

```
user@host> show chassis firmware scc
scc-re0:
--------------------------------------------------------------------------
Part                        Type       Version
SPMB 0                      ROM        Juniper ROM Monitor Version 6.4b18
                            O/S        Version 7.0-20040804.0 by builder on 2004-0
```

show chassis firmware (TX Matrix Plus Router)

```
user@host> show chassis firmware
sfc0-re0:
--------------------------------------------------------------------------
Part                        Type       Version
Global FPC 4
Global FPC 6
Global FPC 7
Global FPC 12
Global FPC 14
Global FPC 15
Global FPC 20
Global FPC 21
Global FPC 22
Global FPC 23
Global FPC 24
Global FPC 25
Global FPC 26
Global FPC 28
Global FPC 29
Global FPC 31
SPMB 0                      ROM        Juniper ROM Monitor Version 9.5b1
                            O/S        Version 9.6-20090507.0 by builder on 2009-0
SPMB 1                      ROM        Juniper ROM Monitor Version 9.5b1
                            O/S        Version 9.6-20090507.0 by builder on 2009-0

lcc0-re1:
--------------------------------------------------------------------------
Part                        Type       Version
FPC 4                       ROM        Juniper ROM Monitor Version 9.0b2
                            O/S        Version 9.6-20090507.0 by builder on 2009-0
FPC 6                       ROM        Juniper ROM Monitor Version 9.0b2
                            O/S        Version 9.6-20090507.0 by builder on 2009-0
```

```
FPC 7                    ROM        Juniper ROM Monitor Version 9.0b2
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
SPMB 0                   ROM        Juniper ROM Monitor Version 9.5b1
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
SPMB 1                   ROM        Juniper ROM Monitor Version 9.5b1
                         O/S        Version 9.6-20090507.0 by builder on 2009-0

lcc1-re1:
--------------------------------------------------------------------------
Part                     Type       Version
FPC 4                    ROM        Juniper ROM Monitor Version 9.0b2
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
FPC 6                    ROM        Juniper ROM Monitor Version 9.0b2
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
FPC 7                    ROM        Juniper ROM Monitor Version 9.0b2
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
SPMB 0                   ROM        Juniper ROM Monitor Version 9.5b1
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
SPMB 1                   ROM        Juniper ROM Monitor Version 9.5b1
                         O/S        Version 9.6-20090507.0 by builder on 2009-0

lcc2-re1:
--------------------------------------------------------------------------
Part                     Type       Version
FPC 4                    ROM        Juniper ROM Monitor Version 9.0b2
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
FPC 5                    ROM        Juniper ROM Monitor Version 9.0b2
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
FPC 6                    ROM        Juniper ROM Monitor Version 9.0b2
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
FPC 7                    ROM        Juniper ROM Monitor Version 7.5b4
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
SPMB 0                   ROM        Juniper ROM Monitor Version 9.5b1
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
SPMB 1                   ROM        Juniper ROM Monitor Version 9.5b1
                         O/S        Version 9.6-20090507.0 by builder on 2009-0

lcc3-re1:
--------------------------------------------------------------------------
Part                     Type       Version
FPC 0                    ROM        Juniper ROM Monitor Version 9.0b2
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
FPC 1                    ROM        Juniper ROM Monitor Version 9.0b2
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
FPC 2                    ROM        Juniper ROM Monitor Version 9.0b2
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
FPC 4                    ROM        Juniper ROM Monitor Version 7.5b4
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
FPC 5                    ROM        Juniper ROM Monitor Version 9.0b2
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
FPC 7                    ROM        Juniper ROM Monitor Version 9.0b2
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
SPMB 0                   ROM        Juniper ROM Monitor Version 9.5b1
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
SPMB 1                   ROM        Juniper ROM Monitor Version 9.5b1
                         O/S        Version 9.6-20090507.0 by builder on 2009-0
```

show chassis firmware lcc (TX Matrix Plus Router)

```
user@host> show chassis firmware lcc 0
lcc0-re1:
--------------------------------------------------------------------------
Part                     Type       Version
```

```
FPC 4                     ROM        Juniper ROM Monitor Version 9.0b2
                          O/S        Version 9.6-20090507.0 by builder on 2009-0
FPC 6                     ROM        Juniper ROM Monitor Version 9.0b2
                          O/S        Version 9.6-20090507.0 by builder on 2009-0
FPC 7                     ROM        Juniper ROM Monitor Version 9.0b2
                          O/S        Version 9.6-20090507.0 by builder on 2009-0
SPMB 0                    ROM        Juniper ROM Monitor Version 9.5b1
                          O/S        Version 9.6-20090507.0 by builder on 2009-0
SPMB 1                    ROM        Juniper ROM Monitor Version 9.5b1
                          O/S        Version 9.6-20090507.0 by builder on 2009-0
```

show chassis firmware sfc (TX Matrix Plus Router)

```
user@host> show chassis firmware sfc 0
sfc0-re0:
--------------------------------------------------------------------------
Part                      Type       Version
Global FPC 4
Global FPC 6
Global FPC 7
Global FPC 12
Global FPC 14
Global FPC 15
Global FPC 20
Global FPC 21
Global FPC 22
Global FPC 23
Global FPC 24
Global FPC 25
Global FPC 26
Global FPC 28
Global FPC 29
Global FPC 31
SPMB 0                    ROM        Juniper ROM Monitor Version 9.5b1
                          O/S        Version 9.6-20090507.0 by builder on 2009-0
SPMB 1                    ROM        Juniper ROM Monitor Version 9.5b1
                          O/S        Version 9.6-20090507.0 by builder on 2009-0
```

show chassis forwarding

Syntax show chassis forwarding

Release Information Command introduced before Junos OS Release 7.4.

Description (J Series Services Routers only) Display status of the forwarding process (fwdd).

Options This command has no options.

Required Privilege Level view

List of Sample Output **show chassis forwarding on page 388**

Output Fields Table 73 on page 388 lists the output fields for the **show chassis forwarding** command. Output fields are listed in the approximate order in which they appear.

Table 73: show chassis forwarding Output Fields

Field Name	Field Description

FWWD status	Forwarding status:
	• **State**:
	  • **Online**—FWDD is operational and running.
	  • **Offline**—FWDD is not running.
	• **Microkernel CPU utilization**—Percentage of microkernel CPU being used by the forwarding process.
	• **Real-time threads CPU utilization**—Percentage of CPU being used by the forwarding process.
	• **Heap utilization**—Percentage of heap space (dynamic memory) being used by the forwarding process. If this number exceeds 80 percent, there may be a software problem (memory leak).
	• **Buffer utilization**—Percentage of buffer space being used by the forwarding process for buffering internal messages.
	• **Uptime**—How long the forwarding process has been up and running.

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

Syntax

show chassis fpc
<detail <*fpc-slot*>> | <pic-status <*fpc-slot*>>

Syntax (TX Matrix and TX Matrix Plus Router)

show chassis fpc
<detail <*fpc-slot*>> | <pic-status <*fpc-slot*>>
<lcc *number*>

Release Information

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

Description

Display status information about the installed Flexible PIC Concentrators (FPCs) and PICs.

Options

none—Display status information for all FPCs. On a TX Matrix router, display status information for all FPCs on the attached T640 routers in the routing matrix. On a TX Matrix Plus router, display status information for all FPCs on the attached T1600 routers in the routing matrix.

detail—(Optional) Display detailed status information for all FPCs or for the FPC in the specified slot (see ***fpc-slot***).

fpc-slot—(Optional) FPC slot number:

- (TX Matrix and TX Matrix Plus router only—On a TX Matrix router, if you specify the number of the T640 router (or line-card chassis) by using the **lcc *number*** option (the recommended method), replace ***fpc-slot*** with a value from **0** through **7**. Otherwise, replace ***fpc-slot*** with a value from **0** through **31**. Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 router (or line-card chassis) by using the **lcc *number*** option (the recommended method), replace ***fpc-slot*** with a value from **0** through **7**. Otherwise, replace ***fpc-slot*** with a value from **0** through **31**. For example, the following commands have the same result:

  user@host> **show chassis fpc detail 1 lcc 1**
  user@host> **show chassis fpc detail 9**

- M120 router—Replace ***fpc-slot*** with a value from **0** through **5**.
- MX80 router—Replace ***fpc-slot*** with a value from **0** through **1**.
- MX240 router—Replace ***fpc-slot*** with a value from **0** through **2**.
- MX480 router—Replace ***fpc-slot*** with a value from **0** through **5**.
- MX-960 router—Replace ***fpc-slot*** with a value from **0** through **11**.
- Other routers—Replace ***fpc-slot*** with a value from **0** through **7**.
- EX Series switches:
  - EX3200 switches and EX4200 standalone switches—Replace ***fpc-slot*** with 0.
  - EX4200 switches in a Virtual Chassis configuration—Replace ***fpc-slot*** with a value from 0 through 9 (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).

pic-status—(Optional) Display status information for all PICs or for the PIC in the specified slot (see ***fpc-slot***).

NOTE: On T1600 routers, Type 4 FPCs with ASICs based on the SL2.0 chipset do not support the 10-Gigabit Ethernet LAN/WAN PIC with SFP+ (10x10GE(LAN/WAN) SFPP). If you issue the **show chassis fpc** command with the **pic-status** option, the CLI displays the string "Not Supported" for 10x10GE(LAN/WAN) SFPP PICs installed on such FPCs. The following is a sample output:

```
user@host> show chassis fpc pic-status
Slot 0   Online       E2-FPC Type 1
  PIC 0  Online       1x G/E SFP, 1000 BASE
  PIC 1  Online       Adaptive Services-II
  PIC 2  Online       1x G/E IQ, 1000 BASE
  PIC 3  Online       1x G/E IQ, 1000 BASE
Slot 1   Online       FPC Type 3-ES
  PIC 0  Present      UNUSED- Not Supported
Slot 2   Online       FPC Type 4-ES
  PIC 0  Offline      4x OC-192 SONET XFP
  PIC 1  Present      10x10GE(LAN/WAN) SFPP- Not Supported
<<<<<<
Slot 4   Offline      FPC Type 1-ES
Slot 5   Offline      FPC Type 2-ES
Slot 6   Online       E2-FPC Type 3
  PIC 0  Online       1x OC-192 SONET XFP
  PIC 1  Online       4x OC-48 SONET
  PIC 2  Online       4x OC-48 SONET
  PIC 3  Online       MultiServices 500
Slot 7   Online       FPC Type 4-ES
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
  PIC 1  Online       4x 10GE (LAN/WAN) XFP
```

In addition, an entry is logged in the system log messages (/var/log/messages) that the PIC is not supported. The following is a sample message logged in the system log:

```
Apr  5 08:47:36  router1 chassisd[2770]: CHASSISD_UNSUPPORTED_PIC:
 PIC 1 in FPC 2 (type 763, version 257) is not supported
```

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

Required Privilege Level view

Related Documentation

- **request chassis fpc on page 163**

List of Sample Output

Output Fields

Table 74 on page 391 lists the output fields for the**show chassis fpc** command. Output fields are listed in the approximate order in which they appear.

Table 74: show chassis fpc Output Fields

Field Name	Field Description	Level of Output
Slot or **Slot State**	Slot number and state. The state can be one of the following conditions: • **Dead**—Held in reset because of errors. • **Diag**—Slot is being ignored while the FPC is running diagnostics. • **Dormant**—Held in reset. • **Empty**—No FPC is present. • **Online**—FPC is online and running. • **Present**—FPC is detected by the chassis daemon but is either not supported by the current version of Junos or inserted in the wrong slot. The output also states either **Hardware Not Supported** or **Hardware Not In Right Slot**. FPC is coming up but not yet online. • **Probed**—Probe is complete; awaiting restart of the Packet Forwarding Engine (PFE). • **Probe-wait**—Waiting to be probed.	all levels
Logical slot	Slot number.	all levels

Table 74: show chassis fpc Output Fields *(continued)*

Field Name	Field Description	Level of Output
Temp (C) or Temperature	Temperature of the air passing by the FPC, in degrees Celsius or in both Celsius and Fahrenheit.	all levels
Total CPU Utilization (%)	Total percentage of CPU being used by the FPC's processor.	all levels
Interrupt CPU Utilization (%)	Of the total CPU being used by the FPC's processor, the percentage being used for interrupts.	none specified
Memory DRAM (MB)	Total DRAM, in megabytes, available to the FPC's processor.	none specified
Heap Utilization (%)	Percentage of heap space (dynamic memory) being used by the FPC's processor. If this number exceeds 80 percent, there may be a software problem (memory leak).	none specified
Buffer Utilization (%)	Percentage of buffer space being used by the FPC's processor for buffering internal messages.	none specified
Total CPU DRAM	Amount of DRAM available to the FPC's CPU.	**detail**
Total RLDRAM	Amount of reduced latency dynamic random access memory (RLDRAM) available to the FPC CPU.	**detail**
Total DDR DRAM	Amount of double data rate dynamic random access memory (DDR DRAM) available to the FPC CPU.	**detail**
Total SRAM	Amount of static RAM (SRAM) used by the FPC's CPU.	**detail**
Total SDRAM	Total amount of memory used for storing packets and notifications.	**detail**
I/O Manager ASICs information	I/O Manager version number, manufacturer, and part number.	**detail**
Start time	Time when the Routing Engine detected that the FPC was running.	**detail**
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

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
                    Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State           (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Empty
  1  Online           34      6          0       1024       18         30
  2  Online           33      9          0       1024       24         30
```

show chassis fpc (MX480 Router)

```
user@host> show chassis fpc
                    Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State           (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Empty
  1  Online           36      9          0       1024       17         57
  2  Empty
  3  Empty
  4  Empty
  5  Empty
```

show chassis fpc (MX960 Router)

```
user@host> show chassis fpc
        Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State      (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
```

```
 0  Empty
 1  Empty
 2  Empty
 3  Online       25     19          0       1024       15         57
 4  Empty
 5  Online       26     27          0       1024       15         57
 6  Empty
 7  Empty
 8  Empty
 9  Empty
 10  Empty
 11  Empty
```

show chassis fpc detail (MX Series Routers)

```
user@host> show chassis fpc detail 2
Slot 0 information:
  State                                 Online
  Temperature                          36 degrees C / 96 degrees F
  Total CPU DRAM                     1024 MB
  Total RLDRAM                        256 MB
  Total DDR DRAM                     4096 MB
  Start time:                           2009-08-11 21:20:30 PDT
  Uptime:                               2 hours, 8 minutes, 50 seconds
  Max Power Consumption               335 Watts
```

show chassis fpc (Hardware Not Supported)

```
user@host> show chassis fpc
show chassis fpc
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
 Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online          -------------------- CPU less FPC --------------------
  1  Present         ------ Hardware Not In Right Slot ------
  2  Online                    0          0         0         0          0
  3  Present         ------ Hardware Not Supported ------
  4  Empty
  5  Empty
  6  Online                    0          0         0         0          0
```

show chassis fpc detail (Hardware Not Supported)

```
user@host> show chassis fpc detail
Slot 0 information:
  State                                 Online
  Total CPU DRAM                        ---- CPU less FPC ----
  Start time                            2006-07-07 03:21:00 UTC
  Uptime                                27 minutes, 51 seconds
 Slot 1 information:
  State                                 Present
  Reason                                --- Hardware Not In Right Slot ---
 Slot 2 information:
  State                                 Online
  Total CPU DRAM                     32 MB
  Start time                            2006-07-07 03:20:59 UTC
  Uptime                                27 minutes, 52 seconds
 Slot 3 information:
  State                                 Present
  Reason                                --- Hardware Not Supported ---
  Total CPU DRAM                      0 MB
 Slot 6 information:
  State                                 Online
  Total CPU DRAM                     32 MB
  Start time                            2006-07-07 03:21:01 UTC
  Uptime                                27 minutes, 50 seconds
```

show chassis fpc pic-status

```
user@host> show chassis fpc pic-status
Slot 0 Online
  PIC 1    1x OC-12 ATM, MM
  PIC 2    1x OC-12 ATM, MM
  PIC 3    1x OC-12 ATM, MM
Slot 1 Online
  PIC 0    1x OC-48 SONET, SMIR
Slot 2 Online
  PIC 0    1x OC-192 SONET, SMSR
```

show chassis fpc pic-status (M Series Routers)

```
user@host> show chassis fpc pic-status
Slot 1   Online       FPC Type 1
  PIC 0  Present      2x OC-3 ATM, MM- Hardware Error
  PIC 1  Online       4x OC-3 SONET, SMIR
Slot 2   Online       E-FPC Type 2
  PIC 0  Online       4x G/E, 1000 BASE-SX
  PIC 1  Online       2x G/E SFP, 1000 BASE
  PIC 3  Online       1x Tunnel
Slot 3   Online       E-FPC Type 1
  PIC 0  Online       1x G/E IQ, 1000 BASE
  PIC 2  Online       1x G/E SFP, 1000 BASE
Slot 4   Online       E-FPC Type 2
  PIC 0  Online       4x G/E SFP, 1000 BASE
  PIC 1  Online       4x G/E SFP, 1000 BASE
  PIC 2  Online       4x G/E SFP, 1000 BASE
  PIC 3  Online       4x G/E SFP, 1000 BASE
Slot 5   Online       FPC Type 2
...
```

show chassis fpc pic-status (M120 Router)

```
user@host> show chassis fpc pic-status
Slot 1   Online       M120 CFPC 10GE
  PIC 0  Online       1x 10GE(LAN/WAN) XFP
Slot 3   Online       M120 FPC Type 2 (proto)
  PIC 0  Online       2x G/E IQ, 1000 BASE
  PIC 1  Online       4x OC-3 SONET, SMIR
  PIC 2  Online       2x G/E IQ, 1000 BASE
  PIC 3  Online       8x 1GE(LAN), IQ2
Slot 4   Online       M120 FPC Type 3 (proto)
  PIC 0  Online       10x 1GE(LAN), 1000 BASE
Slot 5   Online       M120 FPC Type 1 (proto)
  PIC 0  Present      1x G/E, 1000 BASE-LX- Not Supported
  PIC 1  Online       1x CHOC3 IQ SONET, SMLR
  PIC 2  Online       4x CHDS3 IQ
  PIC 3  Online       1x G/E SFP, 1000 BASE
```

show chassis fpc lcc (TX Matrix Router)

```
user@host> show chassis fpc lcc 0
lcc0-re0:
--------------------------------------------------------------------------
                      Temp  CPU       Utilization (%)  Memory    Utilization (%)
Slot State      (C)  Total  Interrupt     DRAM (MB)       Heap   Buffer
  0  Empty
  1  Online      27      2          0       256         8         44
  2  Online      27      3          0        256        15         44
  3  Empty
  4  Empty
  5  Empty
  6  Empty
  7  Empty
```

show chassis fpc pic-status (TX Matrix Router)

```
user@host> show chassis fpc pic-status
lcc0-re0:
--------------------------------------------------------------------------
Slot 0   Online       FPC Type 3
  PIC 0  Online       1x OC-192 SM SR1
  PIC 1  Online       1x OC-192 SM SR2
  PIC 2  Online       1x OC-192 SM SR1
  PIC 3  Online       1x Tunnel
Slot 1   Online       FPC Type 2
  PIC 0  Online       1x OC-48 SONET, SMSR
  PIC 1  Online       1x OC-48 SONET, SMSR

lcc1-re0:
--------------------------------------------------------------------------

lcc2-re0:
--------------------------------------------------------------------------
Slot 1   Online       FPC Type 3
  PIC 0  Online       1x OC-192 SM SR1
Slot 5   Online       FPC Type 2
  PIC 0  Online       1x OC-48 SONET, SMSR
  PIC 1  Online       2x G/E, 1000 BASE-LX
  PIC 2  Online       2x G/E, 1000 BASE-LX
  PIC 3  Online       1x OC-48 SONET, SMSR

lcc3-re0:
--------------------------------------------------------------------------
```

show chassis fpc pic-status lcc (TX Matrix Router)

```
user@host> show chassis fpc pic-status lcc 0
lcc0-re0:
--------------------------------------------------------------------------
Slot 0   Online       FPC Type 3
  PIC 0  Online       1x OC-192 SM SR2
Slot 1   Online       FPC Type 2
  PIC 0  Online       2x OC-12 ATM2 IQ, MM
  PIC 1  Online       1x OC-48 SONET, SMSR
  PIC 2  Online       1x OC-48 SONET, SMSR
  PIC 3  Online       4x G/E, 1000 BASE-SX
```

show chassis fpc (TX Matrix Plus Router)

```
user@host> show chassis fpc
lcc0-re0:
--------------------------------------------------------------------------
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Empty
  1  Online            38      4          0       2048        3         24
  2  Online            43      8          0       2048        6         24
  3  Empty
  4  Online            43      6          0       2048        6         24
  5  Empty
  6  Online            42     13          0       2048        6         24
  7  Online            45      7          0       2048        3         24

lcc2-re0:
--------------------------------------------------------------------------
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online            42     10          0       2048        6         24
  1  Empty
  2  Online            42     11          0       2048        6         24
```

```
  3  Online            40      5          0       2048        3         24
  4  Online            33     26          0       1024        8         49
  5  Empty
  6  Online            43      8          0       2048        6         24
  7  Online            46      6          0       2048        3         24

lcc3-re0:
--------------------------------------------------------------------------
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Empty
  1  Empty
  2  Online            39     30          0       2048        7         24
  3  Empty
  4  Online            41      8          0       2048        6         24
  5  Online            41     12          0       2048        6         24
  6  Online            40      8          0       2048        6         24
  7  Online            42      4          0       2048        3         24
```

show chassis fpc lcc (TX Matrix Plus Router)

```
user@host> show chassis fpc lcc 0
lcc0-re0:
--------------------------------------------------------------------------
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Empty
  1  Online            38      4          0       2048        3         24
  2  Online            43      8          0       2048        6         24
  3  Empty
  4  Online            43      6          0       2048        6         24
  5  Empty
  6  Online            42     14          0       2048        6         24
  7  Online            45      6          0       2048        3         24
```

show chassis fpc detail (TX Matrix Plus Router)

```
user@host> show chassis fpc details

lcc0-re0:
--------------------------------------------------------------------------
Slot 1 information:
  State                               Online
  Temperature                       38 degrees C / 100 degrees F
  Total CPU DRAM                  2048 MB
  Total SRAM                        64 MB
  Total SDRAM                     1280 MB
  Start time                          2010-10-04 20:06:22 PDT
  Uptime                              1 hour, 32 minutes, 51 seconds
Slot 2 information:
  State                               Online
  Temperature                       43 degrees C / 109 degrees F
  Total CPU DRAM                  2048 MB
  Total SRAM                       128 MB
  Total SDRAM                     2560 MB
  Start time                          2010-10-04 20:06:37 PDT
  Uptime                              1 hour, 32 minutes, 36 seconds
Slot 4 information:
  State                               Online
  Temperature                       43 degrees C / 109 degrees F
  Total CPU DRAM                  2048 MB
  Total SRAM                       128 MB
  Total SDRAM                     2560 MB
  Start time                          2010-10-04 20:06:40 PDT
  Uptime                              1 hour, 32 minutes, 33 seconds
```

```
Slot 6 information:
  State                                 Online
  Temperature                        42 degrees C / 107 degrees F
  Total CPU DRAM                   2048 MB
  Total SRAM                        128 MB
  Total SDRAM                      2560 MB
  Start time                            2010-10-04 20:06:42 PDT
  Uptime                                1 hour, 32 minutes, 31 seconds
Slot 7 information:
  State                                 Online
  Temperature                        45 degrees C / 113 degrees F
  Total CPU DRAM                   2048 MB
  Total SRAM                         64 MB
  Total SDRAM                      1280 MB
  Start time                            2010-10-04 20:06:43 PDT
  Uptime                                1 hour, 32 minutes, 30 seconds

lcc2-re0:
--------------------------------------------------------------------------
Slot 0 information:
  State                                 Online
  Temperature                        42 degrees C / 107 degrees F
  Total CPU DRAM                   2048 MB
  Total SRAM                        128 MB
  Total SDRAM                      2560 MB
  Start time                            2010-10-04 20:06:35 PDT
  Uptime                                1 hour, 32 minutes, 38 seconds
Slot 2 information:
  State                                 Online
  Temperature                        42 degrees C / 107 degrees F
  Total CPU DRAM                   2048 MB
  Total SRAM                        128 MB
  Total SDRAM                      2560 MB
  Start time                            2010-10-04 20:06:37 PDT
  Uptime                                1 hour, 32 minutes, 36 seconds
Slot 3 information:
  State                                 Online
  Temperature                        40 degrees C / 104 degrees F
  Total CPU DRAM                   2048 MB
  Total SRAM                         64 MB
  Total SDRAM                      1280 MB
  Start time                            2010-10-04 20:06:28 PDT
  Uptime                                1 hour, 32 minutes, 45 seconds
Slot 4 information:
  State                                 Online
  Temperature                        33 degrees C / 91 degrees F
  Total CPU DRAM                   1024 MB
  Total SRAM                         64 MB
  Total SDRAM                      1280 MB
  Start time                            2010-10-04 20:08:03 PDT
  Uptime                                1 hour, 31 minutes, 10 seconds
Slot 6 information:
  State                                 Online
  Temperature                        43 degrees C / 109 degrees F
  Total CPU DRAM                   2048 MB
  Total SRAM                        128 MB
  Total SDRAM                      2560 MB
  Start time                            2010-10-04 20:06:44 PDT
  Uptime                                1 hour, 32 minutes, 29 seconds
Slot 7 information:
  State                                 Online
```

```
  Temperature                      46 degrees C / 114 degrees F
  Total CPU DRAM                 2048 MB
  Total SRAM                       64 MB
  Total SDRAM                    1280 MB
  Start time                          2010-10-04 20:06:46 PDT
  Uptime                              1 hour, 32 minutes, 27 seconds

lcc3-re0:
--------------------------------------------------------------------------
Slot 2 information:
  State                               Online
  Temperature                      38 degrees C / 100 degrees F
  Total CPU DRAM                 2048 MB
  Total SRAM                      128 MB
  Total SDRAM                    2560 MB
  Start time                          2010-10-04 20:17:31 PDT
  Uptime                              1 hour, 21 minutes, 42 seconds
Slot 4 information:
  State                               Online
  Temperature                      41 degrees C / 105 degrees F
  Total CPU DRAM                 2048 MB
  Total SRAM                      128 MB
  Total SDRAM                    2560 MB
  Start time                          2010-10-04 20:17:34 PDT
  Uptime                              1 hour, 21 minutes, 39 seconds
Slot 5 information:
  State                               Online
  Temperature                      41 degrees C / 105 degrees F
  Total CPU DRAM                 2048 MB
  Total SRAM                      128 MB
  Total SDRAM                    2560 MB
  Start time                          2010-10-04 20:17:36 PDT
  Uptime                              1 hour, 21 minutes, 37 seconds
Slot 6 information:
  State                               Online
  Temperature                      40 degrees C / 104 degrees F
  Total CPU DRAM                 2048 MB
  Total SRAM                      128 MB
  Total SDRAM                    2560 MB
  Start time                          2010-10-04 20:17:39 PDT
  Uptime                              1 hour, 21 minutes, 34 seconds
Slot 7 information:
  State                               Online
  Temperature                      42 degrees C / 107 degrees F
  Total CPU DRAM                 2048 MB
  Total SRAM                       64 MB
  Total SDRAM                    1280 MB
  Start time                          2010-10-04 20:17:41 PDT
  Uptime                              1 hour, 21 minutes, 32 seconds
```

show chassis fpc pic-status (TX Matrix Plus Router)

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

lcc0-re0:
--------------------------------------------------------------------------
Slot 1   Online       FPC Type 2-ES
  PIC 0  Online       8x 1GE(LAN), IQ2
Slot 2   Online       FPC Type 4-ES
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
Slot 4   Online       FPC Type 4-ES
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
Slot 6   Online       FPC Type 4-ES
```

```
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
  PIC 1  Online       4x 10GE (LAN/WAN) XFP
Slot 7   Online       FPC Type 3-ES
  PIC 0  Online       10x 1GE(LAN), 1000 BASE
  PIC 2  Online       1x OC-192 SM SR2
  PIC 3  Online       10x 1GE(LAN), 1000 BASE

lcc2-re0:
--------------------------------------------------------------------------
Slot 0   Online       FPC Type 4-ES
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
Slot 2   Online       FPC Type 4-ES
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
  PIC 1  Online       4x 10GE (LAN/WAN) XFP
Slot 3   Online       FPC Type 2-ES
  PIC 0  Online       8x 1GE(LAN), IQ2
Slot 4   Online       FPC Type 4
  PIC 0  Online       10x10GE(LAN/WAN) SFPP
Slot 6   Online       FPC Type 4-ES
  PIC 0  Online       4x OC-192 SONET XFP
Slot 7   Online       FPC Type 3-ES
  PIC 0  Online       10x 1GE(LAN), 1000 BASE
  PIC 1  Offline      1x 10GE(LAN/WAN) IQ2E
  PIC 2  Online       1x OC-192 SM SR2
  PIC 3  Online       1x Tunnel

lcc3-re0:
--------------------------------------------------------------------------
Slot 2   Online       FPC Type 4-ES
  PIC 0  Online       10x10GE(LAN/WAN) SFPP
Slot 4   Online       FPC Type 4-ES
  PIC 0  Online       4x OC-192 SONET XFP
Slot 5   Online       FPC Type 4-ES
  PIC 0  Online       4x OC-192 SONET XFP
  PIC 1  Online       4x 10GE (LAN/WAN) XFP
Slot 6   Online       FPC Type 4-ES
  PIC 1  Online       4x 10GE (LAN/WAN) XFP
Slot 7   Online       FPC Type 3-ES
  PIC 0  Online       10x 1GE(LAN), 1000 BASE
  PIC 1  Online       8x 1GE(TYPE3), IQ2E
  PIC 2  Online       4x OC-48 SONET
```

show chassis fpc (T1600 Router)

```
user@host> show chassis fpc
                    Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State           (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Empty
  1  Empty
  2  Online           49      3          0       2048        3         24
  3  Online           46      6          0       2048        6         24
  4  Empty
  5  Online           46      5          0       2048        3         24
  6  Empty
  7  Online           44      8          0       1024        7         49
```

show chassis fpc detail (T1600 Router)

```
user@host> show chassis fpc detail

show chassis fpc detail
Slot 2 information:
  State                              Online
  Temperature                      49 degrees C / 120 degrees F
  Total CPU DRAM                 2048 MB
```

```
  Total SRAM                        64 MB
  Total SDRAM                     1280 MB
  Start time                           2010-10-04 21:12:52 PDT
  Uptime                               32 minutes, 9 seconds
Slot 3 information:
  State                                Online
  Temperature                       47 degrees C / 116 degrees F
  Total CPU DRAM                  2048 MB
  Total SRAM                       128 MB
  Total SDRAM                     2560 MB
  Start time                           2010-10-04 21:13:06 PDT
  Uptime                               31 minutes, 55 seconds
Slot 5 information:
  State                                Online
  Temperature                       46 degrees C / 114 degrees F
  Total CPU DRAM                  2048 MB
  Total SRAM                        64 MB
  Total SDRAM                     1280 MB
  Start time                           2010-10-04 21:12:56 PDT
  Uptime                               32 minutes, 5 seconds
Slot 7 information:
  State                                Online
  Temperature                       44 degrees C / 111 degrees F
  Total CPU DRAM                  1024 MB
  Total SRAM                        64 MB
  Total SDRAM                     1280 MB
  Start time                           2010-10-04 21:14:34 PDT
  Uptime                               30 minutes, 27 seconds
```

show chassis fpc <slot-number> (T1600 Router)

```
user@host> show chassis fpc 2

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

show chassis fpc pic-status (T1600 Router)

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

Slot 2   Online       FPC Type 1-ES
  PIC 0  Online       Load Type 1
  PIC 1  Online       4x 1GE(LAN), IQ2E
  PIC 3  Online       1x OC-12-3 SFP
Slot 3   Online       FPC Type 4-ES
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
  PIC 1  Online       4x OC-192 SONET XFP
Slot 5   Online       FPC Type 2-ES
  PIC 0  Online       Load Type 2
  PIC 1  Online       8x 1GE(LAN), IQ2E
  PIC 2  Online       8x 1GE(LAN), IQ2E
  PIC 3  Online       1x OC-48-12-3 SFP
Slot 7   Online       FPC Type 4
  PIC 0  Online       4x 10GE (LAN/WAN) XFP
```

show chassis fpc-feb-connectivity

Syntax show chassis fpc-feb-connectivity

Release Information Command introduced in Junos OS Release 8.0.

Description (M120 router only) Display the Flexible PIC Concentrator (FPC) and Forwarding Engine Board (FEB) mapping and their respective states.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show chassis fpc-feb-connectivity on page 403**

Output Fields Table 75 on page 402 lists the output fields for the **show chassis fpc-feb-connectivity** command. Output fields are listed in the approximate order in which they appear.

Table 75: show chassis fpc-feb-connectivity Output Fields

Field Name	Field Description
FPC	Slot number of the Flexible PIC Concentrator (FPC).
FPC type	Type of FPC: **Type 1**, **Type 2**, **Type 3**, or **cFPC**.
FPC state	State of the FPC. State can be any of the following: • **Announce offline**—Intermediate state where FPC is going down but is not offline and the Chassis manager acknowledges that the FPC is in the process of going offline. • **Announce online**—Intermediate state where FPC is coming up but is not online and the Chassis manager acknowledges that the FPC is in the process of coming online. • **Empty**—No FPC is present. • **Offline**—FPC is powered down. • **Online**—FPC is online and running. • **Present**—The chassis process has detected the FPC, but the FPC is either not supported by the current version of the Junos OS or FPC is coming up but is not online. • **Ready**—FPC is in transition state.
Connected FEB	Slot number of the Forwarding Engine Board (FEB) connected to the FPC or **None** if the FPC is not connected to a FEB.

Table 75: show chassis fpc-feb-connectivity Output Fields *(continued)*

Field Name	Field Description
FEB state	State of the FEB. State can be any of the following: • **Announce offline**—Intermediate state where FEB is going down but is not offline and the Chassis manager acknowledges that the FEB is in the process of going offline. • **Announce online**—Intermediate state where FEB is coming up but is not online and the Chassis manager acknowledges that the FEB is in the process of coming online. • **Empty**—No FEB is present. • **Offline**—FEB is powered down. • **Online**—FEB is online and running. • **Present**—The chassis process has detected the FEB, but the FEB is either not supported by the current version of the Junos OS or FEB is coming up but is not online. • **Ready**—FEB is in transition state.
Link status	Status of the link connecting the R-FEB and R-FPC: • **Error** • **Misconfiguration**—Configuration between the R-FEB and the F-FPC is incorrect. • **OK**

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

Syntax

show chassis hardware
<clei-models | detail | extensive | models>

Syntax (EX Series Switches)

show chassis hardware
<clei-models>
<detail | extensive>
<models>

Syntax (TX Matrix Router)

show chassis hardware
<clei-models>
<detail | extensive>
<models>
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show chassis hardware
<clei-models>
<detail | extensive>
<models>
<lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
models option introduced in Junos OS Release 8.2.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display a list of all Flexible PIC Concentrators (FPCs) and PICs installed in the router or switch chassis, including the hardware version level and serial number.

In EX Series switch command output, FPC refers to the following:

- On EX2200 switches, EX3200 switches, EX4200 standalone switches, and EX4500 switches—Refers to the switch; FPC ***number*** is always 0.
- On EX4200 switches in a Virtual Chassis configuration—Refers to the member of a Virtual Chassis; FPC ***number*** equals the member ID, from 0 through 9.
- On EX8208 and EX8216 switches—Refers to a line card; FPC ***number*** equals the slot number for the line card.

Options

none—Display information about hardware. For a TX Matrix router, display information about the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display information about the TX Matrix Plus router and its attached T1600 routers.

clei-models—(Optional) Display Common Language Equipment Identifier (CLEI) bar code and model number for orderable field-replaceable units (FRUs).

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 76: 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 409
show chassis hardware clei-models (EX8216 Switch) on page 410
show chassis hardware clei-models (T1600 Router) on page 410
show chassis hardware detail (EX4200 Switch) on page 411
show chassis hardware models (EX4500 Switch) on page 411
show chassis hardware (J6350 Router) on page 411
show chassis hardware (J6300 Router) on page 411
show chassis hardware (M7i Router) on page 412
show chassis hardware (M10 Router) on page 412
show chassis hardware models (M10 Router) on page 413
show chassis hardware (M20 Router) on page 413
show chassis hardware models (M20 Router) on page 414
show chassis hardware (M40 Router) on page 414
show chassis hardware (M40e Router) on page 415
show chassis hardware (M120 Router) on page 415
show chassis hardware detail (M120 Router) on page 416
show chassis hardware models (M120 Router) on page 417
show chassis hardware (M160 Router) on page 417
show chassis hardware models (M160 Router) on page 418
show chassis hardware detail (M160 Router) on page 419
show chassis hardware (M320 Router) on page 420
show chassis hardware models (M320 Router) on page 420

Output Fields Table 77 on page 407 lists the output fields for the **show chassis hardware** command. Output fields are listed in the approximate order in which they appear.

Table 77: show chassis hardware Output Fields

Field Name	Field Description	Level of Output
Item	Chassis component: • (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 . • (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). • (M Series routers, except for the M320 router)—Information about the backplane; power supplies; fan trays; Routing Engine; maxicab (the connection between the Routing Engine and the backplane, for the M40 router only); SCB, SSB, SFM, or FEB; MCS and PCG (for the M160 router only); each FPC and PIC; and each fan, blower, and impeller. • (M120, M320, and T Series routers)—Information about the backplane, power supplies, fan trays, midplane, FPM (craft interface), CIP, PEM, SCG, CB, FPC, PIC, SFP, SPMB, and SIB.	All levels
Version	Revision level of the chassis component.	All levels
Part number	Part number of the chassis component.	All levels
Serial number	Serial number of the chassis component. The serial number of the backplane is also the serial number of the router chassis. Use this serial number when you need to contact Juniper Networks Customer Support about the router chassis.	All levels
Assb ID or **Assembly ID**	(**extensive** keyword only) Identification number that describes the FRU hardware.	**extensive**
FRU model number	(**clei-models**, **extensive**, and **models** keyword only) Model number of FRU hardware component.	none specified
CLEI code	(**clei-models** and **extensive**keyword only) Common Language Equipment Identifier code. This value is displayed only for hardware components that use ID EEPROM format v2. This value is not displayed for components that use ID EEPROM format v1.	none specified
EEPROM Version	ID EEPROM version used by hardware component: **0x01** (version 1) or **0x02** (version 2).	**extensive**
Description	Brief description of the hardware item: • Type of power supply. • Type of PIC. If the PIC type is not supported on the current software release, the output states **Hardware Not Supported**	All levels

Table 77: show chassis hardware Output Fields *(continued)*

Field Name	Field Description	Level of Output

	• Type of FPC: **FPC Type 1**, **FPC Type 2**, **FPC Type 3**, **FPC Type 4** , or **FPC Type OC192**, .
	On EX Series switches, a brief description of the FPC.
	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.
	  • **2x FE**—Either two built-in Fast Ethernet interfaces (fixed PIM) or dual-port Fast Ethernet PIM
	  • **4x FE**—4-port Fast Ethernet ePIM
	  • **1x GE Copper**—Copper Gigabit Ethernet ePIM (one 10-Mbps, 100-Mbps, or 1000-Mbps port)
	  • **1x GE SFP**—SFP Gigabit Ethernet ePIM (one fiber port)
	  • **4x GE Base PIC**—Four built-in Gigabit Ethernet ports on a J4350 or J6350 chassis (fixed PIM)
	  • **2x Serial**—Dual-port serial PIM
	  • **2x T1**—Dual-port T1 PIM
	  • **2x E1**—Dual-port E1 PIM
	  • **2x CT1E1**—Dual-port channelized T1/E1 PIM
	  • **1x T3**—T3 PIM (one port)
	  • **1x E3**—E3 PIM (one port)
	  • **4x BRI S/T**—4-port ISDN BRI S/T PIM
	  • **4x BRI U**—4-port ISDN BRI U PIM
	  • **1x ADSL Annex A**—ADSL 2/2+ Annex A PIM (one port, for POTS)
	  • **1x ADSL Annex B**—ADSL 2/2+ Annex B PIM (one port, for ISDN)
	  • **2x SHDSL (ATM)**—G SHDSL PIM (2-port two-wire module or 1-port four-wire module)
	  • **1x TGM550**—TGM550 Telephony Gateway Module (Avaya VoIP Gateway Module with one console port, two analog **LINE** ports, and two analog **TRUNK** ports)
	  • **1x DS1 TIM510**—TIM510 E1/T1 Telephony Interface Module (Avaya VoIP media module with one E1 or T1 trunk termination port and ISDN PRI backup)
	  • **4x FXS, 4xFXO, TIM514**—TIM514 Analog Telephony Interface Module (Avaya VoIP media module with four analog **LINE** ports and four analog **TRUNK** ports)
	  • **4x BRI TIM521**—TIM521 BRI Telephony Interface Module (Avaya VoIP media module with four ISDN BRI ports)
	  • **Crypto Accelerator Module**—For enhanced performance of cryptographic algorithms used in IP Security (IPsec) services
	• **MPC M 16x 10GE**—16-port 10-Gigabit Module Port Concentrator that supports SFP+ optical transceivers. (Not on EX Series switches.)
	• For hosts, the Routing Engine type.
	• For small form-factor pluggable transceiver (SFP) modules, the type of fiber: **LX**, **SX**, **LH**, or **T**.
	• LCD description for EX Series switches (except EX2200 switches).	

show chassis hardware (EX8216 Switch)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis          REV 06                CY0109220035      EX8216
Midplane         REV 06   710-016845   BA0909120112      EX8216-MP
CB 0             REV 22   710-020771   AX0109197723      EX8216-RE320
CB 1             REV 22   710-020771   AX0109197726      EX8216-RE320
  Routing Engine 1        BUILTIN      BUILTIN           RE-EX8216
FPC 3            REV 19   710-020683   BC0109083125      EX8200-48F
  CPU            REV 13   710-020598   BF0109144549      EX8200-CPU
FPC 4            REV 17   710-020683   BC0108500127      EX8200-48F
  CPU            REV 10   710-020598   BF0108460510      EX8200-CPU
  PIC 0                   BUILTIN      BUILTIN           48x 100 Base-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
```

show chassis hardware clei-models (EX8216 Switch)

```
user@host> show chassis hardware clei-models
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 08   710-016845
PSU 0            REV 05   740-023002   COUPAEAEAA        EX8200-PWR-AC3KR
PSU 1            REV 05   740-023002   COUPAEAEAA        EX8200-PWR-AC3KR
PSU 2            REV 05   740-023002   COUPAEAEAA        EX8200-PWR-AC3KR
PSU 3            REV 05   740-023002   COUPAEAEAA        EX8200-PWR-AC3KR
PSU 4            REV 05   740-023002   COUPAEAEAA        EX8200-PWR-AC3KR
PSU 5            REV 05   740-023002   COUPAEAEAA        EX8200-PWR-AC3KR
Top Fan Tray
Bottom Fan Tray
```

show chassis hardware clei-models (T1600 Router)

```
user@host> show chassis hardware clei-models
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 03   710-005608                     CHAS-BP-T640-S
FPM Display      REV 05   710-002897                     CRAFT-T640-S
CIP              REV 06   710-002895                     CIP-L-T640-S
PEM 0            Rev 07   740-017906   IPUPAC7KTA        PWR-T1600-3-80-DC-S
PEM 1            Rev 18   740-002595                     PWR-T-DC-S
SCG 0            REV 15   710-003423                     SCG-T-S
Routing Engine 0 REV 08   740-014082                     RE-A-2000-4096-S
Routing Engine 1 REV 07   740-014082                     RE-A-2000-4096-S
CB 0             REV 05   710-007655                     CB-T-S
CB 1             REV 03   710-017707                     CB-T-S
FPC 0            REV 07   710-013558                     T640-FPC2-E2
  PIC 0          REV 01   750-010618                     PB-4GE-SFP
  PIC 1          REV 06   750-001900                     PB-1OC48-SON-SMSR
  PIC 2          REV 14   750-001901                     PB-4OC12-SON-SMIR
  PIC 3          REV 07   750-001900                     PB-1OC48-SON-SMSR
FPC 1            REV 06   710-013553                     T640-FPC1-E2
  PIC 0          REV 08   750-001072                     P-1GE-SX
  PIC 1          REV 10   750-012266                     PB-4GE-TYPE1-SFP-IQ2
  PIC 2          REV 22   750-005634                     PB-1CHOC12SMIR-QPP
FPC 2
  PIC 0          REV 16   750-007141                     PC-10GE-SFP
  PIC 1          REV 06   750-015217                     PC-8GE-TYPE3-SFP-IQ2
  PIC 2          REV 05   750-004695                     PC-TUNNEL
  PIC 3          REV 17   750-009553                     PC-4OC48-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-4OC48-SON-SFP
  PIC 3          REV 32   750-003700                     PC-1OC192-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-4OC192-SON-XFP
  PIC 1          REV 01   750-010850                     PD-1OC768-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-1OC192-SON-SR2
SIB 0            REV 07   710-013074                    SIB-I-T1600-S
SIB 1            REV 07   710-013074                    SIB-I-T1600-S
SIB 2            REV 07   710-013074                    SIB-I-T1600-S
SIB 3            REV 07   710-013074                    SIB-I-T1600-S
SIB 4            REV 07   710-013074                    SIB-I-T1600-S
Fan Tray 0                                              FANTRAY-T-S
Fan Tray 1                                              FANTRAY-T-S
Fan Tray 2                                              FAN-REAR-TX-T640-S
```

show chassis hardware detail (EX4200 Switch)

```
user@host> show chassis hardware detail
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                BM0208327733      EX4200-24T
Routing Engine 0 REV 11   750-021256   BM0208327733      EX4200-24T, 8 POE
Routing Engine 0                       BM0208327733      EX4200-24T, 8 POE
FPC 0            REV 11   750-021256   BM0208327733      EX4200-24T, 8 POE
  CPU                     BUILTIN      BUILTIN           FPC CPU
  PIC 0                   BUILTIN      BUILTIN           24x 10/100/1000 Base-T
  PIC 1          REV 03B  711-021270   AR0208162285      4x GE SFP
  BRD            REV 08   711-021264   AK0208328289      EX4200-24T, 8 POE
Power Supply 0   REV 03   740-020957   AT0508346354      PS 320W AC
Fan Tray                                                 Fan Tray
```

show chassis hardware models (EX4500 Switch)

```
user@host> show chassis hardware models
Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
Routing Engine 0 REV 01   750-035700   GG0210271867      EX4500-40F-FB-C
FPC 0            REV 01   750-035700   GG0210271867      EX4500-40F-FB-C
  PIC 0                   BUILTIN      BUILTIN           EX4500-40F-FB-C
Power Supply 1   REV 01   740-029654   H884FS00JC09      EX4500-PWR1-AC-FB
```

show chassis hardware (J6350 Router)

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

show chassis hardware (J6300 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN000164AB        J6300
Midplane         REV 02.04 710-010001  CORE99570
System IO        REV 02.00 710-010003  CORE100848        System IO board
```

```
Routing Engine   RevX2.6  750-010006   IWGS40735390      RE-J.3
FPC 0                                                    FPC
  PIC 0                                                  2x FE
FPC 1            RevX2.0  750-011380   N3960005          FPC
  PIC 0                                                  1xADSL pic Annex A
FPC 2            RevX2.0  750-011380   N3960002          FPC
  PIC 0                                                  1xADSL pic Annex B
FPC 3            REV 03   750-010354   N0780028          FPC
  PIC 0                                                  1x T3
```

show chassis hardware (M7i Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                31959             M7i
Midplane         REV 02   710-008761   CA0209            M7i Midplane
Power Supply 0   Rev 04   740-008537   PD10272           AC Power Supply
Routing Engine   REV 01   740-008846   1000396803        RE-5.0
CFEB             REV 02   750-009492   CA0166            Internet Processor IIv1
FPC 0                                                    E-FPC
  PIC 0          REV 04   750-003163   HJ6416            1x G/E, 1000 BASE-SX
  PIC 1          REV 04   750-003163   HJ6423            1x G/E, 1000 BASE-SX
  PIC 2          REV 04   750-003163   HJ6421            1x G/E, 1000 BASE-SX
  PIC 3          REV 02   750-003163   HJ0425            1x G/E, 1000 BASE-SX
FPC 1                                                    E-FPC
  PIC 2          REV 01   750-009487   HM2275            ASP - Integrated
  PIC 3          REV 01   750-009098   CA0142            2x F/E, 100 BASE-TX

Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                B1157             M7i
Midplane         REV 05   710-008761   DM0840            M7i Midplane
Power Supply 0   Rev 08   740-008537   TE53755           AC Power Supply
Routing Engine   REV 07   740-011202   1000736567        RE-850
CFEB             REV 09   750-010463   DK6952            Internet Processor II
FPC 0                                                    E-FPC
  PIC 0          REV 12   750-012838   DL7993            4x 1GE(LAN), IQ2
    Xcvr 0       REV 01   740-011614   PD94TDJ           SFP-LX10
    Xcvr 1       REV 01   740-011615   PAD5EER           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-4OC3-SON-MM
  PIC 1          REV 11   750-002992                     PE-4FE-TX
  PIC 2          REV 03   750-002977                     PE-2OC3-ATM-MM
  PIC 3          REV 08   750-005724                     PE-2OC3-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> 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-2OC3-ATM-MM
Fan Tray 0                                               FANTRAY-F-M20-S
Fan Tray 1                                               FANTRAY-F-M20-S
Fan Tray 2                                               FANTRAY-F-M20-S
Fan Tray 3                                               FANTRAY-R-M20-S
```

show chassis hardware (M40 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Backplane        REV 02   710-000073   S/N AA0053
Power supply A   Rev 2    740-000235   S/N 000042        DC
Maxicab          REV X1   710-000229   S/N AA0139
Minicab          REV X1   710-000482   S/N AA0201
Display          REV 06   710-000150   S/N AA0905
Host                                                     cpv5000
SCB              REV X1   710-000075   S/N AA0158        Internet Processor I
  SSRAM bank 0   REV 02   710-000077   S/N AA2267        1 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 (M120 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN000054AC        M120
Midplane         REV 01   710-013667   RB4170            M120 Midplane
FPM Board        REV 02   710-011407   CJ9186            M120 FPM Board
FPM Display      REV 02   710-011405   CJ9173            M120 FPM Display
FPM CIP          REV 02   710-011410   CJ9221            M120 FPM CIP
PEM 0            Rev 05   740-011936   RM28320           AC Power Entry Module
PEM 1            Rev 05   740-011936   RM28321           AC Power Entry Module
Routing Engine 0 REV 03   740-014080   1000642883        RE-A-1000
CB 0             REV 03   710-011403   CM8346            M120 Control Board
CB 1             REV 06   710-011403   CP6728            M120 Control Board
FPC 1            REV 02   710-015908   CP6925            M120 CFPC 10GE
  PIC 0                   BUILTIN      BUILTIN           1x 10GE(LAN/WAN) XFP
    Xcvr 0       REV 01   740-014279   62E204N00007      XFP-10G-LR
FPC 3            REV 03   710-011393   CJ9234            M120 FPC Type 2
  PIC 0          REV 16   750-008155   NB5229            2x G/E IQ, 1000 BASE
    Xcvr 0       REV 01   740-011613   P9F15JB           SFP-SX
    Xcvr 1       REV 01   740-007326   P4Q0R9G           SFP-SX
  PIC 1          REV 09   750-007745   CG4360            4x OC-3 SONET, SMIR
  PIC 2          REV 16   750-008155   ND7787            2x G/E IQ, 1000 BASE
```

```
    Xcvr 0       REV 01   740-011613   P9F12AS           SFP-SX
    Xcvr 1       REV 01   740-011613   P9F1ALU           SFP-SX
  PIC 3          REV 07   750-011800   JW1284            8x 1GE(LAN), IQ2
    Xcvr 0       REV 01   740-011613   P9F1AM6           SFP-SX
    Xcvr 6       REV 01   740-011613   P9F16NN           SFP-SX
    Xcvr 7       REV 01   740-011782   P8C29Y7           SFP-SX
  Board B        REV 02   710-011395   CN3754            M120 FPC Mezz
FPC 4            REV 02   710-011398   CP6741            M120 FPC Type 3
  PIC 0          REV 16   750-007141   NB2855            10x 1GE(LAN), 1000 BASE

    Xcvr 0       REV 01   740-011782   P922A1F           SFP-SX
    Xcvr 1       REV 01   740-011782   P922A16           SFP-SX
    Xcvr 2       REV 01   740-011782   P922A0U           SFP-SX
    Xcvr 3       REV 01   740-011782   P9229UZ           SFP-SX
    Xcvr 4       REV 01   740-009029   P11JXWP           SFP-LX
    Xcvr 6       REV 01   740-011613   P9F1ALW           SFP-SX
FPC 5            REV 01   710-011388   CJ9088            M120 FPC Type 1
  PIC 0          *** Hardware Not Supported ***
  PIC 1          REV 05   750-012052   NB0410            1x CHOC3 IQ SONET, SMLR

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

show chassis hardware detail (M120 Router)

```
user@host> show chassis hardware detail
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN000054AC        M120
Midplane         REV 01   710-013667   RB4170            M120 Midplane
FPM Board        REV 02   710-011407   CJ9186            M120 FPM Board
FPM Display      REV 02   710-011405   CJ9173            M120 FPM Display
FPM CIP          REV 02   710-011410   CJ9221            M120 FPM CIP
PEM 0            Rev 05   740-011936   RM28320           AC Power Entry Module
PEM 1            Rev 05   740-011936   RM28321           AC Power Entry Module
Routing Engine 0 REV 03   740-014080   1000642883        RE-A-1000
  ad0     248 MB  SILICONSYSTEMS INC 256M 126CT505S0763SC00110 Compact Flash
  ad2   38154 MB  HTE541040G9SA00      MPBBT0X2HS2E3M    Hard Disk
CB 0             REV 03   710-011403   CM8346            M120 Control Board
CB 1             REV 06   710-011403   CP6728            M120 Control Board
FPC 1            REV 02   710-015908   CP6925            M120 CFPC 10GE
  PIC 0                   BUILTIN      BUILTIN           1x 10GE(LAN/WAN) XFP
    Xcvr 0       REV 01   740-014279   62E204N00007      XFP-10G-LR
FPC 3            REV 03   710-011393   CJ9234            M120 FPC Type 2
  PIC 0          REV 16   750-008155   NB5229            2x G/E IQ, 1000 BASE
    Xcvr 0       REV 01   740-011613   P9F15JB           SFP-SX
    Xcvr 1       REV 01   740-007326   P4Q0R9G           SFP-SX
  PIC 1          REV 09   750-007745   CG4360            4x OC-3 SONET, SMIR
  PIC 2          REV 16   750-008155   ND7787            2x G/E IQ, 1000 BASE
    Xcvr 0       REV 01   740-011613   P9F12AS           SFP-SX
    Xcvr 1       REV 01   740-011613   P9F1ALU           SFP-SX
  PIC 3          REV 07   750-011800   JW1284            8x 1GE(LAN), IQ2
    Xcvr 0       REV 01   740-011613   P9F1AM6           SFP-SX
    Xcvr 6       REV 01   740-011613   P9F16NN           SFP-SX
    Xcvr 7       REV 01   740-011782   P8C29Y7           SFP-SX
```

```
  Board B        REV 02   710-011395   CN3754            M120 FPC Mezz
FPC 4            REV 02   710-011398   CP6741            M120 FPC Type 3
  PIC 0          REV 16   750-007141   NB2855            10x 1GE(LAN), 1000 BASE

    Xcvr 0       REV 01   740-011782   P922A1F           SFP-SX
    Xcvr 1       REV 01   740-011782   P922A16           SFP-SX
    Xcvr 2       REV 01   740-011782   P922A0U           SFP-SX
    Xcvr 3       REV 01   740-011782   P9229UZ           SFP-SX
    Xcvr 4       REV 01   740-009029   P11JXWP           SFP-LX
    Xcvr 6       REV 01   740-011613   P9F1ALW           SFP-SX
FPC 5            REV 01   710-011388   CJ9088            M120 FPC Type 1
  PIC 0          *** Hardware Not Supported ***
  PIC 1          REV 05   750-012052   NB0410            1x CHOC3 IQ SONET, SMLR

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

show chassis hardware models (M120 Router)

```
user@host> show chassis hardware models
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 01   710-013667
FPM CIP          REV 02   710-011410                     CRAFT-M120-S
PEM 0            Rev 05   740-011936                     PWR-M120-AC-S
PEM 1            Rev 05   740-011936                     PWR-M120-AC-S
Routing Engine 0 REV 03   740-014080                     RE-A-1000-2048-S
CB 0             REV 03   710-011403                     CB-M120-S
CB 1             REV 06   710-011403                     CB-M120-S
FPC 1            REV 02   710-015908                     M120-cFPC-1XGE-XFP
FPC 3
  PIC 0          REV 16   750-008155                     PB-2GE-SFP-QPP
  PIC 1          REV 09   750-007745                     PC-4OC3-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-1OC12-SON-SMIR
  PIC 2          REV 04   750-001894                     PB-1GE-SX
  PIC 3          REV 04   750-001896                     PB-1OC12-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-1OC12-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-4OC12-SON-SMIR
```

```
  PIC 1          REV 06   750-001900                    PB-1OC48-SON-SMSR
  PIC 2          REV 07   750-001900                    PB-1OC48-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   S000?6            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-1OC12-SON-SMIR
  PIC 2          REV 04   750-001894                     PB-1GE-SX
```

```
  PIC 3          REV 04   750-001896                    PB-1OC12-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-1OC12-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-4OC12-SON-SMIR
  PIC 1          REV 06   750-001900                    PB-1OC48-SON-SMSR
  PIC 2          REV 07   750-001900                    PB-1OC48-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 (Fixed MX80 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                                  MX80-48T
Midplane         REV 01   711-031603   KF9250            MX80-48T
Routing Engine            BUILTIN      BUILTIN           Routing Engine
FEB 0                     BUILTIN      BUILTIN           Forwarding Engine Board
FPC 0                     BUILTIN      BUILTIN           MPC BUILTIN
  MIC 0                   BUILTIN      BUILTIN           4x 10GE XFP
    PIC 0                 BUILTIN      BUILTIN           4x 10GE XFP
      Xcvr 0              NON-JNPR     M6439D41          XFP-10G-LR
      Xcvr 1     REV 01   740-014279   6XE931N00202      XFP-10G-LR
      Xcvr 2     REV 01   740-014289   C715XU05F         XFP-10G-SR
      Xcvr 3     REV 01   740-014289   C650XU0EP         XFP-10G-SR
FPC 1                     BUILTIN      BUILTIN           MPC BUILTIN
  MIC 0          REV 01   711-029399   JR6981            12x 1GE(LAN) RJ45
    PIC 0                 BUILTIN      BUILTIN           12x 1GE(LAN) RJ45
    PIC 1                 BUILTIN      BUILTIN           12x 1GE(LAN) RJ45
  MIC 1          REV 01   BUILTIN      BUILTIN           12x 1GE(LAN) RJ45
    PIC 2                 BUILTIN      BUILTIN           12x 1GE(LAN) RJ45
    PIC 3                 BUILTIN      BUILTIN           12x 1GE(LAN) RJ45
Fan Tray                                                 Fan Tray
```

show chassis hardware (Modular MX80 Router)

```
user@host> show chassis hardware

Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                                  MX80
```

```
Midplane         REV 02   711-031594   JR7084           MX80
PEM 0            Rev 01   740-028288   000018           AC Power Entry Module
Routing Engine            BUILTIN      BUILTIN          Routing Engine
FEB 0                     BUILTIN      BUILTIN          Forwarding Engine Board

  QXM 0          REV 05   711-028408   JR7041           MPC QXM
FPC 0                     BUILTIN      BUILTIN          MPC BUILTIN
  MIC 0                   BUILTIN      BUILTIN          4x 10GE XFP
    PIC 0                 BUILTIN      BUILTIN          4x 10GE XFP
FPC 1                     BUILTIN      BUILTIN          MPC BUILTIN
  MIC 0          REV 02   750-028380   JR6598           3D 2x 10GE XFP
    PIC 0                 BUILTIN      BUILTIN          1x 10GE XFP
      Xcvr 0     REV 01   740-014289   T07M86365        XFP-10G-SR
    PIC 1                 BUILTIN      BUILTIN          1x 10GE XFP
      Xcvr 0     REV 01   740-014289   T07M71094        XFP-10G-SR
  MIC 1          REV 02   750-028380   JG8548           3D 2x 10GE XFP
    PIC 2                 BUILTIN      BUILTIN          1x 10GE XFP
      Xcvr 0     REV 02   740-014289   T08L86302        XFP-10G-SR
    PIC 3                 BUILTIN      BUILTIN          1x 10GE XFP
      Xcvr 0     REV 02   740-014289   C810XU0BA        XFP-10G-SR
Fan Tray                                               Fan Tray
```

show chassis hardware (MX240 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number    Description
Chassis                                JN10C7F7EAFC     MX240
Midplane         REV 01   710-021041   TR1502           MX240 Backplane
FPM Board        REV 01   710-017254   KD4017           Front Panel Display
PEM 0            Rev 02   740-017330   000332           PS 1.2-1.7kW; 100-240V
AC in
PEM 1            Rev 02   740-017330   000226           PS 1.2-1.7kW; 100-240V
AC in
Routing Engine 0 REV 06   740-013063   1000703522       RE-S-2000
Routing Engine 1 REV 06   740-015113   1000687625       RE-S-1300
CB 0             REV 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                                JN10BA5B9AFA      MX960
Midplane         REV 03   710-013698   TR0234            MX960 Backplane
FPM Board        REV 03   710-014974   JA0878            Front Panel Display
PDM             Rev 03   740-013110   QCS11135028       Power Distribution Module
PEM 0            Rev 03   740-013682   QCS11154036       PS 1.7kW; 200-240VAC in
PEM 1            Rev 03   740-013682   QCS11154010       PS 1.7kW; 200-240VAC in
PEM 2            Rev 03   740-013682   QCS11154022       PS 1.7kW; 200-240VAC in
Routing Engine 0 REV 06   740-013063   1000691458        RE-S-2000
CB 0             REV 07   710-013385   KA2190            MX SCB
CB 1             REV 07   710-013385   KA0837            MX SCB
FPC 3            REV 02   750-018122   KB3890            DPCE 40x 1GE R
  CPU
FPC 4            REV 01   750-018122   KB3889            DPCE 40x 1GE R
  CPU            REV 06   710-013713   KB3976            DPC PMB
  PIC 0                   BUILTIN      BUILTIN           10x 1GE(LAN)
    Xcvr 1       REV 01   740-020426   4910549           SFP-1000BASE-BX40-D
    Xcvr 2       REV 01   740-020426   4910551           SFP-1000BASE-BX40-D
    Xcvr 5       REV 01   740-021340   77E245N00006      SFP-1000BASE-BX10-U
    Xcvr 6       REV 01   740-020425   4882821           SFP-1000BASE-BX40-U
    Xcvr 8       REV 01   740-020425   4882820           SFP-1000BASE-BX40-U
  PIC 1                   BUILTIN      BUILTIN           10x 1GE(LAN)
    Xcvr 0       REV 01   740-020465   77E555N00894      SFP-1000BASE-BX10-D
    Xcvr 1       REV 01   740-020465   75E467X00818      SFP-1000BASE-BX10-D
    Xcvr 2       REV 01   740-020465   75E467X00573      SFP-1000BASE-BX10-D
    Xcvr 3       REV 01   740-020465   4888227           SFP-1000BASE-BX10-D
    Xcvr 4       REV 01   740-020465   4888241           SFP-1000BASE-BX10-D
    Xcvr 5       REV 01   740-021340   77E245N00005      SFP-1000BASE-BX10-U
    Xcvr 6       REV 01   740-021340   76E245X00487      SFP-1000BASE-BX10-U
    Xcvr 7       REV 01   740-021341   5255889           SFP-1000BASE-BX10-U
    Xcvr 8       REV 01   740-021341   5255887           SFP-1000BASE-BX10-U
    Xcvr 9       REV 01   740-021340   77E245N00004      SFP-1000BASE-BX10-U
  PIC 2                   BUILTIN      BUILTIN           10x 1GE(LAN)
    Xcvr 0       REV 01   740-020424   5007582           SFP-1000BASE-BX10-D
    Xcvr 1       REV 01   740-020424   4888187           SFP-1000BASE-BX10-D
    Xcvr 2       REV 01   740-020424   4656500           SFP-1000BASE-BX10-D
    Xcvr 5       REV 01   740-021341   5255886           SFP-1000BASE-BX10-U
    Xcvr 7       REV 01   740-021340   77E245N00003      SFP-1000BASE-BX10-U
    Xcvr 8       REV 01   740-021341   5255888           SFP-1000BASE-BX10-U
  PIC 3                   BUILTIN      BUILTIN           10x 1GE(LAN)
    Xcvr 0       REV 01   740-017726   74S184H30341      SFP-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    NROWT5925N77      Hard Disk
CB 0             REV 05   710-013725   JK6947            MX960 Test SCB
FPC 4            REV 01   710-013305   JM7617            MX960 Test DPC
  CPU
  PIC 0                   BUILTIN      BUILTIN           1x 10GE(LAN/WAN)
  PIC 1                   BUILTIN      BUILTIN           10x 1GE
FPC 7            REV 01   710-013305   JL9634            MX960 Test DPC
  CPU
  PIC 0                   BUILTIN      BUILTIN           1x 10GE(LAN/WAN)
    Xcvr 0                NON-JNPR     MYBG65I82C        XFP-10G-SR
  PIC 1                   BUILTIN      BUILTIN           10x 1GE
    Xcvr 1       REV 01   740-011782   P7N0368           SFP-SX
    Xcvr 4       REV 01   740-011782   P8J1W27           SFP-SX
    Xcvr 6       REV 01   740-011782   P8J1VSD           SFP-SX
    Xcvr 9       REV 01   740-011782   P8J1W25           SFP-SX
Fan Tray 0
Fan Tray 1
```

show chassis hardware (T320 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                19093             T320
Midplane         REV 04   710-004339   BC1436            T320 Backplane
FPM GBUS         REV 03   710-004461   BC1407            T320 FPM Board
FPM Display      REV 04   710-002897   BE0763            FPM Display
CIP              REV 05   710-002895   BB2311            T Series CIP
PEM 0            Rev 01   740-004359   NB12546           Power Entry Module
SCG 0            REV 06   710-004455   AY4522            T320 Sonet
Clock Gen.
Routing Engine 0                                         unknown
CB 0             REV 13   710-002728   BC1577            T Series
Control Board
CB 1             REV 13   710-002728   BC1595            T Series
Control Board
FPC 1            REV 09   710-007531   HS1572            FPC Type 2
   CPU            REV 15   710-001726   HR8763            FPC CPU
   PIC 0          REV 01   750-010618   CB5579            4x G/E SFP,
1000 BASE
     SFP 0        REV 01   740-007326   P5809Z1           SFP-SX
     SFP 1        REV 01   740-007326   P4Q10XU           SFP-SX
     SFP 2                 NON-JNPR     RA45020031        SFP-SX
     SFP 3                 NON-JNPR     RA45020032        SFP-SX
   PIC 1          REV 01   750-010618   CD9587            4x G/E SFP,
1000 BASE
     SFP 0                 NON-JNPR     P5A08QZ           SFP-T
     SFP 1        REV 01   740-007326   P4Q133K           SFP-SX
```

```
     SFP 2        REV 01   740-007326   P5809YY           SFP-SX
     SFP 3        REV 01   740-007327   4C81704           SFP-LX
   MMB 1          REV 03   710-005555   HR9401            MMB-288mbit
   PPB 0          REV 04   710-003758   HR2886            PPB Type 2
FPC 2            REV 07   710-005860   HP2392            FPC Type 1
   CPU            REV 14   710-001726   HP7797            FPC CPU
   PIC 0          REV 02   750-007643   HM0853            1x G/E QPP,
1000 BASE
     SFP 0        REV 01   740-007326   P11E9JJ           SFP-SX
   MMB 1          REV 02   710-005555   HN2379            MMB-288mbit
   PPB 0          REV 04   710-003758   HP8092            PPB Type 2
FPC 3            REV 07   710-005860   HP2393            FPC Type 1
   CPU            REV 14   710-001726   HP0968            FPC CPU
   PIC 0          REV 01   750-010240   CB5363            1x G/E SFP,
1000 BASE
     SFP 0        REV 01   740-007326   P4R0PNH           SFP-SX
   PIC 1          REV 03   750-003034   HD2832            4x OC-3 SONET,
SMIR
   MMB 1          REV 02   710-005555   HN6307            MMB-288mbit
   PPB 0          REV 04   710-003758   HP5051            PPB Type 2
FPC 4            REV 01   710-010845   JD3872            FPC Type 4
   CPU            REV 02   710-011481   JB6042            FPC CPU
 5            REV 01   710-005802   BC1566            FPC Type 2
   CPU            REV 09   710-001726   AY4922            FPC CPU
   PIC 0          REV 02   750-008155   BE2114            2x G/E QPP,
1000 BASE
     SFP 0        REV 01   740-007326   P4R0PMQ           SFP-SX
     SFP 1        REV 01   740-007326   P4R0PN9           SFP-SX
   PIC 1          REV 01   750-008155   BE2116            2x G/E QPP,
1000 BASE
     SFP 0        REV 01   740-007326   P4R0PNZ           SFP-SX
     SFP 1                 NON-JNPR     2908              SFP-T
   MMB 1          REV 01   710-005555   AZ2246            MMB-288mbit
   PPB 0          REV 03   710-003758   AY4839            PPB Type 2
FPC 7            REV 01   710-005803   AZ2123            FPC Type 3
...
```

show chassis hardware (T640 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                19182             T640
Midplane         REV 04   710-002726   AX5608            T640 Backplane
FPM GBUS         REV 02   710-002901   HE3064            T640 FPM Board
FPM Display      REV 02   710-002897   HE7864            FPM Display
CIP              REV 05   710-002895   HA5024            T Series CIP
PEM 0            Rev 02   740-029522   VH26235           AC PEM 10kW US
PEM 1            Rev 02   740-029522   VH26230           AC PEM 10kW US
SCG 0            REV 03   710-003423   HA4508            T640 Sonet Clock Gen.
Routing Engine 0 REV 02   740-005022   210865700483      RE-3.0 (RE-600)
CB 0             REV 01   710-002728   HD3044            T Series Control Board
FPC 2            REV 04   710-001721   HD5572            FPC Type 3
  CPU            REV 06   710-001726   HA4712            FPC CPU
  PIC 1          REV 03   750-009567   HV2331            1x 10GE(LAN),XENPAK
    SFP 0        REV 01   740-009898   USC202R103        XENPAK-SR
  PIC 2          REV 03   750-009567   HV2332            1x 10GE(LAN),XENPAK
    SFP 0        REV 01   740-011268   USC202R112        XENPAK-ZR
  PIC 3          REV 03   750-009567   HX4416            1x 10GE(LAN),XENPAK
    SFP 0        REV 01   740-012056   434TC004          XENPAK-CX4
  PIC 4          REV 03   750-009567   HX4420            1x 10GE(LAN),XENPAK
    SFP 0        REV 01   740-012058   434TC124          XENPAK-LX4
FPC 5            REV 01   710-013553   JE4839            E2-FPC Type 1
```

```
  CPU            REV 01   710-013569   JW9163            FPC CPU
  PIC 0          REV 01   750-009567   HX4419            1x 10GE(LAN),XENPAK
    SFP 0        REV 01   740-009898   USC202RT05        XENPAK-LR
  PIC 1          REV 03   750-009567   HN7426            1x 10GE(LAN),XENPAK
    SFP 0        REV 01   740-009550   03L90051          XENPAK-ER
  PIC 2          REV 03   750-009467   HT7423            1x 10GE(LAN),XENPAK
    SFP 0                 NON-JNPR                       UNKNOWON
  PIC 3          REV 04   750-005100   AY4850            1x 10GE(LAN),DWDM
FPC 4            REV 01   710-010845   JD3872            FPC Type 4
  CPU            REV 02   710-011481   JB6042            FPC CPU
Fan Tray 0                                               Front Top Fan Tray
Fan Tray 1                                               Front Bottom Fan Tray
Fan Tray 2                                               Rear Fan Tray
```

show chassis hardware models (T640 Router)

```
user@host> show chassis hardware models
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 04   710-002726                     CHAS-BP-T640-S
FPM Display      REV 02   710-002897                     CRAFT-T640-S
CIP              REV 05   710-002895                     CIP-L-T640-S
PEM 0            Rev 01   740-002595                     PWR-T-DC-S
SCG 0            REV 04   710-003423                     SCG-T-S
SCG 1            REV 04   710-003423                     SCG-T-S
Routing Engine 0 REV 01   740-005022                     RE-600-2048-S
Routing Engine 1 REV 07   740-005022                     RE-600-2048-S
CB 0             REV 06   710-002726                     CHAS-BP-T640-S
CB 1             REV 06   710-002728                     CB-L-T-S
FPC 5            REV 05   710-007527                     T640-FPC2
  PIC 0          REV 05   750-002510                     PB-2GE-SX
  PIC 1          REV 05   750-001901                     PB-4OC12-SON-SMIR
FPC 6            REV 03   710-001721                     T640-FPC3
  PIC 1          REV 01   750-009553                     PC-4OC48-SON-SFP
SIB 4            REV 02   750-005486                     SIB-I-T640-S
Fan Tray 0                                               FANTRAY-T-S
Fan Tray 1                                               FANTRAY-T-S
Fan Tray 2                                               FAN-REAR-TX-T640-S
```

show chassis hardware extensive (T640 Router)

```
user@host> show chassis hardware extensive
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                                   T640
 Jedec Code:   0x7fb0            EEPROM Version:    0x01
 P/N:        ...........       S/N:             ...........
 Assembly ID:  0x0507            Assembly Version:  00.00
 Date:         00-00-0000        Assembly Flags:    0x00
 Version:    ...........
 ID: Gibson LCC Chassis
 Board Information Record:
  Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
 I2C Hex Data:
  Address 0x00: 7f b0 01 ff 05 07 00 00 00 00 00 00 00 00 00 00
  Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x20: ff ff ff ff ff ff ff ff ff ff ff ff 00 00 00 00
  Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane         REV 04   710-002726   AX5633
 Jedec Code:   0x7fb0            EEPROM Version:    0x01
 P/N:          710-002726.       S/N:               S/N AX5633.
 Assembly ID:  0x0127            Assembly Version:  01.04
 Date:         06-27-2001        Assembly Flags:    0x00
 Version:      REV 04.....
```

```
 ID: Gibson Backplane
 Board Information Record:
  Address 0x00: ad 01 08 00 00 90 69 0e f8 00 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 01 ff 01 27 01 04 52 45 56 20 30 34 00 00
  Address 0x10: 00 00 00 00 37 31 30 2d 30 30 32 37 32 36 00 00
  Address 0x20: 53 2f 4e 20 41 58 35 36 33 33 00 00 00 1b 06 07
  Address 0x30: d1 ff ff ff ad 01 08 00 00 90 69 0e f8 00 ff ff
  Address 0x40: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
FPM GBUS         REV 02   710-002901   HE3245
 ...
FPM Display      REV 02   710-002897   HA4873
 ...
CIP              REV 05   710-002895   HA4729
...
PEM 1            RevX02   740-002595   MD21815           Power Entry Module
 ...
SCG 0            REV 04   710-003423   HF6023
 ...
SCG 1            REV 04   710-003423   HF6061
 ...
Routing Engine 0 REV 01   740-005022   210865700292      RE-3.0
...
CB 0             REV 06   710-002728   HE3614
...
FPC 1            REV 01   710-002385   HE3009            FPC Type 1
...              REV 06   710-001726   HC0010
```

show chassis hardware lcc (TX Matrix Router)

```
user@host> show chassis hardware lcc 0
lcc0-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                65751             T640
Midplane         REV 03   710-005608   RA1408            T640 Backplane
FPM GBUS         REV 09   710-002901   RA2784            T640 FPM Board
FPM Display      REV 05   710-002897   RA2825            FPM Display
CIP              REV 06   710-002895   HT0684            T Series CIP
PEM 0            Rev 11   740-002595   PM18483           Power Entry Module
PEM 1            Rev 11   740-002595   qb13984           Power Entry Module
SCG 0            REV 11   710-003423   HT0022            T640 Sonet Clock Gen.
Routing Engine 0 REV 13   740-005022   210865700363      RE-3.0 (RE-600)
CB 0             REV 03   710-007655   HW1195            Control Board (CB-T)
FPC 1            REV 05   710-007527   HM3245            FPC Type 2
  CPU            REV 14   710-001726   HM1084            FPC CPU
  PIC 0          REV 02   750-007218   AZ1112            2x OC-12 ATM2 IQ, SMIR
  PIC 1          REV 02   750-007745   HG3462            4x OC-3 SONET, SMIR
  PIC 2          REV 14   750-001901   BA5390            4x OC-12 SONET, SMIR
  PIC 3          REV 09   750-008155   HS3012            2x G/E IQ, 1000 BASE
    SFP 0                 NON-JNPR     P1186TY           SFP-S
    SFP 1        REV 01   740-007326   P11WLTF           SFP-SX
  MMB 1          REV 02   710-005555   HL7514            MMB-288mbit
  PPB 0          REV 04   710-003758   HM4405            PPB Type 2
  PPB 1          REV 04   710-003758   AV1960            PPB Type 2
FPC 2            REV 08   710-010154   HZ3578            E-FPC Type 3
  CPU            REV 05   710-010169   HZ3219            FPC CPU-Enhanced
  PIC 0          REV 02   750-009567   HX2882            1x 10GE(LAN),XENPAK
    SFP 0        REV 01   740-009898   USC202U709        XENPAK-LR
  PIC 1          REV 03   750-003336   HJ9954            4x OC-48 SONET, SMSR
  PIC 2          REV 01   750-004535   HC0235            1x OC-192 SM SR1
  PIC 3          REV 07   750-007141   HX1699            10x 1GE(LAN), 1000 BASE
```

```
    SFP 0        REV 01   740-007326   2441042           SFP-SX
    SFP 1        REV 01   740-007326   2441027           SFP-SX
  MMB 0          REV 03   710-010171   HV2365            MMB-5M3-288mbit
  MMB 1          REV 03   710-010171   HZ3888            MMB-5M3-288mbit
SPMB 0           REV 09   710-003229   HW5245            T Series Switch CPU
SIB 3            REV 07   710-005781   HR5927            SIB-L8-F16
  B Board        REV 06   710-005782   HR5971            SIB-L8-F16 (B)
SIB 4            REV 07   710-005781   HR5903            SIB-L8-F16
  B Board        REV 06   710-005782   HZ5275            SIB-L8-F16 (B)
```

show chassis hardware scc (TX Matrix Router)

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user@host> show chassis hardware scc
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
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    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   P9P0XV4           SFP-SX
    Xcvr 2       REV 01   740-011782   P9M0TNX           SFP-SX
    Xcvr 4       REV 01   740-011782   P9B0TTP           SFP-SX
    Xcvr 5                NON-JNPR     PBS4LED           SFP-SX
  PIC 2          REV 17   750-009553   RL0212            4x OC-48 SONET
    Xcvr 0       REV 01   740-011785   PDS3T8G           SFP-SR
  PIC 3          REV 32   750-003700   DL1279            1x OC-192 12xMM VSR
  MMB 0          REV 01   710-010171   HR0821            MMB-288mbit
  MMB 1          REV 01   710-010171   HR0818            MMB-288mbit
FPC 4            REV 16   710-013037   EB4919            FPC Type 4-ES
  CPU            REV 09   710-016744   BBAA4382          ST-PMB2
  PIC 0          REV 03   711-029996   EB1569            100GE
  PIC 1          REV 05   711-029999   EB9983            100GE CFP
    Xcvr 0       REV 0    740-032210   J10G80746         CFP-100G-LR4
  BRIDGE 0       REV 02   711-029995   EB2235            100GE Bridge Board
  MMB 0          REV 04   710-025563   BBAA7112          ST-MMB2
  MMB 1          REV 04   710-025563   BBAA7149          ST-MMB2
FPC 5            REV 02   710-013037   DE3407            FPC Type 4-ES
  CPU            REV 04   710-016744   DA2124            ST-PMB2
  PIC 0          REV 16   750-012518   DF2554            4x OC-192 SONET XFP
    Xcvr 0       REV 01   740-014279   AA0745N1FX8       XFP-OC192-SR
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    Xcvr 1       REV 01   740-014279   AA0748N1HN5       XFP-OC192-SR
    Xcvr 2       REV 01   740-014279   AA0748N1HT6       XFP-OC192-SR
    Xcvr 3       REV 01   740-014279   AA0744N1EC9       XFP-OC192-SR
  PIC 1          REV 01   750-010850   JA0329            1x OC-768 SONET SR
  MMB 0          REV 04   710-016036   DE9577            ST-MMB2
  MMB 1          REV 04   710-016036   DK4060            ST-MMB2
FPC 6            REV 14   710-013037   DV1431            FPC Type 4-ES
  CPU            REV 09   710-016744   DT9020            ST-PMB2
  PIC 0          REV 11   750-017405   DM6261            4x 10GE (LAN/WAN) XFP
    Xcvr 0       REV 01   740-014289   C701XU05Q         XFP-10G-SR
    Xcvr 1       REV 01   740-014279   AA0748N1HPT       XFP-10G-LR
    Xcvr 2       REV 01   740-014289   T08E19189         XFP-10G-SR
    Xcvr 3       REV 01   740-014289   C715XU058         XFP-10G-SR
  PIC 1          REV 13   750-017405   DP8772            4x 10GE (LAN/WAN) XFP
    Xcvr 0       REV 02   740-011571   C850XJ037         XFP-10G-SR
    Xcvr 1       REV 02   740-014289   C839XU0L9         XFP-10G-SR
    Xcvr 2       REV 02   740-014289   C834XU05A         XFP-10G-SR
    Xcvr 3       REV 02   740-014289   C810XU0CE         XFP-10G-SR
  MMB 0          REV 01   710-025563   DT8454            ST-MMB2
  MMB 1          REV 01   710-025563   DT8366            ST-MMB2
FPC 7            REV 09   710-007529   HZ7624            FPC Type 3
  CPU            REV 15   710-001726   HZ1413            FPC CPU
  PIC 0          REV 10   750-012793   DM5627            1x 10GE(LAN/WAN) IQ2
    Xcvr 0       REV 02   740-011571   C831XJ062         XFP-10G-SR
  PIC 1          REV 01   750-015217   JT6762            8x 1GE(TYPE3), IQ2
    Xcvr 0       REV 01   740-011782   P8Q25JU           SFP-SX
    Xcvr 1       REV 01   740-011782   P9B0U0K           SFP-SX
  PIC 2          REV 01   750-015217   JS4268            8x 1GE(TYPE3), IQ2
    Xcvr 0       REV 01   740-011613   AM0812S8XBZ       SFP-SX
    Xcvr 1       REV 01   740-011613   AM0812S8XAP       SFP-SX
    Xcvr 2       REV 01   740-011613   AM0812S8XBY       SFP-SX
    Xcvr 3       REV 01   740-011613   AM0812S8XBX       SFP-SX
    Xcvr 4       REV 01   740-011613   P9F1652           SFP-SX
    Xcvr 5       REV 01   740-011782   P8Q21YC           SFP-SX
    Xcvr 6       REV 01   740-011782   P8Q27HQ           SFP-SX
    Xcvr 7       REV 01   740-011613   P8E2SSU           SFP-SX
  PIC 3          REV 15   750-009450   NB6790            1x OC-192 SM SR2
  MMB 0          REV 03   710-005555   HZ3450            MMB-288mbit
  MMB 1          REV 03   710-005555   HZ3415            MMB-288mbit
  PPB 0          REV 04   710-002845   HP0887            PPB Type 3
  PPB 1          REV 04   710-002845   HW5255            PPB Type 3
SPMB 0           REV 10   710-003229   HX3699            T-series Switch CPU
SPMB 1           REV 12   710-003229   DT3091            T-series Switch CPU
SIB 0            REV 07   710-013074   DS4747            SIB-I8-SF
SIB 1            REV 07   710-013074   DS4942            SIB-I8-SF
SIB 2            REV 07   710-013074   DS4965            SIB-I8-SF
SIB 3            REV 07   710-013074   DS4990            SIB-I8-SF
SIB 4            REV 07   710-013074   DS4944            SIB-I8-SF
Fan Tray 0                                               Front Top Fan Tray
Fan Tray 1                                               Front Bottom Fan Tray
Fan Tray 2                                               Rear Fan Tray -- Rev 2
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show chassis hardware (TX Matrix Plus Router)

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user@host> show chassis hardware
sfc0-re0:
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Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN113186EAHB      TXP
Midplane         REV 05   710-022574   TS3822            SFC Midplane
FPM Display      REV 03   710-024027   DW4701            TXP FPM Display
CIP 0            REV 05   710-023792   DW7998            TXP CIP
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CIP 1            REV 05   710-023792   DW7999           TXP CIP
PEM 0            Rev 04   740-027463   UM26367          Power Entry Module
PEM 1            Rev 04   740-027463   UM26346          Power Entry Module
Routing Engine 0 REV 06   740-026942   737A-1081        RE-DUO-2600
Routing Engine 1 REV 06   740-026942   737A-1043        RE-DUO-2600
CB 0             REV 05   710-022606   DW4435           SFC Control Board
CB 1             REV 09   710-022606   DW6100           SFC Control Board
SPMB 0                    BUILTIN                       SFC Switch CPU
SPMB 1                    BUILTIN                       SFC Switch CPU
SIB F13 0        REV 04   750-024564   DW5764           F13 SIB
  B Board        REV 03   710-023431   DW9053           F13 SIB Mezz
SIB F13 3        REV 04   750-024564   DW5785           F13 SIB
  B Board        REV 03   710-023431   DW9030           F13 SIB Mezz
SIB F13 6
SIB F13 8        REV 04   750-024564   DW5752           F13 SIB
  B Board        REV 03   710-023431   DW9051           F13 SIB Mezz
SIB F13 11       REV 04   750-024564   DW5782           F13 SIB
  B Board        REV 03   710-023431   DW9058           F13 SIB Mezz
SIB F13 12       REV 03   750-024564   DT9466           F13 SIB
  B Board        REV 02   710-023431   DT6556           F13 SIB Mezz
SIB F2S 0/0      REV 05   710-022603   DW7898           F2S SIB
  B Board        REV 05   710-023787   DW7625           F2S SIB Mezz
SIB F2S 0/2      REV 05   710-022603   DW7811           F2S SIB
  B Board        REV 05   710-023787   DW7550           F2S SIB Mezz
SIB F2S 0/4      REV 04   710-022603   DW4873           F2S SIB
  B Board        REV 05   710-023787   DW8509           F2S SIB Mezz
SIB F2S 0/6      REV 04   710-022603   DW4867           F2S SIB
  B Board        REV 05   710-023787   DW8472           F2S SIB Mezz
SIB F2S 1/0      REV 04   710-022603   DW4871           F2S SIB
  B Board        REV 05   710-023787   DW8497           F2S SIB Mezz
SIB F2S 1/2      REV 05   710-022603   DW7868           F2S SIB
  B Board        REV 05   710-023787   DW7551           F2S SIB Mezz
SIB F2S 1/4      REV 04   710-022603   DW4854           F2S SIB
  B Board        REV 05   710-023787   DW8496           F2S SIB Mezz
SIB F2S 1/6      REV 05   710-022603   DW7889           F2S SIB
  B Board        REV 05   710-023787   DW7496           F2S SIB Mezz
SIB F2S 2/0      REV 04   710-022603   DW4852           F2S SIB
  B Board        REV 05   710-023787   DW8498           F2S SIB Mezz
SIB F2S 2/2      REV 04   710-022603   DW4845           F2S SIB
  B Board        REV 05   710-023787   DW8457           F2S SIB Mezz
SIB F2S 2/4      REV 05   710-022603   DW7802           F2S SIB
  B Board        REV 05   710-023787   DW7562           F2S SIB Mezz
SIB F2S 2/6      REV 04   710-022603   DW4822           F2S SIB
  B Board        REV 05   710-023787   DW8467           F2S SIB Mezz
SIB F2S 3/0      REV 05   710-022603   DW7815           F2S SIB
  B Board        REV 05   710-023787   DW7518           F2S SIB Mezz
SIB F2S 3/2      REV 03   710-022603   DV0068           F2S SIB
  B Board        REV 03   710-023787   DT9974           F2S SIB Mezz
SIB F2S 3/4      REV 05   710-022603   DW7874           F2S SIB
  B Board        REV 05   710-023787   DW7601           F2S SIB Mezz
SIB F2S 3/6      REV 03   710-022603   DV0033           F2S SIB
  B Board        REV 03   710-023787   DT9969           F2S SIB Mezz
SIB F2S 4/0      REV 03   710-022603   DV0043           F2S SIB
  B Board        REV 03   710-023787   DT9948           F2S SIB Mezz
SIB F2S 4/2      REV 05   710-022603   DW5446           F2S SIB
  B Board        REV 05   710-023787   DW7611           F2S SIB Mezz
SIB F2S 4/4      REV 04   710-022603   DW4826           F2S SIB
  B Board        REV 05   710-023787   DW8458           F2S SIB Mezz
SIB F2S 4/6      REV 03   710-022603   DV0026           F2S SIB
  B Board        REV 03   710-023787   DT9963           F2S SIB Mezz
Fan Tray 0       REV 02   760-024497   DR8290           Front Fan Tray
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Fan Tray 1       REV 02   760-024497   DR8293            Front Fan Tray
Fan Tray 2       REV 05   760-024502   DR8280            Rear Fan Tray
Fan Tray 3
Fan Tray 4       REV 05   760-024502   DR8276            Rear Fan Tray
Fan Tray 5       REV 02   760-024502   DP5643            Rear Fan Tray

lcc0-re0:
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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
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  PIC 2          REV 12   750-009567   WF3566            1x 10GE(LAN),XENPAK
    Xcvr 0       REV 02   740-013170   T07C94489         XENPAK-LR
  MMB 0          REV 03   710-005555   HZ1907            MMB-288mbit
  MMB 1          REV 03   710-005555   HW5283            MMB-288mbit
  PPB 0          REV 04   710-002845   HZ7717            PPB Type 3
  PPB 1          REV 04   710-002845   HS0110            PPB Type 3
FPC 6            REV 07   710-013035   DP7486            FPC Type 3-ES
  CPU            REV 08   710-016744   DP2545            ST-PMB2
  PIC 0          REV 09   750-009567   NE6323            1x 10GE(LAN),XENPAK
    Xcvr 0       REV 02   740-013170   T09C71959         XENPAK-LR
  PIC 1          REV 06   750-015217   DN4775            8x 1GE(TYPE3), IQ2
    Xcvr 0       REV 01   740-011782   P7E0T6M           SFP-SX
    Xcvr 1       REV 01   740-011613   AM0812S8XAY       SFP-SX
    Xcvr 2       REV 01   740-011782   P7E0T6J           SFP-SX
    Xcvr 3       REV 01   740-011782   PCH2P7D           SFP-SX
    Xcvr 4       REV 01   740-011782   P9B0QYT           SFP-SX
    Xcvr 5       REV 01   740-011613   AM0812S8WQJ       SFP-SX
    Xcvr 6       REV 02   740-013111   9301220           SFP-T
    Xcvr 7       REV 01   740-011782   P9B0TZ5           SFP-SX
  PIC 2          REV 06   750-015217   DM6747            8x 1GE(TYPE3), IQ2
    Xcvr 0       REV 01   740-011613   PAP0ZB2           SFP-SX
    Xcvr 1       REV 01   740-013111   70191002          SFP-T
    Xcvr 6       REV 01   740-011782   PBA29H8           SFP-SX
    Xcvr 7       REV 01   740-011613   AM0812S8WQG       SFP-SX
  MMB 0          REV 04   710-016036   DP3238            ST-MMB2
FPC 7            REV 03   710-021540   DV3154            FPC Type 2-ES
  CPU            REV 09   710-016744   DT9053            ST-PMB2
  PIC 0          REV 13   750-001901   HB4225            4x OC-12 SONET, SMIR
  PIC 1          REV 05   750-001900   AD3644            1x OC-48 SONET, SMSR
  PIC 2          REV 10   750-008155   HV0335            2x G/E IQ, 1000 BASE
    Xcvr 0       REV 01   740-011782   PCH2UKF           SFP-SX
    Xcvr 1       REV 01   740-011782   PCH2V19           SFP-SX
  PIC 3          REV 03   750-014638   JS9493            1x OC-48-12-3 SFP
    Xcvr 0       REV 01   740-011785   P6Q0ENK           SFP-SR
  MMB 0          REV 05   710-016036   DP3323            ST-MMB2
SPMB 0           REV 04   710-023321   DX3004            LCC Switch CPU
SPMB 1           REV 04   710-023321   DX3009            LCC Switch CPU
SIB 0            REV 07   710-022594   DW4195            LCC SIB
  B Board        REV 07   710-023185   DW3930            LCC SIB Mezz
SIB 1            REV 07   710-022594   DW4179            LCC SIB
  B Board        REV 07   710-023185   DW3919            LCC SIB Mezz
SIB 2
SIB 3            REV 06   710-022594   DT8251            LCC SIB
  B Board        REV 06   710-023185   DT5792            LCC SIB Mezz
SIB 4            REV 08   710-022594   DW8014            LCC SIB
  B Board        REV 07   710-023185   DW3917            LCC SIB Mezz
Fan Tray 0                                               Front Top Fan Tray
Fan Tray 1                                               Front Bottom Fan Tray
Fan Tray 2                                               Rear Fan Tray -- Rev 3

lcc1-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN1102270AHA      T1600
Midplane         REV 04   710-017247   RC5358            T-series Backplane
FPM GBUS         REV 10   710-002901   DS3443            T640 FPM Board
FPM Display      REV 01   710-021387   DS6411            T1600 FPM Display
CIP              REV 06   710-002895   DS4235            T-series CIP
PEM 0            Rev 02   740-023211   VM82438           Power Entry Module 4x60A
SCG 0            REV 15   710-003423   DS6649            T640 Sonet Clock Gen.
```

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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   P4T0WLR         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   PCH2P0U         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
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  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   PDS0MMB          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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show chassis hardware sfc (TX Matrix Plus Router)

```
user@host> show chassis hardware sfc 0
sfc0-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN112F007AHB      TXP
Midplane         REV 05   710-022574   TS4027            SFC Midplane
FPM Display      REV 03   710-024027   DX0282            TXP FPM Display
CIP 0            REV 04   710-023792   DW4889            TXP CIP
CIP 1            REV 04   710-023792   DW4887            TXP CIP
PEM 0            Rev 07   740-027463   UM26368           Power Entry Module
Routing Engine 0 REV 01   740-026942   737A-1064         SFC RE
Routing Engine 1 REV 01   740-026942   737A-1082         SFC RE
CB 0             REV 09   710-022606   DW6099            SFC Control Board
CB 1             REV 09   710-022606   DW6096            SFC Control Board
SPMB 0                    BUILTIN                        SFC Switch CPU
SPMB 1                    BUILTIN                        SFC Switch CPU
SIB F13 0        REV 04   710-022600   DX0841            F13 SIB
  B Board        REV 03   710-023431   DX0966            F13 SIB Mezz
SIB F13 1        REV 04   750-024564   DW5776            F13 SIB
  B Board        REV 03   710-023431   DW9028            F13 SIB
SIB F13 3        REV 04   750-024564   DW5762            F13 SIB
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  B Board        REV 03   710-023431   DW9059            F13 SIB
SIB F13 4        REV 04   750-024564   DW5797            F13 SIB
  B Board        REV 03   710-023431   DW9041            F13 SIB
SIB F13 6        REV 04   750-024564   DW5770            F13 SIB
  B Board        REV 03   710-023431   DW9079            F13 SIB Mezz
SIB F13 7        REV 04   750-024564   DW5758            F13 SIB
  B Board        REV 03   710-023431   DW9047            F13 SIB
SIB F13 8        REV 04   750-024564   DW5761            F13 SIB
  B Board        REV 03   710-023431   DW9043            F13 SIB Mezz
SIB F13 9        REV 04   750-024564   DW5754            F13 SIB
  B Board        REV 03   710-023431   DW9078            F13 SIB Mezz
SIB F13 11       REV 04   710-022600   DX0826            F13 SIB
  B Board        REV 03   710-023431   DX0967            F13 SIB Mezz
SIB F13 12       REV 04   750-024564   DW5794            F13 SIB
  B Board        REV 03   710-023431   DW9044            F13 SIB Mezz
SIB F2S 0/0      REV 05   710-022603   DW7897            F2S SIB
  B Board        REV 05   710-023787   DW7657            NEO PMB
SIB F2S 0/2      REV 05   710-022603   DW7833            F2S SIB
  B Board        REV 05   710-023787   DW7526            NEO PMB
SIB F2S 0/4      REV 05   710-022603   DW7875            F2S SIB
  B Board        REV 05   710-023787   DW7588            NEO PMB
SIB F2S 0/6      REV 05   710-022603   DW7860            F2S SIB
  B Board        REV 05   710-023787   DW7589            NEO PMB
SIB F2S 1/0      REV 04   710-022603   DW4820            F2S SIB
  B Board        REV 05   710-023787   DW8510            NEO PMB
SIB F2S 1/2      REV 05   710-022603   DW7849            F2S SIB
  B Board        REV 05   710-023787   DW7525            NEO PMB
SIB F2S 1/4      REV 05   710-022603   DW7927            F2S SIB
  B Board        REV 05   710-023787   DW7556            F2S SIB Mezz
SIB F2S 1/6      REV 05   710-022603   DW7866            F2S SIB
  B Board        REV 05   710-023787   DW7651            NEO PMB
SIB F2S 2/0      REV 05   710-022603   DW7880            F2S SIB
  B Board        REV 05   710-023787   DW7523            NEO PMB
SIB F2S 2/2      REV 05   710-022603   DW7895            F2S SIB
  B Board        REV 05   710-023787   DW7591            NEO PMB
SIB F2S 2/4      REV 05   710-022603   DW7907            F2S SIB
  B Board        REV 05   710-023787   DW7590            NEO PMB
SIB F2S 2/6      REV 05   710-022603   DW7785            F2S SIB
  B Board        REV 05   710-023787   DW7524            NEO PMB
SIB F2S 3/0      REV 05   710-022603   DW7782            F2S SIB
  B Board        REV 05   710-023787   DW7634            NEO PMB
SIB F2S 3/2      REV 05   710-022603   DW7793            F2S SIB
  B Board        REV 05   710-023787   DW7548            NEO PMB
SIB F2S 3/4      REV 05   710-022603   DW7779            F2S SIB
  B Board        REV 05   710-023787   DW7587            NEO PMB
SIB F2S 3/6      REV 05   710-022603   DW7930            F2S SIB
  B Board        REV 05   710-023787   DW7505            NEO PMB
SIB F2S 4/0      REV 05   710-022603   DW7867            F2S SIB
  B Board        REV 05   710-023787   DW7656            NEO PMB
SIB F2S 4/2      REV 05   710-022603   DW7917            F2S SIB
  B Board        REV 05   710-023787   DW7640            NEO PMB
SIB F2S 4/4      REV 05   710-022603   DW7929            F2S SIB
  B Board        REV 05   710-023787   DW7643            NEO PMB
SIB F2S 4/6      REV 05   710-022603   DW7870            F2S SIB
  B Board        REV 05   710-023787   DW7635            NEO PMB
Fan Tray 0       REV 06   760-024497   DV7831            Front Fan Tray
Fan Tray 1       REV 06   760-024497   DV9614            Front Fan Tray
Fan Tray 2       REV 06   760-024502   DV9618            Rear Fan Tray
Fan Tray 3       REV 06   760-024502   DV9616            Rear Fan Tray
Fan Tray 4       REV 06   760-024502   DV7807            Rear Fan Tray
Fan Tray 5       REV 06   760-024502   DV7828            Rear Fan Tray
```

show chassis hardware extensive (TX Matrix Plus Router)

```
user@host> show chassis hardware extensive
sfc0-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN112F007AHB      TXP
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
                                 S/N:               JN112F007AHB
 Assembly ID:  0x052c            Assembly Version:  00.00
 Date:         00-00-0000        Assembly Flags:    0x00
 ID: TXP
 Board Information Record:
  Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 05 2c 00 00 00 00 00 00 00 00 00 00
  Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x20: 4a 4e 31 31 32 46 30 30 37 41 48 42 00 00 00 00
  Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane         REV 05   710-022574   TS4027            SFC Midplane
 Jedec Code:   0x7fb0            EEPROM Version:    0x01
 P/N:          710-022574        S/N:               S/N TS4027
 Assembly ID:  0x0962            Assembly Version:  01.05
 Date:         03-23-2009        Assembly Flags:    0x00
 Version:      REV 05
 ID: SFC Midplane
 Board Information Record:
  Address 0x00: ad 01 ff ff 00 1d b5 14 00 00 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 01 ff 09 62 01 05 52 45 56 20 30 35 00 00
  Address 0x10: 00 00 00 00 37 31 30 2d 30 32 32 35 37 34 00 00
  Address 0x20: 53 2f 4e 20 54 53 34 30 32 37 00 00 00 17 03 07
  Address 0x30: d9 ff ff ff ad 01 ff ff 00 1d b5 14 00 00 ff ff
  Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff 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
```

show chassis hardware clei-models (TX Matrix Plus Router)

```
user@host> show chassis hardware clei-models
sfc0-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 05   710-022574                     CHAS-BP-TXP-S
FPM Display      REV 03   710-024027                     CRAFT-TXP-S
CIP 0            REV 05   710-023792                     CIP-TXP-S
CIP 1            REV 05   710-023792                     CIP-TXP-S
PEM 0            Rev 04   740-027463   IPUPAFGKTA        PWR-TXP-7-60-DC
PEM 1            Rev 04   740-027463   IPUPAFGKTA        PWR-TXP-7-60-DC
Routing Engine 0 REV 06   740-026942                     RE-DUO-C2600-16G-S
Routing Engine 1 REV 06   740-026942                     RE-DUO-C2600-16G-S
CB 0             REV 05   710-022606                     CB-TXP-S
CB 1             REV 09   710-022606                     CB-TXP-S
SIB F13 0        REV 04   750-024564                     SIB-TXP-F13
SIB F13 3        REV 04   750-024564                     SIB-TXP-F13
SIB F13 8        REV 04   750-024564                     SIB-TXP-F13
SIB F13 11       REV 04   750-024564                     SIB-TXP-F13
SIB F13 12       REV 03   750-024564                     SIB-TXP-F13
SIB F2S 0/0      REV 05   710-022603                     SIB-TXP-F2S-S
SIB F2S 0/2      REV 05   710-022603                     SIB-TXP-F2S-S
SIB F2S 0/4      REV 04   710-022603                     SIB-TXP-F2S-S
SIB F2S 0/6      REV 04   710-022603                     SIB-TXP-F2S-S
SIB F2S 1/0      REV 04   710-022603                     SIB-TXP-F2S-S
SIB F2S 1/2      REV 05   710-022603                     SIB-TXP-F2S-S
SIB F2S 1/4      REV 04   710-022603                     SIB-TXP-F2S-S
SIB F2S 1/6      REV 05   710-022603                     SIB-TXP-F2S-S
SIB F2S 2/0      REV 04   710-022603                     SIB-TXP-F2S-S
SIB F2S 2/2      REV 04   710-022603                     SIB-TXP-F2S-S
SIB F2S 2/4      REV 05   710-022603                     SIB-TXP-F2S-S
SIB F2S 2/6      REV 04   710-022603                     SIB-TXP-F2S-S
SIB F2S 3/0      REV 05   710-022603                     SIB-TXP-F2S-S
SIB F2S 3/2      REV 03   710-022603                     SIB-TXP-F2S-S
SIB F2S 3/4      REV 05   710-022603                     SIB-TXP-F2S-S
SIB F2S 3/6      REV 03   710-022603                     SIB-TXP-F2S-S
SIB F2S 4/0      REV 03   710-022603                     SIB-TXP-F2S-S
SIB F2S 4/2      REV 05   710-022603                     SIB-TXP-F2S-S
SIB F2S 4/4      REV 04   710-022603                     SIB-TXP-F2S-S
SIB F2S 4/6      REV 03   710-022603                     SIB-TXP-F2S-S
Fan Tray 0       REV 02   760-024497                     FANTRAY-TXP-H-S
Fan Tray 1       REV 02   760-024497                     FANTRAY-TXP-H-S
Fan Tray 2       REV 05   760-024502                     FANTRAY-TXP-V-S
Fan Tray 3
Fan Tray 4       REV 05   760-024502                     FANTRAY-TXP-V-S
Fan Tray 5       REV 02   760-024502                     FANTRAY-TXP-V-S

lcc0-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 03   710-017247                     CHAS-BP-T1600-S
FPM Display      REV 01   710-021387                     CRAFT-T1600-S
CIP              REV 06   710-002895                     CIP-L-T640-S
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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-4OC48-SON-SMSR
FPC 3            REV 12   710-013037                     T1600-FPC4-ES
  PIC 0          REV 02   750-010850                     PD-1OC768-SON-SR
FPC 4            REV 05   710-021534                     T640-FPC1-ES
  PIC 0          REV 04   750-014627                     PB-4OC3-1OC12-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-4OC12-SON-SMIR
  PIC 1          REV 05   750-001900                     PB-1OC48-SON-SMSR
  PIC 2          REV 10   750-008155                     PB-2GE-SFP-QPP
  PIC 3          REV 03   750-014638                     PB-1OC48-SON-B-SFP
SIB 0            REV 07   710-022594                     SIB-TXP-T1600-S
SIB 1            REV 07   710-022594                     SIB-TXP-T1600-S
SIB 3            REV 06   710-022594                     SIB-TXP-T1600-S
SIB 4            REV 08   710-022594                     SIB-TXP-T1600-S
Fan Tray 0                                               FANTRAY-T-S
Fan Tray 1                                               FANTRAY-T-S
Fan Tray 2                                               FANTRAY-TXP-R-S

lcc1-re0:
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Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 04   710-017247                     CHAS-BP-T1600-S
FPM Display      REV 01   710-021387                     CRAFT-T1600-S
CIP              REV 06   710-002895                     CIP-L-T640-S
PEM 0            Rev 02   740-023211   IPUPAC8KTA        PWR-T1600-4-60-DC-S
SCG 0            REV 15   710-003423                     SCG-T-S
SCG 1            REV 15   710-003423                     SCG-T-S
Routing Engine 0 REV 01   740-026941                     RE-DUO-C1800-8G-S
Routing Engine 1 REV 01   740-026941                     RE-DUO-C1800-8G-S
CB 0             REV 06   710-022597                     CB-LCC-S
CB 1             REV 06   710-022597                     CB-LCC-S
FPC 0            REV 02   710-010845                     T640-FPC4-ES
  PIC 0          REV 11   750-017405                     PD-4XGE-XFP
FPC 1            REV 16   710-013037                     T1600-FPC4-ES
  PIC 1          REV 06   750-034781                     PD-1CE-CFP
FPC 2            REV 16   710-013037                     T1600-FPC4-ES
  PIC 1          REV 05   750-034781                     PD-1CE-CFP
FPC 3            REV 10   710-021534                     T640-FPC1-ES
  PIC 0          REV 13   750-012266                     PB-4GE-TYPE1-SFP-IQ2
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  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-1OC192-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-1OC192-SON-VSR
  PIC 3          REV 12   750-009553                    PC-4OC48-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-4OC48-SON-SMSR
  PIC 3          REV 02   750-012793                    PC-1XGE-TYPE3-XFP-IQ2
FPC 7            REV 08   710-010845                    T640-FPC4-ES
  PIC 0          REV 11   750-017405                    PD-4XGE-XFP
SIB 0            REV 07   710-022594                    SIB-TXP-T1600-S
SIB 1            REV 07   710-022594                    SIB-TXP-T1600-S
SIB 3            REV 07   710-022594                    SIB-TXP-T1600-S
SIB 4            REV 08   710-022594                    SIB-TXP-T1600-S
Fan Tray 0                                              FANTRAY-T-S
Fan Tray 1                                              FANTRAY-T-S
Fan Tray 2                                              FANTRAY-TXP-R-S
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show chassis hardware detail (TX Matrix Plus Router)

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user@host> show chassis hardware detail
sfc0-re0:
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Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN111B023AHB      TXP
Midplane         REV 01   710-022574   TR7990            SFC Midplane
FPM Display      REV 03   710-024027   DW4699            TXP FPM Display
CIP 0            REV 01   710-023792   DR1437            TXP CIP
CIP 1            REV 02   710-023792   DS4564            TXP CIP
PEM 0            Rev 07   740-027463   UM26360           Power Entry Module
Routing Engine 0 REV 01   740-026942   737A-1024         SFC RE
  ad0    3887 MB  SMART CF             200811050193CEB1CEB1 Compact Flash
  ad1   30533 MB  SAMSUNG MCBQE32G8MPP-0V SY814A0762     Disk 1
Routing Engine 1 REV 01   740-026942   737A-1024         SFC RE
  ad0    3887 MB  SMART CF             20081105004C19A019A0 Compact Flash
  ad1   30533 MB  SAMSUNG MCBQE32G8MPP-0V SY814A0794     Disk 1
CB 0             REV 03   710-022606   DR7134            SFC Control Board
CB 1             REV 01   710-022606   DP8890            SFC Control Board
SPMB 0                    BUILTIN                        SFC Switch CPU
SPMB 1                    BUILTIN                        SFC Switch CPU
SIB F13 0        REV 03   750-024564   DT9478            F13 SIB
  B Board        REV 02   710-023431   DT6554            F13 SIB
SIB F13 1        REV 03   750-024564   DT9454            F13 SIB
  B Board        REV 02   710-023431   DT6551            F13 SIB
SIB F2S 0/0      REV 02   710-022603   DT2838            F2S SIB
  B Board        REV 02   710-023787   DT1725            NEO PMB
SIB F2S 0/2      REV 02   710-022603   DT2824            F2S SIB
  B Board        REV 02   710-023787   DT1706            NEO PMB
SIB F2S 0/4      REV 02   710-022603   DT2822            F2S SIB
  B Board        REV 02   710-023787   DT1696            NEO PMB
SIB F2S 0/6      REV 02   710-022603   DT2823            F2S SIB
  B Board        REV 02   710-023787   DT1717            NEO PMB
SIB F2S 1/0      REV 03   710-022603   DV0059            F2S SIB
  B Board        REV 03   710-023787   DT9942            NEO PMB
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SIB F2S 1/2      REV 02   710-022603   DT2826            F2S SIB
  B Board        REV 02   710-023787   DT1713            NEO PMB
SIB F2S 1/4      REV 03   710-022603   DV0092            F2S SIB
  B Board        REV 03   710-023787   DV0000            NEO PMB
SIB F2S 1/6      REV 03   710-022603   DV0079            F2S SIB
  B Board        REV 03   710-023787   DT9972            NEO PMB
SIB F2S 2/0      REV 03   710-022603   DV0100            F2S SIB
  B Board        REV 03   710-023787   DT9925            NEO PMB
SIB F2S 2/2      REV 03   710-022603   DV0050            F2S SIB
  B Board        REV 03   710-023787   DV0005            NEO PMB
SIB F2S 2/4      REV 03   710-022603   DV0097            F2S SIB
  B Board        REV 03   710-023787   DT9936            NEO PMB
Fan Tray 0       REV 02   760-024497   DR8286            Front Fan Tray
Fan Tray 1       REV 06   760-024497   DV9624            Front Fan Tray
Fan Tray 2       REV 02   760-024502   DR8259            Rear Fan Tray
Fan Tray 3       REV 02   760-024502   DR8270            Rear Fan Tray
Fan Tray 4       REV 02   760-024502   DR8284            Rear Fan Tray
Fan Tray 5       REV 06   760-024502   DV7813            Rear Fan Tray

lcc0-re0:
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Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN1101F27AHA      T1600
Midplane         REV 04   710-017247   RC5317            T Series Backplane
FPM GBUS         REV 10   710-002901   DS8197            T640 FPM Board
FPM Display      REV 01   710-021387   DS6433            T1600 FPM Display
CIP              REV 06   710-002895   DS1493            T Series CIP
PEM 0            Rev 08   740-017906   UD26601           Power Entry Module 3x80
SCG 0            REV 15   710-003423   DP5847            T640 Sonet Clock Gen.
SCG 1            REV 15   710-003423   DR0924            T640 Sonet Clock Gen.
Routing Engine 0 REV 01   740-026942   737F-1024         LCC RE
  ad0    3887 MB  SMART CF             2008110502B63E513E51 Compact Flash
  ad1   30533 MB  SAMSUNG MCBQE32G8MPP-0V SY814A1208     Disk 1
Routing Engine 1 REV 01   740-026942   737F-1024         LCC RE
  ad0    3887 MB  SMART CF             2008110500F9A8A8A8A8 Compact Flash
  ad1   30533 MB  SAMSUNG MCBQE32G8MPP-0V SY814A1076     Disk 1
CB 0             REV 05   710-022597   DV4264            LCC Control Board
CB 1             REV 03   710-022597   DP8558            LCC Control Board
FPC 0            REV 14   710-013037   DS9967            FPC Type 4-ES
  CPU            REV 08   710-016744   DS3989            ST-PMB2
  PIC 0          REV 12   750-013198   DL7506            1x Tunnel
  PIC 1          REV 12   750-013198   DL7505            1x Tunnel
  MMB 0          REV 01   710-025563   DS8524            ST-MMB2
  MMB 1          REV 01   710-025563   DS8373            ST-MMB2
FPC 1            REV 14   710-013037   DT0027            FPC Type 4-ES
  CPU            REV 09   710-016744   DS7684            ST-PMB2
  PIC 0          REV 12   750-013198   DL7512            1x Tunnel
  PIC 1          REV 12   750-013198   DL7498            1x Tunnel
  MMB 0          REV 01   710-025563   DS8494            ST-MMB2
  MMB 1          REV 01   710-025563   DS8436            ST-MMB2
SPMB 0           REV 04   710-023321   DV3867            LCC Switch CPU
SPMB 1           REV 02   710-023321   DP0238            LCC Switch CPU
SIB 0            REV 06   710-022594   DT8268            LCC SIB
  B Board        REV 06   710-023185   DT5791            LCC SIB Mezz
SIB 1            REV 06   710-022594   DT8261            LCC SIB
  B Board        REV 06   710-023185   DT5769            LCC SIB Mezz
SIB 2            REV 04   710-022594   DS2315            LCC SIB
  B Board        REV 06   710-023185   DT5788            LCC SIB Mezz
SIB 3            REV 06   710-022594   DT8253            LCC SIB
  B Board        REV 06   710-023185   DT5811            LCC SIB Mezz
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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
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show chassis hardware models (TX Matrix Plus Router)

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user@host> show chassis hardware models
sfc0-re0:
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Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
FPM Display      REV 03   710-024027   DX0282            CRAFT-TXP
CIP 0            REV 04   710-023792   DW4889            CIP-TXP
CIP 1            REV 04   710-023792   DW4887            CIP-TXP
PEM 0            Rev 07   740-027463   UM26368           ÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿ
Routing Engine 0 REV 01   740-026942   737A-1064         RE-TXP-SFC-DUO-2600-16G
Routing Engine 1 REV 01   740-026942   737A-1082         RE-TXP-SFC-DUO-2600-16G
CB 0             REV 09   710-022606   DW6099            CB-TXP
CB 1             REV 09   710-022606   DW6096            CB-TXP
SIB F13 1        REV 04   750-024564   DW5776            SIB-TXP-F13
SIB F13 3        REV 04   750-024564   DW5762            SIB-TXP-F13
SIB F13 4        REV 04   750-024564   DW5797            SIB-TXP-F13
SIB F13 6        REV 04   750-024564   DW5770            SIB-TXP-F13
SIB F13 7        REV 04   750-024564   DW5758            SIB-TXP-F13
SIB F13 8        REV 04   750-024564   DW5761            SIB-TXP-F13
SIB F13 9        REV 04   750-024564   DW5754            SIB-TXP-F13
SIB F13 12       REV 04   750-024564   DW5794            SIB-TXP-F13
SIB F2S 0/0      REV 05   710-022603   DW7897
SIB F2S 0/2      REV 05   710-022603   DW7833
SIB F2S 0/4      REV 05   710-022603   DW7875
SIB F2S 0/6      REV 05   710-022603   DW7860
SIB F2S 1/0      REV 04   710-022603   DW4820
SIB F2S 1/2      REV 05   710-022603   DW7849
SIB F2S 1/4      REV 05   710-022603   DW7927            SIB-TXP-F2S
SIB F2S 1/6      REV 05   710-022603   DW7866
SIB F2S 2/0      REV 05   710-022603   DW7880
SIB F2S 2/2      REV 05   710-022603   DW7895
SIB F2S 2/4      REV 05   710-022603   DW7907
SIB F2S 2/6      REV 05   710-022603   DW7785
SIB F2S 3/0      REV 05   710-022603   DW7782
SIB F2S 3/2      REV 05   710-022603   DW7793
SIB F2S 3/4      REV 05   710-022603   DW7779
SIB F2S 3/6      REV 05   710-022603   DW7930
SIB F2S 4/0      REV 05   710-022603   DW7867
SIB F2S 4/2      REV 05   710-022603   DW7917
SIB F2S 4/4      REV 05   710-022603   DW7929
SIB F2S 4/6      REV 05   710-022603   DW7870
Fan Tray 0       REV 06   760-024497   DV7831            FANTRAY-TXP-F
Fan Tray 1       REV 06   760-024497   DV9614            FANTRAY-TXP-F
Fan Tray 2       REV 06   760-024502   DV9618            FANTRAY-TXP-R
Fan Tray 3       REV 06   760-024502   DV9616            FANTRAY-TXP-R
Fan Tray 4       REV 06   760-024502   DV7807            FANTRAY-TXP-R
Fan Tray 5       REV 06   760-024502   DV7828            FANTRAY-TXP-R

lcc0-re0:
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Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
Midplane         REV 03   710-017247   RC3765            CHAS-BP-T1600-S
FPM Display      REV 01   710-021387   DN5441            CRAFT-T1600-S
CIP              REV 06   710-002895   DP6021            CIP-L-T640-S
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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-1OC192-SON-XFP
  PIC 2          REV 10   750-009450   HX6466            PC-1OC192-SON-SR2
SIB 0            REV 08   710-022594   DW8033            SIB-TXP-T1600-S
SIB 1            REV 08   710-022594   DW8044            SIB-TXP-T1600-S
SIB 2            REV 08   710-022594   DW8020            SIB-TXP-T1600-S
SIB 3            REV 08   710-022594   DW8063            SIB-TXP-T1600-S
SIB 4            REV 08   710-022594   DW8064            SIB-TXP-T1600-S
Fan Tray 0                                               FANTRAY-T-S
Fan Tray 1                                               FANTRAY-T-S
Fan Tray 2                                               FANTRAY-TXP-R-S

lcc1-re0:
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Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
Midplane         REV 04   710-017247   RC5361            CHAS-BP-T1600-S
FPM Display      REV 01   710-021387   DS6430            CRAFT-T1600-S
CIP              REV 06   710-002895   DS4239            CIP-L-T640-S
PEM 0            Rev 08   740-017906   UD26649           PWR-T1600-3-80-DC-S
SCG 0            REV 15   710-003423   DP5820            SCG-T-S
CB 0             REV 06   710-022597   DW8523            CB-LCC
CB 1             REV 06   710-022597   DW8528            CB-LCC
FPC 4            REV 12   710-013037   DP8509            T1600-FPC4-ES
  PIC 0          REV 11   750-017405   DP8808            PD-4XGE-XFP
  PIC 1          REV 11   750-017405   DP7263            PD-4XGE-XFP
FPC 6            REV 14   710-013037   DS9961            T1600-FPC4-ES
  PIC 0          REV 13   750-017405   DS5532            PD-4XGE-XFP
  PIC 1          REV 13   750-017405   DS7639            PD-4XGE-XFP
FPC 7            REV 03   710-013035   DF5564            T1600-FPC3-ES
  PIC 0          REV 16   750-007141   JJ8063            PC-10GE-SFP
SIB 0            REV 08   710-022594   DW8035            SIB-TXP-T1600-S
SIB 1            REV 10   710-022594   DX7672            SIB-TXP-T1600-S
SIB 2            REV 08   710-022594   DW8060            SIB-TXP-T1600-S
SIB 3            REV 08   710-022594   DW8072            SIB-TXP-T1600-S
SIB 4            REV 08   710-022594   DW8043            SIB-TXP-T1600-S
Fan Tray 0                                               FANTRAY-T-S
Fan Tray 1                                               FANTRAY-T-S
Fan Tray 2                                               FANTRAY-TXP-R-S

lcc2-re0:
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Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
Midplane         REV 03   710-017247   RC3956            CHAS-BP-T1600-S
FPM Display      REV 01   710-021387   DN7030            CRAFT-T1600-S
CIP              REV 06   710-002895   DM3962            CIP-L-T640-S
PEM 0            Rev 08   740-017906   UD26519           PWR-T1600-3-80-DC-S
PEM 1            Rev 07   740-017906   UC26601           PWR-T1600-3-80-DC-S
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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-4OC192-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:
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Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
Midplane         REV 04   710-017247   RC5319           CHAS-BP-T1600-S
FPM Display      REV 01   710-021387   DS6402           CRAFT-T1600-S
CIP              REV 06   710-002895   DR9973           CIP-L-T640-S
PEM 0            Rev 07   740-017906   UC26496          PWR-T1600-3-80-DC-S
PEM 1            Rev 07   740-017906   UC26599          PWR-T1600-3-80-DC-S
SCG 0            REV 15   710-003423   DP5831           SCG-T-S
CB 0             REV 06   710-022597   DW8533           CB-LCC
CB 1             REV 06   710-022597   DW8538           CB-LCC
FPC 0            REV 14   710-013037   DS5345           T1600-FPC4-ES
  PIC 0          REV 13   750-017405   DS7641           PD-4XGE-XFP
  PIC 1          REV 13   750-017405   DS5479           PD-4XGE-XFP
FPC 1            REV 14   710-013037   DS7338           T1600-FPC4-ES
  PIC 0          REV 13   750-017405   DS7631           PD-4XGE-XFP
  PIC 1          REV 13   750-017405   DS7632           PD-4XGE-XFP
FPC 2            REV 14   710-013037   DS9962           T1600-FPC4-ES
  PIC 0          REV 13   750-017405   DS7581           PD-4XGE-XFP
  PIC 1          REV 13   750-017405   DS7627           PD-4XGE-XFP
FPC 4            REV 10   710-010845   JZ6573           T640-FPC4-ES
  PIC 0          REV 14   750-012518   JT5124           PD-4OC192-SON-XFP
FPC 5            REV 14   710-013037   DT0016           T1600-FPC4-ES
  PIC 0          REV 14   750-012518   JY9918           PD-4OC192-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

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

Ethernet MPC with SFP+ Optics [MX Series Routers])

```
Hardware inventory:
    Item             Version  Part number  Serial number     Description
    Chassis                                JN112D865AFA      MX960
    Midplane         REV 03   710-013698   TS3339            MX960 Backplane
    FPM Board        REV 03   710-014974   WW6267            Front Panel Display

    PDM              Rev 03   740-013110   QCS12485026       Power Distribution
Module
    PEM 0            Rev 04   740-013682   QCS12434086       PS 1.7kW; 200-240VAC
 in
    PEM 1            Rev 04   740-013682   QCS1243408Z       PS 1.7kW; 200-240VAC
 in
    PEM 2            Rev 04   740-013682   QCS1243407X       PS 1.7kW; 200-240VAC
 in
    Routing Engine 0 REV 07   740-015113   9009009677        RE-S-1300
    Routing Engine 1 REV 07   740-015113   9009011510        RE-S-1300
    CB 0             REV 03   710-021523   XF0394            MX SCB
    CB 1             REV 03   710-021523   XF0550            MX SCB
    CB 2             REV 03   710-021523   XD7455            MX SCB
    FPC 4            REV 02   750-028467   JR6127            MPC M 16x 10GE
      CPU            REV 02   711-029089   JX0129            AS PMB
      PIC 0                   BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
      PIC 1                   BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
      PIC 2                   BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
      PIC 3                   BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
    Fan Tray 0       REV 05   740-014971   TP9990            Fan Tray
    Fan Tray 1       REV 05   740-014971   VS1709            Fan Tray
```

show chassis 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 738**
- **request system software in-service-upgrade on page 749**

List of Sample Output **show chassis in-service-upgrade on page 447**

Output Fields Table 78 on page 447 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 78: show chassis in-service-upgrade Output Fields

Field Name	Field Description
Item	Flexible PIC Concentrator (FPC) slot number.
Status	FPC and corresponding PIC state. State can be either of the follwing: • **Online**—FPC is online and running. • **Offline**—FPC is powered down.
Reason	Reason for the state (if offline).

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

Syntax show chassis lccs

Release Information Command introduced before Junos OS Release 7.4.

Description (TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the status of all T640 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.

Options This command has no options.

Required Privilege Level view

Related Documentation

- **request chassis lcc on page 166**

List of Sample Output **show chassis lccs on page 449**

Output Fields Table 79 on page 449 lists the output fields for the **show chassis lccs** command. Output fields are listed in the approximate order in which they appear.

Table 79: show chassis lccs Output Fields

Field Name	Field Description
Slot	LCC slot number.
State	LCC status: • **Online**—LCC is online and running. • **Offline**—LCC is powered down. • **Empty**—No LCC is present.
Uptime	How long the LCC has been up and running.

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

Syntax show chassis location

Syntax (TX Matrix Router) show chassis location
<fpc | interface (by-name *name* | by-slot fpc *number* lcc *number*) | lcc *number* | scc>

Syntax (TX Matrix Plus Router) show chassis location
<fpc | interface (by-name *name* | by-slot fpc *number* lcc *number*) | lcc *number* | sfc *number*>

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description Display the physical location of the chassis. This command can only be used on the master Routing Engine.

Options none—Display all information about the physical location of the chassis. On a TX Matrix router, display all information about the physical location of the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display all information about the physical location of the TX Matrix Plus router and its attached T1600 routers.

fpc—(TX Matrix and TX Matrix Plus routers only) (Optional) Display the physical location of all Flexible PIC Concentrators (FPCs).

interface by-name *name*—(TX Matrix and TX Matrix Plus routers only) (Optional) Display the physical location of a specified interface name. On a TX Matrix router, this option displays the FPC number and T640 router (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.

interface by-slot fpc *number* lcc *number*—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display the global FPC number of an interface by specifying its local FPC number and T640 router (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.

- The global FPC number is the FPC slot number when all the FPC slots in the routing matrix are considered: **0** through **31**. The local FPC number is the FPC slot number on a particular T640 router.
- For **fpc**, replace ***number*** with a value from **0** through **7**.
- For **lcc**, replace ***number*** with a value from **0** through **3**.

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 451
show chassis location fpc (TX Matrix Router) on page 452
show chassis location interface by-slot (TX Matrix Router) on page 452
show chassis location on page 452
show chassis location fpc (TX Matrix Plus Router) on page 452
show chassis location interface by-slot (TX Matrix Plus Router) on page 452

Output Fields Table 80 on page 451 lists the output fields for the **show chassis location** command. Output fields are listed in the approximate order in which they appear.

Table 80: show chassis location Output Fields

Field Name	Field Description
country-code	Country code information.
postal-code	Postal code information.
Building	Building information.
Floor	Floor information.
Global FPC	Global FPC number. The FPC slot number, when all FPC slots in the Routing Matrix are considered. The range of values is **0** through **31**.
LCC	Line-card chassis number. On a TX Matrix router, the number of a particular T640 router connected to the TX Matrix router. On a TX Matrix Plus router, the number of a particular T1600 router connected to the TX Matrix Plus router.
Local FPC	Local FPC number. On a TX Matrix router, the FPC slot number on a particular T640 router. On a TX Matrix Plus router, the FPC slot number on a particular T1600 router.

show chassis location

```
user@host> show chassis location
country-code: US
postal-code: 94404
Building: Building 2, Floor: 2
```

show chassis location fpc (TX Matrix Router)

```
user@host> show chassis location fpc
Global FPC    LCC     Local FPC
    17          2         1
    21          2         5
```

show chassis location interface by-slot (TX Matrix Router)

```
user@host> show chassis location interface by-slot fpc 1 lcc 1
Global FPC: 9
```

show chassis location

```
user@host> show chassis location
country-code: US
postal-code: 94404
Building: Building 2, Floor: 2
```

show chassis location fpc (TX Matrix Plus Router)

```
user@host> show chassis location fpc
Global FPC    LCC     Local FPC
     0          0         0
     1          0         1
```

show chassis location interface by-slot (TX Matrix Plus Router)

```
user@host> show chassis location interface by-slot fpc 2 lcc 1
Global FPC: 10
```

show chassis mac-addresses

Syntax

show chassis mac-addresses

Syntax (TX Matrix Router)

show chassis mac-addresses
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show chassis mac-addresses
<lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display the media access control (MAC) addresses for the router or switch chassis.

Options

none—(TX Matrix and TX Matrix Plus routers only) Display the MAC addresses for the router chassis. 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.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display MAC addresses for a specified T640 router (or line-card chassis) that is connected to the TX Matrix Plus router. On a TX Matrix Plus router, display MAC addresses for a specified T640 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) Display MAC addresses for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display MAC addresses for the TX Matrix Plus router (or switch-fabric chassis).

Required Privilege Level

view

List of Sample Output

show chassis mac-addresses on page 454
show chassis mac-addresses (TX Matrix Router) on page 454
show chassis mac-addresses (TX Matrix Plus Router) on page 454

Output Fields

Table 81 on page 453 lists the output fields for the **show chassis mac-addresses** command. Output fields are listed in the approximate order in which they appear.

Table 81: show chassis mac-addresses Output Fields

Field Name	Field Description
MAC address information	
Public base address	Base address of the MAC addresses allocated to this router or switch.

Table 81: show chassis mac-addresses Output Fields *(continued)*

Field Name	Field Description
Public count	Number of allocated public addresses.
Private base address	Base address of the private MAC addresses allocated to this router or switch.
Private count	Number of allocated private addresses.

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 Matrix Router)

```
user@host> show chassis mac-addresses
scc-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:05:85:9e:cc:00
  Public count            8064
  Private base address    00:05:85:9e:eb:80
  Private count           128
lcc0-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:05:85:68:98:00
  Public count            2032
  Private base address    00:05:85:68:9f:f0
  Private count           16
lcc2-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:05:85:68:78:00
  Public count            2032
  Private base address    00:05:85:68:7f:f0
  Private count           16
```

show chassis mac-addresses (TX Matrix Plus Router)

```
user@host> show chassis mac-addresses
sfc0-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:1d:b5:14:00:00
  Public count            65023
  Private base address    00:1d:b5:14:fd:ff
  Private count           512

lcc0-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:1f:12:7a:84:00
  Public count            2032
  Private base address    00:1f:12:7a:8b:f0
  Private count           16
```

```
lcc1-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:22:83:42:48:00
  Public count            2032
  Private base address    00:22:83:42:4f:f0
  Private count           16

lcc2-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:1f:12:c3:58:00
  Public count            2032
  Private base address    00:1f:12:c3:5f:f0
  Private count           16

lcc3-re0:
--------------------------------------------------------------------------
MAC address information:
  Public base address     00:21:59:ef:b8:00
  Public count            2032
  Private base address    00:21:59:ef:bf:f0
  Private count           16
```

show chassis network services

Syntax show chassis network services

Release Information Command introduced in Junos OS Release 9.4.

Description (MX Series routers only) Display the network services mode that the router is configured to run in—IP Services mode or Ethernet Services mode.

Options This command has no options.

Required Privilege Level view

Output Fields Table 82 on page 456 lists the output fields for the **show chassis network services** command. Output fields are listed in the approximate order in which they appear.

Table 82: show chassis network services Output Fields

Field Name	Field Description
Network services mode	Network services mode configured for the MX Series router: • **IP**—IP Services mode. • **Ethernet**—Ethernet Services mode.

show chassis network services

```
user@host> show chassis network services
Network Services Mode: IP
```

show chassis pic

Syntax

show chassis pic fpc-slot *slot-number* pic-slot *slot-number*

Syntax (TX Matrix and TX Matrix Plus Routers)

show chassis pic fpc-slot *slot-number* pic-slot *slot-number*
<lcc *number*>

Release Information

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

Description

Display status information about the PIC installed in the specified Flexible PIC Concentrator (FPC) and PIC slot.

Options

fpc-slot *slot-number*—Display information about the PIC in this particular FPC slot:

- On a TX Matrix router, if you specify the number of the T640 router by using the **lcc *number*** option (the recommended method), replace ***slot-number*** with a value from **0** through **7**. Otherwise, replace ***slot-number*** with a value from **0** through **31**. For example, the following commands have the same result:

  Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 router by using the **lcc *number*** option (the recommended method), replace ***slot-number*** with a value from **0** through **7**. Otherwise, replace ***slot-number*** with a value from **0** through **31**. For example, the following commands have the same result:

  user@host> **show chassis pic fpc-slot 1 lcc 1 pic-slot 1**
  user@host> **show chassis pic fpc-slot 9 pic-slot 1**

- M120 routers only—Replace ***slot-number*** with a value from **0** through **5**.
- MX80 routers only—Replace ***slot-number*** with a value from **0** through **1**.
- MX240 routers only—Replace ***slot-number*** with a value from **0** through **2**.
- MX480 routers only—Replace ***slot-number*** with a value from **0** through **5**.
- MX960 routers only—Replace ***slot-number*** with a value from **0** through **11**.
- Other routers—Replace ***slot-number*** with a value from **0** through **7**.
- EX Series switches:
  - EX3200 switches and EX4200 standalone switches—Replace ***slot-number*** with 0.
  - EX4200 switches in a Virtual Chassis configuration—Replace ***slot-number*** with a value from 0 through 9 (switch's member ID).
  - EX8208 switches—Replace ***slot-number*** with a value from 0 through 7 (line card).
  - EX8216 switches—Replace ***slot-number*** with a value from 0 through 15 (line card).

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 and EX8216 switches, replace ***slot-number*** with 0.

Required Privilege Level

view

Related Documentation

- **request chassis pic on page 169**

List of Sample Output

show chassis pic fpc-slot pic-slot on page 459
show chassis pic fpc-slot pic-slot (PIC Offline) on page 460
show chassis pic fpc-slot pic-slot (FPC Offline) on page 460
show chassis pic fpc-slot pic-slot (FPC Not Present) on page 460
show chassis pic fpc-slot pic-slot (PIC Not Present) on page 460
show chassis pic fpc-slot 3 pic-slot 0 (M120 Router) on page 460
show chassis pic fpc-slot pic-slot (MX960 Router Bidirectional Optics) on page 460
show chassis pic fpc-slot pic-slot (T1600 Router with 100-Gigabit Ethernet PIC) on page 460
show chassis pic fpc-slot pic-slot lcc (TX Matrix Router) on page 461
show chassis pic fpc-slot pic-slot lcc (TX Matrix Plus Router) on page 461
show chassis pic fpc-slot pic-slot (Next-generation SONET/SDH SFP) on page 461
show chassis pic fpc-slot pic-slot (12-port T1/E1) on page 461
show chassis pic fpc-slot 0 pic-slot 1 (4x CHOC3 SONET CE SFP) on page 462
show chassis pic fpc-slot pic-slot (OTN) on page 462

Output Fields

Table 83 on page 458 lists the output fields for the **show chassis pic** command. Output fields are listed in the approximate order in which they appear.

Table 83: 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. • **Online**— PIC is online and running. • **Offline**—PIC is powered down.
PIC version	PIC hardware version.
Uptime	How long the PIC has been online.

Table 83: show chassis pic Output Fields *(continued)*

Field Name	Field Description
Package	(MultiServices PICs only) Services package supported: **Layer-2** or **Layer-3**.
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: **LH**, **LX**, or **SX**

PIC Port Information (MX960 Router Bidirectional Optics)	Port-level information for the PIC.
	• Port—Port number
	• Cable type—Type of small form-factor pluggable (SFP) optical transceiver installed. Uplink interfaces display -U. Down link interfaces display -D.
	• Fiber type—Type of fiber. SM is single-mode.
	• Xcvr vendor—Transceiver vendor name.
	• Xcvr vendor part number—Transceiver vendor part number.
	  ◦ BX10-10-km bidirectional optics.
	  ◦ BX40-40-km bidirectional optics.
	  ◦ SFP-LX-40-km SFP optics.
	• Wavelength—Wavelength of the transmitted signal. Uplinks are always 1310 nm. Downlinks are either 1490 nm or 1550 nm.

PIC Port Information (next-generation SONET/SDH SFP)	Port-level information for the next-generation SONET/SDH SFP PIC. • Port—Port number • Cable type—Type of small form-factor pluggable (SFP) optical transceiver installed. • Fiber type—Type of fiber: **SM** (single-mode) or **MM** (multimode). • Xcvr vendor—Transceiver vendor name. • Xcvr vendor part number—Transceiver vendor part number. • Wavelength—Wavelength of the transmitted signal. Next-generation SONET/SDH SFPs use 1310 nm.

show chassis pic fpc-slot pic-slot

```
user@host> show chassis pic fpc-slot 2 pic-slot 0
PIC fpc slot 2 pic slot 0 information:
  Type                            10x 1GE(LAN), 1000 BASE
  ASIC type                       H chip
  State                           Online
  PIC version                     1.1
  Uptime                          1 day, 50 minutes, 58 seconds
PIC Port Information:
  Port        Cable
  Number      Type
  0           GIGE 1000LX
  6           GIGE 1000LX
```

show chassis pic fpc-slot pic-slot (PIC Offline)

```
user@host> show chassis pic fpc-slot 1 pic-slot 0
PIC fpc slot 1 pic slot 0 information:
  State                           Offline
```

show chassis pic fpc-slot pic-slot (FPC Offline)

```
user@host> show chassis pic fpc-slot 1 pic-slot 0
FPC 1 is not online
```

show chassis pic fpc-slot pic-slot (FPC Not Present)

```
user@host> show chassis pic fpc-slot 4 pic-slot 0
FPC slot 4 is empty
```

show chassis pic fpc-slot pic-slot (PIC Not Present)

```
user@host> show chassis pic fpc-slot 5 pic-slot 2
FPC 5, PIC 2 is empty
```

show chassis pic fpc-slot 3 pic-slot 0 (M120 Router)

```
user@host> show chassis pic fpc-slot 3 pic-slot 0
PC slot 3, PIC slot 0 information:
  Type                            2x G/E IQ, 1000 BASE
  ASIC type                       IQ GE 2 VLAN-TAG FPGA
  State                           Online
  PIC version                1.16
  Uptime                       3 hours, 3 minutes

PIC Port Information:
  Port        Cable             Xcvr               Xcvr Vendor
  Number      Type              Vendor Name        Part Number
  0           GIGE 1000SX       FINISAR CORP.      FTRJ8519P1BNL-J3
  1           GIGE 1000SX       FINISAR CORP.      FTRJ-8519-7D-JUN
```

show chassis pic fpc-slot pic-slot (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:
                         Fiber                     Xcvr vendor
  Port  Cable type       type  Xcvr vendor        part number       Wavelength
  0     SFP-1000BASE-BX10-D SM  SumitomoElectric   SBP6H44-J3-BW-49  1490 nm
  1     SFP-1000BASE-BX10-D SM  SumitomoElectric   SBP6H44-J3-BW-49  1490 nm
  2     SFP-1000BASE-BX10-D SM  SumitomoElectric   SBP6H44-J3-BW-49  1490 nm
  3     SFP-1000BASE-BX10-D SM  OCP                TRXBG1LXDBVM2-JW  1490 nm
  4     SFP-1000BASE-BX10-D SM  OCP                TRXBG1LXDBVM2-JW  1490 nm
  5     SFP-1000BASE-BX10-U SM  SumitomoElectric   SBP6H44-J3-BW-31  1310 nm
  6     SFP-1000BASE-BX10-U SM  SumitomoElectric   SBP6H44-J3-BW-31  1310 nm
  7     SFP-1000BASE-BX10-U SM  OCP                TRXBG1LXDBBMH-J1  1310 nm
  8     SFP-1000BASE-BX10-U SM  OCP                TRXBG1LXDBBMH-J1  1310 nm
  9     SFP-1000BASE-BX10-U SM  SumitomoElectric   SBP6H44-J3-BW-31  1310 nm
```

show chassis pic fpc-slot pic-slot (T1600 Router with 100-Gigabit Ethernet PIC)

```
user@host> run show chassis pic fpc-slot 3 pic-slot 1
FPC slot 3, PIC slot 1 information:
  Type                            100GE SLOT1
  ASIC type                       Brooklyn 100GE FPGA
  State                           Online
  PIC version                 1.3
  Uptime                        10 minutes, 44 seconds
```

```
PIC port information:
                          Fiber                    Xcvr vendor
  Port  Cable type        type  Xcvr vendor        part number       Wavelength
  0     100GBASE LR4      SM    Opnext Inc.        TRC5E20ENFSF000F  1310 nm
```

show chassis pic fpc-slot pic-slot lcc (TX Matrix Router)

```
user@host> show chassis pic fpc-slot 1 pic-slot 1 lcc 0
lcc0-re0:
--------------------------------------------------------------------------
PIC fpc slot 1 pic slot 1 information:
  Type                            4x OC-3 SONET, SMIR
  ASIC type                       D chip
  State                           Online
  PIC version                 1.2
  Uptime                       5 days, 2 hours, 12 minutes, 8 seconds
```

show chassis pic fpc-slot pic-slot lcc (TX Matrix Plus Router)

```
user@host> show chassis pic 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:
                          Fiber                    Xcvr vendor
  Port  Cable type        type  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:
                          Fiber                    Xcvr vendor
   Port  Cable type        type  Xcvr vendor        part number       Wavelength

   0     OC48 short reach  SM    FINISAR CORP.      FTRJ1321P1BTL-J2  1310 nm
   1     OC3 short reach   MM    OCP                TRPA03MM3BAS-JE   1310 nm
   2     OC3 short reach   MM    OCP                TRXA03MM3BAS-JW   1310 nm
   3     OC12 inter reach  SM    FINISAR CORP.      FTLF1322P1BTR     1310 nm
```

show chassis pic fpc-slot pic-slot (12-port T1/E1)

```
user@host> show chassis pic fpc-slot 0 pic-slot 3
FPC slot 0, PIC slot 3 information:
  Type                            12x T1/E1 CE
  State                           Online
  PIC version                 1.1
  CPU load average              1 percent
  Interrupt load average        0 percent
  Total DRAM size             128 MB
  Memory buffer utilization   100 percent
  Memory heap utilization       4 percent
```

```
  Uptime                          1 day, 22 hours, 28 minutes, 12 seconds
  Internal Clock Synchronization   Normal
```

show chassis pic fpc-slot 0 pic-slot 1 (4x CHOC3 SONET CE SFP)

```
user@host> show chassis pic fpc-slot 0 pic-slot 1
FPC slot 0, PIC slot 1 information:
  Type                              4x CHOC3 SONET CE SFP
  State                             Online
  PIC version                  1.3
  CPU load average               1 percent
  Interrupt load average         0 percent
  Total DRAM size              128 MB
  Memory buffer utilization     99 percent
  Memory heap utilization        4 percent
  Uptime                          1 day, 22 hours, 55 minutes, 37 seconds
  Internal Clock Synchronization   Normal

PIC port information:
                           Fiber                    Xcvr vendor
  Port  Cable type         type  Xcvr vendor        part number       Wavelength
  0     OC3 short reach    MM    AVAGO              HFBR-57E0P-JU2    n/a
  1     OC3 short reach    MM    AVAGO              HFBR-57E0P-JU2    n/a
  3     OC3 long reach     SM    OPNEXT INC         TRF5456AVLB314    1310 nm
```

show chassis pic fpc-slot 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 power-ratings

Syntax show chassis power-ratings

Release Information Command introduced in Junos OS Release 8.4.

Description (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.

Options This command has no options.

Required Privilege Level view

List of Sample Output
show chassis power-ratings on page 465
show chassis power-ratings (Power Management Disabled) on page 465

Output Fields Table 84 on page 463 lists the output fields for the **show chassis power-ratings** command. Output fields are listed in the approximate order in which they appear.

Table 84: show chassis power-ratings Output Fields

Field Name	Field Description
Device	Physical Interface Module (PIM) slot. (PIM slot numbers appear as FPC numbers in the output.)
Total Tokens	Maximum number of low-power, high-power, and heat tokens available for the router: • **Low Power**—Maximum number of low-power consumption tokens available for the router. • **High Power**—Maximum number of high-power consumption tokens available for the router. • **Heat**—Maximum number of heat tokens available for the router.

Table 84: show chassis power-ratings Output Fields *(continued)*

Field Name	Field Description

FPC *number*	PIM slot number and power and heat information for the PIM in this slot:
	• **Low Power**—PIM low-power consumption. The number of low-power tokens used by the PIM.
	• **High Power**—PIM high-power consumption. The number of high-power tokens used by the PIM.
	• **Heat**—The number of PIM heat dissipation tokens used by this PIM.
	• **Ratings**—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:
	NOTE: The **request chassis fpc** command has no effect on the status of the PIM slot.
	  • **OK**—The PIM in this PIM slot can be brought online.
	  • **Exceeded**—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.
	  • **Empty**—No PIM is installed in the PIM slot.
	  • **Cfg offline**—The PIM cannot be brought online because the PIM slot has been disabled by the **set chassis fpc offline** command.

Tokens Used	Total number of low-power, high-power, and heat tokens used by the router: • **Low Power**—The total number of low-power tokens used by the router. • **High Power**—The total number of high-power tokens used by the router. • **Heat**—Number of heat tokens used by the router. • **Ratings**—If blank, J Series power management is enabled. **No Power Mgmt** indicates that J Series power management has been disabled by the **set chassis disable_power_management** command. NOTE: 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.

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 Management Disabled)

```
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      No Power Mgmt
```

show chassis power

Syntax show chassis power

Release Information Command introduced in Junos OS Release 10.0

Description (MX Series Ethernet Services Routers only) Display power limits and usage information for the AC or DC Power Entry Modules (PEMs).

Options This command has no options.

Required Privilege Level view

Related Documentation

- **show chassis power sequence on page 470**

List of Sample Output

show chassis power (MX960 Router with DC PEM) on page 467
show chassis power (MX960 Router with AC PEM) on page 468
show chassis power (MX480 Router with AC PEM) on page 468
show chassis power (MX240 Router with DC PEM) on page 469

Output Fields Table 85 on page 466 lists the output fields for the **show chassis power** command. Output fields are listed in the approximate order in which they appear.

Table 85: show chassis power Output Fields

Field Name	Field Description

PEM *number*	AC or DC PEM number on the chassis. The following output fields are displayed for the PEM:
	• **State**—State of the PEM:
	  ◦ **Online**—PEM is present in the slot and online.
	  ◦ **Empty**—PEM is not present in the slot.
	  ◦ **Present**—PEM is present in the slot, but not online.
	• ***AC/DC* Input**—**OK** or **Check**—State of the AC or DC input power feed with the number of active and expected feeds (one or two).
	For a DC input power feed, this output field also displays the reference voltage input with maximum input voltage displayed in mV (in parentheses) for the AC or DC PEM.
	• **Capacity**—Actual power input capacity with maximum capacity displayed (in parentheses) in watts.
	NOTE: The maximum capacity for AC and DC PEMs is:
	• MX960 AC PEM—4100 W if two feeds are connected. 1700 W if one feed is connected.
	• MX960 DC PEM—4100 W if two feeds are connected. 1700 W if one feed is connected.
	• MX480 AC PEM—2520 W if it is high-line. 1450 W if it is low-line.
	• MX480 DC PEM—2400 W if the DIP switch is off. 2600 W if the DIP switch is on.
	• MX240 AC PEM—2520 W if it is high-line. 1450 W if it is low-line.
	• MX240 DC PEM—2400 W if the DIP switch is off. 2600 W if the DIP switch is on.
	• **DC Output**—DC power output in Watts for the specified zone, at the specified amps and voltage (*A* @ *V*), and load and percentage utilization of the maximum capacity) for the zone.

Table 85: show chassis power Output Fields *(continued)*

Field Name	Field Description

System	Overall power statistics for the system zone-wise:
	• Zone *number*:
	  • **Capacity**—Maximum power capacity applicable for the zone, in watts.
	  • **Allocated power**—Actual capacity allocated for the zone, in watts, with remaining power displayed in parentheses.
	  • **Actual usage**—Actual power usage for the zone, in watts.
	• **Total system capacity**—Cumulative power capacity of all the zones, in watts.
	• **Total remaining capacity**—Difference between the **Total system capacity** and cumulative **Allocated power** of all the zones, in watts.

show chassis power (MX960 Router with DC PEM)

```
user@host> show chassis power
PEM 0:
  State:     Online
  DC input:  OK (2 feed expected, 2 feed connected)
  DC input:  48.0 V input (57000 mV)
  Capacity:  4100 W (maximum 4100 W)
  DC output: 513 W (zone 0, 9 A at 57 V, 12% of capacity)

PEM 1:
  State:     Online
  DC input:  OK (2 feed expected, 2 feed connected)
  DC input:  48.0 V input (57000 mV)
  Capacity:  4100 W (maximum 4100 W)
  DC output: 228 W (zone 1, 4 A at 57 V, 5% of capacity)

PEM 2:
  State:     Online
  DC input:  OK (2 feed expected, 2 feed connected)
  DC input:  48.0 V input (57000 mV)
  Capacity:  4100 W (maximum 4100 W)
  DC output: 513 W (zone 0, 9 A at 57 V, 12% of capacity)

PEM 3:
  State:     Online
  DC input:  OK (2 feed expected, 2 feed connected)
  DC input:  48.0 V input (57000 mV)
  Capacity:  4100 W (maximum 4100 W)
  DC output: 342 W (zone 1, 6 A at 57 V, 8% of capacity)

System:
  Zone 0:
      Capacity:          4100 W (maximum 4100 W)
      Allocated power:   1680 W (2420 W remaining)
      Actual usage:      1026 W
  Zone 1:
      Capacity:          4100 W (maximum 4100 W)
      Allocated power:   1263 W (2837 W remaining)
      Actual usage:      570 W
  Total system capacity: 8200 W (maximum 8200 W)
  Total remaining power: 5257 W
```

show chassis power (MX960 Router with AC PEM)

```
user@host> show chassis power
PEM 0:
  State:     Online
  AC input:  OK (2 feed expected, 2 feed connected)
  Capacity:  4100 W (maximum 4100 W)
  DC output: 0 W (zone 0, 0 A at 56 V, 0% of capacity)

PEM 1:
  State:     Present
  AC input:  Check (2 feed expected, 1 feed connected)
  Capacity:  1700 W (maximum 4100 W)

PEM 2:
  State:     Empty
  Input:     Absent

PEM 3:
  State:     Online
  AC input:  OK (1 feed expected, 1 feed connected)
  Capacity:  1700 W (maximum 1700 W)

System:
  Zone 0:
      Capacity:          4100 W (maximum 4100 W)
      Allocated power:   540 W (3560 W remaining)
      Actual usage:      0 W
  Zone 1:
      Capacity:          0 W (maximum 0 W)
      Allocated power:   0 W (0 W remaining)
      Actual usage:      0 W
  Total system capacity: 4100 W (maximum 4100 W)
  Total remaining power: 3560 W
```

show chassis power (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

Syntax show chassis power sequence

Release Information Command introduced in Junos OS Release 10.0

Description (MX Series Ethernet Services Routers only) Show power-on sequence for the chassis Dense Port Concentrators (DPCs).

Options This command has no options.

Required Privilege Level view

Related Documentation
- **show chassis power on page 466**

List of Sample Output **show chassis power sequence on page 470**

Output Fields Table 86 on page 470 lists the output fields for the **show chassis power sequence** command. Output fields are listed in the approximate order in which they appear.

Table 86: 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.

show chassis power sequence

```
user@host> show chassis power sequence
Chassis FRU Power Sequence: 3 4 5 6 7 8 9 10 11 0 1 2
```


show chassis psd

Syntax **show chassis psd**

Release Information Command introduced in Junos OS Release 9.1.

Description (Root System Domain [RSD] only) Display information about Protected System Domains (PSDs). A PSD is initially created by the RSD configuration. An RSD and PSDs are supported on a T320 or T640 router, or a T1600 routing node that is interconnected with the JCS1200 platform.

Options This command has no options

Additional Information For more information about PSDs, RSDs, and the JCS1200 platform, see the *Junos OS Protected System Domain Configuration Guide*.

Required Privilege Level view

List of Sample Output **show chassis psd on page 471**

Output Fields Table 87 on page 471 lists the output fields for the **show chassis psd** command. Output fields are listed in the approximate order in which they appear.

Table 87: show chassis psd Output Fields

Field Name	Field Description
Slot Description	PSD identification.
State	PSD status: • **Online**—PSD is online and running. • **Offline**—PSD is powered down.
Uptime	Length of time that the PSD has been up and running.

show chassis psd

```
{master}

user@host> show chassis psd
Slot Description          State               Uptime
 1                        Online              12 hours, 19 minutes, 51 seconds
 2                        Online              2 hours, 18 minutes, 17 seconds
 3                        Online              12 hours, 19 minutes, 51 seconds
```

show chassis redundancy feb

Syntax

show chassis redundancy feb
<errors>
<redundancy-group *group-name*>

Release Information

Command introduced in Junos OS Release 8.2.

Description

(M120 routers only) Display information about the status of configured Forwarding Engine Board (FEB) redundancy groups.

Options

none—Display information about the status of all configured FEB redundancy groups.

redundancy-group *group-name*—(Optional) Display information about the specified configured redundancy group.

errors—(Optional) Display information about any errors encountered on the components in configured redundancy groups or on links between a FEB and a Flexible PIC Concentrator (FPC).

Required Privilege Level

view

List of Sample Output

show chassis redundancy feb on page 473
show chassis redundancy feb redundancy-group grp1 on page 473
show chassis redundancy feb redundancy-group grp0 errors on page 473

Output Fields

Table 88 on page 472 lists the output fields for the **show chassis redundancy feb** command. Output fields are listed in the approximate order in which they appear.

Table 88: show chassis redundancy feb Output Fields

Field name	Field Description
Group	Name of configured redundancy group.
FEB	Slot number of each FEB included in redundancy groups.
State	State of each FEB: • **Online**—FEB is online and running. • **Offline**—FEB is powered down.
Priority	(Standard and **redundancy-group** option) Status of FEB in the redundancy group: **Backup**, **Primary**, or null.
Connected FPCs	(Standard and **redundancy-group** option) Slot number of each FPC connected to the FEB. The status **Check** is displayed when an error might have occurred.

Table 88: show chassis redundancy feb Output Fields *(continued)*

Field name	Field Description
Redundancy State	(Standard and **redundancy-group** option) Status of the FEB: • **Active**—FEB is currently active. • **Ready**—Backup FEB is ready for a switchover • **Not Ready**—Backup FEB is not ready for a switchover.
Auto-failover	(Standard and **redundancy-group** option) Automatic failover status of redundancy group: **Enabled** or **Disabled**.
Switch-reason	(Standard and **redundancy-group** option) Reason a switchover occurred to the backup FEB in the redundancy group.
Hard error: Yes	(**errors** option only) Displayed when a hard error occurs on a FEB.
FPC	(**errors** option only) Slot number and status of FPC: **link ok** or **link error**.
Fabric plane	(**errors** option only) Slot number and status of fabric plane.

show chassis redundancy feb

```
user@host> show chassis redundancy feb
Group:        cfpc
  FEB  State             Priority  Connected FPCs  Redundancy state
  0    Offline           Backup                    Not ready
  1    Online                      5               Active
  Auto-failover:  Enabled
 Group:        grp0
  FEB  State             Priority  Connected FPCs  Redundancy state
  3    Offline           Backup                    Not ready
  5    Online            Primary   0               Active
  Auto-failover:  Enabled
```

show chassis redundancy feb redundancy-group grp1

```
user@host> show chassis redundancy feb redundancy-group grp1
Group:  grp1
    FEB      State      Priority      Connected FPC(s)      Redundancy state
    0        Online     Backup        5                     Active
    3        Online                   3                     Active
   5        Online     Primary                             Ready
Auto-failover:  Enabled
Switch-reason:  Switchover from CLI
```

show chassis redundancy feb redundancy-group grp0 errors

```
user@host> show chassis redundancy feb redundancy-group grp0 errors
Group: grp0
    FEB: 0    State: Online
        FPC 0 link OK
        Fabric plane 0 OK
        Fabric plane 1 OK
        Fabric plane 2 OK
        Fabric plane 3 OK
    FEB: 1    State: Online
        FPC 0 link OK
        Fabric plane 0 OK
        Fabric plane 1 OK
        Fabric plane 2 OK
```

```
    Fabric plane 3 OK
FEB: 2    State: Online
    FPC 2 link OK
    Fabric plane 0 OK
    Fabric plane 1 OK
    Fabric plane 2 OK
    Fabric plane 3 OK
FEB: 3    State: Online
    FPC 3 link OK
    Fabric plane 0 OK
    Fabric plane 1 OK
    Fabric plane 2 OK
    Fabric plane 3 OK
FEB: 4    State: Online
    FPC 4 link OK
    Fabric plane 0 OK
    Fabric plane 1 OK
    Fabric plane 2 OK
    Fabric plane 3 OK
FEB: 5    State: Online
    FPC 5 link OK
    Fabric plane 0 OK
    Fabric plane 1 OK
    Fabric plane 2 OK
    Fabric plane 3 OK
```

show chassis routing-engine

Syntax

show chassis routing-engine
<bios | *slot*>

Syntax (EX Series Switch)

show chassis routing-engine
<*slot*>

Syntax (TX Matrix Router)

show chassis routing-engine
<bios | *slot*>
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show chassis routing-engine
<bios | *slot*>
<lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release in 9.6.

Description

Display the status of the Routing Engine.

Options

none—Display information about one or more Routing Engines. On a TX Matrix router, display information about all Routing Engines on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display information about all Routing Engines on the TX Matrix Plus router and its attached T1600 routers.

bios—(Optional) Display the basic input/output system (BIOS) firmware version.

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

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

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

slot—(Systems with multiple Routing Engines) (Optional) Display information for an individual Routing Engine. Replace ***slot*** with 0 or 1.

Required Privilege Level

view

Related Documentation

- **request chassis routing-engine master on page 173**

List of Sample Output

Output Fields

Table 89 on page 476 lists the output fields for the **show chassis routing-engine** command. Output fields are listed in the approximate order in which they appear.

Table 89: show chassis routing-engine Output Fields

Field Name	Field Description
Slot	(Systems with multiple Routing Engines) Slot number.
Current state	(Systems with multiple Routing Engines) Current state of the Routing Engine: **Master**, **Backup**, or **Disabled**.
Election priority	(Systems with multiple Routing Engines) Election priority for the Routing Engine: **Master** or **Backup**.
Temperature	Temperature of the air flowing past the Routing Engine.
DRAM	Total DRAM available to the Routing Engine's processor.
Memory utilization	Percentage of Routing Engine memory being used.
CPU utilization	Information about the Routing Engine's CPU utilization: • **User**—Percentage of CPU time being used by user processes. • **Background**—Percentage of CPU time being used by background processes. • **Kernel**—Percentage of CPU time being used by kernel processes. • **Interrupt**—Percentage of CPU time being used by interrupts. • **Idle**—Percentage of CPU time that is idle.
Model	Routing Engine model number.
Serial ID	(Systems with multiple Routing Engines) Identification number of the Routing Engine in this slot.
Start time	Time at which the Routing Engine started running.
Uptime	How long the Routing Engine has been running.

Table 89: show chassis routing-engine Output Fields *(continued)*

Field Name	Field Description
Last reboot reason	Reason for last reboot, including: • **power cycle/failure**—Reboot due to the switching off of the power button behind the Routing Engine, not the power button on the chassis. • **watchdog**—Reboot due to a hardware watchdog. • **reset-button reset**—(Not available on the J Series router or EX Series switch) Reboot due to pressing of the reset button on the Routing Engine. • **power-button hard power off**—Reboot due to pressing of the power button. • **misc hardware reason**—Reboot due to miscellaneous hardware reasons. • **thermal shutdown**—Reboot due to the router reaching a critical temperature point at which it is unsafe to continue operations. • **hard disk failure**—Reboot due to a hard disk failure. • **reset from debugger**—Reboot due to reset from the debugger. • **chassis control reset**—Reboot due to a chassis control reset. • **bios auto recovery reset**—Reboot due to a BIOS auto-recovery reset. • **could not be determined**—Reboot due to an undetermined reason. • **Router rebooted after a normal shutdown**—Reboot due to a normal shutdown.
Load averages	Routing Engine load averages for the last 1, 5, and 15 minutes.

show chassis routing-engine (M5 Router)

```
user@host> show chassis routing-engine
Routing Engine status:
    Temperature                 25 degrees C / 77 degrees F
    DRAM                       768 MB
    Memory utilization          21 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     0 percent
      Interrupt                  0 percent
      Idle                     100 percent
    Model                          RE-2.0
    Serial ID                      31000007349bf701
    Start time                     2003-12-04 09:42:17 PST
    Uptime                         26 days, 1 hour, 12 minutes, 27 seconds
    Last reboot reason             Router rebooted after a normal shutdown
    Load averages:                 1 minute   5 minute  15 minute
                                       0.00       0.01       0.00
```

show chassis routing-engine (M10 Router)

```
user@host> show chassis routing-engine
Routing Engine status:
    Temperature                 25 degrees C / 77 degrees F
    DRAM                       768 MB
    Memory utilization          21 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     0 percent
      Interrupt                  0 percent
      Idle                     100 percent
    Model                          RE-2.0
```

```
    Serial ID                       31000007349bf701
    Start time                      2003-12-04 09:42:17 PST
    Uptime                          26 days, 1 hour, 12 minutes, 27 seconds
    Last reboot reason              Router rebooted after a normal shutdown
    Load averages:                  1 minute   5 minute  15 minute
                                        0.00       0.01       0.00
```

show chassis routing-engine (M20 Router)

```
user@host> show chassis routing-engine
Routing Engine status:
  Slot 0:
    Current state                   Master
    Election priority               Master (default)
    Temperature                  29 degrees C / 84 degrees F
    DRAM                        768 MB
    Memory utilization           20 percent
    CPU utilization:
      User                        1 percent
      Background                  0 percent
      Kernel                      2 percent
      Interrupt                   0 percent
      Idle                       97 percent
    Model                           RE-2.0
    Serial ID                       58000007348d9a01
    Start time                      2003-12-30 07:05:47 PST
    Uptime                        3 hours, 41 minutes, 14 seconds
    Last reboot reason              Router rebooted after a normal shutdown
    Load averages:                  1 minute   5 minute  15 minute
                                        0.00       0.02       0.00
Routing Engine status:
  Slot 1:
    Current state                   Backup
    Election priority               Backup (default)
    Temperature                  29 degrees C / 84 degrees F
    DRAM                        768 MB
    Memory utilization            0 percent
    CPU utilization:
      User                        0 percent
      Background                  0 percent
      Kernel                      1 percent
      Interrupt                   0 percent
      Idle                       99 percent
    Model                           RE-2.0
    Serial ID                       d800000734745701
    Start time                      2003-06-17 16:37:33 PDT
    Uptime                        195 days, 18 hours, 47 minutes, 9 seconds
    Last reboot reason              Router rebooted after a normal shutdown
```

show chassis routing-engine (M40 Router)

```
user@host> show chassis routing-engine
Routing Engine status:
    Temperature                  25 degrees C / 77 degrees F
    DRAM                        768 MB
    Memory utilization           21 percent
    CPU utilization:
      User                        0 percent
      Background                  0 percent
      Kernel                      0 percent
      Interrupt                   0 percent
      Idle                      100 percent
    Model                           RE-2.0
    Serial ID                       31000007349bf701
    Start time                      2003-12-04 09:42:17 PST
```



```
    Uptime                          26 days, 1 hour, 12 minutes, 27 seconds
    Last reboot reason              Router rebooted after a normal shutdown
    Load averages:                  1 minute   5 minute  15 minute
                                        0.00       0.01       0.00
```

show chassis routing-engine (M120 Router)

```
user@host> show chassis routing-engine
Routing Engine status:
  Slot 0:
    Current state                   Master
    Election priority               Master (default)
    Temperature                  46 degrees C / 114 degrees F
    CPU temperature              44 degrees C / 111 degrees F
    DRAM                       2048 MB
    Memory utilization           18 percent
    CPU utilization:
      User                        0 percent
      Background                  0 percent
      Kernel                      5 percent
      Interrupt                   0 percent
      Idle                       95 percent
    Model                          RE-A-1000
    Serial ID                      1000621154
    Start time                     2006-10-31 17:10:05 PST
    Uptime                         14 minutes, 31 seconds
    Last reboot reason             Router rebooted after a normal shutdown
    Load averages:                 1 minute   5 minute  15 minute
                                       0.02       0.07       0.07
Routing Engine status:
  Slot 1:
    Current state                  Backup
    Election priority              Backup (default)
    Temperature                  45 degrees C / 113 degrees F
    CPU temperature              42 degrees C / 107 degrees F
    DRAM                       2048 MB
    Memory utilization           15 percent
    CPU utilization:
      User                        0 percent
      Background                  0 percent
      Kernel                      0 percent
      Interrupt                   0 percent
      Idle                      100 percent
    Model                          RE-A-1000
    Serial ID                      1000621151
    Start time                     2006-10-31 17:10:04 PST
    Uptime                         14 minutes, 30 seconds
    Last reboot reason             Router rebooted after a normal shutdown
```

show chassis routing-engine (M160 Router)

```
user@host> show chassis routing-engine
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                 43 degrees C / 109 degrees F
    DRAM                      2048 MB
    Memory utilization          11 percent
    CPU utilization:
      User                       1 percent
      Background                 0 percent
      Kernel                     2 percent
      Interrupt                  0 percent
      Idle                      97 percent
    Model                          RE-3.0
    Serial ID                      210865700403
    Start time                     2003-12-23 12:25:55 PST
    Uptime                       6 days, 22 hours, 33 minutes, 24 seconds
    Last reboot reason             Router rebooted after a normal shutdown
    Load averages:                 1 minute   5 minute  15 minute
                                       0.24       0.13       0.04
Routing Engine status:
  Slot 1:
    Current state                  Backup
    Election priority              Backup (default)
    Temperature                 40 degrees C / 104 degrees F
    DRAM                      2048 MB
    Memory utilization           9 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     0 percent
      Interrupt                  0 percent
      Idle                     100 percent
    Model                          RE-3.0
    Serial ID                      210865700332
    Start time                     2003-12-23 12:25:55 PST
    Uptime                       6 days, 22 hours, 33 minutes, 21 seconds
    Last reboot reason             Router rebooted after a normal shutdown
```

show chassis routing-engine (MX240 Router)

```
user@host> show chassis routing-engine
Routing Engine status:
  Slot 0:
    Current state                  Backup
    Election priority              Master (default)
    Temperature                 40 degrees C / 104 degrees F
    CPU temperature             47 degrees C / 116 degrees F
    DRAM                      3584 MB
    Memory utilization           7 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     0 percent
      Interrupt                  0 percent
      Idle                     100 percent
    Model                          RE-S-2000
    Serial ID                      1000703522
    Start time                     2007-12-19 10:35:40 PST
```

```
    Uptime                          16 days, 3 hours, 15 minutes, 23 seconds
    Last reboot reason              Router rebooted after a normal shutdown
```

show chassis routing-engine (MX480 Router)

```
user@host> show chassis routing-engine
Routing Engine status:
  Slot 0:
    Current state                   Master
    Election priority               Master (default)
    Temperature                 41 degrees C / 105 degrees F
    CPU temperature             38 degrees C / 100 degrees F
    DRAM                      2048 MB
    Memory utilization          13 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     2 percent
      Interrupt                  0 percent
      Idle                      98 percent
    Model                           RE-S-1300
    Serial ID                       1000697044
    Start time                      2008-01-04 06:46:08 PST
    Uptime                          8 hours, 17 minutes, 16 seconds
    Last reboot reason              Router rebooted after a normal shutdown
```

show chassis routing-engine (MX960 Router)

```
user@host> show chassis routing-engine
Routing Engine status:
  Slot 0:
    Current state                   Master
    Election priority               Master (default)
    Temperature                 37 degrees C / 98 degrees F
    CPU temperature             37 degrees C / 98 degrees F
    DRAM                      2048 MB
    Memory utilization          18 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     4 percent
      Interrupt                  0 percent
      Idle                      96 percent
    Model                           RE-S-1300
    Serial ID                       1000617944
    Start time                      2006-10-26 12:37:13 PDT
    Uptime                          6 days, 4 hours, 59 minutes, 40 seconds
    Last reboot reason              Router rebooted after a normal shutdown
    Load averages:                  1 minute   5 minute  15 minute
                                        0.16       0.08       0.02
```

show chassis routing-engine (TX Matrix Router)

```
user@host> show chassis routing-engine
scc-re0:
--------------------------------------------------------------------------
Routing Engine status:
  Slot 0:
    Current state                   Master
    Election priority               Master (default)
    Temperature                 34 degrees C / 93 degrees F
    CPU temperature             33 degrees C / 91 degrees F
    DRAM                      2048 MB
    Memory utilization          12 percent
    CPU utilization:
      User                       0 percent
```

```
      Background                 0 percent
      Kernel                     2 percent
      Interrupt                  0 percent
      Idle                      98 percent
    Model                          RE-4.0
    Serial ID                      P11123900153
    Start time                     2004-08-05 18:42:05 PDT
    Uptime                        9 days, 22 hours, 49 minutes, 50 seconds
    Last reboot reason             Router rebooted after a normal shutdown
    Load averages:                 1 minute   5 minute  15 minute
                                       0.00       0.08       0.07

lcc0-re0:
--------------------------------------------------------------------------
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                   33 degrees C / 91 degrees F
    CPU temperature               30 degrees C / 86 degrees F
    DRAM                        2048 MB
    Memory utilization            12 percent
    CPU utilization:
      User                         0 percent
      Background                   0 percent
      Kernel                       1 percent
      Interrupt                    0 percent
      Idle                        98 percent
    Model                          RE-3.0
    Serial ID                      210865700363
    Start time                     2004-08-05 18:42:05 PDT
    Uptime                        9 days, 22 hours, 48 minutes, 20 seconds
    Last reboot reason             Router rebooted after a normal shutdown
    Load averages:                 1 minute   5 minute  15 minute
                                       0.00       0.02       0.00

lcc2-re0:
--------------------------------------------------------------------------
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                   34 degrees C / 93 degrees F
    CPU temperature               35 degrees C / 95 degrees F
    DRAM                        2048 MB
    Memory utilization            12 percent
    CPU utilization:
      User                         0 percent
      Background                   0 percent
      Kernel                       2 percent
      Interrupt                    0 percent
      Idle                        98 percent
    Model                          RE-4.0
    Serial ID                      P11123900126
    Start time                     2004-08-05 18:42:05 PDT
    Uptime                        9 days, 22 hours, 49 minutes, 4 seconds
    Last reboot reason             Router rebooted after a normal shutdown
    Load averages:                 1 minute   5 minute  15 minute
                                       0.01       0.01       0.0
```

show chassis routing-engine lcc (TX Matrix Router)

```
user@host> show chassis routing-engine 0 lcc 0
lcc0-re0:
--------------------------------------------------------------------------------
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                 33 degrees C / 91 degrees F
    CPU temperature             30 degrees C / 86 degrees F
    DRAM                      2048 MB
    Memory utilization          12 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     1 percent
      Interrupt                  0 percent
      Idle                      98 percent
    Model                          RE-3.0
    Serial ID                      210865700363
    Start time                     2004-08-05 18:42:05 PDT
    Uptime                       7 days, 22 hours, 49 minutes, 6 seconds
    Last reboot reason             Router rebooted after a normal shutdown
    Load averages:                 1 minute   5 minute  15 minute
                                       0.00       0.00       0.00
```

show chassis routing-engine bios (TX Matrix Router)

```
user@host> show chassis routing-engine bios
scc-re0:
--------------------------------------------------------------------------
Routing Engine BIOS Version: V1.0.0
lcc0-re0:
--------------------------------------------------------------------------
Routing Engine BIOS Version: V1.0.17
lcc2-re0:
--------------------------------------------------------------------------
Routing Engine BIOS Version: V1.0.0
```

show chassis routing-engine (TX Matrix Plus Router)

```
user@host> show chassis routing-engine
sfc0-re0:
--------------------------------------------------------------------------
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                 27 degrees C / 80 degrees F
    CPU temperature             42 degrees C / 107 degrees F
    DRAM                      3327 MB
    Memory utilization          12 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     2 percent
      Interrupt                  0 percent
      Idle                      98 percent
    Model                          RE-TXP-SFC
    Serial ID                      737A-1024
    Start time                     2009-05-11 17:39:49 PDT
    Uptime                         3 hours, 45 minutes, 25 seconds
    Last reboot reason             Router rebooted after a normal shutdown.
    Load averages:                 1 minute   5 minute  15 minute
                                       0.00       0.00       0.00
```

```
Routing Engine status:
  Slot 1:
    Current state                  Backup
    Election priority              Backup (default)
    Temperature                 29 degrees C / 84 degrees F
    CPU temperature             43 degrees C / 109 degrees F
    DRAM                      3327 MB
    Memory utilization          11 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     0 percent
      Interrupt                  0 percent
      Idle                     100 percent
    Model                          RE-TXP-SFC
    Serial ID                      737A-1024
    Start time                     2009-05-11 17:08:54 PDT
    Uptime                         4 hours, 16 minutes, 52 seconds
    Last reboot reason             0x1:power cycle/failure

lcc0-re0:
--------------------------------------------------------------------------
Routing Engine status:
  Slot 0:
    Current state                  Master
    Election priority              Master (default)
    Temperature                 30 degrees C / 86 degrees F
    CPU temperature             43 degrees C / 109 degrees F
    DRAM                      3327 MB
    Memory utilization           9 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     2 percent
      Interrupt                  0 percent
      Idle                      98 percent
    Model                          RE-TXP-LCC
    Serial ID                      737F-1024
    Start time                     2009-05-11 17:40:32 PDT
    Uptime                         3 hours, 44 minutes, 51 seconds
    Last reboot reason             Router rebooted after a normal shutdown.
    Load averages:                 1 minute   5 minute  15 minute
                                       0.00       0.00       0.00
Routing Engine status:
  Slot 1:
    Current state                  Backup
    Election priority              Backup (default)
    Temperature                 30 degrees C / 86 degrees F
    CPU temperature             43 degrees C / 109 degrees F
    DRAM                      3327 MB
    Memory utilization           9 percent
    CPU utilization:
      User                       0 percent
      Background                 0 percent
      Kernel                     0 percent
      Interrupt                  0 percent
      Idle                     100 percent
    Model                          RE-TXP-LCC
    Serial ID                      737F-1024
    Start time                     2009-05-06 17:31:32 PDT
```

```
    Uptime                          5 days, 3 hours, 54 minutes, 19 seconds
    Last reboot reason              Router rebooted after a normal shutdown.
```

show chassis routing-engine lcc (TX Matrix Plus Router)

```
user@host> show chassis routing-engine 0 lcc 0
lcc0-re0:
--------------------------------------------------------------------------
Routing Engine status:
  Slot 0:
    Current state                   Master
    Election priority               Master (default)
    Temperature                  30 degrees C / 86 degrees F
    CPU temperature              43 degrees C / 109 degrees F
    DRAM                       3327 MB
    Memory utilization            9 percent
    CPU utilization:
      User                        0 percent
      Background                  0 percent
      Kernel                      2 percent
      Interrupt                   0 percent
      Idle                       98 percent
    Model                           RE-TXP-LCC
    Serial ID                       737F-1024
    Start time                      2009-05-11 17:40:32 PDT
    Uptime                          3 hours, 45 minutes, 26 seconds
    Last reboot reason              Router rebooted after a normal shutdown.
    Load averages:                  1 minute   5 minute  15 minute
                                        0.00       0.00       0.00
Routing Engine status:
  Slot 1:
    Current state                   Backup
    Election priority               Backup (default)
    Temperature                  30 degrees C / 86 degrees F
    CPU temperature              43 degrees C / 109 degrees F
    DRAM                       3327 MB
    Memory utilization            9 percent
    CPU utilization:
      User                        0 percent
      Background                  0 percent
      Kernel                      0 percent
      Interrupt                   0 percent
      Idle                      100 percent
    Model                           RE-TXP-LCC
    Serial ID                       737F-1024
    Start time                      2009-05-06 17:31:32 PDT
    Uptime                          5 days, 3 hours, 54 minutes, 59 seconds
    Last reboot reason              Router rebooted after a normal shutdown.
```

show chassis routing-engine bios (TX Matrix Plus Router)

```
user@host> show chassis routing-engine bios
sfc0-re0:
--------------------------------------------------------------------------
    Routing Engine BIOS Version: V0.0.Z

lcc0-re0:
--------------------------------------------------------------------------
    Routing Engine BIOS Version: V0.0.N
```

show chassis scb

Syntax show chassis scb

Release Information Command introduced before Junos OS Release 7.4.

Description (M40 router only) Display System Control Board (SCB) status information.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show chassis scb on page 487**

Output Fields Table 90 on page 486 lists the output fields for the **show chassis scb** command. Output fields are listed in the approximate order in which they appear.

Table 90: 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: • **IP routes**—Number of IP routes known to the Internet Processor. • **MPLS routes**—Number of MPLS routes known to the Internet Processor. • **SRAM banks enabled**—Which SRAM banks are enabled. • **SRAM size**—Size of SCB SRAM, in bytes. • **SRAM used**—Amount of SRAM used, in bytes. • **SRAM utilization**—Percentage of SRAM used.

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

Syntax

show chassis sfm
<detail <*sfm-slot*>>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M40e and M160 routers only) Display Switching and Forwarding Module (SFM) status information.

Options

none—Display standard status information about all SFMs.

detail—(Optional) Display detailed SFM status information.

sfm-slot—(Optional) Display status information about the SFM in the specified slot only. For the M40e router, replace ***sfm-slot*** with **0** or **1**. For the M160 router, replace ***sfm-slot*** with a value from **0** through **3**.

Required Privilege Level

view

Related Documentation

- **request chassis sfm on page 177**
- **request chassis sfm master switch on page 178**

List of Sample Output

show chassis sfm (M160 Router) on page 489
show chassis sfm detail (M40e Router) on page 489
show chassis sfm detail (M160 Router) on page 491

Output Fields

Table 91 on page 488 lists the output fields for the **show chassis sfm** command. Output fields are listed in the approximate order in which they appear.

Table 91: show chassis sfm Output Fields

Field Name	Field Description	Level of Output
Slot	Slot number.	All levels
State	Status of the SFM. State can be any of the following: • **Online**—SFM is online and running. • **Online-Standby** (M40e router only)—SFM is online, operating as Standby. • **Offline**—SFM is powered down. • **Empty**—No SFM is present.	All levels
Reason	If the status is **Offline**, reason for this state.	All levels
Temp	Temperature of air passing by the SFM, in degrees Celsius.	none specified
CPU Utilization (%)	Information about CPU usage.	none specified

Table 91: show chassis sfm Output Fields *(continued)*

Field Name	Field Description	Level of Output
Total	Total percentage of the CPU being used by the SFM's processor.	All levels
Interrupt	Of the total CPU being used by the SFM's processor, the percentage being used for interrupts.	All levels
Memory Utilization	Information about memory usage.	none specified
DRAM	Total DRAM available to the SFM's processor, in megabytes (MB).	All levels
Heap	Percentage of heap space (dynamic memory) being used by the SFM's processor. If this number exceeds 80 percent, it might indicate a software problem (memory leak).	All levels
Buffer	Percentage of buffer space being used by the SFM's processor for buffering internal messages.	All levels
SPP Temperature	Temperature of air passing by the Switch Plane Processor card, in degrees Celsius and Fahrenheit	**detail**
SPR Temperature	Temperature of air passing by the Switch Plane Router card, in degrees Celsius and Fahrenheit.	**detail**
Total CPU DRAM	Total amount of CPU DRAM being used by the SFM's processor.	**detail**
Total SSRAM	Total amount of SSRAM being used by the SFM's processor.	**detail**
Internet processor II	(M160 router only) Processor type.	**detail**
Start time	Time this SFM became active.	**detail**
Uptime	How long the SFM has been up and running.	**detail**
Packet scheduling mode	(M160 router only) Enabled or disabled.	**detail**

show chassis sfm (M160 Router)

```
user@host> show chassis sfm
SFM status:
                  Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State         (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online        39      0          0        64         0          6
  1  Online        43      0          0        64         0          6
  2  Empty          0      0          0         0         0          0
  3  Empty          0      0          0         0         0          0
```

show chassis sfm detail (M40e Router)

```
user@host> show chassis sfm detail
Slot 0 information:
  State                                 Offline
  Reason:                               - power configured off
```

```
Slot 1 information:
  State                                 Present
  SPP temperature                     0 degrees C / 32 degrees F
  SPR temperature                     0 degrees C / 32 degrees F
  Total CPU DRAM                       0 MB
  Total SSRAM                          0 MB
```

show chassis sfm detail (M160 Router)

```
user@host> show chassis sfm detail
Slot 0 information:
  State                                   Online
  SPP temperature                      37 degrees C / 98 degrees F
  SPR temperature                      39 degrees C / 102 degrees F
  Total CPU DRAM                       64 MB
  Total SSRAM                           8 MB
  Internet Processor II                   Version 1, Foundry IBM, Part number 9
  Start time:                             2004-08-17 09:23:08 PDT
  Uptime:                                72 days, 1 hour, 15 minutes, 57 seconds
Slot 1 information:
  State                                   Online
  SPP temperature                      36 degrees C / 96 degrees F
  SPR temperature                      37 degrees C / 98 degrees F
  Total CPU DRAM                       64 MB
  Total SSRAM                           8 MB
  Internet Processor II                   Version 1, Foundry IBM, Part number 9
  Start time:                             2004-08-17 09:23:08 PDT
  Uptime:                                72 days, 1 hour, 15 minutes, 57 seconds
Slot 2 information:
....
Packet scheduling mode : Disabled
```

show chassis sibs

Syntax

show chassis sibs

Syntax (TX Matrix Router)

show chassis sibs
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show chassis sibs
<lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

(M320 and T Series routers only) Display Switch Interface Boards (SIBs) status information.

Options

none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the SIB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display the SIB status for the TX Matrix Plus router and its attached T1600 routers.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

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

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

Required Privilege Level

view

Related Documentation

- **request chassis sib on page 179**
- **show chassis spmb sibs on page 505**

List of Sample Output

Output Fields

Table 92 on page 493 lists the output fields for the **show chassis sibs** command. Output fields are listed in the approximate order in which they appear.

Table 92: show chassis sibs Output Fields

Field Name	Field Description
Slot	SIB slot number.
Type	(TX Matrix Plus router only) SIB type.
Uptime	How long the SIB has been up and running.

State	SIB status:
	• **Activating**—Transitional state when the SIB is coming online.
	• **Deactivating**—Transitional state when the SIB is going offline.
	• **Connected**—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.
	• **Disconnected**—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.
	• **Online**—SIB is operational and running.
	• **Offline**—SIB is powered down.
	NOTE: If a SIB transitions to the **Offline** state, the command displays an appropriate reason in the output. For instance, if the SIB is taken offline using the **request chassis sib** command, the **show chassis sibs** command displays **--- Offlined by cli command ---** in the output.
	• **Spare**—SIB is redundant and will move to active state if one of the working SIBs fails to pass traffic.
	• **Empty**—No SIB is present.
	• **Fault**—SIB is in an alarmed state in which the SIB's plane is not operational for one of the following reasons:
	  ◦ Onboard fabric ASIC is not operational.
	  ◦ Fiber-optic connector faults.
	  ◦ FPC connector faults.
	  ◦ SIB midplane connector faults.
	• **Check**—SIB is in the **Check** state because of the following reasons:
	  ◦ SIB is not inserted properly.
	  ◦ 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.
	  ◦ Link errors are detected on the channel between the SIB and a Packet Forwarding Engine. Link errors can be detected at initialization time or runtime:
	  ◦ Link errors caused by a link training failure at initialization time—The Packet Forwarding Engine does not use the SIB to send traffic. The **show chassis fabric fpcs** command shows **Plane disabled** as status for this link.
	  ◦ Link errors caused by CRC errors detected at runtime—The Packet Forwarding Engine continues to use the SIB to send

Table 92: show chassis sibs Output Fields *(continued)*

Field Name	Field Description
	traffic. The **show chassis fabric fpcs** command shows **Link error** as the status for this link. NOTE: For SIBs in the **Check** state, the output displays some additional information: • In Junos OS Release 9.6 and later, the **Check** state message shows the number of Packet Forwarding Engines in the plane having destination errors. For example, **Check (10 destination errors)** indicates 10 Packet Fowarding Engines having destination errors. If there are no destination errors, and if the SIB transitions to the **Check** state because of link errors only, the **Check** state message shows **Check (0 destination errors)**. • In Junos OS Release 9.5 and earlier, the **Check** state message shows **Check (destination errors)** if there are Packet Forwarding Engines with destination errors in this plane. However, it does not show the number of Packet Forwarding Engines having destination errors. If there are no destination errors and if the SIB transitions to the **Check** state because of link errors only, the **Check** state message shows **Check (no destination errors)**. If the SIB is in a **Check** state, because of destination errors, the CLI displays an additional line in the output, **use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details**. • **SFC Error**—If an F13 SIB on the TX Matrix Plus router (SFC) transitions to the **Fault** state (for instance, because of link errors), and then if an LCC SIB (connected to the F13 SIB) comes online, the LCC SIB transitions to the **SFC Error** state. This state indicates that the F13 SIB to which the LCC SIB is connected has errors. NOTE: The **Connected**, **Disconnected**, and **SFC Error** states are only applicable to the SIBs on an LCC.

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

Syntax

show chassis spmb

Syntax (TX Matrix Routers)

show chassis spmb
<sibs>
<lcc *number* | scc>

Syntax (TX Matrix Plus Routers)

show chassis spmb
<sibs>
<lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
sibs option introduced for the T1600 and TX Matrix Plus routers in Junos OS Release 9.6.

Description

(T Series routers only) Display Switch Processor Mezzanine Board (SPMB) status information.

Options

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.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

scc—(TX Matrix routers only) (Optional) Display information about the SPMB on the TX Matrix router (or switch-card chassis).

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

sibs—(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 **sibs** option has the following sub-options:

lcc *number* (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 ***number*** with a value from **0** through **3**.

scc *number*—(TX Matrix routers only) (Optional) Display information about the SIBs on the TX Matrix router (or switch-card chassis). Replace ***number*** with **0**.

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 179**
- **show chassis spmb sibs on page 505**

List of Sample Output
show chassis spmb on page 500
show chassis spmb lcc (TX Matrix Router) on page 500
show chassis spmb scc (TX Matrix Router) on page 500
show chassis spmb (T1600 Router) on page 500
show chassis spmb sibs (T1600 Router) on page 500
show chassis spmb (TX Matrix Plus Router) on page 501
show chassis spmb lcc (TX Matrix Plus Router) on page 502
show chassis spmb scc (TX Matrix Plus Router) on page 502
show chassis spmb sibs (TX Matrix Plus Router) on page 503

Output Fields Table 93 on page 499 lists the output fields for the **show chassis spmb** command. Output fields are listed in the approximate order in which they appear.

Table 93: show chassis spmb Output Fields

Field Name	Field Description
Slot	SPMB slot number: **0** or **1**.
State	SPMB status: • **Online**—SPMB is operational and running. • **Offline**—SPMB is powered down.
Total CPU Utilization (%)	Total percentage of CPU being used by the SPMB processor.
Interrupt CPU Utilization (%)	Of the total CPU being used by the SPMB processor, the percentage being used for interrupts.
Memory Heap Utilization (%)	Percentage of heap space (dynamic memory) being used by the FPC processor. If this number exceeds 80 percent, there may be a software problem (memory leak).
Buffer Utilization (%)	Percentage of buffer space being used by the SPMB processor for buffering internal messages.
Start time	Time at which the SPMB last came online.
Uptime	How long the SPMB has been up and running.

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 (TX Matrix Router)

```
user@host> show chassis spmb lcc 0
lcc0-re0:
--------------------------------------------------------------------------
Slot 0 information:
  State                          Online
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               42%
  Start time:                    2004-08-05 18:43:38 PDT
  Uptime:                        8 days, 55 minutes, 52 seconds
```

show chassis spmb scc (TX Matrix Router)

```
user@host> show chassis spmb scc
scc-re0:
--------------------------------------------------------------------------
Slot 0 information:
  State                          Online
  Total CPU Utilization             1%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               42%
  Start time:                    2004-08-05 18:43:37 PDT
  Uptime:                        8 days, 1 hour, 6 minutes, 51 seconds
```

show chassis spmb (T1600 Router)

```
user@host> show chassis spmb
Slot 0 information:
  State                          Online
  Total CPU Utilization             2%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-05-07 22:34:03 PDT
  Uptime:                        3 days, 4 hours, 14 minutes, 33 seconds
Slot 1 information:
  State                          Online - Standby
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-05-07 22:34:02 PDT
  Uptime:                        3 days, 4 hours, 14 minutes, 34 seconds
```

show chassis spmb sibs (T1600 Router)

```
user@host> show chassis spmb sibs
Slot  State              Uptime
 0    Check             3 days, 4 hours, 11 minutes, 59 seconds
 1    Disconnected      3 days, 4 hours, 12 minutes, 36 seconds
 2    Disconnected      3 days, 4 hours, 12 minutes, 26 seconds
 3    Disconnected      3 days, 4 hours, 12 minutes, 17 seconds
 4    Disconnected      3 days, 4 hours, 12 minutes, 8 seconds
```

show chassis spmb (TX Matrix Plus Router)

```
user@host> show chassis spmb
sfc0-re0:
--------------------------------------------------------------------------
Slot 0 information:
  State                          Online
  Total CPU Utilization            84%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-05-11 01:25:20 PDT
  Uptime:                        46 minutes, 6 seconds
Slot 1 information:
  State                          Online - Standby
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-05-11 01:25:20 PDT
  Uptime:                        46 minutes, 6 seconds

lcc0-re1:
--------------------------------------------------------------------------
Slot 0 information:
  State                          Online - Standby
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-05-11 01:25:09 PDT
  Uptime:                        46 minutes, 24 seconds
Slot 1 information:
  State                          Online
  Total CPU Utilization             5%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-05-11 01:25:08 PDT
  Uptime:                        46 minutes, 25 seconds

lcc1-re1:
--------------------------------------------------------------------------
Slot 0 information:
  State                          Online - Standby
  Total CPU Utilization             1%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-05-11 01:25:09 PDT
  Uptime:                        46 minutes, 24 seconds
Slot 1 information:
  State                          Online
  Total CPU Utilization             5%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                    2009-05-11 01:25:10 PDT
  Uptime:                        46 minutes, 23 seconds

lcc2-re1:
--------------------------------------------------------------------------
Slot 0 information:
```

```
  State                           Online - Standby
  Total CPU Utilization              0%
  Interrupt CPU Utilization          0%
  Memory Heap Utilization            0%
  Buffer Utilization                24%
  Start time:                     2009-05-11 01:25:08 PDT
  Uptime:                         46 minutes, 25 seconds
Slot 1 information:
  State                           Online
  Total CPU Utilization              5%
  Interrupt CPU Utilization          0%
  Memory Heap Utilization            0%
  Buffer Utilization                24%
  Start time:                     2009-05-11 01:25:10 PDT
  Uptime:                         46 minutes, 23 seconds

lcc3-re1:
--------------------------------------------------------------------------
Slot 0 information:
  State                           Online - Standby
  Total CPU Utilization              1%
  Interrupt CPU Utilization          0%
  Memory Heap Utilization            0%
  Buffer Utilization                24%
  Start time:                     2009-05-11 01:25:10 PDT
  Uptime:                         46 minutes, 23 seconds
Slot 1 information:
  State                           Online
  Total CPU Utilization              5%
  Interrupt CPU Utilization          0%
  Memory Heap Utilization            0%
  Buffer Utilization                24%
  Start time:                     2009-05-11 01:25:09 PDT
  Uptime:                         46 minutes, 24 seconds
```

show chassis spmb lcc (TX Matrix Plus Router)

```
user@host> show chassis spmb lcc 2
lcc2-re1:
--------------------------------------------------------------------------
Slot 0 information:
  State                           Online - Standby
  Total CPU Utilization              0%
  Interrupt CPU Utilization          0%
  Memory Heap Utilization            0%
  Buffer Utilization                24%
  Start time:                     2009-05-11 01:25:08 PDT
  Uptime:                         45 minutes, 18 seconds
Slot 1 information:
  State                           Online
  Total CPU Utilization              6%
  Interrupt CPU Utilization          0%
  Memory Heap Utilization            0%
  Buffer Utilization                24%
  Start time:                     2009-05-11 01:25:10 PDT
  Uptime:                         45 minutes, 16 seconds
```

show chassis spmb scc (TX Matrix Plus Router)

```
user@host> show chassis spmb sfc 0
sfc0-re0:
--------------------------------------------------------------------------
Slot 0 information:
  State                           Online
  Total CPU Utilization             87%
```



```
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                     2009-05-11 01:25:20 PDT
  Uptime:                         43 minutes, 32 seconds
Slot 1 information:
  State                           Online - Standby
  Total CPU Utilization             0%
  Interrupt CPU Utilization         0%
  Memory Heap Utilization           0%
  Buffer Utilization               24%
  Start time:                     2009-05-11 01:25:20 PDT
  Uptime:                         43 minutes, 32 seconds
```

show chassis spmb sibs (TX Matrix Plus Router)

```
user@host> show chassis spmb sibs
sfc0-re0:
--------------------------------------------------------------------------
Slot  State              Type          Uptime
 0    Online             SIB F13        1 hour, 18 minutes, 54 seconds
 1    Online             SIB F13        1 hour, 18 minutes, 45 seconds
 2    Invalid
 3    Online             SIB F13        1 hour, 20 minutes, 21 seconds
 4    Online             SIB F13        1 hour, 20 minutes, 18 seconds
 5    Invalid
 6    Online             SIB F13        1 hour, 19 minutes, 51 seconds
 7    Fault              SIB F13
 8    Online             SIB F13        1 hour, 19 minutes, 17 seconds
 9    Online             SIB F13        1 hour, 19 minutes, 13 seconds
10    Invalid
11    Online             SIB F13        1 hour, 17 minutes, 54 seconds
12    Online             SIB F13        1 hour, 17 minutes, 51 seconds
13    Invalid
14    Invalid
15    Invalid
0/0   Online             SIB F2S        1 hour, 18 minutes, 52 seconds
0/2   Online             SIB F2S        1 hour, 18 minutes, 51 seconds
0/4   Online             SIB F2S        1 hour, 18 minutes, 49 seconds
0/6   Online             SIB F2S        1 hour, 18 minutes, 48 seconds
1/0   Online             SIB F2S        1 hour, 20 minutes, 16 seconds
1/2   Online             SIB F2S        1 hour, 20 minutes, 15 seconds
1/4   Online             SIB F2S        1 hour, 20 minutes, 14 seconds
1/6   Online             SIB F2S        1 hour, 20 minutes, 13 seconds
2/0   Online             SIB F2S        1 hour, 19 minutes, 48 seconds
2/2   Online             SIB F2S        1 hour, 19 minutes, 47 seconds
2/4   Online             SIB F2S        1 hour, 19 minutes, 46 seconds
2/6   Online             SIB F2S        1 hour, 19 minutes, 44 seconds
3/0   Online             SIB F2S        1 hour, 19 minutes, 24 seconds
3/2   Online             SIB F2S        1 hour, 19 minutes, 22 seconds
3/4   Online             SIB F2S        1 hour, 19 minutes, 21 seconds
3/6   Online             SIB F2S        1 hour, 19 minutes, 20 seconds
4/0   Online             SIB F2S        1 hour, 18 minutes, 2 seconds
4/2   Online             SIB F2S        1 hour, 18 minutes
4/4   Online             SIB F2S        1 hour, 17 minutes, 58 seconds
4/6   Online             SIB F2S        1 hour, 17 minutes, 58 seconds

lcc0-re1:
--------------------------------------------------------------------------
Slot  State               Uptime
 0    Online             1 hour, 18 minutes, 58 seconds
 1    Online             1 hour, 20 minutes, 25 seconds
 2    Fault
```

```
 3    Online             1 hour, 18 minutes, 30 seconds
 4    Online             1 hour, 18 minutes, 28 seconds

lcc1-re1:
--------------------------------------------------------------------------
Slot  State               Uptime
 0    Online             1 hour, 18 minutes, 58 seconds
 1    Online             1 hour, 20 minutes, 26 seconds
 2    Fault
 3    Online             1 hour, 18 minutes, 22 seconds
 4    Online             1 hour, 18 minutes, 20 seconds

lcc2-re1:
--------------------------------------------------------------------------
Slot  State               Uptime
 0    Online             1 hour, 18 minutes, 19 seconds
 1    Online             1 hour, 20 minutes, 25 seconds
 2    Fault
 3    Online             1 hour, 18 minutes, 17 seconds
 4    Online             1 hour, 18 minutes, 15 seconds

lcc3-re1:
--------------------------------------------------------------------------
Slot  State               Uptime
 0    Online             1 hour, 18 minutes, 27 seconds
 1    Online             1 hour, 20 minutes, 24 seconds
 2    Fault
 3    Online             1 hour, 18 minutes, 25 seconds
 4    Online             1 hour, 18 minutes, 23 seconds
```

show chassis spmb sibs

Syntax

show chassis spmb sibs

Syntax (TX Matrix Router)

show chassis spmb sibs
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show chassis spmb sibs
<lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

(T Series routers only) Display Switch Processor Mezzanine Board (SPMB) Switch Interface Board (SIB) status information.

Options

none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the SIB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display the SIB status for the TX Matrix Plus router and its attached T1600 routers.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display SIB status information for a specified T640 router (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 ***number*** with a value from **0** through **3**.

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

sfc—(TX Matrix Plus router only) (Optional) Display SIB status information for the TX Matrix Plus router (or switch-fabric chassis).

Additional Information

On a T Series router, you can use either this command or the **show chassis sibs** command to produce the same output. The **show chassis sibs** command is supported on the M320 router and on the T Series routers.

Required Privilege Level

view

Related Documentation

- **request chassis spmb restart on page 185**

List of Sample Output

Output Fields Table 94 on page 506 lists the output fields for the **show chassis spmb sibs** command. Output fields are listed in the approximate order in which they appear.

Table 94: show chassis spmb sibs Output Fields

Field Name	Field Description
Slot	SIB slot number: • T640 router, T1600 router or TX Matrix router, and TX Matrix Plus router—**0** through **4** • T320 router—**0** through **2**

State	SIB status:
	• **Disconnected**—On a routing matrix composed of a TX Matrix router and T640 routers, if a SIB on the SCC becomes **Offline** 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 **Offline** then the SIBs on all other LCCs of the same plane get disconnected.
	• **Online**—SPMB is operational and running.
	• **Offline**—SPMB is powered down.
	• **Spare**—SIB is redundant and will move to active state if one of the working SIBs fail to pass traffic.
	• **Empty**—No SPMB is present.
	• **Fault**— SIB is in alarmed state where the SIB's plane is not operational for the following reasons:
	  ◦ On-board F-chip is not operational.
	  ◦ Fiber optic connector faults.
	  ◦ FPC connector faults.
	  ◦ SIB midplane connector faults.
	• **Check**—SIB is in alarmed state where the SIB's plane is partially operational for the following reasons:
	  ◦ SIB is not inserted properly.
	  ◦ Two or more links between the SIB and PFE fails.

Uptime	How long the SIB has been up and running.

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

Syntax

show chassis ssb
<slot>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M20 routers only) Display status information about the System and Switch Board (SSB).

Options

none—Display information about all SSBs.

slot—(Optional) Display information about the SSB in the specified slot. Replace ***slot*** with **0** or **1**.

Required Privilege Level

view

Related Documentation

- **request chassis ssb master switch on page 186**

List of Sample Output

show chassis ssb on page 510

Output Fields

Table 95 on page 509 lists the output fields for the**show chassis ssb** command. Output fields are listed in the approximate order in which they appear.

Table 95: show chassis ssb Output Fields

Field Name	Field Description
Failover	Number of times mastership has changed.
Slot	SSB slot number.
State	Current state of the SSB in this slot. State can be any one of the following: • **Master**—SSB is online, operating as master. • **Backup**—SSB running as backup. • **Empty**—No SSB is present.
Temperature	Temperature of the air passing by the SSB, in degrees Celsius.
CPU utilization	Total percentage of the CPU being used by the SSB's processor.
Interrupt utilization	Of the total CPU being used by the SSB's processor, the percentage being used for interrupts.
Heap utilization	Percentage of heap space being used by the SSB's processor.
Buffer utilization	Percentage of buffer space being used by the SSB's processor.
DRAM	Total DRAM available to the SSB's processor.

Table 95: 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.

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

Syntax

show chassis synchronization
<extensive>
<backup | master>

Release Information

Command introduced in Junos OS Release 7.6 for M320 routers.
Command introduced in Junos OS Release 8.3 for M40e routers.
Command introduced in Junos OS Release 9.3 for M120 routers.
Command introduced in Junos OS Release 10.2 for T320, T640, and T1600 routers.

Description

(M320, M40e,M120, T320, T640, and T1600 routers only) Display information about the external clock source currently used for chassis synchronization.

Options

extensive—(Optional) Display clock synchronization information in detail.

backup—(Optional) Display clock synchronization information about the backup clock.

master— (Optional) Display clock synchronization information about the master clock.

Required Privilege Level

maintenance

Related Documentation

- **request chassis synchronization switch on page 188**

List of Sample Output

show chassis synchronization on page 512
show chassis synchronization master on page 512
show chassis synchronization backup on page 513
show chassis synchronization extensive on page 513
show chassis synchronization (T320, T640, and T1600 Routers) on page 513

Output Fields

Table 96 on page 511 lists the output fields for the**show chassis synchronization** command. Output fields are listed in the approximate order in which they appear.

Table 96: show chassis synchronization Output Fields

Field Name	Field Description
Current state	Indicates current status of external clock sources: • **backup**—Source is currently the backup clock source. • **master**—Source is currently the master clock source.
Current clock state	Indicates current source of external synchronization: • **internal**—Source is providing its own clocking. • **locked to master CB**—(M320, M40e, and M120 routers) Source is locked to master clock source. • **locked to master SCG**—(T320, T640, and T1600 routers) Source is locked to master clock source.
Selected for	Number of seconds this clock has been the master or backup clock source.

Table 96: show chassis synchronization Output Fields *(continued)*

Field Name	Field Description
Selected since	Time stamp for establishment as master or backup clock source.
Deviation (in ppm)	Difference in clock timing, in parts per million (ppm).
Last deviation (in ppm)	Previous difference in clock timing, if any, in ppm.
Configured sources	Information of clock sources eligible for selection as master clock.
Source	Information following concerns external source A or B.
Priority	Indicates priority of external clock sources: • **primary**—Source is a primary reference. • **secondary**—Source is a secondary reference.
Deviation (in ppm)	Current difference in clock timing, in ppm: • **measuring**—Establishing source deviation. • ***number***—Deviation in ppm.
Last deviation (in ppm)	Previous difference in clock timing, in ppm: • ***number***—Deviation in ppm.
Status	Indicates status of external sources: • **present**—Source is configured and present. • **qualified**—Source is eligible for synchronization source.

show chassis synchronization

```
user@host> show chassis synchronization
Clock Synchronization Status :
  Clock module on CB 0
    Current state            : master
    Current clock state      : internal
      Selected for           : 18 hours, 12 minutes, 43 seconds
      Selected since         : 2008-09-10 03:27:47 PDT
      Deviation (in ppm)     : +0.00
      Last deviation (in ppm): +0.00
Clock Synchronization Status :
  Clock module on CB 1
    Current state            : backup
    Current clock state      : locked to master CB
      Selected for           : 1 day, 12 hours, 49 minutes, 20 seconds
      Selected since         : 2008-09-09 08:51:10 PDT
```

show chassis synchronization master

```
user@host> show chassis synchronization master
Clock Synchronization Status :
  Clock module on CB 0
    Current state            : master
    Current clock state      : internal
      Selected for           : 8 days, 21 minutes, 12 seconds
      Selected since         : 2008-08-27 21:05:40 PDT
```

```
      Deviation (in ppm)     : +0.00
      Last deviation (in ppm): +0.00
```

show chassis synchronization backup

```
user@host> show chassis synchronization backup
Clock Synchronization Status :
  Clock module on CB 1
    Current state            : backup
    Current clock state      : locked to master CB
      Selected for           : 34 days, 20 hours, 17 minutes, 8 seconds
      Selected since         : 2008-08-01 01:22:16 PDT
```

show chassis synchronization extensive

```
user@host> show chassis synchronization extensive
Clock Synchronization Status :
  Clock module on CB 0
    Current state            : master
    Current clock state      : internal
      Selected for           : 8 days, 36 minutes, 29 seconds
      Selected since         : 2008-08-27 21:05:40 PDT
      Deviation (in ppm)     : +0.00
      Last deviation (in ppm): +0.00
Clock Synchronization Status :
  Clock module on CB 1
    Current state            : backup
    Current clock state      : locked to master CB
      Selected for           : 34 days, 20 hours, 19 minutes, 53 seconds
      Selected since         : 2008-08-01 01:22:16 PDT
```

show chassis synchronization (T320, T640, and T1600 Routers)

```
user@host> show chassis synchronization
    Clock Synchronization Status :
      Clock module on SCG 0
        Current state            : master
        Current clock state      : locked to external-a
          Selected for           : 2 hours, 28 minutes, 4 seconds
          Selected since         : 2006-02-17 01:12:58 PST
        Configured sources
          Source      Priority   Deviation    Last deviation   Status
                                 (in ppm)     (in ppm)
          external-a  primary    measuring    -0.10            in-use
          external-b  secondary  -0.10        -0.10            qualified
    Clock Synchronization Status :
      Clock module on SCG 1
        Current state            : backup
        Current clock state      : locked to master SCG
          Selected for           : 19 hours, 49 minutes, 14 seconds
          Selected since         : 2006-02-16 07:51:48 PST
        Configured sources
          Source      Priority   Deviation    Last deviation   Status
                                 (in ppm)     (in ppm)
          external-a  primary    -0.25        -0.25            qualified
          external-b  secondary  -0.25        -0.25            qualified
```

show chassis temperature-thresholds

Syntax
show chassis temperature-thresholds

Syntax (TX Matrix Router)
show chassis temperature-thresholds
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)
show chassis temperature-thresholds
<lcc *number* | sfc *number*>

Release Information
Command introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc command introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description
Display chassis temperature threshold settings, in degrees Celsius.

Options
lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the temperature threshold details of a specified T640 router (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 ***number*** 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 *number*—(TX Matrix Plus routers only) (Optional) Display the temperature threshold details of the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with **0**.

Required Privilege Level
view

List of Sample Output
show chassis temperature-thresholds on page 515
show chassis temperature-thresholds (TX Matrix Plus Router) on page 515
show chassis temperature-thresholds lcc (TX Matrix Plus Router) on page 517
show chassis temperature-thresholds sfc (TX Matrix Plus Router) on page 517

Output Fields
Table 97 on page 514 lists the output fields for the **show chassis temperature-thresholds** command. Output fields are listed in the approximate order in which they appear.

Table 97: show chassis temperature-thresholds Output Fields

Field name	Field Description
Item	Chassis component. If per FRU per slot thresholds are configured, the components about which information is displayed include the chassis, the Routing Engines, FPCs, and FEBs. If per FRU per slot thresholds are not configured, the components about which information is displayed include the chassis and the Routing Engines.

Table 97: show chassis temperature-thresholds Output Fields *(continued)*

Field name	Field Description
Fan speed	Temperature threshold settings, in degrees Celsius, for the fans to operate at normal and high speeds. • **Normal**—The fans operate at normal speed if the component is at or below this temperature and all the fans are present and functioning normally. • **High**—The fans operate at high speed if the component has exceeded this temperature or a fan has failed or is missing. An alarm is not triggered until the temperature exceeds the threshold settings for a yellow alarm or a red alarm.
Yellow alarm	Temperature threshold settings, in degrees Celsius, that trigger a yellow alarm. • **Normal**—The temperature that must be exceeded on the component to trigger a yellow alarm when the fans are running at full speed. • **Bad fan**—The temperature that must be exceeded on the component to trigger a yellow alarm when one or more fans have failed or are missing.
Red alarm	Temperature threshold settings, in degrees Celsius, that trigger a red alarm. • **Normal**—The temperature that must be exceeded on the component to trigger a red alarm when the fans are running at full speed. • **Bad fan**—The temperature that must be exceeded on the component to trigger a red alarm when one or more fans have failed or are missing.

show chassis temperature-thresholds

```
user@host> show chassis temperature-thresholds
                          Fan speed        Yellow alarm         Red alarm
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 (TX Matrix Plus Router)

```
user@host> show chassis temperature-thresholds
sfc0-re0:
--------------------------------------------------------------------------
                          Fan speed        Yellow alarm         Red alarm
Item                    Normal   High    Normal   Bad fan    Normal   Bad fan
Chassis default             48     54        65        55        75        65
Routing Engine 0            48     54        85        85       100       100
Routing Engine 1            48     54        85        85       100       100
SIB F13 0                   64     70        76        72        90        84
SIB F13 1                   64     70        76        72        90        84
SIB F13 3                   64     70        76        72        90        84
```

```
SIB F13 4                    64     70        76        72        90        84
SIB F13 6                    64     70        76        72        90        84
SIB F13 7                    64     70        76        72        90        84
SIB F13 8                    64     70        76        72        90        84
SIB F13 9                    64     70        76        72        90        84
SIB F13 11                   64     70        76        72        90        84
SIB F13 12                   64     70        76        72        90        84
SIB F2S 16                   64     70        76        72        90        84
SIB F2S 17                   64     70        76        72        90        84
SIB F2S 18                   64     70        76        72        90        84
SIB F2S 19                   64     70        76        72        90        84
SIB F2S 20                   64     70        76        72        90        84
SIB F2S 21                   64     70        76        72        90        84
SIB F2S 22                   64     70        76        72        90        84
SIB F2S 23                   64     70        76        72        90        84
SIB F2S 24                   64     70        76        72        90        84
SIB F2S 25                   64     70        76        72        90        84
SIB F2S 26                   64     70        76        72        90        84
SIB F2S 27                   64     70        76        72        90        84
SIB F2S 28                   64     70        76        72        90        84
SIB F2S 29                   64     70        76        72        90        84
SIB F2S 30                   64     70        76        72        90        84
SIB F2S 31                   64     70        76        72        90        84
SIB F2S 32                   64     70        76        72        90        84
SIB F2S 33                   64     70        76        72        90        84
SIB F2S 34                   64     70        76        72        90        84
SIB F2S 35                   64     70        76        72        90        84

lcc0-re0:
--------------------------------------------------------------------------
                          Fan speed        Yellow alarm         Red alarm
Item                    Normal   High    Normal   Bad fan    Normal   Bad fan
Chassis default             48     54        65        55        75        65
Routing Engine 0            48     54        85        85       100       100
Routing Engine 1            48     54        85        85       100       100
FPC 4                       56     62        75        63        83        76
FPC 6                       56     62        75        63        83        76
FPC 7                       56     62        75        63        83        76
SIB 0                       48     54        65        60        80        75
SIB 1                       48     54        65        60        80        75
SIB 2                       48     54        65        60        80        75
SIB 3                       48     54        65        60        80        75
SIB 4                       48     54        65        60        80        75

lcc1-re0:
--------------------------------------------------------------------------
                          Fan speed        Yellow alarm         Red alarm
Item                    Normal   High    Normal   Bad fan    Normal   Bad fan
Chassis default             48     54        65        55        75        65
Routing Engine 0            48     54        85        85       100       100
Routing Engine 1            48     54        85        85       100       100
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

lcc2-re0:
```

```
---------------------------------------------------------------------------
                           Fan speed        Yellow alarm         Red alarm
Item                     Normal   High    Normal   Bad fan    Normal   Bad fan
Chassis default              48     54        65        55        75        65
Routing Engine 0             48     54        85        85       100       100
Routing Engine 1             48     54        85        85       100       100
FPC 4                        56     62        75        63        83        76
FPC 5                        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

lcc3-re0:
---------------------------------------------------------------------------
                           Fan speed        Yellow alarm         Red alarm
Item                     Normal   High    Normal   Bad fan    Normal   Bad fan
Chassis default              48     54        65        55        75        65
Routing Engine 0             48     54        85        85       100       100
Routing Engine 1             48     54        85        85       100       100
FPC 0                        56     62        75        63        83        76
FPC 1                        56     62        75        63        83        76
FPC 2                        56     62        75        63        83        76
FPC 5                        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
```

show chassis temperature-thresholds lcc (TX Matrix Plus Router)

```
user@host> show chassis temperature-thresholds lcc 1
lcc1-re0:
---------------------------------------------------------------------------
                           Fan speed        Yellow alarm         Red alarm
Item                     Normal   High    Normal   Bad fan    Normal   Bad fan
Chassis default              48     54        65        55        75        65
Routing Engine 0             48     54        85        85       100       100
Routing Engine 1             48     54        85        85       100       100
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
```

show chassis temperature-thresholds sfc (TX Matrix Plus Router)

```
user@host> show chassis temperature-thresholds sfc 0
sfc0-re0:
---------------------------------------------------------------------------
                           Fan speed        Yellow alarm         Red alarm
Item                     Normal   High    Normal   Bad fan    Normal   Bad fan
Chassis default              48     54        65        55        75        65
Routing Engine 0             48     54        85        85       100       100
Routing Engine 1             48     54        85        85       100       100
SIB F13 0                    64     70        76        72        90        84
SIB F13 1                    64     70        76        72        90        84
SIB F13 3                    64     70        76        72        90        84
```

SIB F13 4	64	70	76	72	90	84
SIB F13 6	64	70	76	72	90	84
SIB F13 7	64	70	76	72	90	84
SIB F13 8	64	70	76	72	90	84
SIB F13 9	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

CHAPTER 8

Command-Line Interface Operational Mode Commands

Table 98 on page 519 summarizes the command-line interface (CLI) commands you can use to perform and monitor CLI management functions. Commands are listed in alphabetical order.

Table 98: CLI Operational Mode Commands

Task	Command
Clear the logical system view and return to a full router view.	**clear cli logical-system**
Set the CLI to complete partial command entries.	**set cli complete-on-space**
Set the current working directory.	**set cli directory**
Set the maximum time that an individual session can be idle before the user is logged off the router.	**set cli idle-timeout**
Set the CLI to the specified logical routing instance.	**set cli logical-system**
Set the CLI prompt.	**set cli prompt**
Set the CLI to prompt you to restart the router after a software upgrade.	**set cli restart-on-upgrade**
Set the number of lines on the screen.	**set cli screen-length**
Set the number of characters on a line.	**set cli screen-width**
Set the terminal type.	**set cli terminal**
Timestamp CLI output.	**set cli timestamp**
Set the system date and time.	**set date**
Display all CLI settings.	**show cli**

Table 98: CLI Operational Mode Commands *(continued)*

Task	Command
Display login permissions for the current user.	**show cli authorization**
Display the current working directory.	**show cli directory**
Display a list of previous CLI commands.	**show cli history**

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

Syntax clear cli logical-system

Release Information Command introduced before Junos OS Release 7.4.

Description 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.

Options This command has no options.

Required Privilege Level clear

Related Documentation

- set cli logical-system on page 525

List of Sample Output clear cli logical-system on page 521

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

clear cli logical-system

```
user@host:lr1> clear cli logical-system

Cleared default logical system

user@host>
```

set cli complete-on-space

Syntax set cli complete-on-space (off | on)

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

Description 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.

Options off—Turn off command completion.

on—Allow either a space or a tab to be used for command completion.

Required Privilege Level view

Related Documentation

- **show cli on page 533**

List of Sample Output **set cli complete-on-space on page 522**

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

set cli complete-on-space In the following example, pressing the Spacebar changes the partial command entry from **com** to **complete-on-space**. The example shows how adding the keyword **off** at the end of the command disables command completion.

```
user@host> set cli com<Space>
user@host>set cli complete-on-space off
Disabling complete-on-space
```


set cli directory

Syntax set cli directory *directory*

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

Description Set the current working directory.

Options *directory*—Pathname of the working directory.

Required Privilege Level view

Related Documentation

- **show cli directory on page 538**

List of Sample Output **set cli directory on page 523**

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

set cli directory

```
user@host> set cli directory /var/home/regress
Current directory: /var/home/regress
```

set cli idle-timeout

Syntax

set cli idle-timeout
<minutes>

Release Information

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

Description

Set the maximum time that an individual session can be idle before the user is logged off the router or switch.

Options

minutes—(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.

Required Privilege Level

view

Related Documentation

- **show cli on page 533**

List of Sample Output

set cli idle-timeout on page 524

Output Fields

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

set cli idle-timeout

```
user@host> set cli idle-timeout 60
Idle timeout set to 60 minutes
```

set cli logical-system

Syntax set cli logical-system *logical-system*

Release Information Command introduced before Junos OS Release 7.4.

Description Set the CLI to the specified logical system view.

Options *logical-system*—logical system name.

Required Privilege Level view

List of Sample Output **set cli logical-system on page 525**

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

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

Syntax set cli prompt *string*

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

Description Set the prompt so that it is displayed within the CLI.

Options *string*—CLI prompt string. To include spaces in the prompt, enclose the string in quotation marks. By default, the string is ***username@hostname***.

Required Privilege Level view

Related Documentation

- **show cli on page 533**

List of Sample Output **set cli prompt on page 526**

Output Fields When you enter this command, the new CLI prompt is displayed.

set cli prompt

```
user@host> set cli prompt lab1-router>
lab1-router>
```


set cli restart-on-upgrade

Syntax set cli restart-on-upgrade string (off | on)

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

Description For an individual session, set the CLI to prompt you to restart the router or switch after upgrading the software.

Options off—Disables the prompt.

on—Enables the prompt.

Required Privilege Level view

Related Documentation

- show cli on page 533

List of Sample Output set cli restart-on-upgrade on page 527

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

set cli restart-on-upgrade

```
user@host> set cli restart-on-upgrade on
Enabling restart-on-upgrade
```

set cli screen-length

Syntax set cli screen-length *length*

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

Description Set terminal screen length.

Options *length*—Number of lines of text that the terminal screen displays. The range of values, in number of lines, is **24** through **100,000**. The default is **24**.

Additional Information The point at which the **---(more)---** prompt appears on the screen is a function of this setting and the settings for the **set cli screen-width** and **set cli terminal** commands.

Required Privilege Level view

Related Documentation

- **set cli screen-width on page 529**
- **set cli terminal on page 530**
- **show cli on page 533**

List of Sample Output **set cli screen-length on page 528**

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

set cli screen-length

```
user@host> set cli screen-length 75
Screen length set to 75
```


set cli screen-width

Syntax set cli screen-width *width*

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

Description Set the terminal screen width.

Options *width*—Number of characters in a line. The range of values is **80** through **100,000**. The default is **80**.

Additional Information The point at which the **---(more)---** prompt appears on the screen is a function of this setting and the settings for the **set cli screen-length** and **set cli terminal** commands.

Required Privilege Level view

Related Documentation

- **set cli screen-length on page 528**
- **set cli terminal on page 530**
- **show cli on page 533**

List of Sample Output **set cli screen-width on page 529**

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

set cli screen-width

```
user@host> set cli screen-width
Screen width set to 132
```

set cli terminal

Syntax set cli terminal *terminal-type*

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

Description Set the terminal type.

Options *terminal-type*—Type of terminal that is connected to the Ethernet management port:

- **ansi**—ANSI-compatible terminal (80 characters by 24 lines)
- **small-xterm**—Small xterm window (80 characters by 24 lines)
- **vt100**—VT100-compatible terminal (80 characters by 24 lines)
- **xterm**—Large xterm window (80 characters by 65 lines)

Required Privilege Level view

Related Documentation

- **show cli on page 533**

List of Sample Output **set cli terminal on page 530**

Output Fields This command provides no output.

set cli terminal

```
user@host> set cli terminal xterm
```


set cli timestamp

Syntax set cli timestamp (format *timestamp-format* | disable)

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

Description Set a timestamp for CLI output.

Options format *timestamp-format*—Set the date and time format for the timestamp. The timestamp format you specify can include the following placeholders in any order:

- **%m**—Two-digit month
- **%d**—Two-digit date
- **%T**—Six-digit hour, minute, and seconds

disable—Remove the timestamp from the CLI.

Required Privilege Level view

Related Documentation

- **show cli on page 533**

List of Sample Output **set cli timestamp on page 531**

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

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

Syntax set date (*date-time* | ntp <*ntp-server*> <source-address *source-address*>)

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

Description Set the date and time.

Options *date-time*—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.

ntp-server—(Optional) Specify the IP address of one or more NTP servers.

source-address *source-address*—(Optional) Specify the source address that the router or switch uses to contact the remote NTP server.

Required Privilege Level view

Related Documentation

- **show cli on page 533**

List of Sample Output **set date on page 532**

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

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

Syntax show cli

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

Description Display configured CLI settings.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show cli on page 533**

Output Fields Table 99 on page 533 lists the output fields for the **show cli** command. Output fields are listed in the approximate order in which they appear.

Table 99: 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: **on** or **off**.
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 **disabled**.
CLI restart-on-upgrade	CLI is set to prompt you to restart the router or switch after upgrading the software: **on** or **off**.
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: **enhanced**.
CLI timestamp	Date and time format for the timestamp. If the timestamp is not set, the state is **disabled**.
CLI working directory	Pathname of the working directory.

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

Syntax show cli authorization

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

Description Display the permissions for the current user.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show cli authorization on page 536**

Output Fields Table 100 on page 535 lists the output fields for the **show cli authorization** command. In the table, all possible permissions are displayed and output fields are listed in alphabetical order.

Table 100: 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.
flow-tap-control	Can configure flow-tap configuration information.

Table 100: show cli authorization Output Fields *(continued)*

Field Name	Field Description
interface	Can view interface configuration information.
interface-control	Can modify interface configuration information.
maintenance	Can perform system maintenance.
network	Can access the network by entering the **ping**, **ssh**, **telnet**, and **traceroute** commands.
reset	Can reset or restart interfaces and system processes.
rollback	Can rollback to previous configurations.
routing	Can view routing configuration information.
routing-control	Can modify routing configuration information.
secret	Can view passwords and authentication keys in the configuration.
secret-control	Can modify passwords and authentication keys in the configuration.
security	Can view security configuration information.
security-control	Can modify security configuration information.
shell	Can start a local shell.
snmp	Can view SNMP configuration information.
snmp-control	Can modify SNMP configuration information.
system	Can view system configuration information.
system-control	Can modify system configuration information.
trace	Can view trace file settings information.
trace-control	Can modify trace file settings information.
view	Can view current values and statistics.
view-configuration	Can view all configuration information (not including secrets).

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

Syntax show cli directory

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

Description Display the current working directory.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show cli directory on page 538**

Output Fields Table 101 on page 538 lists the output fields for the **show cli directory** command. Output fields are listed in the approximate order in which they appear.

Table 101: show cli directory Output Fields

Field Name	Field Description
Current directory	Pathname of the current working directory.

show cli directory

```
user@host> show cli directory
Current directory: /var/home/regress
```


show cli history

Syntax

show cli history
<count>

Release Information

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

Description

Display a list of previous CLI commands.

Options

none—Display all previous CLI commands.

count—(Optional) Maximum number of commands to display.

Required Privilege Level

view

List of Sample Output

show cli history on page 539

Output Fields

Table 102 on page 539 lists the output fields for the **show cli history** command. Output fields are listed in the approximate order in which they appear.

Table 102: show cli history Output Fields

Field Name	Field Description
timestamp	Time at which the command was entered.
command-syntax	Command that was entered.

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 103 on page 541 summarizes the command-line interface (CLI) commands you can use to perform and monitor file management functions. Commands are listed in alphabetical order.

Table 103: File Management Operational Mode Commands

Task	Command
Remove contents of a log file.	**clear log**
Archive files or archive and compress files.	**file archive**
Calculate checksum using MD5 has algorithm.	**file checksum md5**
Calculate checksum using Secure Hash Algorithm SHA1.	**file checksum sha1**
Calculate checksum using Secure Hash Algorithm SHA–256.	**file checksum sha-256**
Compare two files.	**file compare**
Copy files.	**file copy**
Delete files.	**file delete**
List files and directories on the router.	**file list**
Rename files.	**file rename**
Display the contents of a file.	**file show**
List log files, display log file contents, and display information about users who have logged in to the router.	**show log**

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

Syntax

clear log *filename*
<all>

Release Information

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

Description

Remove contents of a log file.

Options

filename—Name of the specific log file to truncate.

all—(Optional) Truncate the specified log file and delete all archived versions of it.

Required Privilege Level

clear

Related Documentation

- **show log on page 560**

List of Sample Output

clear log on page 543

Output Fields

See **file list** for an explanation of output fields.

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

Syntax

file archive destination *destination* source *source*
<compress>

Release Information

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

Description

Archive, and optionally compress, one or multiple local system files as a single file, locally or at a remote location.

Options

destination *destination*—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:

- For archived files—The suffix **.tar**
- For archived and compressed files—The suffix **.tgz**

source *source*—Source of the original file or files. Specify the source as a URL or filename.

compress—(Optional) Compress the archived file with the GNU zip (gzip) compression utility. The compressed files have the suffix **.tgz**.

Required Privilege Level

maintenance

List of Sample Output

file archive (Multiple Files) on page 544
file archive (Single File) on page 544
file archive (with Compression) on page 545

Output Fields

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

file archive (Multiple Files)

The following sample command archives all message files in the local directory **/var/log/messages** as the single file **messages-archive.tar** in the same directory:

```
user@host> 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>
```

file archive (Single File)

The following sample command archives one message file in the local directory **/var/log/messages** as the single file **messages-archive.tar** in the same directory:

```
user@host> 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
```

file archive (with Compression)

The following sample command archives and compresses all message files in the local directory **/var/log/messages** as the single file **messages-archive.tgz** in the same directory:

```
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.

user@host>
```

file checksum md5

Syntax file checksum md5 <*pathname*> *filename*

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

Description Calculate the Message Digest 5 (MD5) checksum of a file.

Options *pathname*—(Optional) Path to a filename.

filename—Name of a local file for which to calculate the MD5 checksum.

Required Privilege Level maintenance

Related Documentation

- Configuring Checksum Hashes for a Commit Script in the *Junos Configuration and Operations Automation Guide*
- Configuring Checksum Hashes for an Event Script in the *Junos Configuration and Operations Automation Guide*
- Configuring Checksum Hashes for an Op Script in the *Junos Configuration and Operations Automation Guide*
- Executing an Op Script from a Remote Site in the *JUNO Configuration and Operations Automation Guide*
- **file checksum sha-256 on page 548**
- **file checksum sha1 on page 547**
- **op on page 693**

List of Sample Output **file checksum md5 on page 546**

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

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

Syntax file checksum sha1 <*pathname*> *filename*

Release Information Command introduced in Junos OS Release 9.5.
Command introduced in Junos OS Release 9.5 for EX Series switches.

Description Calculate the Secure Hash Algorithm (SHA-1) checksum of a file.

Options *pathname*—(Optional) Path to a filename.

filename—Name of a local file for which to calculate the SHA-1 checksum.

Required Privilege Level maintenance

Related Documentation

- Configuring Checksum Hashes for a Commit Script in the *Junos Configuration and Operations Automation Guide*
- Configuring Checksum Hashes for an Event Script in the *Junos Configuration and Operations Automation Guide*
- Configuring Checksum Hashes for an Op Script in the *Junos Configuration and Operations Automation Guide*
- Executing an Op Script from a Remote Site in the *Junos Configuration and Operations Automation Guide*
- **file checksum md5 on page 546**
- **file checksum sha-256 on page 548**
- **op on page 693**

List of Sample Output **file checksum sha1 on page 547**

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

file checksum sha1

```
user@host> file checksum sha1 /var/db/scripts/opscript.slax

SHA1 (/var/db/scripts/commitscript.slax) = ba9e47120c7ce55cff29afd73eacd370e162c676
```

file checksum sha-256

Syntax file checksum sha-256 <*pathname*> *filename*

Release Information Command introduced in Junos OS Release 9.5.
Command introduced in Junos OS Release 9.5 for EX Series switches.

Description Calculate the Secure Hash Algorithm 2 family (SHA-256) checksum of a file.

Options *pathname*—(Optional) Path to a filename.

filename—Name of a local file for which to calculate the SHA-256 checksum.

Required Privilege Level maintenance

Related Documentation

- Configuring Checksum Hashes for a Commit Script in the *Junos Configuration and Operations Automation Guide*
- Configuring Checksum Hashes for an Event Script in the *Junos Configuration and Operations Automation Guide*
- Configuring Checksum Hashes for an Op Script in the *Junos Configuration and Operations Automation Guide*
- Executing an Op Script from a Remote Site in the *Configuration and Operations Automation Guide*
- **file checksum md5 on page 546**
- **file checksum sha1 on page 547**
- **op on page 693**

List of Sample Output **file checksum sha-256 on page 548**

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

file checksum sha-256

```
user@host> file checksum sha-256 /var/db/scripts/commitscript.slax

SHA256 (/var/db/scripts/commitscript.slax) =
94c2b061fb55399e15babd2529453815601a602b5c98e5c12ed929c9d343dd71
```


file compare

Syntax

file compare (files *filename filename*)
< context | unified>
<ignore-white-space >

Release Information

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

Description

Compare two local files and describe the differences between them in default, context, or unified output styles:

- **Default**—In the first line of output, **c** means lines were changed between the two files, **d** means lines were deleted between the two files, and **a** 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 (**<**) in front of output lines refers to the first file. A right angle bracket (**>**) in front of output lines refers to the second file.
- **Context**—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 (**-**).
- **Unified**—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.

Options

files *filename*—Names of two local files to compare.

context—(Optional) Display output in context format.

ignore-white-space—(Optional) Ignore changes in amount of white space.

unified—(Optional) Display output in unified format.

Required Privilege Level

none

List of Sample Output

file compare files on page 550
file compare files context on page 550
file compare files unified on page 550
file compare files unified ignore-white-space on page 551

Output Fields

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

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 context

```
user@host> file compare files /tmp/one /tmp/two 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 unified

```
user@host> file compare files /tmp/one /tmp/two 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 unified ignore-white-space

```
user@host> file compare files /tmp/one /tmp/two 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

Syntax

file copy *source destination*
<source-address *address*>

Release Information

Command introduced before Junos OS Release 7.4.
source-address option added in Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.

Description

Copy files from one place to another on the local router or switch or between the local router or switch and a remote system.

Options

source—Source of the original file. Specify this as a URL or filename.

destination—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 (.).

source-address *address*—(Optional) Source IP host address. This option is useful for specifying the source address of a secure copy (scp) file transfer.

Required Privilege Level

maintenance

List of Sample Output

file copy (A File from the Router to a PC) on page 552
file copy (A Configuration File Between Routing Engines) on page 552
file copy (A Log File Between Routing Engines) on page 552
file copy (A File From the TX Matrix Plus Router to a T1600 Router Connected to the TX Matrix Plus Router) on page 552

Output Fields

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

file copy (A File from the Router to a PC)

```
user@host> file copy /var/tmp/rpd.core.4 berry:/c/junipero/tmp

...transferring.file...... |          0 KB |   0.3 kB/s | ETA: 00:00:00 | 100%
```

file copy (A Configuration File Between Routing Engines)

The following sample command copies a configuration file from Routing Engine 0 to Routing Engine 1:

```
user@host>  file copy /config/juniper.conf re1:/var/tmp/copied-juniper.conf
```

file copy (A Log File Between Routing Engines)

The following sample command copies a log file from Routing Engine 0 to Routing Engine 1:

```
user@host> file copy lcc0-re0:/var/log/chassisd lcc0-re1:/var/tmp
```

file copy (A File From the TX Matrix Plus Router to a T1600 Router Connected to the TX Matrix Plus Router)

The following sample command copies a text file from Routing Engine 1 on the switch-fabric chassis **sfc0** to Routing Engine 1 on the line-card chassis **lcc0**:

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

file delete

Syntax

file delete *filename*
<purge>

Release Information

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

Description

Delete a file on the local router or switch.

Options

filename—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.

purge—(Optional) Overwrite regular files before deleting them.

Required Privilege Level

maintenance

List of Sample Output

file delete on page 553
file delete (Routing Matrix) on page 553

Output Fields

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

file delete

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

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

file delete (Routing Matrix)

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

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

file list

Syntax

file list
<detail | recursive>
<*filename*>

Release Information

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

Description

Display a list of files on the local router or switch.

Options

none—Display a list of all files for the current directory.

detail | recursive—(Optional) Display detailed output or descend recursively through the directory hierarchy, respectively.

filename—(Optional) Display a list of files. For a routing matrix, the filename must include the chassis information.

Additional Information

The default directory is the home directory of the user logged into the router or switch. To view available directories, enter a space and then a backslash (/) after the **file list** command. To view files within a specific directory, include a backslash followed by the directory and, optionally, subdirectory name after the **file list** command.

Required Privilege Level

maintenance

List of Sample Output

file list on page 554
file list (Routing Matrix) on page 555

Output Fields

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

file list

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

file list (Routing Matrix)

```
user@host> file list lcc0-re0:var/tmp
lcc0-re0:
--------------------------------------------------------------------------
/var/tmp/:
.gdbinit
.pccardd
Test/
chassisd*
chassisd.nathan*
check_time*
cores/
diagTestPrep*
diagtest*
diagtest.regress*
do_switchovers*
dump_test*
err.manoj.log
esw_clearstats*
esw_counter*
esw_debug*
esw_debug_ge*
esw_filt_test*
esw_filter_tnp_addr*
esw_getstats*
esw_phy*
esw_stats*
```

file rename

Syntax file rename *source destination*

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

Description Rename a file on the local router or switch.

Options *destination*—New name for the file.

source—Original name of the file. For a routing matrix, the filename must include the chassis information.

Required Privilege Level maintenance

List of Sample Output
file rename on page 556
file rename (Routing Matrix) on page 557

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

file rename The following example lists the files in **/var/tmp**, renames one of the files, and then displays the list of files again to reveal the newly named file.

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

user@host> file rename /var/tmp/dcd.core /var/tmp/dcd.core.990413
user@host> file list /var/tmp
dcd.core.990413
rpd.core
snmpd.core
```


file rename (Routing Matrix)

The following example lists the files in **/var/tmp**, renames one of the files, and then displays the list of files again to reveal the newly named file.

```
user@host> file list lcc0-re1:/var/tmp
lcc0-re1:
--------------------------------------------------------------------------

/var/tmp:
.pccardd
sartre.conf
snmpd
syslogd.core-tarball.0.tgz
```

```
user@host> file rename lcc0-re0:/var/tmp/snmpd /var/tmp/snmpd.rr
user@host> file list lcc0-re1:/var/tmp
lcc0-re1:
--------------------------------------------------------------------------

/var/tmp:
.pccardd
sartre.conf
snmpd.rr
syslogd.core-tarball.0.tgz
```

file show

Syntax

file show *filename*
<encoding (base64 | raw)>

Release Information

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

Description

Display the contents of a file.

Options

filename—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.

Required Privilege Level

maintenance

List of Sample Output

file show on page 558
file show (Routing Matrix) on page 558

Output Fields

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

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 (Routing Matrix)

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

show log

Syntax

show log
<*filename* | user <*username*>>

Syntax (TX Matrix Router)

show log
<all-lcc | lcc *number* | scc>
<*filename* | user <*username*>>

Release Information

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

Description

List log files, display log file contents, or display information about users who have logged in to the router or switch.

Options

none—List all log files.

<all-lcc | lcc *number* | scc>—(Routing matrix only) (Optional) Display logging information about all T640 routers (or line-card chassis) or a specific T640 router (replace ***number*** 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).

filename—(Optional) Display the log messages in the specified log file. For the routing matrix, the filename must include the chassis information.

user <*username*>—(Optional) Display logging information about users who have recently logged in to the router or switch. If you include ***username***, display logging information about the specified user.

Required Privilege Level

trace

List of Sample Output

show log on page 560
show log filename on page 560
show log user on page 561

show log

```
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 recv 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 recv 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 recv len 48 V9 seq 150 op add Type ifaddr index 24 devindex
43
Oct  1 18:00:19 KRT recv len 144 V9 seq 151 op chnge Type ifdev devindex 44
Oct  1 18:00:19 KRT recv len 144 V9 seq 152 op chnge Type ifdev devindex 45
Oct  1 18:00:19 KRT recv len 144 V9 seq 153 op chnge Type ifdev devindex 46
Oct  1 18:00:19 KRT recv 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     ttyp2    jun.site.per    Wed Sep 30 18:39 - 18:41  (00:02)
alex     ttyp1    192.168.1.2      Wed Sep 30 01:03 - 01:22  (00:19)
```

CHAPTER 10

Packet Forwarding Engine Operational Mode Commands

Table 104 on page 563 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 104: Packet Forwarding Engine Operational Mode Commands

Task	Command
Display Packet Forwarding Engine Compact Forwarding Engine Board (CFEB) status and statistics information.	**show pfe cfeb**
Display Packet Forwarding Engine Forwarding Engine Board (FEB) status and statistics information.	**show pfe feb**
Display Packet Forwarding Engine statistics for the specified Flexible PIC Concentrator (FPC).	**show pfe fpc**
(J Series router only) Display Packet Forwarding Engine forwarding process (fwdd) status and statistics information.	**show pfe fwdd**
(Routing matrix only) Display Packet Forwarding Engine information for the specified T640 router (or line-card chassis).	**show pfe lcc**
Display Packet Forwarding Engine next-hop information.	**show pfe next-hop**
Display IPv4 Packet Forwarding Engine statistics.	**show pfe statistics ip**
(M320 and T320 routers, and T-640 only) Display Packet Forwarding Engine resource and L-chip SRAM memory usage statistics.	**show pfe resource usage memory**
Display the routes in the Packet Forwarding Engine forwarding table.	**show pfe route**
(M40 routers only) Display Packet Forwarding Engine System Control Board (SCB) status and statistics information.	**show pfe scb**

Table 104: 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.	**show pfe sfm**
(M20 routers only) Display Packet Forwarding Engine System and Switch Board (SSB) status and statistics information.	**show pfe ssb**
Display Packet Forwarding Engine direct memory access (DMA) statistics.	**show pfe statistics dma**
Display Packet Forwarding Engine error statistics.	**show pfe statistics error**
Display IPv4 Packet Forwarding Engine statistics.	**show pfe statistics ip**
Display Packet Forwarding Engine IPv6 statistics.	**show pfe statistics ip6**
Display Packet Forwarding Engine notification statistics.	**show pfe statistics notification**
Display Packet Forwarding Engine polled I/O (PIO) statistics.	**show pfe statistics pio**
Display Packet Forwarding Engine traffic statistics.	**show pfe statistics traffic**
Display Packet Forwarding Engine traffic statistics for Bidirectional Forwarding Detection (BFD).	**show pfe statistics traffic protocol bfd**
Display Packet Forwarding Engine traffic statistics for connectivity fault management (CFM).	**show pfe statistics traffic protocol cfm**
Display Packet Forwarding Engine traffic statistics for link fault management (LFM).	**show pfe statistics traffic protocol lfm**
Display Packet Forwarding Engine status information.	**show pfe terse**

NOTE: For information about how to configure PFE parameters, see the *Junos OS System Basics Configuration Guide*.

show pfe cfeb

Syntax show pfe cfeb

Release Information Command introduced before Junos OS Release 7.4.

Description (M7i routers only) Display Packet Forwarding Engine Compact Forwarding Engine Board (CFEB) status and statistics information.

Options This command has no options.

Required Privilege Level admin

List of Sample Output show pfe cfeb on page 565

show pfe cfeb

```
user@host> show pfe cfeb
CFEB status:
  Slot:                 Present
  State:                Online
  Last State Change:    2005-03-10 09:01:25 PST
  Uptime (total):       2d 00:44
  Failures:             0
  Pending:              0

Peer message type receive qualifiers:
 Message Type      Receive Qualifier
 ----------------  -----------------
              TTP  All
              IFD  All
              IFL  All
          Nexthop  All
              COS  All
            Route  All
      SW Firewall  All
      HW Firewall  All
   PFE Statistics  All
   PIC Statistics  All
         Sampling  All
       Monitoring  None
              ASP  None
             L2TP  None
        Collector  None
 PIC Configuration  All
 Queue Statistics  All
           (null)  None

PFE listener statistics:
  Open:                 1
  Close:                0
  Sleep:                0
  Wakeup:               0
  Resync Request:       0
  Resync Done:          1
  Resync Fail:          0
  Resync Time:          0

PFE IPC statistics:
```

```
 type         TX Messages  RX messages
 ----------- -----------  -----------
      Header           0            0
        Test           0            0
   Interface         562        14582
     Chassis           0            0
        Boot           0            0
    Next-hop         104            0
       Jtree           0            0
       Cprod           0            0
       Route         103            1
         Pfe        3770         2925
         Dfw          10            0
  Mastership           0            0
    Sampling           0            0
        GUCP           0            0
         CoS          50            0
        GCCP           0            0
        GHCP           0            0
        IRSD           0            0
  Monitoring           0            0
          RE           0            0
         PIC           0            0
     ASP cfg           0            0
     ASP cmd           0            0
    L2TP cfg           0            0
   Collector           0            0
   PIC state           0            0
  Aggregator           0            0
       Empty           0            0

PFE socket-buffer mbuf depth:
 bucket          count
 ------          -----
     0               0
     1               0
     2               0
     3               0
     4               0
     5               0
     6               0
     7               0
     8               0
     9               0
    10               0
    11               0
    12               0
    13               0
    14               0
    15               0
    16               0
    17               0
    18               0
    19               0
    20               0
    21               0

PFE socket-buffer bytes pending transmit:
 bucket          count
 ------          -----
     0               0
```

1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0

show pfe feb

Syntax show pfe feb

Release Information Command introduced before Junos OS Release 7.4.

Description (M5 and M10 routers only) Display Packet Forwarding Engine Forwarding Engine Board (FEB) status and statistics information.

Options This command has no options.

Required Privilege Level admin

List of Sample Output show pfe feb on page 568

show pfe feb

```
user@host> show pfe feb
FEB status:
  Slot:                 Present
  State:                Online
  Last State Change:    2005-03-11 00:33:57 PST
  Uptime (total):       1d 09:14
  Failures:             0
  Pending:              0

Peer message type receive qualifiers:
 Message Type      Receive Qualifier
 ----------------  -----------------
              TTP  All
              IFD  All
              IFL  All
          Nexthop  All
              COS  All
            Route  All
      SW Firewall  All
      HW Firewall  All
   PFE Statistics  All
   PIC Statistics  All
         Sampling  All
       Monitoring  None
              ASP  None
             L2TP  None
        Collector  None
 PIC Configuration  All
 Queue Statistics  All
           (null)  None

PFE listener statistics:
  Open:                 1
  Close:                0
  Sleep:                0
  Wakeup:               0
  Resync Request:       0
  Resync Done:          1
  Resync Fail:          0
  Resync Time:          0

PFE IPC statistics:
```



```
 type         TX Messages  RX messages
 ----------- -----------  -----------
      Header           0            0
        Test           0            0
   Interface         639        11889
     Chassis           0            0
        Boot           0            0
    Next-hop         104            0
       Jtree           0            0

       Cprod           0            0
       Route         940            0
         Pfe        3008         1995
         Dfw           9            0
  Mastership           0            0
    Sampling           0            0
        GUCP           0            0
         CoS          35            0
        GCCP           0            0
        GHCP           0            0
        IRSD           0            0
  Monitoring           0            0
          RE           0            0
         PIC           0            0
     ASP cfg           0            0
     ASP cmd           0            0
    L2TP cfg           0            0
   Collector           0            0
   PIC state           0            0
  Aggregator           0            0
       Empty           0            0

PFE socket-buffer mbuf depth:
 bucket          count
 ------          -----
     0               0
     1               0
     2               0
     3               0
     4               0
     5               0
     6               0
     7               0
     8               0
     9               0
    10               0
    11               0
    12               0
    13               0
    14               0
    15               0
    16               0
    17               0
    18               0
    19               0
    20               0
    21               0

PFE socket-buffer bytes pending transmit:
 bucket          count
 ------          -----
```

0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0

show pfe fpc

Syntax

show pfe fpc *slot*
<detail | extensive>

Syntax (TX Matrix and TX Matrix Plus Router)

show pfe fpc
<lcc *number*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display Packet Forwarding Engine statistics for the specified Flexible PIC Concentrator (FPC).

Options

slot—FPC slot number, for example, 0. The number of slots depends on the .

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

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, the slot number of the T640 router (or line-card chassis) that houses the FPC. On a TX Matrix Plus router, the slot number of the T1600 router (or line-card chassis) that houses the FPC. Replace ***number*** with a value from **0** through **3**.

Required Privilege Level

admin

List of Sample Output

show pfe fpc on page 571
show pfe fpc lcc on page 572

show pfe fpc

```
user@host> show pfe fpc 1
FPC 1 status:
  Slot:                  Present
  State:                 Online
  Last State Change:     2000-01-10 18:12:27 UTC
  Uptime:                1d 03:31
  Failures:              0
  Pending:               0
  Route Memory Enhanced: 0
PFE listener statistics:
  Open:                 1
  Close:                0
  Sleep:                0
  Wakeup:               0
  Resync Request:       0
  Resync Done:          0
  Resync Fail:          0
  Resync Time:          0

PFE IPC statistics:
 type        TX Messages  RX messages
 ----------- -----------  -----------
      Header           0            0
        Test           0            0
   Interface        2251         2219
     Chassis           0            0
        Boot           0            0
    Next-hop           0            0
```

```
      Jtree           0            0
      Cprod           0            0
      Route           0            0
        Pfe           0            1
        Dfw
```

show pfe fpc lcc

```
user@host> show pfe fpc 0 lcc 0
lcc0-re0:
--------------------------------------------------------------------------
GFPC 0 status:
  Slot:                 Present
  State:                Online
  Last State Change:    2009-06-17 21:00:35 PDT
  Uptime (total):       02:31:45
  Failures:             0
  Pending:              0

Peer message type receive qualifiers [ non-NONE(s) only ]:
 IPC Msg Type (subtype)     Receive Qualifier
 ----------------  -----------------
 Interface        (0)           All
 Interface        (1)           All
 Interface        (2)           All
 Interface        (3)           All
 Interface        (4)           All
 Interface        (5)           All
 Interface        (6)           All
 Interface        (7)           All
 Interface        (8)           All
 Interface        (9)           All
 Interface        (10)          All
 Interface        (11)          All
 Interface        (12)          All
 Interface        (13)          All
 Interface        (14)          All
 Interface        (15)          All
 Interface        (16)          All
 Interface        (17)          All
 Interface        (18)          All
 Interface        (19)          All
 Interface        (20)          Slot only
 Interface        (21)          All
...
 Next-hop         (0)           All
 Next-hop         (1)           All
 Next-hop         (2)           All
 Next-hop         (3)           All
 Next-hop         (4)           All
 Next-hop         (5)           Always TRUE
...
 Route            (0)           All
 Route            (1)           All
 Route            (2)           All
 Route            (3)           All
 Route            (4)           All
 Route            (5)           All
 Route            (6)           All
 Route            (7)           All
 Route            (8)           All

...
```

```
 Pfe              (1)           Always TRUE
 Pfe              (3)           Always TRUE
 Pfe              (5)           Always TRUE
...
 Dfw              (0)           All
 Dfw              (1)           All
 Dfw              (2)           All
 Dfw              (3)           All

...
 Sampling         (1)           All
 Sampling         (2)           All
 Sampling         (3)           All
 CoS              (0)           All
 CoS              (1)           All
 CoS              (2)           All
 CoS              (3)           All
...
 PIC              (1)           Always TRUE
 PIC              (3)           Always TRUE
...
 GenCfg           (8)           All
 GenCfg           (15)          All
...
 IFSTATE BITS SET:
 ----------------
        IFD
        IFL
        IFF
        IFA
        RTTABLE
        ROUTE
        NEXTHOP
        FIREWALL
        NAME TABLE
        COS_FABRIC
        COS_POLICY
        COS_RED
        COS_REWRT_TABLE
        COS_REWRT_IFLMAP
        COS_CLASS_TABLE
        COS_CLASS_IFLMAP
        COS_POLICER
        COS_SHAPER
        SAMPLE
        RTCOS
        SYSCONF
        IFVP
        SADB
        IFVC
        COS_FC_QUEUE
        COS_FRAGMAP_TABLE
        COS_FRAGMAP_IFLMAP
        Generic config
        Mesh group

PFE listener statistics:
  Open:                 1
  Close:                0
  Sleep:                0
  Wakeup:               0
```

```
  Resync Request:       0
  Resync Done:          1
  Resync Fail:          0
  Resync Time:          0

PFE IPC statistics:
 Type (subtype)             TX Messages    RX messages
 --------------             -----------   -----------
 Interface  ( 3)                165            0
 Interface  ( 4)                 81            0
 Interface  ( 5)                  0          190
 Interface  ( 8)                145            0
 Interface  ( 9)                425            0
 Interface  (10)                 24            0
...
PFE socket-buffer mbuf depth:
 bucket          count
 ------          -----
     0               0
     1               0
     2               0

PFE socket-buffer bytes pending transmit:
 bucket          count
 ------          -----
     0               0
     1               0
...
```

show pfe fwdd

Syntax show pfe fwdd

Release Information Command introduced before Junos OS Release 7.4.

Description (J Series routers only) Display Packet Forwarding Engine forwarding process (fwdd) status and statistics information.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show pfe fwdd on page 575**

show pfe fwdd

```
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 578

show pfe lcc

```
user@host> show pfe lcc 0
LCC 0 status:
  Slot:                 Present
  State:                Online
  Last State Change:    2005-03-10 19:31:50 PST
  Uptime (total):       1d 14:20
  Failures:             23
  Pending:              0

Peer message type receive qualifiers:
 Message Type      Receive Qualifier
 ----------------  -----------------
              TTP  All detail
              IFD  All detail
              IFL  All detail
          Nexthop  All
              COS  All
            Route  All
      SW Firewall  All
      HW Firewall  All
   PFE Statistics  All
   PIC Statistics  All
         Sampling  All detail
       Monitoring  All detail
              ASP  All detail
             L2TP  All detail
        Collector  All detail

PFE listener statistics:
  Open:                 25
  Close:                23
  Sleep:                0
  Wakeup:               0
  Resync Request:       0
  Resync Done:          2
```

```
  Resync Fail:          0
  Resync Time:          0

PFE IPC statistics:
 type        TX Messages  RX messages
 ----------- -----------  -----------
      Header           0            0
        Test           0            0
   Interface         163         2923
     Chassis           0            0
        Boot           0            0
    Next-hop          15            0
       Jtree           0            0
       Cprod           0            0
       Route         100            0
         Pfe        5369         3072
         Dfw          11            0
  Mastership           0            0
    Sampling           0            0
        GUCP           0            0
         CoS          20            0
        GCCP           0            0
        GHCP           0            0
        IRSD           0            0
  Monitoring           0            0
          RE           3         6930
         PIC           0            0
     ASP cfg           0            0
     ASP cmd           0            0
    L2TP cfg           0            0
   Collector           0            0
   PIC state           4            0

PFE socket-buffer mbuf depth:
 bucket          count
 ------          -----
     0               0
     1               0
     2               0
     3               0
     4               0
     5               0
     6               0
     7               0
     8               0
     9               0
    10               0
    11               0
    12               0
    13               0
    14               0
    15               0
    16               0
    17               0
    18               0
    19               0
    20               0
    21               0

PFE socket-buffer bytes pending transmit:
 bucket          count
```

```
------          -----
     0              0
     1              0
     2              0
     3              0
     4              0
     5              0
     6              0
     7              0
     8              0
     9              0
    10              0
    11              0
    12              0
    13              0
    14              0
    15              0
    16              0
    17              0
    18              0
    19              0
    20              0
    21              0
```

show pfe next-hop

Syntax

show pfe next-hop
<interface *interface-name*>

Syntax (TX Matrix and TX Matrix Plus router)

show pfe next-hop
<fpc *slot*>
<interface *interface-name*>
<lcc *number*>

Release Information

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

Description

Display Packet Forwarding Engine next-hop information.

Options

none—Display all Packet Forwarding Engine next-hop 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 next-hop fpc 1 lcc 1
user@host> show pfe next-hop fpc 9
```

interface *interface-name*—(Optional) Display the Packet Forwarding Engine next-hop interface.

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**.

Required Privilege Level

admin

List of Sample Output

show pfe next-hop on page 582
show pfe next-hop fpc (TX Matrix Router) on page 582
show pfe next-hop fpc (TX Matrix Plus Router) on page 582

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

Syntax

show pfe route
<<inet6 | ip | iso> <prefix *prefix*> | <table <*table-name*> <index *index*> <prefix *prefix*>>>
<mpls>
<summary>

Syntax (EX Series Switch)

show pfe route
<<inet6 | ip> <prefix *prefix*> | <table <*table-name*> <index *index*> <prefix *prefix*>>>
<mpls>
<summary>

Syntax (TX Matrix and TX Matrix Plus Router)

show pfe route
<fpc *slot*>
<<inet6 | ip | iso> <prefix *prefix*> | <table <*table-name*> <index *index*> <prefix *prefix*>>>
<lcc *number*>
<mpls>
<summary>

Release Information

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

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 586
show pfe route iso on page 586
show pfe route lcc summary (TX Matrix Router) on page 587
show pfe route lcc summary (TX Matrix Plus Router) on page 588

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                                            Discard     8
127.0.0.1                         127.0.0.1          Local   256
172.16/12                         192.168.71.254   Unicast    68 fxp0.0
192.168.0/18                      192.168.71.254   Unicast    68 fxp0.0
192.168.40/22                     192.168.71.254   Unicast    68 fxp0.0
192.168.64/18                     192.168.71.254   Unicast    68 fxp0.0
192.168.64/21                                      Resolve    67 fxp0.0
192.168.71.249                    192.168.71.249     Local    66
192.168.220.0/30                                   Resolve   303 fe-0/0/0.0
192.168.220.0                     192.168.220.0    Receive   301 fe-0/0/0.0
224.0.0.1                                            Mcast     5
255.255.255.255                                      Bcast     6

...
```

show pfe route iso

```
user@host# show pfe route iso

CLNS Route Table 0, CLNP.0, 0x0:
Destination                               Type     NH ID Interface
----------------------------------------- -------- ----- ---------
default                                     Reject    60
47.0005.80ff.f800.0000.0108.0001.0102.5508.2159/152     Local   514
49.0001.00a0.c96b.c491/72                    Local   536
```

show pfe route lcc summary (TX Matrix Router)

```
user@host> show pfe route lcc 2 summary

Slot 0

IPv4 Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default           43        3081
1                  4         281

MPLS Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default            1          68

IPV6 Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default            9         717
1                  5         389

Slot 1


IPv4 Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default           43        3081
1                  4         281

MPLS Route Tables:

Index         Routes     Size(b)
--------  ----------  ----------
Default            1          68

IPV6 Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default            9         717
1                  5         389

Slot 16

IPv4 Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default           41        2938
1                  4         281

MPLS Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default            1          68

IPV6 Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default            9         717
1                  5         389
```

```
Slot 17

IPv4 Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default           41        2938
1                  4         281


MPLS Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default            1          68

IPV6 Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default            9         717
1                  5         389
```

show pfe route lcc summary (TX Matrix Plus Router)

```
user@host> show pfe route lcc 2 summary

Slot 0


IPv4 Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default           25        2266
1                  9         815
2                  6         545
3                  5         453
4                 15        1371
5                  5         453
6                 13        1187

MPLS Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default            1          88
4                  5         452

IPv6 Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default            7         697
1                 13        1305
3                  4         385
4                  4         385
5                  4         385
6                 18        1833

Slot 6


IPv4 Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default           25        2266
1                  9         815
2                  6         545
```



```
3                   5         453
4                  15        1371
5                   5         453
6                  13        1187

MPLS Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default            1          88
4                  5         452

IPv6 Route Tables:
Index         Routes     Size(b)
--------  ----------  ----------
Default            7         697
1                 13        1305
3                  4         385
4                  4         385
5                  4         385
6                 18        1833
...
```

show pfe scb

Syntax show pfe scb

Release Information Command introduced before Junos OS Release 7.4.

Description (M40 routers only) Display Packet Forwarding Engine System Control Board (SCB) status and statistics information.

Options This command has no options.

Required Privilege Level admin

List of Sample Output show pfe scb on page 590

show pfe scb

```
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

Syntax

show pfe sfm *slot*
<detail | extensive>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M40e and M160 routers only) Display Packet Forwarding Engine Switching and Forwarding Module (SFM) status and statistics information.

Options

slot—Display statistics from the specified SFM slot. Replace ***slot*** with a value from **0** through **3**.

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

Additional Information

This command applies only to systems with multiple SFMs.

Required Privilege Level

admin

List of Sample Output

show pfe sfm on page 592

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

Syntax show pfe ssb

Release Information Command introduced before Junos OS Release 7.4.

Description (M20 routers only) Display Packet Forwarding Engine System and Switch Board (SSB) status and statistics information.

Options This command has no options.

Required Privilege Level admin

List of Sample Output show pfe ssb on page 594

show pfe ssb

```
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

Syntax

show pfe statistics dma

Syntax (TX Matrix and TX Matrix Plus Router)

show pfe statistics dma
<fpc *slot*>
<lcc *number*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display Packet Forwarding Engine direct memory access (DMA) statistics.

Options

none—Display all Packet Forwarding Engine direct memory access statistics.

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 **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 statistics dma fpc 1 lcc 1**
user@host> **show pfe statistics dma fpc 9**

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 ***number*** with a value from **0** through **3**.

Required Privilege Level

admin

List of Sample Output

show pfe statistics dma on page 597
show pfe statistics dma lcc (Routing Matrix) on page 598

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> 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

Syntax

show pfe statistics error

Syntax (TX Matrix and TX Matrix Plus Router)

show pfe statistics error
<fpc *slot*>
<lcc *number*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display Packet Forwarding Engine error statistics.

Options

none—Display all Packet Forwarding Engine error statistics.

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 **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 statistics error fpc 1 lcc 1**
user@host> **show pfe statistics error fpc 9**

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 ***number*** with a value from **0** through **3**.

Required Privilege Level

admin

List of Sample Output

show pfe statistics error on page 601
show pfe statistics error lcc (Routing Matrix) on page 602
show pfe statistics error on page 603

show pfe statistics 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 error lcc (Routing Matrix)

```
user@host> show pfe statistics error lcc 2

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

```
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

Syntax

show pfe statistics ip
<icmp | options>

Syntax (TX Matrix and TX Matrix Plus Router)

show pfe statistics ip
<fpc *slot*>
<icmp | options>
<lcc *number*>

Release Information

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

Description

Display IPv4 Packet Forwarding Engine statistics.

Options

none—Display all IPv4 Packet Forward Engine statistics.

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 **lcc *number*** option (the recommended method), replace ***slot*** 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 **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 statistics ip fpc 1 lcc 1
user@host> show pfe statistics ip fpc 9
```

icmp—(Optional) Display Packet Forwarding Engine IP ICMP statistics.

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 ***number*** with a value from **0** through **3**.

options—(Optional) Display Packet Forwarding Engine IP options statistics.

Required Privilege Level

admin

List of Sample Output

show pfe statistics ip icmp on page 605
show pfe statistics ip options on page 606

Output Fields

Table 105 on page 605 lists the output fields for the **show pfe statistics ip** command. Output fields are listed in the approximate order in which they appear.

Table 105: show pfe statistics ip Output Fields

Field Name	Field Description
ICMP Statistics	ICMP statistics, including the following: • **requests**—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 **throttled icmps** field description.) • **network unreachables**—When route lookups fail, ICMP packets are sent to the source. These packets are ICMP TypeDestination Unreachable (3) and ICMP Code=Network Unreachable (0). • **ttl expired**—Number of notifications processed as a result of time-to-live (TTL) expiration packets. • **ttl captured**—Number of TTL expired packets sent by PFE interfaces to the Routing Engine. • **redirects**—Number of ICMP errors sent with Type=Redirect (5). • **mtu exceeded**—Number of ICMP errors sent with Type=Source Quench (4). • **icmp/option handoffs**—Number of packets that the PFE hardware requests the PFE software to process.
ICMP errors	ICMP errors, including the following: • **unknown unreachables**—Unknown code (greater than 16) found for an unknown unreachable type ICMP error. • **unsupported ICMP type**—Any ICMP type other than UNREACH, REDIRECT, TIME_EXCEED, and PARAM_PROB. • **unprocessed redirects**—When trying to find the neighbor to send redirects to, the PFE could not find the next-hop information. • **invalid ICMP type**—Any ICMP type other than UNREACH, REDIRECT, TIME_EXCEED, and PARAM_PROB. • **invalid protocol**—An incorrect protocol was detected by the ICMP processor. • **bad input interface if1**—The PFE software cannot map the interface index supplied by the chips to a proper data structure in the microkernel. • **throttled icmps**—Number of requests dropped because of rate limiting by the PFE. • **runts**—Number of packets for which the IP header length is less than the minimum length that is supported.
ICMP Discards	ICMP discard statistics, including the following: • **multicasts**—ICMP packets are not sent for link-layer multicast packets. These are counted as invalid source addresses (not a unicast address or all zeros). • **bad source addresses**—ICMP packets were received from an invalid source address (not a unicast address or all zeros). • **bad dest addresses**—ICMP packets were sent to an invalid destination address (not a unicast address or all zeros). • **IP fragments**—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. • **ICMP errors**—Number of ICMP error packets.

show pfe statistics ip icmp

```
user@host> show pfe statistics ip icmp
ICMP Statistics:
            0 requests
            0 network unreachables
            0 ttl expired
            0 ttl captured
            0 redirects
            0 mtu exceeded
```

```
           0 icmp/option handoffs
ICMP Errors:
           0 unknown unreachables
           0 unsupported ICMP type
           0 unprocessed redirects
           0 invalid ICMP type
           0 invalid protocol
           0 bad input interface
           0 throttled icmps
           0 runts
ICMP Discards:
           0 multicasts
           0 bad source addresses
           0 bad dest addresses
           0 IP fragments
           0 ICMP errors
```

show pfe statistics ip options

```
user@host> show pfe statistics ip options
IP Option Values:
  LSRR/SSRR forwarding enabled
IP Option Statistics:
           0 loose source routes
           0 strict source routes
           0 record routes
      889382 router alerts
           0 other options
IP Option Errors:
           0 runts
           2 bad versions
           0 runt header lengths
           0 giant header lengths
           0 null frames
           0 bad option lengths
           0 duplicate options
           0 bad option pointers
           0 source route frames dropped
         188 frames queued
        1126 frames dropped
```

show pfe statistics ip6

Syntax

show pfe statistics ip6
<icmp>

Syntax (TX Matrix and TX Matrix Plus Router)

show pfe statistics ip6
<fpc *slot*>
<icmp>
< lcc *number*>

Release Information

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

Description

Display Packet Forwarding Engine IPv6 statistics.

Options

none—Display all Packet Forwarding Engine IPv6 statistics.

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:

```
user@host> show pfe statistics ip6 fpc 1 lcc 1
user@host> show pfe statistics ip6 fpc 9
```

icmp—(Optional) Display Packet Forwarding Engine IP ICMP statistics.

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**.

Required Privilege Level

admin

List of Sample Output

show pfe statistics ip6 icmp on page 608
show pfe statistics ip6 lcc on page 609

Output Fields

Table 106 on page 608 lists the output fields for the **show pfe statistics ip6** command. Output fields are listed in the approximate order in which they appear.

Table 106: show pfe statistics ip6 Output Fields

Field Name	Field Description
ICMP6 Statistics	ICMP6 statistics, including the following: • **requests**—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 **throttled icmps** field description.) • **network unreachables**—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). • **ttl expired**—Number of notifications processed as a result of time-to-live (TTL) expiration packets. • **ttl captured**—Number of TTL expired packets sent by PFE interfaces to the Routing Engine. • **redirects**—Number of ICMP errors sent with Type=Redirect (5). • **mtu exceeded**—Number of ICMP errors sent with Type=Source Quench (4). • **icmp/option handoffs**—Number of packets that the PFE hardware requests the PFE software to process.
ICMP6 errors	ICMP6 errors, including the following: • **unknown unreachables**—Unknown code (greater than 16) found for an unknown unreachable type ICMP error. • **unsupported ICMP type**—Any ICMP type other than UNREACH, REDIRECT, TIME_EXCEED, and PARAM_PROB. • **unprocessed redirects**—When trying to find the neighbor to send redirects to, the PFE could not find the next-hop information. • **invalid ICMP type**—Any ICMP type other than UNREACH, REDIRECT, TIME_EXCEED, and PARAM_PROB. • **invalid protocol**—An incorrect protocol was detected by the ICMP processor. • **bad input interface if1**—The PFE software cannot map the interface index supplied by the chips to a proper data structure in the microkernel. • **throttled icmps**—Number of requests dropped because of rate limiting by the PFE. • **runts**—Number of packets for which the IP header length is less than the minimum length that is supported.
ICMP6 Discards	ICMP6 discard statistics, including the following: • **multicasts**—ICMP packets are not sent for link-layer multicast packets. These are counted as invalid source addresses (not a unicast address or all zeros). • **bad source addresses**—ICMP packets were received from an invalid source address (not a unicast address or all zeros). • **bad dest addresses**—ICMP packets were sent to an invalid destination address (not a unicast address or all zeros). • **IP fragments**—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. • **ICMP errors**—Number of ICMP error packets.

show pfe statistics ip6 icmp

```
user@host> show pfe statistics ip6 icmp
ICMP6 Statistics:
            0 requests
            0 network unreachables
            0 ttl expired
            0 ttl captured
            0 redirects
            0 mtu exceeded
```

```
           0 icmp/option handoffs
ICMP6 Errors:
           0 unknown unreachables
           0 unsupported ICMP type
           0 unprocessed redirects
           0 invalid ICMP type
           0 invalid protocol
           0 bad input interface
           0 throttled icmps
           0 runts
ICMP6 Discards:
           0 multicasts
           0 bad source addresses
           0 bad dest addresses
           0 IP fragments
           0 ICMP errors
```

show pfe statistics ip6 lcc

```
user@host> show pfe statistics ip6 lcc 0 fpc 0
sfc0-re0:
--------------------------------------------------------------------------
ICMP Statistics:
           0 requests
           0 network unreachables
           0 ttl expired
           0 ttl captured
           0 redirects
           0 mtu exceeded
           0 icmp/option handoffs

ICMP Errors:
           0 unknown unreachables
           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

Syntax

show pfe statistics notification

Syntax (TX Matrix and TX Matrix Plus Router)

show pfe statistics notification
<fpc *slot*>
< lcc *number*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display Packet Forwarding Engine notification statistics.

Options

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.

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 **lcc *number*** option (the recommended method), replace *slot* 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 **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 statistics notification fpc 1 lcc 1
user@host> show pfe statistics notification fpc 9
```

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 ***number*** with a value from **0** through **3**.

Required Privilege Level

admin

List of Sample Output

show pfe statistics notification on page 610
show pfe statistics notification lcc (Routing Matrix) on page 611

show pfe statistics notification

```
user@host> show pfe statistics notification
PFE Notification statistics:
       2453 parsed
       0 aged
       0 corrupt
       0 illegal
       0 sample
       0 giants
       0 transit options/ttl-exceeded

PFE Notification Type statistics:
    Parsed       Input      Failed     Ignored
```

```
    Illegal           0           0           0           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 notification lcc (Routing Matrix)

```
user@host> show pfe statistics notification lcc 0

Slot 0

PFE Notification statistics:
       1252 parsed
          0 aged
          0 corrupt
          0 illegal
          0 sample
          0 giants
          0 transit options/ttl-exceeded
          0 transit options/ttl-exceeded errors
          0 svc options sent to ASP
          0 svc options sent to RE
          0 post svc options sent out
        121 options or ttl expired (not RE-destined)

PFE Notification Type statistics:
               Parsed       Input      Failed     Ignored
  Illegal           0           0           0           0
  Unclass         695         695           0           0
   Option          30          30           0           0
 Next-Hop         527         527           0           0
  Discard           0           0           0           0
   Sample           0           0           0           0
 Redirect           0           0           0           0
 DontFrag           0           0           0           0
     CfDF           0           0           0           0
   Poison           0           0           0           0

Slot 1

PFE Notification statistics:
          0 parsed
          0 aged
...
```

show pfe statistics pio

Syntax

show pfe statistics pio

Syntax (TX Matrix Router)

show pfe statistics pio
<fpc *slot*>
< lcc *number*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display Packet Forwarding Engine polled I/O (PIO) statistics.

Options

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.

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 **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 statistics pio fpc 1 lcc 1**
user@host> **show pfe statistics pio fpc 9**

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 ***number*** with a value from **0** through **3**.

Required Privilege Level

admin

List of Sample Output

show pfe statistics pio on page 612
show pfe statistics pio lcc (Routing Matrix) on page 612

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 lcc (Routing Matrix)

```
user@host> show pfe statistics pio lcc 0
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

Syntax

show pfe statistics traffic
<fpc *slot*>

Syntax (TX Matrix and TX Matrix Plus Router)

show pfe statistics traffic
<fpc *slot*>
< lcc *number*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display Packet Forwarding Engine traffic statistics.

Options

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

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 **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 statistics traffic fpc 1 lcc 1
user@host> show pfe statistics traffic fpc 9
```

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 ***number*** with a value from **0** through **3**.

Required Privilege Level

admin

List of Sample Output

show pfe statistics traffic on page 615

Output Fields

Table 107 on page 614 lists the output fields for the **show pfe statistics traffic** command. Output fields are listed in the approximate order in which they appear.

Table 107: show pfe statistics traffic Output Fields

Field Name	Field Description
Packet Forwarding Engine Traffic statistics	Information about Packet Forwarding Engine traffic: • **Input Packets**—Number and rate of input packets. • **Output Packets**—Number and rate of output packets.

Table 107: show pfe statistics traffic Output Fields *(continued)*

Field Name	Field Description
Packet Forwarding Engine Local Traffic statistics	Information about Packet Forwarding Engine local traffic: • **Local packets input**—Number of local input packets. • **Local packets output**—Number of local output packets. • **Software input high drops**—Number of software input high-priority drops. • **Software input medium drops**—Number of software input medium-priority drops. • **Software input low drops**—Number of software input low-priority drops. • **Software output drops**—Number of software output drops. • **Hardware input drops**—Number of hardware input drops.
Packet Forwarding Engine Local Protocol statistics	Information about the Packet Forwarding Engine Local Protocol: • **HDLC keepalives**—Number of HDLC keepalive packets. • **ATM OAM**—Number of Asynchronous Transfer Mode (ATM) Operation, Administration, and Maintenance (OAM) packets. • **Frame Relay LMI**—Number of Frame Relay Local Management Interface (LMI) packets. • **PPP LCP/NCP**—Number of Point-to-Point Protocol (PPP) Link Control Protocol (LCP) or Network Control Protocol (NCP) packets. • **OSPF hello**—Number of Open Shortest Path First (OSPF) hello packets. • **OSPF3 hello**—Number of Open Shortest Path First version 3 (OSPFv3) hello packets. • **RSVP hello**—Number of Reservation Setup Protocol (RSVP) hello packets. • **LDP hello**—Number of Label Distribution Protocol (LDP) hello packets. • **BFD**—Number of Bidirectional Forwarding Detection Protocol (BFD) hello packets. • **IS-IS IIH**—Number of Intermediate System-to-Intermediate System Hello (IIH) packets. • **LACP**—Number of Link Aggregation Control Protocol (LACP) packets. • **ARP**—Number of Address Resolution Protocol (ARP) packets. • **ETHER OAM**—Number of Ethernet Operations, Administration, and Management (OAM) packets. • **Unknown**—Number of unknown packets not matching any of the packet types listed above.
Packet Forwarding Engine Hardware Discard statistics	Information about Packet Forwarding Engine hardware discards: • **Timeout**—Number of packets discarded because of timeouts. • **Truncated key**—Number of packets discarded because of truncated keys. • **Bits to test**—Number of bits to test. • **Data error**—Number of packets discarded because of data errors. • **Stack underflow**—Number of packets discarded because of stack underflows. • **Stack overflow**—Number of packets discarded because of stack overflows. • **Normal discard**—Number of packets discarded because of discard routes. • **Extended discard**—Number of packets discarded because of illegal next hops. • **Invalid interface**—Number of packets discarded because of invalid incoming interfaces. • **Info cell drops**—Number of information cell drops. • **Fabric drops**—Number of fabric drops.

show pfe statistics traffic

```
user@host> show pfe statistics traffic
Packet Forwarding Engine traffic statistics:
    Input  packets:              102682                    5 pps
```

```
    Output packets:                58033                    4 pps
Packet Forwarding Engine local traffic statistics:
    Local packets input                :                44628
    Local packets output               :                46146
    Software input control plane drops  :                   0
    Software input high drops          :                    0
    Software input medium drops        :                    0
    Software input low drops           :                    0
    Software output drops              :                    0
    Hardware input drops               :                    0
Packet Forwarding Engine local protocol statistics:
    HDLC keepalives            :                    0
    ATM OAM                    :                    0
    Frame Relay LMI            :                    0
    PPP LCP/NCP                :                 5597
    OSPF hello                 :                 3195
    OSPF3 hello                :                    0
    RSVP hello                 :                    0
    LDP hello                  :                 7478
    BFD                        :                    0
    IS-IS IIH                  :                    0
    LACP                       :                    0
    ARP                        :                    0
    ETHER OAM                  :                    0
    Unknown                    :                    8
Packet Forwarding Engine hardware discard statistics:
    Timeout                    :                    0
    Truncated key              :                    0
    Bits to test               :                    0
    Data error                 :                    0
    Stack underflow            :                    0
    Stack overflow             :                    0
    Normal discard             :                    0
    Extended discard           :                    0
    Invalid interface          :                    0
    Info cell drops            :                   39
    Fabric drops               :                    0
Packet Forwarding Engine Input IPv4 Header Checksum Error and Output MTU Error
statistics:
    Input Checksum             :                    0
    Output MTU                 :                    0
```

show pfe statistics traffic protocol bfd

Syntax

show pfe statistics traffic protocol bfd
<fpc *slot*>

Syntax (TX Matrix and TX Matrix Plus Router)

show pfe statistics traffic protocol bfd
<fpc *slot*>
<lcc *number*>

Release Information

Command introduced in Junos OS Release 8.4.

Description

Display Packet Forwarding Engine traffic protocol statistics for Bidirectional Forwarding Detection hello packets.

Options

None—Display all Packet Forwarding Engine traffic protocol BFD statistics.

fpc *slot*—(M320 and MX960 routers, and T Series routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot.

user@host> **show pfe statistics traffic protocol bfd fpc 1**

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 ***number*** with a value from **0** through **3**.

user@host> **show pfe statistics traffic protocol bfd fpc 1 lcc 1**

Required Privilege Level

admin

List of Sample Output

show pfe statistics traffic protocol bfd on page 618

Output Fields

Table 108 on page 617 lists the output fields for the **show pfe statistics traffic protocol bfd** command. Output fields are listed in the approximate order in which they appear.

Table 108: 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 108: 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.

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

Syntax

show pfe statistics traffic protocol cfm
<fpc *slot* >

Syntax (TX Matrix and TX Matrix Plus Router)

show pfe statistics traffic protocol cfm
<fpc *slot* >
<lcc *number*>

Release Information

Command introduced in Junos OS Release 8.5.

Description

Display Packet Forwarding Engine traffic protocol statistics for connectivity fault management (CFM).

Options

None—Display all PFE traffic protocol CFM statistics.

fpc *slot*—(M320 and MX960 routers, and T Series routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot.

user@host> **show pfe statistics traffic protocol cfm fpc 1**

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 ***number*** with a value from **0** through **3**.

user@host> **show pfe statistics traffic protocol cfm fpc 1 lcc 1**

Required Privilege Level

admin

List of Sample Output

show pfe statistics traffic protocol cfm on page 620

Output Fields

Table 109 on page 619 lists the output fields for the **show pfe statistics traffic protocol cfm** command. Output fields are listed in the approximate order in which they appear.

Table 109: 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 109: 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.

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

Syntax

show pfe statistics traffic protocol lfm
<fpc *slot* >

Syntax (TX Matrix and TX Matrix Plus Router)

show pfe statistics traffic protocol lfm
<fpc *slot*>
<lcc *number*>

Release Information

Command introduced in Junos OS Release 8.5

Description

Display Packet Forwarding Engine traffic protocol link fault management (LFM) statistics.

Options

none—Display all PFE traffic protocol LFM statistics.

fpc *slot*—(M320 and MX960 routers, and T Series routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot.

user@host> **show pfe statistics traffic protocol lfm fpc 1**

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 ***number*** with a value from **0** through **3**.

user@host> **show pfe statistics traffic protocol lfm fpc 1 lcc 1**

Required Privilege Level

admin

List of Sample Output

show pfe statistics traffic protocol lfm on page 622

Output Fields

Table 110 on page 621 lists the output fields for the **show pfe statistics traffic protocol lfm** command. Output fields are listed in the approximate order in which they appear.

Table 110: 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.

show pfe statistics traffic protocol lfm

```
user@host> show pfe statistics 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

Syntax

show pfe terse

Syntax (TX Matrix and TX Matrix Plus Router)

show pfe terse
<lcc *number* | scc>

Release Information

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

Description

Display Packet Forwarding Engine status information.

Options

none—Display brief information about the Packet Forwarding Engine.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

scc—(TX Matrix routers only) (Optional) Display Packet Forwarding Engine information for the TX Matrix router (or switch-card chassis).

sfc—(TX Matrix Plus routers only) (Optional) Display Packet Forwarding Engine information for the TX Matrix Plus router (or switch-fabric chassis).

Required Privilege Level

admin

List of Sample Output

show pfe terse (TX Matrix Router) on page 623
show pfe terse (TX Matrix Plus Router) on page 623
show pfe terse sfc (TX Matrix Plus Router) on page 624

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 626

Output Fields

Table 111 on page 625 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 111: show pfe resource usage memory Output Fields

Field Name	Field Description
Resource Name	Name of the resource, including: • **FPC** • **Pfe**
Free	Free L-chip SRAM memory.
Inuse	L-chip SRAM memory that is currently in use.
Total	Total of **Free** and **Inuse** memory.
%Use	Percentage of **Total** L-chip memory that is in use.

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
```

```
Resouce 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
```

CHAPTER 11

Remote System Access Operational Mode Commands

Table 112 on page 629 summarizes the command-line interface (CLI) commands you can use to access remote systems. Commands are listed in alphabetical order.

Table 112: Remote System Access Operational Mode Commands

Task	Command
Open an SSH connection to a remote system.	**ssh**
Open a telnet session to a remote system.	**telnet**

NOTE: To configure SSH and Telnet parameters, see the *Junos OS System Basics Configuration Guide*.

ssh

Syntax

ssh *host*
<bypass-routing>
<inet | inet6>
<interface *interface-name*>
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>
<source *address*>
<v1 | v2>

Syntax (EX Series Switch)

ssh *host*
<bypass-routing>
<inet | inet6>
<interface *interface-name*>
<routing-instance *routing-instance-name*>
<source *address*>
<v1 | v2>

Release Information

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

Description

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 **ssh** 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:

ssh *address* '*cli-command1* ; *cli-command2* '

Options

host—Name or address of the remote system.

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.

inet | inet6—(Optional) Create an IPv4 or IPv6 connection, respectively.

interface *interface-name*—(Optional) Interface name for the SSH session. (This option does not work when **default-address-selection** is configured at the **[edit system]** hierarchy level, because this configuration uses the loopback interface as the source address for all locally generated IP packets.)

logical-system *logical-system-name*—(Optional) Name of a particular logical system for the SSH attempt.

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

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

List of Sample Output

ssh on page 631

Output Fields

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

ssh

```
user@host> 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

Syntax

telnet *host*
<8bit>
<bypass-routing>
<inet | inet6>
<interface *interface-name*>
<logical-system *logical-system-name*>
<no-resolve>
<port *port-number*>
<routing-instance *routing-instance-name*>
<source *source-address*>

Syntax (EX Series Switch)

telnet *host*
<8bit>
<bypass-routing>
<inet | inet6>
<interface *interface-name*>
<no-resolve>
<port *port-number*>
<routing-instance *routing-instance-name*>
<source *source-address*>

Release Information

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

Description

Open a telnet session to a remote system. Type Ctrl+] to escape from the telnet session to the telnet command level, and then type **quit** to exit from telnet.

Options

host—Name or address of the remote system.

8bit—(Optional) Use an 8-bit data path.

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.

inet | inet6—(Optional) Open an IPv4 or IPv6 session, respectively.

interface *interface-name*—(Optional) Interface name for the telnet session. (This option does not work when **default-address-selection** is configured at the **[edit system]** hierarchy level, because this configuration uses the loopback interface as the source address for all locally generated IP packets.)

logical-system *logical-system-name*—(Optional) Name of a particular logical system for the telnet attempt.

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

port *port-number*—(Optional) Port number or service name on the remote system.

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 633

Output Fields

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

telnet

```
user@host> telnet 192.154.1.254
Trying 192.154.169.254...
Connected to level5.company.net.
Escape character is '^]'.
ttypa
login:
```

CHAPTER 12

Simple Network Management Protocol Operational Mode Commands

Table 113 on page 635 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 113: SNMP Operational Commands

Task	Command
Clear SNMP statistics.	**clear snmp statistics**
Spoof (mimic) the behavior of an SNMP trap.	**request snmp spoof-trap**
Display information about health monitor alarms.	**show snmp health-monitor**
Display statistics about SNMP informs.	**show snmp inform-statistics**
Display local Management Information Base (MIB) object values through the command-line interface (CLI).	**show snmp mib**
Display information about Remote Monitoring (RMON) alarms and events.	**show snmp rmon**
Display statistics about SNMP packets sent and received.	**show snmp statistics**
Display SNMP version 3 statistics.	**show snmp v3**

NOTE: For information about how to configure SNMP, see the *Junos OS Network Management Configuration Guide*.

clear snmp statistics

Syntax clear snmp statistics

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

Description Clear Simple Network Management Protocol (SNMP) statistics.

Options This command has no options.

Required Privilege Level clear

Related Documentation

- **show snmp statistics on page 659**

List of Sample Output **clear snmp statistics on page 636**

Output Fields See **show snmp statistics** for an explanation of output fields.

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

Syntax

request snmp spoof-trap
<*trap*> variable-bindings <*object*> <*instance*> <*value*>

Release Information

Command introduced in Junos OS Release 8.2.
Command introduced in Junos OS Release 9.0 for EX Series switches.

Description

Spoof (mimic) the behavior of a Simple Network Management Protocol (SNMP) trap.

Options

<*trap*>—Name of the trap to spoof.

variable-bindings <*object*> <*instance*> <*value*>—(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, **ifIndex[14] = 14**). Enclose the list of variable bindings in quotation marks (" ") and use a comma to separate each object name, instance, and value definition (for example, **variable-bindings "ifIndex[14] = 14, ifAdminStatus[14] = 1, ifOperStatus[14] = 2"**). 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.

<*dummy name*>—A dummy trap name to display the list of available traps.

Question mark (**?**)—Question mark**?** to display possible completions.

Required Privilege Level

request

List of Sample Output

request snmp spoof-trap (with Variable Bindings) on page 638
request snmp spoof-trap (Illegal Trap Name) on page 638
request snmp spoof-trap (Question Mark ?) on page 642

request snmp spoof-trap (with Variable Bindings)

```
user@host> request snmp spoof-trap linkUp variable-bindings "ifIndex[14] = 14, ifAdminStatus[14]
= 1, ifOperStatus[14] = 2"
Spoof trap request result: trap sent successfully
```

request snmp spoof-trap (Illegal Trap Name)

```
user@host> request snmp spoof-trap xx
Spoof trap request result: trap not found

Allowed Traps:
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
dlswTrapTConnDown
dlswTrapTConnPartnerReject
dlswTrapTConnProtViolation
dlswTrapTConnUp
dsx1LineStatusChange
dsx3LineStatusChange
entConfigChange
fallingAlarm
frDLCIStatusChange
ggsnTrapChanged
ggsnTrapCleared
ggsnTrapNew
gmplsTunnelDown
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
jnxSecAccessdsRateLimitCrossed
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
  mplsNumVrfSecIllglLblThrshExcd
  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

Syntax

show snmp health-monitor
<alarms <detail>> | <logs>

Release Information

Command introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.0 for EX Series switches.

Description

Display information about Simple Network Management Protocol (SNMP) health monitor alarms and logs.

Options

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.

Required Privilege Level

view

List of Sample Output

show snmp health-monitor on page 646
show snmp health-monitor alarms detail on page 648

Output Fields

Table 114 on page 644 describes the output fields for the **show snmp health-monitor** command. Output fields are listed in the approximate order in which they appear.

Table 114: show snmp health-monitor Output Fields

Field Name	Field Description	Level of Output
Alarm Index	Alarm identifier.	All levels
Variable description	Description of the health monitor object instance being monitored.	All levels
Variable name	Name of the health monitor object instance being monitored.	All levels
Value	Current value of the monitored variable in the most recent sample interval.	All levels

Table 114: show snmp health-monitor Output Fields *(continued)*

Field Name	Field Description	Level of Output

State	State of the alarm or event entry:
	• Alarms:
	  • **active**—Entry is fully configured and activated.
	  • **falling threshold crossed**—Value of the variable has crossed the lower threshold limit.
	  • **rising threshold crossed**—Value of the variable has crossed the upper threshold limit.
	  • **under creation**—Entry is being configured and is not yet activated.
	  • **startup**—Alarm is waiting for the first sample of the monitored variable.
	  • **object not available**—Monitored variable of that type is not available to the health monitor agent.
	  • **instance not available**—Monitored variable's instance is not available to the health monitor agent.
	  • **object type invalid**—Monitored variable is not a numeric value.
	  • **object processing errored**—An error occurred when the monitored variable was processed.
	  • **unknown**—State is not one of the above.
		All levels

Variable OID	Object ID to which the variable name is resolved. The format is **x.x.x.x**.	**detail**
Sample type	Method of sampling the monitored variable and calculating the value to compare against the upper and lower thresholds. It can have the value of **absolute value** or **delta value**.	**detail**

Startup alarm	Alarm that might be sent when this entry is first activated, depending on the following criteria:
	• Alarm is sent when one of the following situations exists:
	  • Value of the alarm is above or equal to the rising threshold and the startup type is either **rising alarm** or **rising or falling alarm.**
	  • Value of the alarm is below or equal to the falling threshold and the startup type is either **falling alarm** or **rising or falling alarm**.
	• Alarm is *not* sent when one of the following situations exists:
	  • Value of the alarm is above or equal to the rising threshold and the startup type is **falling alarm**.
	  • Value of the alarm is below or equal to the falling threshold and the startup type is **rising alarm**.
	  • Value of the alarm is between the thresholds.
		detail

Owner	Name of the entry configured by the user. If the entry was created through the CLI, the owner has **monitor** prepended to it.	**detail**
Creator	Mechanism by which the entry was configured (**Health Monitor**).	**detail**
Sample interval	Time period between samples (in seconds).	**detail**
Rising threshold	Upper limit threshold value as a percentage of the maximum possible value.	**detail**

Table 114: 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**

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 health-monitor alarms detail

```
user@host> show snmp 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                        sysApplElmtRunCPU.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: sysApplElmtRunCPU.3.1.1
    Instance Description: Init daemon
    Instance Value: 0
    Instance State: active

    Instance Name: sysApplElmtRunCPU.3.2.2786
    Instance Description: Chassis daemon
    Instance Value: 50
    Instance State: active

    Instance Name: sysApplElmtRunCPU.3.3.2938
    Instance Description: Firewall daemon
    Instance Value: 0
    Instance State: active

    Instance Name: sysApplElmtRunCPU.3.4.2942
    Instance Description: Interface daemon
    Instance Value: 5
    Instance State: active

    Instance Name: sysApplElmtRunCPU.3.7.7332
    Instance Description: SNMP daemon
    Instance Value: 11
    Instance State: active

    Instance Name: sysApplElmtRunCPU.3.9.2914
    Instance Description: MIB2 daemon
    Instance Value: 42
    Instance State: active

    Instance Name: sysApplElmtRunCPU.3.12.2916
    Instance Description: Sonet APS daemon
    Instance Value: 0
```

```
    Instance State: active

    Instance Name: sysApplElmtRunCPU.3.13.2917
    Instance Description: VRRP daemon
    Instance Value: 0
    Instance State: active

    Instance Name: sysApplElmtRunCPU.3.14.2787
    Instance Description: Alarm daemon
    Instance Value: 3
    Instance State: active

    Instance Name: sysApplElmtRunCPU.3.15.2940
    Instance Description: PFE daemon
    Instance Value: 0
    Instance State: active

    Instance Name: sysApplElmtRunCPU.3.16.2788
    Instance Description: CRAFT daemon
    Instance Value: 0
    Instance State: active

    Instance Name: sysApplElmtRunCPU.3.17.2918
    Instance Description: Traffic sampling control daemon
---(more 23%)---
```

show snmp inform-statistics

Syntax show snmp inform-statistics

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

Description Display information about Simple Network Management Protocol (SNMP) inform requests.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show snmp inform-statistics on page 651**

Output Fields Table 115 on page 651 describes the output fields for the **show snmp inform-statistics** command. Output fields are listed in the approximate order in which they appear.

Table 115: show snmp inform-statistics Output Fields

Field Name	Field Description
Target Name	Name of the device configured to receive and respond to SNMP informs.
Address	IP address of the target device.
Sent	Number of informs sent to the target device and acknowledged by the target device.
Pending	Number of informs held in memory pending a response from the target device.
Discarded	Number of informs discarded after the specified number of retransmissions to the target device were attempted.
Timeouts	Number of informs that did not receive an acknowledgement from the target device within the timeout specified.
Probe Failures	Connection failures that occurred (for example, when the target server returned invalid content or you incorrectly configured the target address).

show snmp inform-statistics

```
user@host> show snmp 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

Syntax show snmp mib (get | get-next | walk) (ascii | decimal) *object-id* .

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
ascii and **decimal** options introduced in Junos OS Release 9.6.
ascii and **decimal** options introduced in Junos OS Release 9.6 for EX Series switches.

Description Display local Simple Network Management Protocol (SNMP) Management Information Base (MIB) object values.

Options get—Retrieve and display one or more SNMP object values.

get-next—Retrieve and display the next SNMP object values.

walk—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.

ascii—Display the SNMP object's string indices as an ascii-key representation.

decimal—Display the SNMP object values in the decimal (default) format. The **decimal** option is the default option for this command. Therefore, issuing the **show snmp mib (get | get-next | walk) decimal object-id** and the **show snmp mib (get | get-next | walk) object-id** commands display the same output.

object-id—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 **interfaces**). When entering multiple objects, enclose the objects in quotation marks.

Required Privilege Level snmp—To view this statement in the configuration.

List of Sample Output
show snmp mib get on page 654
show snmp mib get (Multiple Objects) on page 654
show snmp mib get-next on page 654
show snmp mib get-next (Specify an OID) on page 654
show snmp mib walk on page 654
show snmp mib walk decimal on page 654
show snmp mib walk (ASCII) on page 654
show snmp mib walk (Multiple Indices) on page 654
show snmp mib walk decimal (Multiple Indices) on page 654

Output Fields Table 116 on page 654 describes the output fields for the **show snmp mib** command. Output fields are listed in the approximate order in which they appear.

Table 116: show snmp mib Output Fields

Field Name	Field Description
name	Object name and numeric instance value.
object value	Object value. The Junos OS translates OIDs into the corresponding object names.

show snmp mib get

```
user@host> show snmp mib get sysObjectID.0
sysObjectID.0 = jnxProductNameM20
```

show snmp mib get (Multiple Objects)

```
user@host> show snmp mib get ?sysObjectID.0 sysUpTime.0?
sysObjectID.0 = jnxProductNameM20
sysUpTime.0 = 1640992
```

show snmp mib get-next

```
user@host> show snmp mib get-next jnxMibs
jnxBoxClass.0 = jnxProductLineM20.0
```

show snmp mib get-next (Specify an OID)

```
user@host> show snmp mib get-next 1.3.6.1
sysDescr.0    = Juniper Networks, Inc. m20 internet router, kernel
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 decimal

```
user@host show snmp mib walk decimal jnxUtilData
jnxUtilCounter32Value.102.114.101.100 = 100
```

show snmp mib walk (ASCII)

```
show snmp mib walk ascii jnxUtilData
jnxUtilCounter32Value."fred" = 100
```

show snmp mib walk (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 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

Syntax

show snmp rmon
<alarms <brief | detail> | events <brief | detail> | logs>

Release Information

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

Description

Display information about Simple Network Management Protocol (SNMP) Remote Monitoring (RMON) alarms and events.

Options

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.

Required Privilege Level

view

List of Sample Output

show snmp rmon on page 657
show snmp rmon alarms detail on page 657
show snmp rmon events detail on page 658

Output Fields

Table 117 on page 655 describes the output fields for the **show snmp rmon** command. Output fields are listed in the approximate order in which they appear.

Table 117: show snmp rmon Output Fields

Field Name	Field Description	Level of Output
Alarm Index	Alarm identifier.	All levels

Table 117: show snmp rmon Output Fields *(continued)*

Field Name	Field Description	Level of Output
State	State of the alarm or event entry: Alarms: • **active**—Entry is fully configured and activated. • **falling threshold crossed**—Value of the variable has crossed the lower threshold limit. • **rising threshold crossed**—Value of the variable has crossed the upper threshold limit. • **under creation**—Entry is being configured and is not yet activated. • **startup**—Alarm is waiting for the first sample of the monitored variable. • **object not available**—Monitored variable of that type is not available to the SNMP agent. • **instance not available**—Monitored variable's instance is not available to the SNMP agent. • **object type invalid**—Monitored variable is not a numeric value. • **object processing errored**—An error occurred when the monitored variable was processed. • **unknown**—State is not one of the above. Events: • **active**—Entry has been fully configured and activated. • **under creation**—Entry is being configured and is not yet activated. • **unknown**—State is not one of the above.	All levels
Variable name	Name of the SNMP object instance being monitored.	All levels
Event Index	Event identifier.	All levels
Type	Type of notification made when an event is triggered. It can be one of the following: • **log**—A system log message is generated and an entry is made to the log table. • **snmptrap**—An SNMP trap is sent to the configured destination. • **log and trap**—A system log message is generated, an entry is made to the log table, and an SNMP trap is sent to the configured destination. • **none**—Neither log nor trap will be sent.	**detail**
Last Event	Date and time of the last event. It has the format *yyyy-mm-dd hh:mm:ss timezone*.	**brief**
Community	Identifies the trap group used for sending the SNMP trap.	**detail**
Variable OID	Object ID to which the variable name is resolved. The format is **x.x.x.x**.	**detail**
Sample type	Method of sampling the monitored variable and calculating the value to compare against the upper and lower thresholds. It can have the value of **absolute value** or **delta value**.	**detail**

Table 117: show snmp rmon Output Fields *(continued)*

Field Name	Field Description	Level of Output

Startup alarm	Alarm that might be sent when this entry is first activated, depending on the following criteria:
	• Alarm is sent when one of the following situations exists:
	  ◦ Value of the alarm is above or equal to the rising threshold and the startup type is either **rising alarm** or **rising or falling alarm.**
	  ◦ Value of the alarm is below or equal to the falling threshold and the startup type is either **falling alarm** or **rising or falling alarm**.
	• Alarm is *not* sent when one of the following situations exists:
	  ◦ Value of the alarm is above or equal to the rising threshold and the startup type is **falling alarm**.
	  ◦ Value of the alarm is below or equal to the falling threshold and the startup type is **rising alarm**.
	  ◦ Value of the alarm is between the thresholds.
		detail

Owner	Name of the entry configured by the user. If the entry was created through the CLI, the owner has **monitor** prepended to it.	**detail**
Creator	Mechanism by which the entry was configured (**CLI** or **SNMP**).	**detail**
Sample interval	Time period between samples (in seconds).	**detail**
Rising threshold	Upper limit threshold value configured by the user.	**detail**
Falling threshold	Lower limit threshold value configured by the user.	**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**
Current value	Current value of the monitored variable in the most recent sample interval.	**detail**

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 alarms detail

```
user@host> show snmp rmon 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

Syntax show snmp statistics

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

Description Display statistics about Simple Network Management Protocol (SNMP) packets sent and received by the router or switch.

Options This command has no options.

Required Privilege Level view

Related Documentation
- **clear snmp statistics on page 636**

List of Sample Output **show snmp statistics on page 662**

Output Fields Table 118 on page 659 describes the output fields for the **show snmp statistics** command. Output fields are listed in the approximate order in which they appear.

Table 118: show snmp statistics Output Fields

Field Name	Field Description
Input	Information about received packets: • **Packets(snmpInPkts)**—Total number of messages delivered to the SNMP entity from the transport service. • **Bad versions—(snmpInBadVersions**) Total number of messages delivered to the SNMP entity that were for an unsupported SNMP version. • **Bad community names—(snmpInBadCommunityNames)** Total number of messages delivered to the SNMP entity that used an SNMP community name not known to the entity. • **Bad community uses—(snmpInBadCommunityUses)** 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. • **ASN parse errors—(snmpInASNParseErrs)** Total number of ASN.1 or BER errors encountered by the SNMP entity when decoding received SNMP messages. • **Too bigs—(snmpInTooBigs)** Total number of SNMP PDUs delivered to the SNMP entity with an error status field of **tooBig**. • **No such names—(snmpInNoSuchNames)**.Total number of SNMP PDUs delivered to the SNMP entity with an error status field of **noSuchName**. • **Bad values—(snmpInBadValues)** Total number of SNMP PDUs delivered to the SNMP entity with an error status field of **badValue**. • **Read onlys—(snmpInReadOnlys)** Total number of valid SNMP PDUs delivered to the SNMP entity with an error status field of **readOnly**. Only incorrect implementations of SNMP generate this error.

Table 118: show snmp statistics Output Fields *(continued)*

Field Name	Field Description
Input (continued)	• **General errors—(snmpInGenErrs)** Total number of SNMP PDUs delivered to the SNMP entity with an error status field of**genErr**. • **Total requests varbinds—(snmpInTotalReqVars)** Total number of MIB objects retrieved successfully by the SNMP entity as a result of receiving valid SNMP **GetRequest** and **GetNext** PDUs. • **Total set varbinds—(snmpInSetVars)** Total number of MIB objects modified successfully by the SNMP entity as a result of receiving valid SNMP **SetRequest** PDUs. • **Get requests—(snmpInGetRequests)** Total number of SNMP**GetRequest** PDUs that have been accepted and processed by the SNMP entity. • **Get nexts—(snmpInGetNexts)** Total number of SNMP **GetNext** PDUs that have been accepted and processed by the SNMP entity. • **Set requests—(snmpInSetRequests)** Total number of SNMP **SetRequest** PDUs that have been accepted and processed by the SNMP entity. • **Get responses—(snmpInGetResponses)** Total number of SNMP **GetResponse** PDUs that have been accepted and processed by the SNMP entity. • **Traps—(snmpInTraps)** Total number of SNMP traps generated by the SNMP entity. • **Silent drops—(snmpSilentDrops)** Total number of **GetRequest**, **GetNextRequest**, **GetBulkRequest**, **SetRequests**, and **InformRequest** 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. • **Proxy drops.—(snmpProxyDrops)** Total number of **GetRequest**, **GetNextRequest**, **GetBulkRequest**, **SetRequests**, and **InformRequest** 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. • **Commit pending drops**—Number of SNMP packets for**Set** requests dropped because of a previous pending SNMP **Set** request on the committed configuration. • **Throttle drops**—Number of SNMP packets for any requests dropped reaching the throttle limit.

Table 118: show snmp statistics Output Fields *(continued)*

Field Name	Field Description
V3 Input	Information about SNMP version 3 packets: • **Unknown security models—(snmpUnknownSecurityModels)** 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. • **Invalid messages—(snmpInvalidMsgs)** Number of packets received by the SNMP engine that were dropped because there were invalid or inconsistent components in the SNMP message. • **Unknown pdu handlers—(snmpUnknownPDUHandlers)** 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. • **Unavailable contexts—(snmpUnavailableContexts)** Number of requests received for a context that is known to the SNMP engine, but is currently unavailable. • **Unknown contexts—(snmpUnknownContexts)** Total number of requests received for a context that is unknown to the SNMP engine. • **Unsupported security levels—(usmStatsUnsupportedSecLevels)** Total number of packets received by the SNMP engine which were dropped because they requested a security level unknown to the SNMP engine (or otherwise unavailable). • **Not in time windows—(usmStatsNotInTimeWindows)** Total number of packets received by the SNMP engine that were dropped because they appeared outside of the authoritative SNMP engine's window. • **Unknown user names—(usmStatsUnknownUserNames)** 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. • **Unknown engine ids—(usmStatsUnknownEngineIDs)** 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. • **Wrong digests—(usmStatsWrongDigests)** Total number of packets received by the SNMP engine that were dropped because they didn't contain the expected digest value. • **Decryption errors—(usmStatsDecryptionErrors)** Total number of packets received by the SNMP engine that were dropped because they could not be decrypted.

Table 118: show snmp statistics Output Fields *(continued)*

Field Name	Field Description
Output	Information about transmitted packets: • **Packets—(snmpOutPkts)** Total number of messages passed from the SNMP entity to the transport service. • **Too bigs—(snmpOutTooBigs)** Total number of SNMP PDUs generated by the SNMP entity with an error status field of **tooBig**. • **No such names—(snmpOutNoSuchNames)** Total number of SNMP PDUs delivered to the SNMP entity with an error status field of **noSuchName**. • **Bad values—(snmpOutBadValues)** Total number of SNMP PDUs generated by the SNMP entity with an error status field of **badValue**. • **General errors—(snmpOutGenErrs)** Total number of SNMP PDUs generated the SNMP entity with an error status field of **genErr**. • **Get requests—(snmpOutGetRequests)** Total number of SNMP **GetRequest** PDUs generated by the SNMP entity. • **Get nexts—(snmpOutGetNexts)** Total number of SNMP **GetNext** PDUs generated by the SNMP entity. • **Set requests—(snmpOutSetRequests)** Total number of SNMP **SetRequest** PDUs generated by the SNMP entity. • **Get responses—(snmpOutGetResponses)** Total number of SNMP **GetResponse** PDUs generated by the SNMP entity. • **Traps—(snmpOutTraps)** Total number of SNMP traps generated by the SNMP entity.

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 bigs: 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 bigs: 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

Syntax

show snmp v3
<access <brief | detail> | community | general | groups | notify <filter> | target <address | parameters> | users>

Release Information

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

Description

Display the Simple Network Management Protocol version 3 (SNMPv3) operating configuration.

Options

none—Display all of the SNMPv3 operating configuration.

access—(Optional) Display SNMPv3 access information.

brief | detail—(Optional) Display brief or detailed information about SNMPv3 access information.

community—(Optional) Display SNMPv3 community information.

general—(Optional) Display SNMPv3 general information.

groups—(Optional) Display SNMPv3 security-to-group information.

notify <filter>—(Optional) Display SNMPv3 notify and, optionally, notify filter information.

target <address | parameters>—(Optional) Display SNMPv3 target and, optionally, either target address or target parameter information.

users—(Optional) Display SNMPv3 user information.

Additional Information

To edit the default display of the **show snmp v3** command, specify options in the **show** statement at the **[edit snmp v3]** hierarchy level.

Required Privilege Level

view

List of Sample Output

show snmp v3 on page 664

Output Fields

Table 119 on page 664 describes the output fields for the **show snmp v3** command. Output fields are listed in the approximate order in which they appear.

Table 119: show snmp v3 Output Fields

Field Name	Field Description
Access control	Information about access control: • **Group**—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. • **Context prefix**—SNMPv3 context for which the configured access privileges apply. • **Security model/level**—Security model and security level for which the configuration access privileges apply. • **Read view**—Identifies the MIB view applied to SNMPv3 read operations. • **Write view**—Identifies the MIB view applied to SNMPv3 write operations. • **Notify view**—Identifies the MIB view applied to outbound SNMP notifications.
Engine	Information about local engine configuration: • **Local engine ID**—Identifier that uniquely and unambiguously identifies the local SNMPv3 engine. • **Engine boots**—Number of times the local SNMPv3 engine has rebooted or reinitialized since the engine ID was last changed. • **Engine time**—Number of seconds since the local SNMPv3 engine was last rebooted or reinitialized. • **Max msg size**—Maximum message size the sender can accommodate.
Engine ID	Information about engine ID: • **Local engine ID**—Identifier that uniquely and unambiguously identifies the local SNMPv3 engine. • **Engine boots**—Number of times the local SNMPv3 engine has rebooted or reinitialized since the engine ID was last changed. • **Engine time**—Number of seconds since the local SNMPv3 engine was last rebooted or reinitialized. • **Max msg size**—Maximum message size the sender can accommodate. • **Engine ID**—SNMPv3 engine ID associated with each user. • **User**—SNMPv3 user. • **Auth/Priv**—Authentication and encryption algorithm available for use by each user. • **Storage**—Indicates whether a user is saved to the configuration file (nonvolatile) or not (volatile). Applies only to users with active status. • **Status**—Status of the conceptual row. Only rows with an active status are used by the SNMPv3 engine.
Group name	Name of the group to which this entry belongs.
Security model	Identifies the security model context for the security name.
Security name	Used with the security model; identifies a specific security name instance. Each security model/security name combination can be assigned to a specific group.
Storage type	Indicates whether a user is saved to the configuration file (nonvolatile) or not (volatile). Applies only to users with active status.
Status	Status of the conceptual row. Only rows with active status are used by the SNMPv3 engine.

show snmp v3 `user@host>` **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  Security              Storage      Status
                     model     name                  type
g1                   usm       user1                 nonvolatile  active
g2                   usm       user2                 nonvolatile  active
g3                   usm       user3                 nonvolatile  active

Access control:
Group                Context Security      Read       Write     Notify
                     prefix  model/level   view       view      view
g1                            usm/privacy  v1         v1
g2                            usm/authent  v1         v1
g3                            usm/none     v1         v1
```

CHAPTER 13

System Software Operational Mode Commands

Table 120 on page 667 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 120: System Software Operational Mode Commands

Task	Command
Clear the Address Resolution Protocol (ARP) table.	**clear arp**
Clear the binding state of a Dynamic Host Configuration Protocol (DHCP) client from the client table on the extended DHCP local server.	**clear dhcp server binding**
Clear all extended DHCP local server statistics.	**clear dhcp server statistics**
Clear the binding state from the client table on the DHCPv6 local server.	**clear dhcpv6 server binding**
Clear all DHCPv6 local server statistics.	**clear dhcpv6 server statistics**
Clear AAA statistics.	**clear network-access aaa statistics**
Log out AAA subscribers and clear the AAA subscriber statistics.	**clear network-access aaa subscriber**
Clear a pending commit operation.	**clear system commit**
Clear a pending system halt or reboot.	**clear system reboot**
(J Series routers only) Remove obsolete IP address bindings on a Dynamic Host Configuration Protocol (DHCP) server.	**clear system services dhcp binding**
(J Series routers only) Clear IP addresses from the DHCP server conflicts list.	**clear system services dhcp conflict**

Table 120: System Software Operational Mode Commands *(continued)*

Task	Command
(J Series routing routers only) Clear DHCP server statistics.	**clear system services dhcp statistics**
Enter configuration mode.	**configure**
Execute an operation (op) script.	**op**
Force lease renewal for DHCPv4 clients.	**request dhcp server reconfigure**
Initiate reconfiguration processing for DHCPv6 clients.	**request dhcpv6 server reconfigure**
Send messages to users currently logged in to the router.	**request message**
On a router with two Routing Engines, specify a tty connection for login.	**request routing-engine login**
Resets the state of an interface group on which static subscribers were forcibly logged out.	**request services static-subscribers login group**
Forces static subscribers on the interfaces in the group to be logged out.	**request services static-subscribers login interface**
Resets the state of an interface on which a static subscriber was forcibly logged out.	**request services static-subscribers logout group**
Forces static subscriber on the interface to be logged out.	**request services static-subscribers logout interface**
Collect information for customer support.	**request support information**
Delete an existing rescue configuration.	**request system configuration rescue delete**
Save the most recently committed configuration as the rescue configuration.	**request system configuration rescue save**
(J Series routers only) Upgrade or downgrade firmware.	**request system firmware**
Stop the routing software.	**request system halt**
Add a license key.	**request system license add**
Delete a license key.	**request system license delete**
(J Series routers only) Save installed license keys to a file or URL.	**request system license save**

Table 120: System Software Operational Mode Commands *(continued)*

Task	Command
Log out a user from the configuration database.	**request system logout**
Abort a previously scheduled partition request.	**request system partition abort**
Schedule the hard disk for partitioning.	**request system partition hard-disk**
Power off the routing software.	**request system power-off**
Reboot the routing software.	**request system reboot**
Convert an Extensible Stylesheet Language Transformations (XSLT) script to Stylesheet Language, Alternative syntaX (SLAX), or convert a SLAX script to XSLT.	**request system scripts convert**
Back up the file systems on the router.	**request system snapshot**
(M320 router, T320 router, and T640 router only) Abort a unified in-service software upgrade (ISSU).	**request system software abort**
Install software bundles or packages onto the router.	**request system software add**
Remove software bundles or packages from the router.	**request system software delete**
(J Series routers only) Delete the backup Junos OS file (if it exists) to free up compact flash drive space.	**request system software delete-backup**
(M320 router, T320 router, and T640 router only) Perform a unified ISSU.	**request system software in-service-upgrade**
Roll back to a previously installed version.	**request system software rollback**
Check candidate software compatibility against the current configuration.	**request system software validate**
Free storage space on the router by rotating log files and deleting unnecessary files.	**request system storage cleanup**
Restart a Junos OS process.	**restart**
Display the contents of the ARP table.	**show arp**
Display the current running system configuration.	**show configuration**

Table 120: System Software Operational Mode Commands *(continued)*

Task	Command
Display the address bindings in the client table on the extended DHCP local server.	**show dhcp server binding**
Display extended DHCP local server statistics.	**show dhcp server statistics**
Display the address bindings in the client table on the extended DHCPv6 local server.	**show dhcpv6 server binding**
Display extended DHCPv6 local server statistics.	**show dhcpv6 server statistics**
Display Domain Name System (DNS) hostname information.	**show host**
Display AAA statistics.	**show network-access aaa statistics**
Display information about AAA subscribers.	**show network-access aaa subscribers**
Display information about AAA subscriber sessions.	**show network-access aaa subscribers session-id**
Display state information for address-assignment pools.	**show network-access address-assignment pool**
Display information for domain maps.	show network-access domain-map
Display Network Time Protocol (NTP) peers.	**show ntp associations**
Display variables returned by NTP peers.	**show ntp status**
Display Information about static subscriber sessions.	**show static-subscribers sessions**
Display information about active subscribers	**show subscribers**
Show system alarms.	**show system alarms**
Display state and checksum values for files in a file system.	**show system audit**
(J Series routers only) Display autoinstallation status information.	**show system autoinstallation status**
Display boot messages.	**show system boot-messages**
Display system memory and buffer usage information.	**show system buffers**
Display information about a pending commit operation.	**show system commit**

Table 120: System Software Operational Mode Commands *(continued)*

Task	Command
Display directory and number of files queued for archival transfer.	**show system configuration archival**
Display information about the rescue configuration.	**show system configuration rescue**
Display information about active IP sockets on the Routing Engine.	**show system connections**
Display directory usage information.	**show system directory-usage**
(J Series routers only) Display system firmware information.	**show system firmware**
Display a list of installed licenses.	**show system license**
Display dynamic hostname to IP address mappings.	**show system name-resolution**
Display software processes running on the router.	**show system processes**
Display statistics about queues on interfaces.	**show system queues**
Display any pending system reboots or halts.	**show system reboot**
View or compare previous configurations.	**show system rollback**
(J Series routers only) Display client binding information.	**show system services dhcp binding**
(J Series routers only) Display DHCP client-detected conflicts for IP addresses.	**show system services dhcp conflict**
(J Series routers only) Display global configuration settings for a DHCP server.	**show system services dhcp global**
(J Series routers only) Display IP address pools defined for a DHCP server.	**show system services dhcp pool**
(J Series routers only) Display statistics associated with a DHCP server.	**show system services dhcp statistics**
Display information about a Session and Resource Control (SRC) client.	**show system services service-deployment**
Display information about the backup software that located in the **/altroot** and **/altconfig** file systems.	**show system snapshot**

Table 120: System Software Operational Mode Commands *(continued)*

Task	Command
Display Junos OS extensions.	**show system software**
Display system-wide protocol-related statistics.	**show system statistics**
Display system-wide Address Resolution Protocol (ARP) statistics.	**show system statistics arp**
Display system-wide Connectionless Network Service (CLNS) statistics.	**show system statistics clns**
Display system-wide End System-to-Intermediate System (ES-IS) statistics.	**show system statistics esis**
Display system-wide Internet Control Message Protocol (ICMP) statistics.	**show system statistics icmp**
Display system-wide ICMP version 6 statistics.	**show system statistics icmp6**
Display system-wide Internet Group Management Protocol (IGMP) statistics.	**show system statistics igmp**
Display system-wide IPv4 statistics.	**show system statistics ip**
Display system-wide IPv6 statistics.	**show system statistics ip6**
Display system-wide Multiprotocol Label Switching (MPLS) statistics.	**show system statistics mpls**
Display system-wide Reliable Datagram Protocol (RDP) statistics.	**show system statistics rdp**
Display system-wide Transmission Control Protocol (TCP) statistics.	**show system statistics tcp**
Display system-wide Trivial Network Protocol (TNP) statistics.	**show system statistics tnp**
Display system-wide Trivial User Datagram Protocol (TUDP) statistics.	**show system statistics tudp**
Display system-wide User Datagram Protocol (UDP) statistics.	**show system statistics udp**
Display system-wide Virtual Private LAN Services (VPLS) statistics.	**show system statistics vpls**
Display statistics about the amount of free disk space in the router's file systems.	**show system storage**

Table 120: System Software Operational Mode Commands *(continued)*

Task	Command
View configurations of the primary and secondary Routing Engines.	**show system switchover**
Display the current time and information about how long the router, router software, and routing protocols have been running.	**show system uptime**
Display users currently logged in to the router.	**show system users**
Display Junos kernel memory usage.	**show system virtual-memory**
Display routing protocol tasks on the Routing Engine.	**show task**
Display I/O statistics for routing protocol tasks on the Routing Engine.	**show task io**
Display memory utilization for routing protocol tasks on the Routing Engine.	**show task memory**
Display whether or not graceful Routing Engine switchover (GRES) and nonstop active routing (NSR) are configured on the router.	**show task replication**
Display the hostname and version information about the software running on the router.	**show version**
Create a UNIX-level shell.	**start shell**
Verify the syntax of a configuration file.	**test configuration**

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

Syntax

clear arp
<hostname *hostname*>
<logical-system *logical-system-name*>
<vpn *vpn*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

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 **set cli logical-system logical-system-name** command, and then issue the **clear arp** command.

Options

none—Clear all entries from the ARP table.

hostname *hostname*—(Optional) Clear the specified host entry only.

logical-system *logical-system-name*—(Optional) Clear entries for the specified logical system; only available in main router context.

vpn *vpn*—(Optional) Clear entries from the ARP table for the specified virtual private network (VPN).

Required Privilege Level

clear

Related Documentation

- **set cli logical-system on page 525**
- **show arp on page 770**

List of Sample Output

clear arp on page 674
clear arp logical-system ls1 on page 674

Output Fields

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

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 logical-system ls1

```
user@host> clear arp 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

Syntax

clear dhcp server binding
<all | *ip-address* | *mac-address*>
<interface *interface-name*>
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

Release Information

Command introduced in Junos OS Release 9.0.

Description

Clear the binding state of a Dynamic Host Configuration Protocol (DHCP) client from the client table on the extended DHCP local server.

Options

all—(Optional) Clear the binding state for all DHCP clients.

ip-address—(Optional) Clear the binding state for the DHCP client with the specified IP address.

mac-address—(Optional) Clear the binding state for the DHCP client with the specified MAC address.

interface *interface-name*—(Optional) Clear the binding state for DHCP clients on the specified interface.

NOTE: 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 *ip-address* or *mac-address* options.

logical-system *logical-system-name*—(Optional) Clear the binding state for DHCP clients on the specified logical system.

routing-instance *routing-instance-name*—(Optional) Clear the binding state for DHCP clients on the specified routing instance.

Required Privilege Level

view

List of Sample Output

clear dhcp server binding on page 675
clear dhcp server binding all on page 676
clear dhcp server binding interface on page 676

Output Fields

See **show dhcp server binding** for an explanation of output fields.

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

Syntax

clear dhcp server statistics
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

Release Information

Command introduced in Junos OS Release 9.0.

Description

Clear all extended Dynamic Host Configuration Protocol (DHCP) local server statistics.

Options

logical-system *logical-system-name*—(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.

routing-instance *routing-instance-name*—(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.

Required Privilege Level

view

List of Sample Output

clear dhcp server statistics on page 677

Output Fields

See **show dhcp server statistics** for an explanation of output fields.

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

Syntax

clear dhcpv6 server binding
<all |*client-id* | *ip-address* | *session-id*>
<interface *interface-name*>
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Clear the binding state of a Dynamic Host Configuration Protocol for IPv6 (DHCPv6) client from the client table on the extended DHCPv6 local server.

Options

all—(Optional) Clear the binding state for all DHCPv6 clients.

client-id—(Optional) Clear the binding state for the DHCPv6 client with the specified client ID (option 1).

ip-address—(Optional) Clear the binding state for the DHCPv6 client with the specified address.

session-id—(Optional) Clear the binding state for the DHCPv6 client with the specified subscriber session ID.

interface *interface-name*—(Optional) Clear the binding state for DHCPv6 clients on the specified interface.

logical-system *logical-system-name*—(Optional) Clear the binding state for DHCPv6 clients on the specified logical system.

routing-instance *routing-instance-name*—(Optional) Clear the binding state for DHCPv6 clients on the specified routing instance.

Required Privilege Level

clear

Related Documentation

- **show dhcpv6 server binding on page 782**

List of Sample Output

clear dhcpv6 server binding on page 679
clear dhcpv6 server binding all on page 679
clear dhcpv6 server binding prefix on page 680

Output Fields

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

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 binding prefix

```
user@host> clear dhcpv6 server binding 14/0x00010001/0x02b3be8f/0x00109400/0x0005
```

clear dhcpv6 server statistics

Syntax

clear dhcpv6 server statistics
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Clear all extended Dynamic Host Configuration Protocol for IPv6 (DHCPv6) local server statistics.

Options

logical-system *logical-system-name*—(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.

routing-instance *routing-instance-name*—(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.

Required Privilege Level

clear

Related Documentation

- **show dhcpv6 server statistics on page 786**

List of Sample Output

clear dhcpv6 server statistics on page 681

Output Fields

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

clear dhcpv6 server statistics

```
user@host> clear dhcpv6 server statistics
```

clear network-access aaa statistics

Syntax

clear network-access aaa statistics
<accounting>
<address-assignment (client | pool *pool-name*)>
<authentication>
<dynamic-requests>
<re-authentication>

Release Information

Command introduced in Junos OS Release 10.0.

Description

Clear AAA statistics.

Options

accounting—Clear AAA accounting statistics.

address-assignment client—Clear AAA address-assignment statistics for the client.

address-assignment pool *pool-name*—Clear AAA address-assignment pool statistics.

authentication—Clear AAA authentication statistics.

dynamic-requests—Clear AAA dynamic-request statistics.

re-authentication—Clear AAA reauthentication statistics.

Required Privilege Level

maintenance

List of Sample Output

clear network-access aaa statistics accounting on page 682
clear network-access aaa statistics address-assignment pool on page 682

Output Fields

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

clear network-access aaa statistics accounting

```
user@host> clear network-access aaa statistics accounting
```

clear network-access aaa statistics address-assignment pool

```
user@host> clear network-access aaa statistics address-assignment pool isp_1
```

clear network-access aaa subscriber

Syntax

clear network-access aaa subscriber
<statistics username *username*>
<username *username*>

Release Information

Command introduced in Junos OS Release 9.1.

Description

Clear AAA subscriber statistics and log out subscribers.

Options

statistics username *username*—Clear AAA subscriber statistics and log out the subscriber.

username *username*—Log out the AAA subscriber.

Required Privilege Level

maintenance

List of Sample Output

clear network-access aaa subscriber statistics username on page 683
clear network-access aaa subscriber username on page 683

Output Fields

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

clear network-access aaa subscriber statistics username

```
user@host> clear network-access aaa subscriber statistics username dsmith@isp5555.com
```

clear network-access aaa subscriber username

```
user@host> clear network-access aaa subscriber username dsmith@isp5555.com
```

clear system commit

Syntax clear system commit

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

Description Clear any pending commit operation.

Options This command has no options.

Required Privilege Level maintenance (or the actual user who scheduled the commit)

Related Documentation

- show system commit on page 829

List of Sample Output

clear system commit on page 684
clear system commit (None Pending) on page 684
clear system commit (User Does Not Have Required Privilege Level) on page 684

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

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
```


clear system reboot

Syntax

clear system reboot
<both-routing-engines>

Syntax (EX Series Switch)

clear system reboot
<all-members>
<both-routing-engines>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

clear system reboot
<both-routing-engines>
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

clear system reboot
<both-routing-engines>
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

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.

Options

none—Clear all pending system software reboots or halts.

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.

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.

all-members—(EX4200 switches only) (Optional) Clear all halt or reboot requests on all members of the Virtual Chassis configuration.

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.

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 729**

List of Sample Output

clear system reboot on page 687
clear system reboot (TX Matrix Router) on page 687

Output Fields

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

clear system reboot

```
user@host> clear system reboot
reboot requested by root at Sat Dec 12 19:37:34 1998
[process id 17855]
Terminating...
```

clear system reboot (TX Matrix Router)

```
user@host> clear system reboot
scc-re0:
---------------------------------------------------------------------------
No shutdown/reboot scheduled.
lcc0-re0:
---------------------------------------------------------------------------
No shutdown/reboot scheduled.
lcc2-re0:
---------------------------------------------------------------------------
No shutdown/reboot scheduled.
```

clear system services dhcp binding

Syntax

clear system services dhcp binding
<address>

Release Information

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

Description

(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.

Options

address—(Optional) Remove a specific IP address binding and return it to the address pool.

Required Privilege Level

view and system

Related Documentation

- **show system services dhcp binding on page 892**

List of Sample Output

clear system services dhcp binding on page 688

Output Fields

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

clear system services dhcp binding

`user@host>` **clear system services dhcp binding**

clear system services dhcp conflict

Syntax

clear system services dhcp conflict
<address>

Release Information

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

Description

(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.

Options

address—(Optional) Remove a specific IP address from the conflict list and return it to the address pool.

Required Privilege Level

view and system

Related Documentation

- **show system services dhcp conflict on page 894**

List of Sample Output

clear system services dhcp conflict on page 689

Output Fields

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

clear system services dhcp conflict

`user@host>` **clear system services dhcp conflict**

clear system services dhcp statistics

Syntax clear system services dhcp statistics

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

Description (J Series routers and EX Series switches only) Clear Dynamic Host Configuration Protocol (DHCP) server statistics.

Options This command has no options.

Required Privilege Level view and system

Related Documentation

- **show system services dhcp statistics on page 899**

List of Sample Output **clear system services dhcp statistics on page 690**

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

clear system services dhcp statistics

```
user@host> clear system services dhcp statistics
```


configure

Syntax

configure
<dynamic>
<exclusive>
<private>

Release Information

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

Description

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.

Options

none—Enter configuration mode.

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.

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.

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.

Additional Information

For more information about the different methods of entering configuration mode and the restrictions that apply, see the *Junos OS System Basics Configuration Guide*.

Required Privilege Level

configure

Related Documentation

- **show configuration on page 772**

List of Sample Output

configure on page 692

Output Fields

When you enter this command, you are placed in configuration mode and the system prompt changes from ***hostname>*** to ***hostname#***.

configure

```
user@host> configure
Entering configuration mode
[edit]
user@host#
```

op

Syntax

op *filename*
<detail>
<*argument-name argument-value*>
<key (md5 | sha-256 | sha1) *key-value*
<url *url*>

Release Information

Command introduced in Junos OS Release 7.6.
Command introduced in Junos OS Release 9.0 for EX Series switches.
key option introduced in Junos OS Release 10.0.
url option introduced in Junos OS Release 10.0.

Description

Execute an op script stored in one of the following locations:

- On the router or switch in the **/var/db/scripts/op** directory
- At a remote URL

Options

detail—(Optional) Display detailed output.

argument-name argument-value—(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.

key (md5 | sha-256 | sha1) *key-value*—(Optional) With the <url> option, specify a checksum hash to verify the integrity of the script. You can include the <key> option if the **checksum** statement is included at the **[edit system scripts op file *filename*]** hierarchy level.

url *url*—(Optional) Specify a URL where the script is located.

Additional Information

For more information about Junos op scripts, see the *Junos OS Configuration and Operations Automation Guide*.

Required Privilege Level

maintenance

Related Documentation

- Executing an Op Script in the *Junos OS Configuration and Operations Automation Guide*
- Executing an Op Script from a Remote Site in the *Junos OS Configuration and Operations Automation Guide*
- checksum
- **file checksum md5 on page 546**
- **file checksum sha-256 on page 548**
- **file checksum sha1 on page 547**

List of Sample Output

op on page 694

op url on page 694

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

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

Syntax **request dhcp server reconfigure (all | *address* | interface *interface–name* | logical-system *logical-system–name* | routing-instance *routing-instance–name*)**

Release Information Command introduced in JUNOS Release 10.0.

Description 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 **clear dhcp server binding** command.

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 forcerenew 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 forcerenew message is sent. If the final attempt is unsuccessful, the client is returned to its original state by default. You can optionally include the **clear-on-abort** statement to configure the client to be cleared when reconfiguration fails.

Options all—Initiate reconfiguration for all DHCP clients.

address—Initiate reconfiguration for DHCP client with the specified IP address or MAC address.

interface *interface-name*—Initiate reconfiguration for all DHCP clients on this logical interface (clients whose initial login requests were received over the specified interface).

NOTE: You cannot use the **interface** *interface-name* option with the **request dhcp server reconfigure** 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.

logical-system *logical-system-name*—Initiate reconfiguration for all DHCP clients on the specified logical system.

routing-instance *routing-instance-name*—Initiate reconfiguration reconfigured for all DHCP clients in the specified routing instance.

Required Privilege Level view

Related Documentation

- Configuring Extended DHCP Local Server Dynamic Client Reconfiguration

List of Sample Output **request dhcp server reconfigure on page 696**

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

request dhcp server reconfigure

```
user@host> request dhcp server reconfigure interface fe-0/0/0.100
```


request dhcpv6 server reconfigure

Syntax

request dhcpv6 server reconfigure (all | *address* | *client-id* | interface *interface-name* | logical-system *logical-system-name* | routing-instance *routing-instance-name* | *session-id*)

Release Information

Command introduced in Junos OS Release 10.4.

Description

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 **clear dhcpv6 server binding** command.

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 **clear-on-abort** statement to configure the client to be cleared when reconfiguration fails.

Options

all—Initiate reconfiguration for all DHCPv6 clients.

address—Initiate reconfiguration for DHCPv6 client with the specified IPv6 address.

client-id—Initiate reconfiguration for DHCPv6 client with the specified client ID.

interface *interface-name*—Initiate reconfiguration for all DHCPv6 clients on this logical interface (clients whose initial login requests were received over the specified interface).

logical-system *logical-system-name*—Initiate reconfiguration for all DHCPv6 clients on the specified logical system.

routing-instance *routing-instance-name*—Initiate reconfiguration reconfigured for all DHCPv6 clients in the specified routing instance.

session-id—Initiate reconfiguration for DHCPv6 client with the specified session ID.

Required Privilege Level

view

Related Documentation

- Configuring Extended DHCP Local Server Dynamic Client Reconfiguration

List of Sample Output

request dhcpv6 server reconfigure on page 697

Output Fields

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

request dhcpv6 server reconfigure

```
user@host> request dhcpv6 server reconfigure 2001::2/16
```

request message

Syntax

request message all message "*text*"
request message message "*text*" (terminal *terminal-name* | user *user-name*)

Release Information

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

Description

Display a message on the screens of all users who are logged in to the router or switch or on specific screens.

Options

all—Display a message on the terminal of all users who are currently logged in.

message "*text*"—Message to display.

terminal *terminal-name*—Name of the terminal on which to display the message.

user *user-name*—Name of the user to whom to direct the message.

Required Privilege Level

maintenance

List of Sample Output

request message message on page 698

Output Fields

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

request message message

```
user@host> request message message "Maintenance window in 10 minutes" user maria
Message from user@host on ttyp0 at 20:27 ...
Maintenance window in 10 minutes
EOF
```

request routing-engine login

Syntax

request routing-engine login (backup | master | other-routing-engine | re0 | re1)

Syntax (Root System Domain)

request routing-engine login (backup (psd *n* | rsd) | master (psd *n* | rsd) | other-routing-engine | re0 (psd *n* | rsd) | re1 (psd *n* | rsd))

Syntax (TX Matrix Router)

request routing-engine login (backup | master | other-routing-engine | re0 | re1)
<lcc *number*>
<scc *number*>

Syntax (TX Matrix Plus Router)

request routing-engine login (backup | master | other-routing-engine | re0 | re1)
<lcc *number*>
<sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
psd and **rsd** 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.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

On a router with two Routing Engines, specify a tty connection for login.

Options

backup—Log in to the backup Routing Engine.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

master—Log in to the master Routing Engine.

other-routing-engine—Log in to the other Routing Engine.

psd *n*—(RSD only) Log in to the specified Protected System Domain (PSD). Replace *n* with a value from 1 to 31. A PSD is accessible from a T320 router or a T640 or T1600 router that is interconnected with the JCS1200 platform. When you log in to a PSD, you are required to provide user authentication.

re0—Log in to the Routing Engine in slot 0.

re1—Log in to the Routing Engine in slot 1.

rsd—(RSD only) Log in to the RSD (as opposed to a PSD). A T320 router or a T640 or T1600 router that is interconnected with the JCS1200 platform can be configured as an RSD.

sfc *number*—(TX Matrix Plus routers only) Log in to the specified Routing Engine on the TX Matrix Plus router (or switch-fabric chassis):

- **backup**—Log in to the backup Routing Engine.
- **master**—Log in to the master Routing Engine.
- **re0**—Log in to the Routing Engine in slot 0.
- **re1**—Log in to the Routing Engine in slot 1.

Additional Information

For more information about PSDs, RSDs, and the JCS1200 platform, see the *Junos OS Protected System Domain Configuration Guide*.

Required Privilege Level

maintenance

List of Sample Output

request routing-engine login other-routing-engine on page 700
request routing-engine login psd on page 700

Output Fields

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

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

{master}
```

request routing-engine login psd

```
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

Syntax **request services static-subscribers login group *group-name***

Release Information Command introduced in JUNOS Release 9.6.

Description Resets the state of an interface group on which static subscribers were forcibly logged out by the **request services static-subscribers logout group** command. This action enables static subscriber to login on the interfaces in the group.

Options group *group-name*—Group of static subscriber interfaces on which static subscribers have been created.

Required Privilege Level view

List of Sample Output **request services static-subscribers login group on page 701**

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

request services static-subscribers login group

```
user@host> request services static-subscribers login group boston
```

request services static-subscribers login interface

Syntax **request services static-subscribers login interface *interface-name***

Release Information Command introduced in JUNOS Release 9.6.

Description Resets the state of an interface on which a static subscriber was forcibly logged out by the **request services static-subscribers logout interface** command. This action enables a static subscriber to login on the interface.

Options interface *interface-name*—Static interface on which a static subscriber has been created.

Required Privilege Level view

List of Sample Output **request services static-subscribers login interface on page 702**

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

request services static-subscribers login interface

```
user@host> request services static-subscribers login interface ge-2/0/1.5
```


request services static-subscribers logout group

Syntax **request services static-subscribers logout group *igroup-name***

Release Information Command introduced in JUNOS Release 9.6.

Description 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 **request services static-subscribers login group** command.

Options group *group-name*—Group of static subscriber interfaces on which static subscribers have been created.

Required Privilege Level view

List of Sample Output **request services static-subscribers logout group on page 703**

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

request services static-subscribers logout group

```
user@host> request services static-subscribers logout group boston
```

request services static-subscribers logout interface

Syntax **request services static-subscribers logout interface** ***interface-name***

Release Information Command introduced in JUNOS Release 9.6.

Description 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 **request services static-subscribers login interface** command.

Options interface *interface-name*—Static interface on which a static subscriber has been created.

Required Privilege Level view

List of Sample Output **request services static-subscribers logout interface on page 704**

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

request services static-subscribers logout interface

```
user@host> request services static-subscribers logout interface ge-2/0/1.5
```

request support information

Syntax

request support information

Syntax (TX Matrix Router)

request support information
<all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

request support information
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
show chassis alarms added to output in Junos OS Release 8.0.
show route summary added to output in Junos OS Release 8.5.
show krt queue added to output in Junos OS Release 8.5.
show krt state added to output in Junos OS Release 8.5.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display information about the system. Issue this command before contacting customer support, and then include the command output in your support request.

Options

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system information for all chassis.

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.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

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

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

Additional Information

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:

- **show chassis alarms**
- **show chassis environment**
- **show chassis firmware**
- **show chassis fpc detail**

- 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 706
request support information scc (TX Matrix Router) on page 706
request support information sfc (TX Matrix Plus Router) on page 708

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.

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 Matrix Router)

```
user@host> request support information scc



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                                JN112F007AHB      TXP
Midplane         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     0K    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     0K    12K          0:18  0.00% bcmLINK.0
 1345 root           1  76    0     0K    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

Syntax request system configuration rescue delete

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

Description Delete an existing rescue configuration.

Options This command has no options.

Required Privilege Level maintenance

Related Documentation

- **request system configuration rescue save on page 711**
- **request system software rollback on page 753**
- **show system commit on page 829**

List of Sample Output **request system configuration rescue delete on page 710**

Output Fields This command produces no output.

request system configuration rescue delete

```
user@host> request system configuration rescue delete
```

request system configuration rescue save

Syntax request system configuration rescue save

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

Description Save the most recently committed configuration as the rescue configuration so that you can return to it at any time by using the **rollback** command.

Options This command has no options.

Required Privilege Level maintenance

Related Documentation

- **request system software delete on page 745**
- **request system software rollback on page 753**
- **show system commit on page 829**

List of Sample Output **request system configuration rescue save on page 711**

Output Fields This command produces no output.

request system configuration rescue save

```
user@host> request system configuration rescue save
```

request system firmware

Syntax

request system firmware (*upgrade* | downgrade)
(*fpc* <*slot slot number*> | pic <assembly-id *assembly-id*> < fpc-slot *fpc-slot-number*>
<partnumber *partnumber*> <pic-slot *pic-slot-number*> <tag *tag*>)

Release Information

Command introduced in Junos OS Release 7.4.

Description

(J Series routers only) Upgrade or downgrade firmware on a Physical Interface Modules (PIM).

Options

fpc—Flexible PIM concentrator (FPC).

slot *slot-number*—(Optional) Location of the FPC to upgrade or downgrade.

pic—Physical interface card (PIC).

assembly-id *assembly-id*—(Optional) Component assembly identifier.

fpc-slot *fpc-slot-number*—(Optional) Physical location of the PIC to upgrade or downgrade.

partnumber *partnumber*—(Optional) Part number of the component to upgrade or downgrade.

pic-slot *pic-slot-number*—(Optional) Location of the PIC to upgrade or downgrade.

tag *tag*—(Optional) Firmware release number.

Required Privilege Level

maintenance

List of Sample Output

request system firmware upgrade on page 712

Output Fields

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

request system firmware upgrade

`user@host>` **request system configuration firmware upgrade fpc**

request system halt

Syntax

```
request system halt
<at time>
<both-routing-engines>
<other-routing-engine>
<in minutes>
<media (compact-flash | disk | removable-compact-flash | usb)>
<message "text">
```

Syntax (EX Series Switch)

```
request system halt
<all-members>
<at time>
<both-routing-engines>
<in minutes>
<local>
<media (external | internal)>
<member member-id>
<message "text">
<other-routing-engine>
<slice slice>
```

Syntax (TX Matrix Router)

```
request system halt
<all-lcc | lcc number | scc>
<at time>
<both-routing-engines>
<other-routing-engine>
<in minutes>
<media (compact-flash | disk)>
<message "text">
```

Syntax (TX Matrix Plus Router)

```
request system halt
<all-chassis | all-lcc | lcc number | sfc number>
<at time>
<both-routing-engines>
<other-routing-engine>
<in minutes>
<media (compact-flash | disk)>
<message "text">
```

Release Information

Command introduced before Junos OS Release 7.4.
other-routing-engine option introduced 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.

Description

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

List of Sample Output

request system halt on page 716
request system halt (in 2 Hours) on page 716
request system halt (Immediately) on page 716
request system halt (at 1:20 AM) on page 716

Output Fields

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

request system halt

```
user@host> request system halt
Halt the system ? [yes,no] (no) yes

*** FINAL System shutdown message from root@section2 ***
System going down IMMEDIATELY
Terminated
...
syncing disks... 11 8 done
The operating system has halted.
Please press any key to reboot.
```

request system halt (in 2 Hours)

The following example, which assumes that the time is 5 PM (1700), illustrates three different ways to request that the system stop 2 hours from now:

```
user@host> request system halt at +120
user@host> request system halt in 120
user@host> request system halt at 19:00
```

request system halt (Immediately)

```
user@host>   request system halt at now
```

request system halt (at 1:20 AM)

To stop the system at 1:20 AM, enter the following command. Because 1:20 AM is the next day, you must specify the absolute time.

```
user@host> request system halt at yymmdd120
request system halt at 120
Halt the system at 120? [yes,no] (no) yes
```

request system license add

Syntax request system license add (*filename* | terminal)

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

Description Add a license key.

Options *filename*—License key from a file or URL. Specify the filename or the URL where the key is located.

terminal—License key from the terminal.

Required Privilege Level maintenance

List of Sample Output **request system license add on page 717**

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

request system license add

```
user@host> request system license add terminal
```

request system license delete

Syntax request system license delete *license-id*

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

Description Delete a license key. You can delete only one license at a time.

Options *license-id*—License ID that uniquely identifies a license key.

Required Privilege Level maintenance

List of Sample Output **request system license delete on page 718**

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

request system license delete

```
user@host> request system license delete G03000002223
```


request system license save

Syntax request system license save (*filename* | terminal)

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

Description (J Series routers and EX Series switch only) Save installed license keys to a file or URL.

Options *filename*—License key from a file or URL. Specify the filename or the URL where the key is located.

terminal—License key from the terminal.

Required Privilege Level maintenance

List of Sample Output **request system license save on page 719**

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

request system license save

```
user@host> request system license save ftp://user@host/license.conf
```

request system logout

Syntax

request system logout (pid *pid* | terminal *terminal* | user *username*)
<all>

Release Information

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

Description

Log out users from the router or switch and the configuration database. If a user held the **configure exclusive** lock, this command clears the exclusive lock.

Options

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 *pid*—Log out the user session using the specified management process identifier (PID). The PID type must be management process.

terminal *terminal*—Log out the user for the specified terminal session.

user *username*—Log out the specified user.

Additional Information

For information about using the **configure exclusive** command, see the *Junos OS System Basics Configuration Guide*.

Required Privilege Level

configure

List of Sample Output

request system logout on page 720

Output Fields

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

request system logout

```
user@host> request system logout user tammy all
Connection closed by foreign host.
```

request system partition abort

Syntax

request system partition abort

Syntax (TX Matrix Router)

request system partition abort
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

request system partition abort
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

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.

Options

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Abort a previously scheduled partition operation for all chassis.

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.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

scc—(TX Matrix routers only) (Optional) Abort a previously scheduled partition operation on the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Abort a previously scheduled partition operation on the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with **0**.

Required Privilege Level

maintenance

Related Documentation

- **request system partition hard-disk on page 723**

List of Sample Output

request system partition abort on page 722

Output Fields

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

request system partition abort

```
user@host> request partition abort
The hard disk is no longer scheduled to be partitioned.
```

request system partition hard-disk

Syntax

request system partition hard-disk

Syntax (TX Matrix Router)

request system partition hard-disk
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

request system partition hard-disk
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

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 **/altroot** and **/altconfig** are saved and restored. All other data on the hard disk is at risk of being lost.

Options

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.

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.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

scc—(TX Matrix routers only) (Optional) Schedule a partition of the hard disk on the T640 router connected to the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Schedule a partition of the hard disk on the T1600 router connected to the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with **0**.

Additional Information

To immediately partition the hard disk, use the **request system reboot** command. To cancel the partition request, use the **request system partition abort** command.

Required Privilege Level

maintenance

Related Documentation

- **request system partition abort on page 721**

List of Sample Output

request system partition hard-disk on page 724

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

request system partition hard-disk

`user@host>` **request partition hard-disk**

request system power-off

Syntax

```
request system power-off
<both-routing-engines>
<other-routing-engine>
<at time>
<in minutes>
<media (compact-flash | disk | removable-compact-flash | usb)>
<message "text">
```

Syntax (EX Series Switch)

```
request system power-off
<all-members>
<at time>
<both-routing-engines>
<in minutes>
<local>
<media (external | internal)>
<member member-id>
<message "text">
<other-routing-engine>
<slice slice>
```

Syntax (TX Matrix Router)

```
request system power-off
<all-chassis | all-lcc | lcc number |  scc>
<both-routing-engines>
<other-routing-engine>
<at time>
<in minutes>
<media (compact-flash | disk)>
<message "text">
```

Syntax (TX Matrix Plus Router)

```
request system power-off
<all-chassis | all-lcc | lcc number |  sfc number>
<both-routing-engines>
<other-routing-engine>
<at time>
<in minutes>
<media (compact-flash | disk)>
<message "text">
```

Release Information

Command introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.0 for EX Series switches.

Description

Power off the software.

Options

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 727

Output Fields

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

request system power-off

```
user@host> request system power-off message "This router will be powered off in 30 minutes.
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 reboot

Syntax

```
request system reboot
<other-routing-engine>
<at time>
<in minutes>
<media (compact-flash | disk | removable-compact-flash | usb)>
<message "text">
```

Syntax (EX Series Switch)

```
request system reboot
<all-members>
<at time>
<in minutes>
<local>
<media (external | internal)>
<member member-id>
<message "text">
<other-routing-engine>
<slice slice>
```

Syntax (TX Matrix Router)

```
request system reboot
<all-chassis | all-lcc | lcc number |  scc>
<other-routing-engine>
<at time>
<in minutes>
<media (compact-flash | disk)>
<message "text">
```

Syntax (TX Matrix Plus Router)

```
request system reboot
<all-chassis | all-lcc | lcc number | sfc number>
<other-routing-engine>
<partition (1 | 2 | alternate)>
<at time>
<in minutes>
<media (compact-flash | disk)>
<message "text">
```

Release Information

Command introduced before Junos OS Release 7.4.
other-routing-engine 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.

Description

Reboot the software.

Options

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 685**

List of Sample Output

request system reboot on page 732
request system reboot (at 2300) on page 732
request system reboot (in 2 Hours) on page 732

request system reboot (Immediately) on page 732
request system reboot (at 1:20 AM) on page 732

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

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

Syntax

request system scripts convert (slax-to-xslt | xslt-to-slax) source *source/filename* destination *destination/<filename>*

Release Information

Command introduced in Junos OS Release 8.2.
Command introduced in Junos OS Release 9.0 for EX Series switches.

Description

Convert an Extensible Stylesheet Language Transformations (XSLT) script to Stylesheet Language, Alternative syntaX (SLAX), or convert a SLAX script to XSLT.

Options

destination *destination/<filename>*—Specify a destination for the converted file.

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 **test.xsl** to **test.slax**. The software converts a source file called **test1.slax** to **test1.xsl**.

slax-to-xslt—Convert a SLAX script to XSLT.

source *source/filename*—Specify a source file that you want to convert.

xslt-to-slax—Convert an XSLT script to SLAX.

Required Privilege Level

maintenance

List of Sample Output

request system scripts convert slax-to-xslt on page 733
request system scripts convert xslt-to-slax on page 733

Output Fields

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

request system scripts convert slax-to-xslt

```
user@host> request system scripts convert slax-to-xslt source /var/db/scripts/op/script1.slax
destination /var/db/scripts/op
conversion complete
```

request system scripts convert xslt-to-slax

```
user@host> request system scripts convert xslt-to-slax source /var/db/scripts/commit/script1.xsl
destination /var/db/scripts/commit
conversion complete
```

request system snapshot

Syntax

request system snapshot
<partition>

Syntax (TX Matrix Router)

request system snapshot
<all-chassis | all-lcc | lcc *number* | scc>
<partition>

Syntax (TX Matrix Plus Router)

request system snapshot
<all-chassis | all-lcc | lcc *number* | sfc *number*>
<partition>

Syntax (J Series Routers)

request system snapshot
<as-primary>
<config-size *size*>
<data-size *size*>
<factory>
<media *type*>
<partition>
<root-size *size*>
<swap-size *size*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

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 **/altroot**, and **/config** is backed up to **/altconfig**. The root and **/config** file systems are on the router's flash drive, and the **/altroot** and **/altconfig** file systems are on the router's hard drive.

CAUTION: After you run the **request system snapshot** command, you cannot return to the previous version of the software, because the running and backup copies of the software are identical.

Options

none—Back up the currently running and active file system partitions on the router to standby partitions that are not running.

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.

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.

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 902**

List of Sample Output

request system snapshot on page 736
request system snapshot (When Partition Flag Is On) on page 737
request system snapshot (When Mirroring Is Enabled) on page 737
request system snapshot all-lcc (Routing Matrix) on page 737

Output Fields

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

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

Syntax

request system software abort in-service-upgrade

Release Information

Command introduced in Junos OS Release 9.0.

Description

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 **request system in-service-upgrade** command that launched the unified ISSU.

Options

This command has no options.

Required Privilege Level

view

Related Documentation

- **request system software in-service-upgrade on page 749**
- **show chassis in-service-upgrade on page 447**

List of Sample Output

request system software abort (New Router Session) on page 738
request system software in-service-upgrade (Unified ISSU Session) on page 738

Output Fields

When you enter the **request system software abort** 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 **request system software in-service-upgrade** command.

request system software abort (New Router Session)

```
user@host> 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

Syntax

request system software add *package-name*
<best-effort-load>
<delay-restart>
<force>
<no-copy>
<no-validate>
<re0 | re1>
<reboot>
<unlink>
<validate>

Syntax (TX Matrix Router)

request system software add *package-name*
<best-effort-load>
<delay-restart>
<force>
<lcc *number* | scc>
<no-copy>
<no-validate>
<re0 | re1>
<reboot>
<unlink>
<validate>

Syntax (TX Matrix Plus Router)

request system software add *package-name*
<best-effort-load>
<delay-restart>
<force>
<lcc *number* | sfc *number*>
<no-copy>
<no-validate>
<re0 | re1>
<reboot>
<unlink>
<validate>

Release Information

Command introduced before Junos OS Release 7.4.
best-effort-load and **unlink** options added in 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.

Description

Install a software package or bundle on the router or switch.

Options

package-name—Location from which the software package or bundle is to be installed. For example:

- **/var/tmp/*package-name***—For a software package or bundle that is being installed from a local directory on the router or switch.
- ***protocol*://*hostname*/*pathname*/*package-name***—For a software package or bundle that is to be downloaded and installed from a remote location. Replace ***protocol*** with one of the following:

- **ftp**—File Transfer Protocol.
  Use **ftp:*//hostname/pathname/package-name***. To specify authentication credentials, use **ftp:*//<username>:<password>@hostname/pathname/package-name***. To have the system prompt you for the password, specify **prompt** in place of the password. If a password is required, and you do not specify the password or **prompt**, an error message is displayed.
- **http**—Hypertext Transfer Protocol.
  Use **http:*//hostname/pathname/package-name***. To specify authentication credentials, use **http:*//<username>:<password>@hostname/pathname/package-name***. If a password is required and you omit it, you are prompted for it.

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.

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, **jkernel**, last. Add the operating system package, **jkernel**, first and the routing software package, **jroute**, last. If you are upgrading all packages at once, delete and add them in the following order:

```
user@host> request system software add /var/tmp/jbase
user@host> request system software add /var/tmp/jkernel
user@host> request system software add /var/tmp/jpfe
```

```
user@host> request system software add /var/tmp/jdocs
user@host> request system software add /var/tmp/jroute
user@host> request system software add /var/tmp/jcrypto
```

By default, when you issue the **request system software add *package-name*** command on a TX Matrix master Routing Engine, all the T640 master Routing Engines that are connected to it are upgraded to the same version of software. If you issue the same command on the TX Matrix backup Routing Engine, all the T640 backup Routing Engines that are connected to it are upgraded to the same version of software.

Likewise, when you issue the **request system software add *package-name*** command on a TX Matrix Plus master Routing Engine, all the T1600 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

- **request system software delete on page 745**
- **request system software rollback on page 753**
- **request system storage cleanup on page 762**

List of Sample Output

request system software add validate on page 743

Output Fields

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

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 ...
```

request system software delete

Syntax

request system software delete *software-package*
<force>

Syntax (TX Matrix Router)

request system software delete *software-package*
<force>
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)

request system software delete *software-package*
<force>
<lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

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 740**
- **request system software rollback on page 753**
- **request system software validate on page 756**

List of Sample Output

request system software delete jdocs on page 746

Output Fields

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

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

Syntax request system software delete-backup

Release Information Command introduced before Junos OS Release 7.4.

Description (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 **request system software rollback** command to revert to the earlier version of the Junos OS.

Options This command has no options.

Required Privilege Level maintenance

List of Sample Output **request system software delete-backup on page 748**

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

request system software delete-backup

```
user@host> request system software delete-backup
Delete backup system software package [yes,no] (no) yes
```


request system software in-service-upgrade

Syntax

request system software in-service-upgrade *package-name*
<no-old-master-upgrade>
<reboot>

Release Information

Command introduced in Junos OS Release 9.0.

Description

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.

Options

package-name—Location from which the software package or bundle is to be installed. For example:

- **/var/tmp/*package-name***— For a software package or bundle that is being installed from a local directory on the router.
- ***protocol://hostname/pathname/package-name***—For a software package or bundle that is to be downloaded and installed from a remote location. Replace ***protocol*** with one of the following:
  - **ftp**—File Transfer Protocol
  - **http**—Hypertext Transfer Protocol
  - **scp**—Secure copy (available only for Canada and U.S. version)

no-old-master-upgrade—(Optional) When the **no-old-master-upgrade** 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 **no-old-master-upgrade** option, the system will automatically upgrade the former master Routing Engine.

reboot—(Optional) When the **reboot** option is included, the former master (new backup) Routing Engine is automatically rebooted after being upgraded to the new software. When the **reboot** option is not included, you must manually reboot the former master (new backup) Routing Engine using the **request system reboot** command.

Additional Information

The following conditions apply to unified ISSUs:

- Unified ISSUs are supported on M320 and T320 routers and on T640 routers only.
- Unsupported PICs are restarted during a unified ISSU. For information about supported PICs, see the *Junos High Availability Configuration Guide*.

- 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

- **request system software abort on page 738**
- **request system software abort on page 738**
- **show chassis in-service-upgrade on page 447**

List of Sample Output **request system software-in-service upgrade reboot on page 750**

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

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

Syntax

request system software rollback

Syntax (EX Series Switch)

request system software rollback
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

request system software rollback
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)

request system software rollback
<lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Revert to the software that was loaded at the last successful **request system software add** command.

Options

none—Revert to the set of software as of the last successful **request system software add**.

all-members—(EX4200 switches only) (Optional) Attempt to roll back to the previous set of packages on all members of the Virtual Chassis configuration.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Attempt to roll back to the previous set of packages on the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Attempt to roll back to the previous set of packages 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) Attempt to roll back to the previous set of packages on the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Attempt to roll back to the previous set of packages on the TX Matrix Plus router (or switch-fabric chassis). Replace *number with* **0**.

Additional Information

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 **jinstall** package. To return to the previously installed software, use the corresponding **jinstall** package.

A software rollback fails if any required package (or a **jbundle** package containing the required package) cannot be found in **/var/sw/pkg**.

Required Privilege Level

maintenance

Related Documentation

- **request system software add on page 740**
- **request system software delete on page 745**
- **request system software validate on page 756**
- **request system configuration rescue delete on page 710**
- **request system configuration rescue save on page 711**

List of Sample Output

request system software rollback on page 755

Output Fields

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

request system software rollback

```
user@host> request system software rollback
Verified SHA1 checksum of ./jbase-7.2R1.7.tgz
Verified SHA1 checksum of ./jdocs-7.2R1.7.tgz
Verified SHA1 checksum of ./jroute-7.2R1.7.tgz
Installing package './jbase-7.2R1.7.tgz' ...
Available space: 35495 require: 7335
Installing package './jdocs-7.2R1.7.tgz' ...
Available space: 35339 require: 3497
Installing package './jroute-7.2R1.7.tgz' ...
Available space: 35238 require: 6976
NOTICE: uncommitted changes have been saved in
/var/db/config/juniper.conf.pre-install
Reloading /config/juniper.conf.gz ...
Activating /config/juniper.conf.gz ...
mgd: commit complete
Restarting mgd ...
Restarting aprobed ...
Restarting apsd ...
Restarting cosd ...
Restarting fsad ...
Restarting fud ...
Restarting gcdrd ...
Restarting ilmid ...
Restarting irsd ...
Restarting l2tpd ...
Restarting mib2d ...
Restarting nasd ...
Restarting pppoed ...
Restarting rdd ...
Restarting rmopd ...
Restarting rtspd ...
Restarting sampled ...
Restarting serviced ...
Restarting snmpd ...
Restarting spd ...
Restarting vrrpd ...

WARNING: cli has been replaced by an updated version:
CLI release 7.2R1.7 built by builder on 2005-04-22 02:03:44 UTC
Restart cli using the new version ? [yes,no] (yes) yes

Restarting cli ...
user@host
```

request system software validate

Syntax

request system software validate *package-name*

Syntax (EX Series Switch)

request system software validate
<member *member-id*>

Syntax (TX Matrix Router)

request system software validate *package-name*
<lcc *number* | scc>

Syntax (TX Matrix Plus Router)

request system software validate *package-name*
<lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Validate candidate software against the current configuration of the router or switch.

Options

lcc *number*—(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 ***number*** with a value from **0** through **3**.

member *member-id*—(EX4200 switches only) (Optional) Validate the software bundle or package on the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

package-name—Name of the software bundle or package to test.

scc—(TX Matrix routers only) (Optional) Validate the software bundle or package for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Validate the software bundle or package for the TX Matrix Plus router (or switch-fabric chassis).

Additional Information

By default, when you issue the **request system software validate** command on a TX Matrix master Routing Engine, all the T640 master Routing Engines that are connected to it are validated. If you issue the same command on the TX Matrix backup Routing Engine, all the T640 backup Routing Engines that are connected to it are upgraded to the same version of software.

Likewise, if you issue the **request system software validate** command on a TX Matrix Plus master Routing Engine, all the T1600 master Routing Engines that are connected to it are validated. If you issue the same command on a TX Matrix Plus backup Routing Engine, all the T1600 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 add on page 740** • **request system software delete on page 745** • **request system software rollback on page 753**
List of Sample Output	**request system software validate (Successful Case) on page 758** **request system software validate (Failure Case) on page 758**
Output Fields	When you enter this command, you are provided feedback on the status of your request.

request system software validate (Successful Case)

```
user@host> request system software validate /var/sw/pkg/jbundle-5.3I20020124_0520_sjg.tgz
Checking compatibility with configuration
Initializing...
Using /packages/jbase-5.3I20020122_1901_sjg
Using /var/sw/pkg/jbundle-5.3I20020124_0520_sjg.tgz
Using /var/chroot/var/tmp/jbundle/jbase-5.3I20020124_0520_sjg.tgz
Using /var/chroot/var/tmp/jbundle/jkernel-5.3I20020124_0520_sjg.tgz
Using /var/chroot/var/tmp/jbundle/jcrypto-5.3I20020124_0520_sjg.tgz
Using /var/chroot/var/tmp/jbundle/jpfe-5.3I20020124_0520_sjg.tgz
Using /var/chroot/var/tmp/jbundle/jdocs-5.3I20020124_0520_sjg.tgz
Using /var/chroot/var/tmp/jbundle/jroute-5.3I20020124_0520_sjg.tgz
Validating against /config/juniper.conf.gz
mgd: commit complete

WARNING: cli has been replaced by an updated version:
CLI release 5.3I0 built by sjg on 2002-01-24 05:23:53 UTC
Restart cli using the new version ? [yes,no] (yes)
```

request system software validate (Failure Case)

```
user@host> request system software validate 6.3/
Pushing bundle to lcc0-re0
error: Failed to transfer package to lcc0-re0


user@host> request system software validate test
Pushing bundle to lcc0-re0
Pushing bundle to lcc2-re0

lcc0-re0:
gzip: stdin: not in gzip format
tar: child returned status 1
ERROR: Not a valid package: /var/tmp/test
```

request system software validate-in-service-upgrade

Syntax request system software validate in-service-upgrade *package-name*

Release Information Command introduced in Junos OS Release 9.6

Description Perform a compatibility check to ensure that the software and hardware components and the configuration on the device support unified ISSU. The **request system software validate in-service-upgrade** command enables you to detect any compatibility issues before actually issuing the **request system software in-service upgrade** command to initiate unified ISSU.

Options *package-name*—Location from which the software package or bundle is to be installed. For example:

- **/var/tmp/*package-name***— For a software package or bundle that is being installed from a local directory on the router.
- ***protocol://hostname/pathname/package-name***—For a software package or bundle that is to be downloaded and installed from a remote location. Replace ***protocol*** with one of the following:
  - **ftp**—File Transfer Protocol
  - **http**—Hypertext Transfer Protocol
  - **scp**—Secure copy (available only for Canada and U.S. version)

Additional Information Unified ISSU is supported on M320, M10i (with Enhanced Compact Forwarding Engine Board), MX Series, T320, T640, T1600, and TX Matrix routers only.

For more information, see the *Junos OS High Availability Configuration Guide*.

Required Privilege Level view

Related Documentation

- **request system software in-service-upgrade on page 749**
- **request system software abort on page 738**
- **request system software abort on page 738**
- **show chassis in-service-upgrade on page 447**

List of Sample Output **request system software-validate in-service upgrade on page 760**

Output Fields When you enter this command, Junos OS displays the status of your request.

request system software-validate in-service upgrade

```
{master}
user@host> request system software validate 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-aacl ...
Removing /opt/sdk/jservices-aacl ...
Removing jservices-aacl-pic-9.5-20090127.0.tgz from /var/sw/pkg ...
Notifying mspd ...
Installing new jservices-aacl ...
Verified jservices-aacl-pic-9.6-20090706.0.tgz signed by PackageProduction_9_6_0
Creating /opt/sdk/jservices-aacl ...
Storing jservices-aacl-pic-9.6-20090706.0.tgz in /var/sw/pkg ...
Link: /opt/sdk/jservices-aacl/jservices-aacl-pic ->
/var/sw/pkg/jservices-aacl-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

Syntax

request system storage cleanup <dry-run>

Syntax (EX Series Switch)

request system storage cleanup
<all-members>
<dry-run>
<local>
<member *member-id*>

Release Information

Command introduced in Junos OS Release 7.4.
dry-run option introduced in Junos OS Release 7.6.
Command introduced in Junos OS Release 9.0 for EX Series switches.

Description

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.

Options

all-members—(EX4200 switches only) (Optional) Delete files on all members of the Virtual Chassis configuration.

dry-run—(Optional) List files proposed for deletion (without deleting them).

local—(EX4200 switches only) (Optional) Delete files on the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Delete files on the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

Additional Information

If logging is configured and being used, the **dry-run** 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.

Required Privilege Level

maintenance

List of Sample Output

request system storage cleanup dry-run on page 762
request system storage cleanup on page 763

Output Fields

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

request system storage cleanup dry-run

```
user@host> request system storage cleanup dry-run
Currently rotating log files, please wait.
This operation can take up to a minute.

List of files to delete:

         Size Date         Name
  11.4K Mar  8 15:00 /var/log/messages.1.gz
  7245B Feb  5 15:00 /var/log/messages.3.gz
  11.8K Feb 22 13:00 /var/log/messages.2.gz
  3926B Mar 16 13:57 /var/log/messages.0.gz
  3962B Feb 22 12:47 /var/log/sampled.1.gz
  4146B Mar  8 12:20 /var/log/sampled.0.gz
```

```
  4708B Dec 21 11:39 /var/log/sampled.2.gz
  7068B Jan 16 18:00 /var/log/messages.4.gz
  13.7K Dec 27 22:00 /var/log/messages.5.gz
   890B Feb 22 17:22 /var/tmp/sampled.pkts
  65.8M Oct 26 09:10 /var/sw/pkg/jinstall-7.4R1.7-export-signed.tgz
  63.1M Oct 26 09:13 /var/sw/pkg/jbundle-7.4R1.7.tgz
```

request system storage cleanup

```
user@host> request system storage cleanup
Currently rotating log files, please wait.
This operation can take up to a minute.

List of files to delete:

         Size Date         Name
  11.4K Mar  8 15:00 /var/log/messages.1.gz
  7245B Feb  5 15:00 /var/log/messages.3.gz
  11.8K Feb 22 13:00 /var/log/messages.2.gz
  3926B Mar 16 13:57 /var/log/messages.0.gz
  11.6K Mar  8 15:00 /var/log/messages.5.gz
  7254B Feb  5 15:00 /var/log/messages.6.gz
  12.9K Feb 22 13:00 /var/log/messages.8.gz
  3726B Mar 16 13:57 /var/log/messages.7.gz
  3962B Feb 22 12:47 /var/log/sampled.1.gz
  4146B Mar  8 12:20 /var/log/sampled.0.gz
  4708B Dec 21 11:39 /var/log/sampled.2.gz
  7068B Jan 16 18:00 /var/log/messages.4.gz
  13.7K Dec 27 22:00 /var/log/messages.5.gz
   890B Feb 22 17:22 /var/tmp/sampled.pkts
  65.8M Oct 26 09:10 /var/sw/pkg/jinstall-7.4R1.7-export-signed.tgz
  63.1M Oct 26 09:13 /var/sw/pkg/jbundle-7.4R1.7.tgz

Delete these files ? [yes,no] (yes)
```

restart

Syntax

```
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
  logical-system-name> | sampling | service-deployment | services pgcp gateway
  gateway-name |sbc-configuration-process | snmp | usb-control| web-management>
<gracefully | immediately | soft>
```

Syntax (EX Series Switch)

```
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>
```

Syntax (TX Matrix Router)

```
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
  logical-system-name> | sampling | service-deployment | snmp>
<all-chassis | all-lcc | lcc number | scc>
<gracefully | immediately | soft>
```

Syntax (TX Matrix Plus Router)

```
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 logical-system-name> | sampling | service-deployment | snmp>
<all-chassis | all-lcc | all-sfc | lcc number | sfc number>
<gracefully | immediately | soft>
```

Syntax (J Series Router)

```
restart
<adaptive-services | audit-process | chassis-control | class-of-service | dhcp | dhcp-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 | routing <logical-system
  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.

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.

dlsw—(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 BGF running on an MS-PIC. This option does not restart the pgcpd process running on the Routing Engine. To restart the pgcpd process on the Routing Engine, use the **pgcp-service** option.

sflow-service—(EX Series 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 769**

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

restart interfaces

```
user@host> restart interfaces
interfaces process terminated
interfaces process restarted
```

show arp

Syntax

show arp
<expiration-time>
<logical-system *logical-system-name*>
<no-resolve>
<vpn *vpn-name*>

Release Information

Command introduced before Junos OS Release 7.4.
expiration-time option added in Junos OS Release 8.1.
logical-system and **vpn** options added in Junos OS Release 10.1.

Description

Display all entries in the Address Resolution Protocol (ARP) table. To display entries for a particular logical system only, first enter the **set cli logical-system *logical-system-name*** command, and then enter the **show arp** command.

Options

none—Display the entries in the ARP table.

expiration-time—(Optional) Display the amount of time, in seconds, until each ARP entry is set to expire.

logical-system *logical-system-name*—(Optional) Display ARP entries for the specified logical system; only available on the main router context.

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

vpn *vpn-name*—(Optional) Display entries in the ARP table for the specified virtual private network's (VPN) routing table.

Required Privilege Level

view

Related Documentation

- **clear arp on page 674**
- **set cli logical-system on page 525**

List of Sample Output

show arp on page 771
show arp no-resolve on page 771
show arp expiration-time on page 771

Output Fields

Table 121 on page 770 describes the output fields for the **show arp** command. Output fields are listed in the approximate order in which they appear.

Table 121: 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 121: show arp Output Fields *(continued)*

Field Name	Field Description
Name	Hostname.
Interface	Interface name.
Flags	(**no-resolve** option only) Indicates how mappings between IP and MAC addresses are defined: • **Permanent**—Static mapping. • **Permanent and published**—Static mapping that is published. • **None**—Dynamic mapping.
TTE	(**expiration-time** option only) Amount of time, in seconds, until ARP entry is set to expire.

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

Syntax show configuration
<statement-path>

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

Description Display the configuration that currently is running on the router or switch, which is the last committed configuration.

Options none—Display the entire configuration.

statement-path—(Optional) Display one of the following hierarchies in a configuration. (Each ***statement-path*** option has additional suboptions not described here. See the appropriate configuration guide or EX Series switch documentation for more information.)

- **access**—Network access configuration.
- **access-profile**—Access profile configuration.
- **accounting-options**—Accounting data configuration.
- **applications**—Applications defined by protocol characteristics.
- **apply-groups**—Groups from which configuration data is inherited.
- **chassis**—Chassis configuration.
- **chassis network-services**—Current running mode.
- **class-of-service**—Class-of-service configuration.
- **diameter**—Diameter base protocol layer configuration.
- **ethernet-switching-options**—(EX Series switch only) Ethernet switching configuration.
- **event-options**—Event processing configuration.
- **firewall**—Firewall configuration.
- **forwarding-options**—Options that control packet sampling.
- **groups**—Configuration groups.
- **interfaces**—Interface configuration.
- **jsrc**—JSRC partition configuration.
- **jsrc-partition**—JSRC partition configuration.
- **logical-systems**—Logical system configuration.
- **poe**—(EX Series switch only) Power over Ethernet configuration.
- **policy-options**—Routing policy option configuration.
- **protocols**—Routing protocol configuration.

- **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.
- **vlans**—(EX Series switch only) VLAN configuration.

Additional Information

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 **ACCESS-DENIED** 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 **secret** permission bit is not set for your user account, the text **SECRET-DATA** is substituted for that portion of the configuration. If an identifier in the configuration contains a space, the identifier is displayed in quotation marks.

Required Privilege Level

view

Related Documentation

- Displaying the Current Junos OS Configuration
- Overview of Junos OS CLI Operational Mode Commands

List of Sample Output

show configuration on page 773
show configuration policy-options on page 774

Output Fields

This command displays information about the current running configuration.

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 policy-options

```
user@host> show configuration policy-options
policy-options {
    policy-statement "direct routes" {
        from protocol direct;
        then accept;
    }
}
```

show dhcp server binding

Syntax

show dhcp server binding
<brief | detail | summary>
<interface *interface-name*>
<*ip-address* | *mac-address*>
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

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

brief | detail | summary—(Optional) Display the specified level of output about active client bindings. The default is **brief**, which produces the same output as **show dhcp server binding**.

interface *interface-name*—(Optional) Display information about active client bindings on the specified interface. You can optionally filter on VLAN ID and SVLAN ID.

ip-address—(Optional) IP address of the DHCP client.

mac-address—(Optional) MAC address of the DHCP client.

logical-system *logical-system-name*—(Optional) Display information about active client bindings for DHCP clients on the specified logical system.

routing-instance *routing-instance-name*—(Optional) Display information about active client bindings for DHCP clients on the specified routing instance.

Required Privilege Level

view

Related Documentation

- **clear dhcp server binding on page 675**

List of Sample Output

show dhcp server binding on page 777
show dhcp server binding detail on page 777
show dhcp server binding interface vlan-id on page 777
show dhcp server binding interface svlan-id on page 777
show dhcp server binding ip-address on page 777
show dhcp server binding session-id on page 777
show dhcp server binding summary on page 778

Output Fields

Table 122 on page 776 lists the output fields for the **show dhcp server binding** command. Output fields are listed in the approximate order in which they appear.

Table 122: show dhcp server binding Output Fields

Field Name	Field Description	Level of Output
number **clients,** (*number* **init,** *number* **bound,** *number* **selecting,** *number* **requesting,** *number* **renewing,** *number* **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: • **BOUND**—Client has active IP address lease. • **FORCERENEW**—Client has received forcerenew message from server. • **INIT**—Initial state. • **RELEASE**—Client is releasing IP address lease. • **RENEWING**—Client sending request to renew IP address lease. • **REQUESTING**—Client requesting a DHCP server. • **SELECTING**—Client receiving offers from DHCP servers.	**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**

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(bound)
     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(bound)
     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 binding session-id

```
user@host> show dhcp server binding 6
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 binding summary

```
user@host> show dhcp server binding summary
3 clients, (2 init, 1 bound, 0 selecting, 0 requesting, 0 renewing, 0 releasing)
```

show dhcp server statistics

Syntax

show dhcp server statistics
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

Release Information

Command introduced in Junos OS Release 9.0.

Description

Display extended Dynamic Host Configuration Protocol (DHCP) local server statistics.

Options

logical-system *logical-system-name*—(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.

routing-instance *routing-instance-name*—(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.

Required Privilege Level

view

Related Documentation

- **clear dhcp server statistics on page 677**

List of Sample Output

show dhcp server statistics on page 780

Output Fields

Table 123 on page 780 lists the output fields for the **show dhcp server statistics** command. Output fields are listed in the approximate order in which they appear.

Table 123: show dhcp server statistics Output Fields

Field Name	Field Description
Packets dropped	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. • **Total**—Total number of packets discarded by the extended DHCP local server • **Bad hardware address**—Number of packets discarded because an invalid hardware address was specified • **Bad opcode**—Number of packets discarded because an invalid operation code was specified • **Bad options**—Number of packets discarded because invalid options were specified • **Invalid server address**—Number of packets discarded because an invalid server address was specified • **No available addresses**—Number of packets discarded because there were no addresses available for assignment • **No interface match**—Number of packets discarded because they did not belong to a configured interface • **No routing instance match**—Number of packets discarded because they did not belong to a configured routing instance • **No valid local address**—Number of packets discarded because there was no valid local address • **Packet too short**—Number of packets discarded because they were too short • **Read error**—Number of packets discarded because of a system read error • **Send error**—Number of packets that the extended DHCP local server could not send
Messages received	Number of DHCP messages received. • **BOOTREQUEST**—Number of BOOTP protocol data units (PDUs) received • **DHCPDECLINE**—Number of DHCP PDUs of type DECLINE received • **DHCPDISCOVER**—Number of DHCP PDUs of type DISCOVER received • **DHCPINFORM**—Number of DHCP PDUs of type INFORM received • **DHCPRELEASE**—Number of DHCP PDUs of type RELEASE received • **DHCPREQUEST**—Number of DHCP PDUs of type REQUEST received
Messages sent	Number of DHCP messages sent. • **BOOTREPLY**—Number of BOOTP PDUs transmitted • **DHCPOFFER**—Number of DHCP OFFER PDUs transmitted • **DHCPACK**—Number of DHCP ACK PDUs transmitted • **DHCPNACK**—Number of DHCP NACK PDUs transmitted • **DHCPFORCERENEW**—Number of DHCP FORCERENEW PDUs transmitted

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

Syntax

show dhcpv6 server binding
<brief | detail | summary>
<interface *interface-name*>
<*ip-address*>
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display the address bindings in the client table on the extended Dynamic Host Configuration Protocol for IPv6 (DHCPv6) local server.

Options

brief | detail | summary—(Optional) Display the specified level of output about active client bindings. The default is **brief**, which produces the same output as **show dhcpv6 server binding**.

interface *interface-name*—(Optional) Display information about active client bindings on the specified interface. You can optionally filter on VLAN ID and SVLAN ID.

ip-address—(Optional) IP address of the DHCPv6 client, or client ID of the DHCPv6 client, or session ID associated with the DHCPv6 client.

logical-system *logical-system-name*—(Optional) Display information about active client bindings for DHCPv6 clients on the specified logical system.

routing-instance *routing-instance-name*—(Optional) Display information about active client bindings for DHCPv6 clients on the specified routing instance.

Required Privilege Level

view

Related Documentation

- **clear dhcpv6 server binding on page 679**

List of Sample Output

show dhcpv6 server binding on page 784
show dhcpv6 server binding detail on page 784
show dhcpv6 server binding interface on page 784
show dhcpv6 server binding interface detail on page 784
show dhcpv6 server binding prefix on page 785
show dhcpv6 server binding session-id on page 785
show dhcpv6 server binding summary on page 785

Output Fields

Table 124 on page 783 lists the output fields for the **show dhcpv6 server binding** command. Output fields are listed in the approximate order in which they appear.

Table 124: show dhcpv6 server binding Output Fields

Field Name	Field Description	Level of Output
number clients, (*number* init, *number* bound, *number* selecting, *number* requesting, *number* renewing, *number* 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: • **BOUND**—Client has active IP address lease. • **INIT**—Initial state. • **RELEASE**—Client is releasing IP address lease. • **RECONFIGURE**—Server has sent reconfigure message to client. • **RENEWING**—Client sending request to renew IP address lease. • **REQUESTING**—Client requesting a DHCPv6 server. • **SELECTING**—Client receiving offers from DHCPv6 servers.	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

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(bound)
     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(bound)
     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

Syntax

show dhcpv6 server statistics
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display extended Dynamic Host Configuration Protocol for IPv6 (DHCPv6) local server statistics.

Options

logical-system *logical-system-name*—(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.

routing-instance *routing-instance-name*—(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.

Required Privilege Level

view

Related Documentation

- **clear dhcpv6 server statistics on page 681**

List of Sample Output

show dhcpv6 server statistics on page 787

Output Fields

Table 125 on page 787 lists the output fields for the **show dhcpv6 server statistics** command. Output fields are listed in the approximate order in which they appear.

Table 125: show dhcpv6 server statistics Output Fields

Field Name	Field Description
Packets dropped	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. • **Total**—Total number of packets discarded by the extended DHCPv6 local server • **Strict Reconfigure**—Number of solicit messages discarded because the client does not support reconfiguration • **Bad hardware address**—Number of packets discarded because an invalid hardware address was specified • **Bad opcode**—Number of packets discarded because an invalid operation code was specified • **Bad options**—Number of packets discarded because invalid options were specified • **Invalid server address**—Number of packets discarded because an invalid server address was specified • **No available addresses**—Number of packets discarded because there were no addresses available for assignment • **No interface match**—Number of packets discarded because they did not belong to a configured interface • **No routing instance match**—Number of packets discarded because they did not belong to a configured routing instance • **No valid local address**—Number of packets discarded because there was no valid local address • **Packet too short**—Number of packets discarded because they were too short • **Read error**—Number of packets discarded because of a system read error • **Send error**—Number of packets that the extended DHCPv6 local server could not send
Messages received	Number of DHCPv6 messages received. • **DHCPV6_CONFIRM**—Number of DHCPv6 CONFIRM PDUs received. • **DHCPV6_DECLINE**—Number of DHCPv6 DECLINE PDUs received. • **DHCPV6_INFORMATION_REQUEST**—Number of DHCPv6 INFORMATION-REQUEST PDUs received. • **DHCPV6_REBIND**—Number of DHCPv6 REBIND PDUs received. • **DHCPV6_RELAY_FORW**—Number of DHCPv6 RELAY-FORW PDUs received. • **DHCPV6_RELAY_REPL**—Number of DHCPv6 RELAY-REPL PDUs received. • **DHCPV6_RELEASE**—Number of DHCPv6 RELEASE PDUs received. • **DHCPV6_RENEW**—Number of DHCPv6 RENEW PDUs received. • **DHCPV6_REQUEST**—Number of DHCPv6 REQUEST PDUs received. • **DHCPV6_SOLICIT**—Number of DHCPv6 SOLICIT PDUs received.
Messages sent	Number of DHCPv6 messages sent. • **DHCPV6_ADVERTISE**—Number of DHCPv6 ADVERTISE PDUs transmitted. • **DHCPV6_REPLY**—Number of DHCPv6 ADVERTISE PDUs transmitted. • **DHC6_RECONFIGURE**—Number of DHCPv6 RECONFIGURE PDUs transmitted.

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

Syntax show host *hostname*

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

Description Display Domain Name System (DNS) hostname information.

Options *hostname*—Hostname or address.

Additional Information The **show host** command displays the raw data received from the DNS server.

Required Privilege Level view

List of Sample Output **show host on page 789**

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

Syntax

show network-access aaa statistics
<accounting>
<address-assignment (client *client* | pool *pool-name*)>
<authentication>
<dynamic-requests>

Release Information

Command introduced in Junos OS Release 9.1.
address-assignment option introduced in Junos OS Release 10.0.

Description

Display AAA accounting, authentication, address-assignment, and dynamic request statistics.

Options

accounting—(Optional) Display AAA accounting statistics.

address-assignment (client | pool *pool-name*)—(Optional) Display AAA address-assignment client and pool statistics.

authentication—(Optional) Display AAA authentication statistics.

dynamic-requests—(Optional) Display AAA dynamic requests.

Required Privilege Level

view

List of Sample Output

show network-access aaa statistics accounting on page 791
show network-access aaa statistics address-assignment client on page 791
show network-access aaa statistics address-assignment pool on page 791
show network-access aaa statistics authentication on page 792
show network-access aaa statistics dynamic-requests on page 792

Output Fields

Table 126 on page 790 lists the output fields for the **show network-access aaa statistics** command. Output fields are listed in the approximate order in which they appear.

Table 126: show network-access aaa statistics Output Fields

Field Name	Field Description
Requests received	• Number of authentication requests received from clients. • Number of accounting requests generated by the AAA framework. • Number of dynamic requests received from the external server.
Accounting Response failures	Number of accounting requests not acknowledged (NAK) by the accounting server.
Accounting Response Success	Number of accounting requests acknowledged by the accounting server.
Requests timedout	Number of accounting requests to the accounting server that timed out.

Table 126: 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.

show network-access aaa statistics accounting

```
user@host> show network-access aaa statistics accounting
Accounting module statistics
  Requests received: 0
  Accounting Response failures: 0
  Accounting Response Success: 0
  Requests timedout: 0
```

show network-access aaa statistics address-assignment client

```
user@host> show network-access aaa statistics address-assignment client
Address-assignment statistics
 Client: jdhcpd
 Out of Memory: 0
 No Matches: 2
```

show network-access aaa statistics

```
user@host> show network-access aaa statistics address-assignment pool isp_1
```

address-assignment pool

```
Address-assignment statistics
 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 aaa statistics authentication

```
user@host> show network-access aaa statistics authentication
Requests received: 0
Accepts: 0
Rejects: 0
Challenges: 0
```

show network-access aaa statistics dynamic-requests

```
user@host> show network-access aaa statistics dynamic-requests
requests received: 0
processed successfully: 0
errors during processing: 0
silently dropped: 0
```

show network-access aaa subscribers

Syntax

show network-access aaa subscribers
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>
<statistics>
<username>

Release Information

Command introduced in Junos OS Release 9.1.

Description

Display subscriber-specific AAA statistics.

Options

logical-system *logical-system-name*—(Optional) List subscribers in the specific logical system.

routing-instance *routing-instance-name*—(Optional) List subscribers for the specific routing instance. If you do not specify a routing instance name, the default routing instance is assumed.

statistics—(Optional) Display statistics for the subscriber events.

username—(Optional) Display information for the specified subscriber.

Required Privilege Level

view

List of Sample Output

show network-access aaa subscribers logical-system on page 794
show network-access aaa subscribers on page 794
show network-access aaa subscribers statistics username on page 794
show network-access aaa subscribers username on page 795

Output Fields

Table 127 on page 793 lists the output fields for the **show network-access aaa subscribers** command. Output fields are listed in the approximate order in which they appear.

Table 127: 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 127: 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.

show network-access aaa subscribers logical-system

```
user@host> show network-access aaa subscribers logical-system
Username                Virtual router name                  Client type
cbenson@address.net     default                              ppp
00010e020304.1231       isp-bos-metro-12:isp-cmbrg-12-32     dhcp
conley@isp3.com         default:isp-gtown-r3-00              dhcp
0020df980102.2334       isp-bos-metro-16:isp-cmbrg-12-32     dhcp
```

show network-access aaa subscribers

```
user@host> show network-access aaa subscribers logical-system isp-bos-metro-16
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 aaa subscribers statistics username

```
user@host> show network-access aaa subscribers statistics username 00010e020304.1231
Authentication statistics
   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
   Sucessfull 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 aaa subscribers username

```
user@host> show network-access aaa subscribers username fred@isp5.net
Virtual router name                Client type  Session uptime   Accounting
isp-bos-metro-16:isp-cmbrg-12-32   dhcp         1d 12h 56m       on/volume

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

Syntax **show network-access aaa subscribers session-id** *session-id*
<brief | detail>

Release Information Command introduced in Junos OS Release 10.0.

Description Display information about the specified subscriber session.

Options *session-id*—ID of the subscriber session.

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

Required Privilege Level view

List of Sample Output **show network-access aaa subscribers session-id brief on page 797**
show network-access aaa subscribers session-id detail on page 797

Output Fields Table 128 on page 796 lists the output fields for the **show network-access aaa subscribers session-id** command. Output fields are listed in the approximate order in which they appear.

Table 128: show network-access aaa subscribers session-id Output Fields

Field Name	Field Description
Type and **Client type**	Type of client.
Username	Name of the user logged in to the session.
Stripped username	The username after the domain has been removed.
AAA Logical system/Routing instance	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.
Session ID	ID of the subscriber session. The session ID value displayed under **Service name** is the service session ID.
Accounting Session ID	ID of the accounting session (RADIUS attribute 44). The ID appears in decimal or description format, as specified by the **accounting-session-id-format** statement.
Multi Accounting Session ID	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 128: 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*.

show network-access aaa subscribers session-id brief

```
user@host> show network-access aaa subscribers session-id 6 brief
Logical system/Routing instance   Client type   Session uptime    Accounting
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 aaa subscribers session-id detail

```
user@host> show network-access aaa subscribers session-id 5 detail
Type: dhcp
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

Syntax

show network-access address-assignment pool *pool-name*
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

Release Information

Command introduced in Junos OS Release 9.0.

Description

Display state information for each address-assignment pool.

Options

none—Display information about clients that have obtained addresses from the address-assignment pool.

pool *pool-name*—Display information about the specified address-assignment pool.

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

routing-instance *routing-instance-name*—(Optional) Perform this operation on the specified routing instance.

Required Privilege Level

view and system

List of Sample Output

show network-access address-assignment pool on page 798

Output Fields

Table 129 on page 798 lists the output fields for the **show address-assignment pool** command. Output fields are listed in the approximate order in which they appear.

Table 129: 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.

show network-access address-assignment pool

```
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

Syntax

show ntp associations
<no-resolve>

Release Information

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

Description

Display Network Time Protocol (NTP) peers and their state.

Options

none—Display NTP peers and their state.

no-resolve—(Optional) Suppress symbolic addressing.

Required Privilege Level

view

Related Documentation

- **show ntp status on page 801**

List of Sample Output

show ntp associations on page 800

Output Fields

Table 130 on page 799 describes the output fields for the **show ntp associations** command. Output fields are listed in the approximate order in which they appear.

Table 130: 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** (broadcast), **l** (local), **m** (multicast), or **u** (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 130: show ntp associations Output Fields *(continued)*

Field Name	Field Description
peer-name	Peer name and status of the peer in the clock selection process: • space—Discarded because of a high stratum value or failed sanity checks. • **x**—Designated "falseticker", by the intersection algorithm. • **.**—Culled from the end of the candidate list. • **–** —Discarded by the clustering algorithm. • **+**—Included in the final selection set. • **#**—Selected for synchronization, but the distance exceeds the maximum. • *****—Selected for synchronization. • **o**—Selected for synchronization, but the packets-per-second (pps) signal is in use.

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 status

Syntax

show ntp status
<no-resolve>

Release Information

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

Description

Display the values of internal variables returned by Network Time Protocol (NTP) peers.

Options

none—Display the values of internal variables returned by NTP peers.

no-resolve—(Optional) Suppress symbolic addressing.

Required Privilege Level

view

Related Documentation

- show ntp associations on page 799

List of Sample Output

show ntp status on page 801

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

Syntax

show static-subscribers sessions
<group-name>
<interface-name>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display information about the subscriber sessions for all static subscribers, all static subscribers on an interface group, or a single subscriber on an interface.

Options

group-name—(Optional) Display session information for static subscribers on all interfaces in the specified group.

interface-name—(Optional) Display session information for the static subscriber on the specified in the specified group.

Required Privilege Level

view

List of Sample Output

show static-subscribers sessions on page 803
show static-subscribers sessions group on page 803
show static-subscribers sessions interface on page 803

Output Fields

Table 131 on page 802 lists the output fields for the **show static-subscribers sessions** command. Output fields are listed in the approximate order in which they appear.

Table 131: show static-subscribers sessions Output Fields

Field Name	Field Description	Level of Output
Interface	Name of the interface.	None specified
State	State of the static subscriber session: • **authenticating**—Subscriber is being authenticated. • **activating client**—Client is being activated. • **activating services**—Subscriber services are being activated. • **deactivating client**—Client is being deactivated. • **deactivating services**—Subscriber services are being deactivated. • **initializing**—Process is initializing. • **logged in**—Subscriber is logged in to the interface. • **logged out**—Subscriber is logged out of the interface. • **processing statistics**—Session statistics are being processed. • **terminating session**—Subscriber session is being terminated.	None specified
Group	Name of the interface group to which the interface belongs.	None specified
User Name	Username used for the static subscriber. Can be the interface name.	None specified

show static-subscribers sessions

```
user@host> show 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 static-subscribers sessions group

```
user@host> show static-subscribers sessions group boston

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 static-subscribers sessions interface

```
user@host> show static-subscribers sessions interface ge-0/0/1.1

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

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 | terse | extensive—(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 807
show subscribers detail (IPv4) on page 807
show subscribers detail (IPv6) on page 807
show subscribers detail (Tunneled Subscriber) on page 808
show subscribers logical-system on page 808
show subscribers count on page 808
show subscribers routing-instance inst1 count on page 808
show subscribers vlan-id on page 808
show subscribers vlan-id detail on page 808
show subscribers stacked-vlan-id detail on page 808
show subscribers stacked-vlan-id vlan-id detail (Combined Output) on page 809
show subscribers stacked-vlan-id vlan-id interface detail (Combined Output for a Specific Interface) on page 809
show subscribers client-type dhcp detail on page 809
show subscribers extensive on page 809
show subscribers summary on page 810
show subscribers summary all on page 810
show subscribers terse on page 810

Output Fields Table 132 on page 805 lists the output fields for the **show subscribers** command. Output fields are listed in the approximate order in which they appear.

Table 132: 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 132: 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 *tpid.vlan-id*.
Stacked VLAN Id	Stacked VLAN ID associated with the subscriber in the form *tpid.vlan-id*.
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.
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).

Table 132: show subscribers Output Fields *(continued)*

Field Name	Field Description
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	Number of subscribers summarized by state. The summary information includes the following: • Init—Number of subscriber currently in the initialization state. • Configured—Number of configured subscribers. • Active—Number of active subscribers. • Terminating—Number of subscribers currently terminating. • Terminated—Number of terminated subscribers. Summary information includes subscriber counts per state and the total number of subscribers.
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.

show subscribers

```
user@host> show subscribers
Interface            IP Address/VLAN ID   User Name         LS:RI
ge-1/3/0.1073741824   100                                     default:default
demux0.1073741824     100.0.0.10           WHOLESALER-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 detail (IPv4)

```
user@host> show subscribers 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
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 Output)

```
user@host> show subscribers stacked-vlan-id 101 vlan-id 100 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 interface detail (Combined Output for a Specific Interface)

```
user@host> show subscribers stacked-vlan-id 101 vlan-id 100 interface ge-1/2/0.* 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 client-type dhcp detail

```
user@host> show subscribers 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           WHOLESALER-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

Syntax show system alarms

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

Description Display active system alarms.

Options This command has no options.

Additional Information System alarms are preset. They include a **configuration** alarm that appears when no rescue configuration alarm is set and a **license** 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 *Junos OS System Basics Configuration Guide*.

Required Privilege Level admin

List of Sample Output **show system alarms on page 812**

show system alarms

```
user@host> show system alarms
2 alarms currently active
Alarm time                    Class     Description
2005-02-24 17:29:34 UTC       Minor     IPsec VPN tunneling usage requires a
license
2005-02-24 17:29:34 UTC       Minor     Rescue configuration is not sent
```


show system audit

Syntax

show system audit
<root-only>

Syntax (EX Series Switch)

show system audit
<all-members>
<local>
<member *member-id*>
<root-only>

Syntax (TX Matrix Router)

show system audit
<all-lcc | lcc *number* | scc>
<root-only>

Syntax (TX Matrix Plus Router)

show system audit
<all-chassis | all-lcc | lcc *number* | sfc *number*>
<root-only>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display the state and checksum values for file systems.

Options

none—Display the state and checksum values for all file systems.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display file system MD5 hash and permissions information for all of the chassis.

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.

all-members—(EX4200 switches only) (Optional) Display file system MD5 hash and permissions information on all members of the Virtual Chassis configuration.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Display file system MD5 hash and permissions information on the local Virtual Chassis member.

member *member-id*—(EX4200 switches 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 *router-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 814
show system audit lcc (TX Matrix Router) on page 815
show system audit lcc (TX Matrix Plus Router) on page 817

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=bbad415e1c29bbedd9b383537100412c
    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 autoinstallation status

Syntax show system autoinstallation status

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

Description (J Series routers and EX Series switches only) Display autoinstallation status information.

Options This command has no options.

Required Privilege Level view

List of Sample Output show system autoinstallation status on page 819

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

Syntax

show system boot-messages

Syntax (EX Series Switch)

show system boot-messages
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system boot-messages
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system boot-messages
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display initial messages generated by the system kernel upon startup. These messages are the contents of **/var/run/dmesg.boot**.

Options

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 *number*—(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 ***number*** with a value from from **0** through **3**.

local—(EX4200 switches only) (Optional) Display boot time messages on the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display boot time messages 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 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 821
show system boot-messages lcc (TX Matrix Router) on page 822
show system boot-messages (TX Matrix Plus Router) on page 823

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/compil
e/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,<b
16>,<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 SDCFB-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:
--------------------------------------------------------------------------
Copyright (c) 1996-2001, Juniper Networks, Inc.
All rights reserved.
Copyright (c) 1992-2001 The FreeBSD Project.
Copyright (c) 1979, 1980, 1983, 1986, 1988, 1989, 1991, 1992, 1993, 1994
        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,VME,DE,PSE,TSC,MSR,PAE,MCE,CX8,SEP,MTRR,PGE,MCA,CMOV,PAT,PSE36,PN,MMX,FXSR,SSE>
real memory  = 2147467264 (2097136K bytes)
sio0: gdb debugging port
avail memory = 2084040704 (2035196K bytes)
Preloaded elf kernel "kernel" at 0xc06d9000.
DEVFS: ready for devices
Pentium Pro MTRR support enabled
md0: Malloc disk
DRAM Data Integrity Mode: ECC Mode with h/w scrubbing
npx0: <math processor> on motherboard
npx0: INT 16 interface
pcib0: <ServerWorks NB6635 3.0LE host to PCI bridge> on motherboard
pci0: <PCI bus> on pcib0
pcic-pci0: <TI PCI-1410 PCI-CardBus Bridge> irq 15 at device 1.0 on pci0
pcic-pci0: TI12XX PCI Config Reg: [pwr save][pci only]
fxp0: <Intel Embedded 10/100 Ethernet> port 0x1000-0x103f mem
0xfb800000-0xfb81ffff,0xfb820000-0xfb820fff irq 9 at device 3.0 on pci0
fxp1: <Intel Embedded 10/100 Ethernet> port 0x1040-0x107f mem
0xfb840000-0xfb85ffff,0xfb821000-0xfb821fff irq 11 at device 4.0 on pci0
...
```

show system boot-messages (TX Matrix Plus Router)

```
user@host> show system boot-messages
sfc0-re0:
--------------------------------------------------------------------------
Copyright (c) 1996-2009, Juniper Networks, Inc.
All rights reserved.
Copyright (c) 1992-2006 The FreeBSD Project.
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:
--------------------------------------------------------------------------
Copyright (c) 1996-2009, Juniper Networks, Inc.
All rights reserved.
Copyright (c) 1992-2006 The FreeBSD Project.
Copyright (c) 1979, 1980, 1983, 1986, 1988, 1989, 1991, 1992, 1993, 1994
        The Regents of the University of California. All rights reserved.
JUNOS 9.6-20090617.0 #0: 2009-06-17 04:15:14 UTC

builder@lanath.juniper.net:/volume/build/junos/9.6/production/20090617.0/obj-i386/bsd/sys/compile/JUNIPER
Timecounter "i8254" frequency 1193182 Hz quality 0
CPU: Intel(R) Xeon(R) CPU                 @ 1.86GHz (1862.01-MHz 686-class CPU)

  Origin = "GenuineIntel"  Id = 0x1067a  Stepping = 10
  Features=0xbfebfbff
...
```

show system buffers

Syntax

show system buffers

Syntax (EX Series Switch)

show system buffers
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system buffers
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system buffers
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

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).

Options

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 *number*—(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 ***number*** with a value from **0** through **3**.

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 826
show system buffers scc (TX Matrix Router) on page 827
show system buffers sfc (TX Matrix Plus Router) on page 827
show system buffers all-chassis (TX Matrix Plus Router) on page 827

Output Fields

Table 133 on page 826 describes the output fields for the **show system buffers** command. Output fields are listed in the approximate order in which they appear.

Table 133: show system buffers Output Fields

Field Name	Field Description
mbufs in use	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.
mbufs allocated to packet headers	Number of memory buffers currently holding packet headers
mbufs allocated to control blocks	Number of memory buffers currently holding state for sockets.
mbufs allocated to send data	Number of memory buffers currently holding socket send data.
mbufs allocated to pfe refill data	Number of memory buffers currently holding Packet Forwarding Engine refill data.
mbufs allocated to fxp data	Number of memory buffers currently holding fxp data.
mbufs allocated to socket names and addresses	Number of memory buffers currently holding addresses for sockets.
mbuf clusters in use	Allocation statistics for mbuf clusters.
allocated to network	Total amount of memory in use by the networking and interprocess communication (IPC) code.
requests for memory denied	Number of times a memory allocation request within the IPC and networking code failed.
requests for memory delayed	Number of times a memory allocation request within the IPC and networking code was postponed.
calls to protoocl drain routines	Number of times a memory allocation request within the IPC and networking code triggered a memory reclamation attempt.

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 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

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 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

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 sfbufs in use (current/peak/max)
0 requests for sfbufs denied
0 requests for sfbufs delayed
0 requests for I/O initiated by sendfile
```

show system commit

Syntax show system commit

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

Description Display the pending commit operation (if any) and the commit history.

Options This command has no options.

Required Privilege Level view

Related Documentation

- **clear system commit on page 684**

List of Sample Output

show system commit on page 830
show system commit (At a Particular Time) on page 830
show system commit (At the Next Reboot) on page 830
show system commit (Rollback Pending) on page 830

Output Fields Table 134 on page 829 describes the output fields for the **show system commit** command. Output fields are listed in the approximate order in which they appear.

Table 134: show system commit Output Fields

Field Name	Field Description
Commit History	Displays the last 50 commit operations listed, most recent to first. The identifier **rescue** designates a configuration created for recovery using the **request system configuration rescue save** command.
Timestamp	Date and time of the commit operation.
User name	User who executed the commit operation
Commit method	Method used to execute the commit operation: • **cli**—CLI interactive user performed the commit operation. • **Junos XML protocol**—Junos XML protocol client performed the commit operation. • **synchronize**—The **commit synchronize** command was performed on the other Routing Engine. • **snmp**—An SNMP SET request caused the commit operation. • **button**—A button on the router or switch was pressed to commit a rescue configuration for recovery. • **autoinstall**—A configuration obtained through autoinstallation was committed. • **other**—A method other than those identified was used to perform the commit operation.

show system commit

```
user@host> show system commit
0   2003-07-28 19:14:04 PDT by root via other
1   2003-07-25 22:01:36 PDT by regress via cli
2   2003-07-25 22:01:32 PDT by regress via cli
3   2003-07-25 21:30:13 PDT by root via button
4   2003-07-25 13:46:48 PDT by regress via cli
5   2003-07-25 05:33:21 PDT by root via autoinstall
...
rescue  2002-05-10 15:32:03 PDT by root via other
```

show system commit (At a Particular Time)

```
user@host> show system commit
commit requested by root via cli at Tue May  7 15:59:00 2002
```

show system commit (At the Next Reboot)

```
user@host> show system commit
commit requested by root via cli at reboot
```

show system commit (Rollback Pending)

```
user@host> show system commit
0 2005-01-05 15:00:37 PST by root via cli commit confirmed, rollback in 3mins
```

show system configuration archival

Syntax show system configuration archival

Release Information Introduced in Junos OS Release 7.6.
Command introduced in Junos OS Release 9.0 for EX Series switches.

Description Display directory and number of files queued for archival transfer.

Options This command has no options.

Required Privilege Level maintenance

List of Sample Output show system configuration archival on page 831

show system configuration archival

```
user@host> show system configuration archival

/var/transfer/config/:
total 8
```

show system configuration rescue

Syntax show system configuration rescue

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

Description Display a rescue configuration, if one exists.

Options This command has no options.

Required Privilege Level maintenance

List of Sample Output show system configuration rescue on page 832

show system configuration rescue

```
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

Syntax

show system connections
<extensive>
<all-chassis | all-lcc | lcc *number* | scc>
<inet | inet6>
<show-routing-instances>

Syntax (EX Series Switch)

show system connections
<extensive>
<all-members>
<inet | inet6>
<local>
<member *member-id*>
<show-routing-instances>

Syntax (TX Matrix Router)

show system connections
<extensive>
<all-chassis | all-lcc | lcc *number* | scc>
<inet | inet6>
<show-routing-instances>

Syntax (TX Matrix Plus Router)

show system connections
<extensive>
<all-chassis | all-lcc | lcc *number* | sfc *number*>
<inet | inet6>
<show-routing-instances>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display information about the active IP sockets on the Routing Engine. Use this command to verify which servers are active on a system and what connections are currently in progress.

Options

none—Display information about all active IP sockets on the Routing Engine.

extensive—(Optional) Display exhaustive system process information, which, for TCP connections, includes the TCP control block. This option is useful for debugging TCP connections.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system connection activity 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 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

Output Fields

Table 135 on page 835 describes the output fields for the **show system connections** command. Output fields are listed in the approximate order in which they appear.

Table 135: show system connections Output Fields

Field Name	Field Description
Proto	Protocol of the socket: **IP**, **TCP**, or **UDP** for IPv4 or IPv6.
Recv-Q	Number of input packets received by the protocol and waiting to be processed by the application.
Send-Q	Number of output packets sent by the application and waiting to be processed by the protocol.
Local Address	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.
Foreign Address	Foreign address and port of the socket, separated by a period. An asterisk (*) indicates that the address or port is a wildcard.
Routing Instance (Displayed only when the **show-routing-instance** option is used.	Routing instances associated with active IP sockets on the Routing Engine.
(state)	For TCP, the protocol state of the socket.

show system connections

```
user@host> show system connections
Active Internet connections (including servers)
Proto Recv-Q Send-Q  Local Address          Foreign Address        (state)
tcp        0      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

```
user@host> show system connections show-routing-instances
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q  Local Address         Foreign Address       Routing Instance
       (state)
tcp4       0      0  192.168.69.204.23      172.17.28.19.4267      default
          ESTABLISHED
tcp4       0      0  192.168.69.204.58540   10.209.7.138.23        default
          ESTABLISHED
tcp4       0      0  192.168.69.204.23      172.17.28.19.1098      default
          ESTABLISHED
tcp4       0      0  192.168.7.1.57668      192.168.9.1.179        default
          ESTABLISHED
tcp4       0      0  192.168.7.1.179        192.168.8.1.49209      default
          ESTABLISHED
tcp4       0      0  128.0.0.1.6234         128.0.3.17.1024
__juniper_private1__   ESTABLISHED
tcp4       0      0  128.0.0.4.9000         128.0.0.4.59103
__juniper_private1__   ESTABLISHED
tcp4       0      0  128.0.0.4.59103        128.0.0.4.9000
__juniper_private1__   ESTABLISHED
tcp4       0      0  *.32012                *.*
__juniper_private1__   LISTEN
tcp4       0      0  *.9000                 *.*
__juniper_private1__   LISTEN
tcp4       0      0  *.33007                *.*
__juniper_private2__   LISTEN
tcp46      0      0  *.179                  *.*                    default
          LISTEN
tcp4       0      0  *.179                  *.*                    default
          LISTEN
tcp4       0      0  *.6154                 *.*
__juniper_private1__   LISTEN
tcp4       0      0  *.6153                 *.*
__juniper_private1__   LISTEN
tcp4       0      0  *.7000                 *.*
__juniper_private1__   LISTEN
tcp4       0      0  *.6152                 *.*
__juniper_private1__   LISTEN
tcp4       0      0  *.6156                 *.*
__juniper_private1__   LISTEN
tcp4       0      0  *.33005                *.*
__juniper_private2__   LISTEN
tcp4       0      0  *.31343                *.*
__juniper_private1__   LISTEN
tcp4       0      0  *.31341                *.*
__juniper_private1__   LISTEN
tcp4       0      0  *.32003                *.*
__juniper_private2__   LISTEN
tcp4       0      0  *.666                  *.*
__juniper_private1__   LISTEN
tcp4       0      0  *.38                   *.*
__juniper_private1__   LISTEN
tcp4       0      0  *.3221                 *.*                    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                           162.0.0.5.58935
                              ESTABLISHED
tcp4       0      0  *.32012                                   *.*
                                LISTEN
tcp4       0      0  *.33007                                   *.*
                                LISTEN
tcp4       0      0  *.666                                     *.*
                                LISTEN
tcp4       0      0  162.0.0.4.6161                            162.0.0.5.62026
                              ESTABLISHED
tcp4       0      0  *.33005                                   *.*
                                LISTEN
tcp4       0      0  162.0.0.4.9000                            162.0.0.4.51611
                              ESTABLISHED
tcp4       0      0  162.0.0.4.51611                            162.0.0.4.9000
                               ESTABLISHED
tcp4       0      0  *.6151                                    *.*
                                LISTEN
tcp4       0      0  *.6154                                    *.*
                                LISTEN
tcp4       0      0  *.6153                                    *.*
                                LISTEN
tcp4       0      0  *.31343                                   *.*
                                LISTEN
tcp4       0      0  *.31341                                   *.*
                                LISTEN
tcp4       0      0  *.9000                                    *.*
                                LISTEN
tcp4       0      0  *.6152                                    *.*
                                LISTEN
tcp4       0      0  *.32003                                   *.*
                                LISTEN
tcp4       0      0  *.33009                                   *.*
                                LISTEN
tcp4       0      0  *.3221                                    *.*
                                LISTEN
tcp4       0      0  *.23                                      *.*
                                LISTEN
tcp4       0      0  *.22                                      *.*
                                LISTEN
tcp4       0      0  *.514                                     *.*
                                LISTEN
tcp4       0      0  *.513                                     *.*
                                LISTEN
tcp4       0      0  *.21                                      *.*
                                LISTEN
tcp4       0      0  *.79                                      *.*
                                LISTEN
tcp4       0      0  *.514                                     *.*
                                LISTEN
tcp4       0      0  *.513                                     *.*
```

```
                                LISTEN
tcp4       0      0  *.6234                                    *.*
                                LISTEN
udp4       0      0  127.0.0.1.123                             *.*
udp4       0      0  10.255.178.11.123                         *.*
udp4       0      0  *.123                                     *.*
udp46      0      0  *.514                                     *.*
udp4       0      0  *.514                                     *.*
udp46      0      0  *.62027                                   *.*
udp4       0      0  *.59363                                   *.*
udp4       0      0  *.31342                                   *.*
udp46      0      0  *.161                                     *.*
udp4       0      0  *.161                                     *.*
udp4       0      0  *.31340                                   *.*
udp4       0      0  *.31340                                   *.*
udp46      0      0  *.49152                                   *.*
udp46      0      0  *.4784                                    *.*
udp46      0      0  *.3784                                    *.*
udp4       0      0  *.49152                                   *.*
udp4       0      0  *.4784                                    *.*
udp4       0      0  *.3784                                    *.*
udp4       0      0  *.6333                                    *.*
ip4        0      0  *.*                                       *.*
ip4        0      0  *.*                                       *.*

lcc0-re0:
--------------------------------------------------------------------------
Active Internet connections (including servers)
Proto Recv-Q Send-Q  Local Address                          Foreign Address
                              (state)
tcp4       0      0  192.168.178.3.23
172.24.26.227.50399                         ESTABLISHED
tcp4       0      0  *.6234                                    *.*
                                LISTEN
tcp4       0      0  *.7000                                    *.*
                                LISTEN
tcp4       0      0  *.9000                                    *.*
                                LISTEN
tcp4       0      0  *.33009                                   *.*
                                LISTEN
tcp4       0      0  *.3221                                    *.*
                                LISTEN
tcp4       0      0  *.23                                      *.*
                                LISTEN
tcp4       0      0  *.22                                      *.*
                                LISTEN
tcp4       0      0  *.514                                     *.*
                                LISTEN
tcp4       0      0  *.513                                     *.*
                                LISTEN
tcp4       0      0  *.21                                      *.*
                                LISTEN
tcp4       0      0  *.79                                      *.*
                                LISTEN
tcp4       0      0  *.514                                     *.*
                                LISTEN
tcp4       0      0  *.513                                     *.*
                                LISTEN
udp46      0      0  *.514                                     *.*
udp4       0      0  *.514                                     *.*
udp46      0      0  *.59924                                   *.*
```

```
udp4       0      0  *.59412                                    *.*
udp46      0      0  *.161                                      *.*
udp4       0      0  *.161                                      *.*
udp4       0      0  *.31342                                    *.*
udp4       0      0  *.6333                                     *.*

lcc1-re0:
--------------------------------------------------------------------------
Active Internet connections (including servers)
Proto Recv-Q Send-Q  Local Address                            Foreign Address
                                (state)
tcp4       0      0  *.6234                                     *.*
                                LISTEN
tcp4       0      0  *.7000                                     *.*
                                LISTEN
tcp4       0      0  *.9000                                     *.*
                                LISTEN
tcp4       0      0  *.3221                                     *.*
                                LISTEN
tcp4       0      0  *.23                                       *.*
                                LISTEN
tcp4       0      0  *.22                                       *.*
                                LISTEN
tcp4       0      0  *.514                                      *.*
                                LISTEN
tcp4       0      0  *.513                                      *.*
                                LISTEN
tcp4       0      0  *.21                                       *.*
                                LISTEN
tcp4       0      0  *.79                                       *.*
                                LISTEN
tcp4       0      0  *.514                                      *.*
                                LISTEN
tcp4       0      0  *.513                                      *.*
                                LISTEN
tcp4       0      0  *.33009                                    *.*
                                LISTEN
udp46      0      0  *.514                                      *.*
udp4       0      0  *.514                                      *.*
udp46      0      0  *.59924                                    *.*
udp4       0      0  *.59412                                    *.*
udp4       0      0  *.31342                                    *.*
udp46      0      0  *.161                                      *.*
udp4       0      0  *.161                                      *.*
udp4       0      0  *.6333                                     *.*

lcc2-re0:
--------------------------------------------------------------------------
Active Internet connections (including servers)
Proto Recv-Q Send-Q  Local Address                            Foreign Address
                                (state)
tcp4       0      0  *.6234                                     *.*
                                LISTEN
tcp4       0      0  *.7000                                     *.*
                                LISTEN
tcp4       0      0  *.9000                                     *.*
                                LISTEN
tcp4       0      0  *.33009                                    *.*
                                LISTEN
tcp4       0      0  *.3221                                     *.*
                                LISTEN
```

```
tcp4       0      0  *.23                                        *.*
                                  LISTEN
tcp4       0      0  *.22                                        *.*
                                  LISTEN
tcp4       0      0  *.514                                       *.*
...
```

show system connections sfc (TX Matrix Plus Router)

```
user@host> show system connections sfc 0
sfc0-re0:
--------------------------------------------------------------------------
Active Internet connections (including servers)
Proto Recv-Q Send-Q  Local Address                              Foreign Address
                                (state)
tcp4       0      0  162.0.0.4.514                                132.0.0.4.952
                                  TIME_WAIT
tcp4       0      0  162.0.0.4.514                                131.0.0.4.694
                                  TIME_WAIT
tcp4       0      0  162.0.0.4.514                                130.0.0.4.860
                                  TIME_WAIT
tcp4       0      0  162.0.0.4.514                                129.0.0.4.716
                                  TIME_WAIT
tcp4       0      0  162.0.0.4.996                                132.0.0.4.514
                                  TIME_WAIT
tcp4       0      0  162.0.0.4.798                                131.0.0.4.514
                                  TIME_WAIT
tcp4       0      0  162.0.0.4.995                                130.0.0.4.514
                                  TIME_WAIT
tcp4       0      0  162.0.0.4.895                                129.0.0.4.514
                                  TIME_WAIT
tcp4       0      0  192.168.178.11.21
172.17.28.204.64662                           TIME_WAIT
tcp4       0      0  192.168.178.11.21
172.17.28.204.51612                           TIME_WAIT
tcp4       0      0  *.6156                                       *.*
                                  LISTEN
tcp4       0      0  *.9000                                       *.*
                                  LISTEN
tcp4       0      0  *.666                                        *.*
                                  LISTEN
tcp4       0      2  192.168.178.11.23
172.17.28.19.3565                             ESTABLISHED
tcp4       0      0  192.168.178.11.23
172.17.28.204.62719                           ESTABLISHED
tcp4       0      0  192.168.178.11.23
192.168.69.199.51255                          ESTABLISHED
tcp4       0      0  192.168.178.11.23
172.24.26.227.42860                           ESTABLISHED
tcp4       0      0  162.0.0.4.32012                              162.0.0.5.58935
                                ESTABLISHED
tcp4       0      0  *.32012                                      *.*
                                  LISTEN
tcp4       0      0  *.33007                                      *.*
                                  LISTEN
tcp4       0   1432  162.0.0.4.6161                               162.0.0.5.62026
                                ESTABLISHED
tcp4       0      0  *.33005                                      *.*
                                  LISTEN
tcp4       0      0  162.0.0.4.9000                               162.0.0.4.51611
                                FIN_WAIT_2
tcp4       0      0  162.0.0.4.51611                               162.0.0.4.9000
                                 CLOSE_WAIT
```

```
tcp4       0      0  *.6151                                 *.*
                                LISTEN
tcp4       0      0  *.6154                                 *.*
                                LISTEN
tcp4       0      0  *.6153                                 *.*
                                LISTEN
tcp4       0      0  *.31343                                *.*
                                LISTEN
tcp4       0      0  *.31341                                *.*
                                LISTEN
tcp4       0      0  *.6152                                 *.*
                                LISTEN
tcp4       0      0  *.32003                                *.*
                                LISTEN
tcp4       0      0  *.33009                                *.*
                                LISTEN
tcp4       0      0  *.3221                                 *.*
                                LISTEN
tcp4       0      0  *.23                                   *.*
                                LISTEN
tcp4       0      0  *.22                                   *.*
                                LISTEN
tcp4       0      0  *.514                                  *.*
                                LISTEN
tcp4       0      0  *.513                                  *.*
                                LISTEN
tcp4       0      0  *.21                                   *.*
                                LISTEN
tcp4       0      0  *.79                                   *.*
                                LISTEN
tcp4       0      0  *.514                                  *.*
                                LISTEN
tcp4       0      0  *.513                                  *.*
                                LISTEN
tcp4       0      0  *.6234                                 *.*
                                LISTEN
udp4       0      0  127.0.0.1.123                          *.*
udp4       0      0  10.255.178.11.123                      *.*
udp4       0      0  *.123                                  *.*
udp46      0      0  *.514                                  *.*
udp4       0      0  *.514                                  *.*
udp46      0      0  *.50895                                *.*
udp4       0      0  *.50794                                *.*
udp4       0      0  *.31342                                *.*
udp46      0      0  *.161                                  *.*
udp4       0      0  *.161                                  *.*
udp4       0      0  *.31340                                *.*
udp4       0      0  *.31340                                *.*
udp46      0      0  *.49152                                *.*
udp46      0      0  *.4784                                 *.*
udp46      0      0  *.3784                                 *.*
udp4       0      0  *.49152                                *.*
udp4       0      0  *.4784                                 *.*
udp4       0      0  *.3784                                 *.*
udp4       0      0  *.6333                                 *.*
ip4      104      0  *.*                                    *.*
ip4        0      0  *.*                                    *.*
ip4        0      0  *.*                                    *.*
```

show system connections show-routing-instances (TX Matrix Plus Router)

```
user@host> show system connections show-routing-instances
sfc0-re0:
--------------------------------------------------------------------------
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q  Local Address                              Foreign Address
                              Routing Instance       (state)
tcp4       0      0  *.6156                                        *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  *.9000                                        *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  *.666                                         *.*
                                 __juniper_private1__   LISTEN
tcp4       0      2  192.168.178.11.23
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
                              __juniper_private1__   ESTABLISHED
tcp4       0      0  *.32012                                       *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  *.33007                                       *.*
                                 __juniper_private2__   LISTEN
tcp4       0      0  162.0.0.4.6161                              162.0.0.5.62026
                              __juniper_private1__   ESTABLISHED
tcp4       0      0  *.33005                                       *.*
                                 __juniper_private2__   LISTEN
tcp4       0      0  162.0.0.4.9000                              162.0.0.4.51611
                              __juniper_private1__   FIN_WAIT_2
tcp4       0      0  162.0.0.4.51611                              162.0.0.4.9000
                               __juniper_private1__   CLOSE_WAIT
tcp4       0      0  *.6151                                        *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  *.6154                                        *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  *.6153                                        *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  *.31343                                       *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  *.31341                                       *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  *.6152                                        *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  *.32003                                       *.*
                                 __juniper_private2__   LISTEN
tcp4       0      0  *.33009                                       *.*
                                 __juniper_private2__   LISTEN
tcp4       0      0  *.3221                                        *.*
                                 default                LISTEN
tcp4       0      0  *.23                                          *.*
                                 default                LISTEN
tcp4       0      0  *.22                                          *.*
                                 default                LISTEN
tcp4       0      0  *.514                                         *.*
                                 default                LISTEN
tcp4       0      0  *.513                                         *.*
                                 default                LISTEN
tcp4       0      0  *.21                                          *.*
```

```
                                 default                LISTEN
tcp4       0      0  *.79                                        *.*
                                 default                LISTEN
tcp4       0      0  *.514                                       *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  *.513                                       *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  *.6234                                      *.*
                                 __juniper_private1__   LISTEN
udp4       0      0  127.0.0.1.123                               *.*
                                 default
udp4       0      0  10.255.178.11.123                            *.*
                                 default
udp4       0      0  *.123                                        *.*
                                 default
udp46      0      0  *.514                                        *.*
                                 default
udp4       0      0  *.514                                        *.*
                                 default
udp46      0      0  *.50895                                      *.*
                                 default
udp4       0      0  *.50794                                      *.*
                                 default
udp4       0      0  *.31342                                      *.*
                                 __juniper_private1__
udp46      0      0  *.161                                        *.*
                                 default
udp4       0      0  *.161                                        *.*
                                 default
udp4       0      0  *.31340                                      *.*
                                 __juniper_private2__
udp4       0      0  *.31340                                      *.*
                                 __juniper_private1__
udp46      0      0  *.49152                                      *.*
                                 default
udp46      0      0  *.4784                                       *.*
                                 default
udp46      0      0  *.3784                                       *.*
                                 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                              Foreign Address
                                Routing Instance       (state)
tcp4       0      0  *.7000                                      *.*
                                 __juniper_private1__   LISTEN
```

```
tcp4       0      0  192.168.178.3.23
172.24.26.227.50399                          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                            Foreign Address
                                Routing Instance       (state)
tcp4       0      0  *.7000                                        *.*
                                  __juniper_private1__   LISTEN
tcp4       0      0  *.6234                                        *.*
                                  __juniper_private1__   LISTEN
tcp4       0      0  *.9000                                        *.*
                                  __juniper_private1__   LISTEN
tcp4       0      0  *.3221                                        *.*
                                  default                LISTEN
tcp4       0      0  *.23                                          *.*
                                  default                LISTEN
tcp4       0      0  *.22                                          *.*
                                  default                LISTEN
tcp4       0      0  *.514                                         *.*
```

```
                                 default                LISTEN
tcp4       0      0  *.513                                        *.*
                                 default                LISTEN
tcp4       0      0  *.21                                         *.*
                                 default                LISTEN
tcp4       0      0  *.79                                         *.*
                                 default                LISTEN
tcp4       0      0  *.514                                        *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  *.513                                        *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  *.33009                                      *.*
                                 __juniper_private2__   LISTEN
udp46      0      0  *.514                                        *.*
                                 default
udp4       0      0  *.514                                        *.*
                                 default
udp46      0      0  *.59924                                      *.*
                                 default
udp4       0      0  *.59412                                      *.*
                                 default
udp4       0      0  *.31342                                      *.*
                                 __juniper_private1__
udp46      0      0  *.161                                        *.*
                                 default
udp4       0      0  *.161                                        *.*
                                 default
udp4       0      0  *.6333                                       *.*
                                 __juniper_private1__

lcc2-re0:
--------------------------------------------------------------------------
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q  Local Address                              Foreign Address
                               Routing Instance       (state)
tcp4       0      0  *.7000                                       *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  *.6234                                       *.*
                                 __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
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                                      *.*
                                  __juniper_private1__
udp46      0      0  *.161                                        *.*
                                  default
udp4       0      0  *.161                                        *.*
```

```
                                        default
udp4       0      0  *.6333                                        *.*
                                        __juniper_private1__
```

show system core-dumps

Syntax

show system core-dumps
<brief | detail>
<*core-filename*>
<core-file-info>

Syntax (EX Series Switch

show system core-dumps
<all-members>
<brief | detail>
<*core-filename*>
<core-file-info>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system core-dumps
<all-chassis | all-lcc | lcc *number* | scc>
<brief | detail>
<*core-filename*>
<core-file-info>

Syntax (TX Matrix Plus Router)

show system core-dumps
<all-chassis | all-lcc | lcc *number* | sfc *number*>
<brief | detail>
<*core-filename*>
<core-file-info>

Release Information

Command introduced before Junos OS Release 8.5.
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.

Description

Show core files on all routers or switches running Junos OS. You can use the **show system core-dumps** 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/filename.

You can use the option ***core-filename*** and its options **core-file-info**, **brief**, and **detai**l to display more information about the specified core-dump files.

Options

none—Display a list of all existing core-dump files.

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.

<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 binary.

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 851
show system core-dumps on page 851
show system core-dumps (TX Matrix Plus Router) on page 851

Output Fields

Table 136 on page 850 describes the output fields for the **show system core-dumps** command. Output fields are listed in the approximate order in which they appear.

Table 136: show system core-dumps Output Fields

Field Name	Field Description
Permissions	Read/write permissions for the file named.
Links	Number of links to the file.
Owner	Name of the file owner.
Group	Name of the group with file access.
File size	File size in bytes.
Modified	Last file modification date and time.

Table 136: show system core-dumps Output Fields *(continued)*

Field Name	Field Description
Path/filename	File path where the file resides and the filename.

show system core-dumps

This example shows the command output if core files exist.

```
user@host> show system core-dumps
-rw------- 1 root wheel 268369920 Jun 18 17:59 /var/crash/vmcore.0
-rw-rw---- 1 root field 3371008 Jun 18 17:53 /var/tmp/rpd.core.0
-rw-r--r-- 1 root wheel 27775914 Jun 18 17:59 /var/crash/kernel.0
```

show system core-dumps

This example shows the command output if core files do not exist.

```
user@host> show system core-dumps
/var/crash/*core*: No such file or directory
/var/tmp/*core*: No such file or directory
/var/crash/kernel.*: No such file or directory
```

show system core-dumps (TX Matrix Plus Router)

```
user@host> show system core-dumps
sfc0-re0:
--------------------------------------------------------------------------
/var/crash/kernel.*: No such file or directory
/tftpboot/corefiles/*core*: No such file or directory

/var/crash/cores:
total 8

/var/tmp/cores:
total 1627592
-rw-r--r--  1 root  field  535346090 May 15 07:36
rpd.core-tarball.0.090515.0736.tgz
-rw-r--r--  1 root  field  105632057 May 15 07:37
rpd.core-tarball.1.090515.0737.tgz
-rw-r--r--  1 root  field  101981681 May 15 07:38
rpd.core-tarball.2.090515.0738.tgz
-rw-r--r--  1 root  field   85854573 May 15 07:40
rpd.core-tarball.3.090515.0740.tgz
-rw-r--r--  1 root  field    4157845 May 15 08:18
rpd.core-tarball.4.090515.0818.tgz

lcc0-re0:
--------------------------------------------------------------------------
/var/crash/kernel.*: No such file or directory
/tftpboot/corefiles/*core*: No such file or directory

/var/crash/cores:
total 8

/var/tmp/cores:
total 12

lcc1-re0:
--------------------------------------------------------------------------
/var/crash/kernel.*: No such file or directory
/tftpboot/corefiles/*core*: No such file or directory

/var/crash/cores:
```

```
total 8

/var/tmp/cores:
total 10024
-rw-r--r--  1 root  field    1875794 Apr 22 15:47
chassisd.core-tarball.0.090422.1547.tgz
-rw-r--r--  1 root  field    1894183 Apr 22 19:02
chassisd.core-tarball.0.090422.1902.tgz
-rw-r--r--  1 root  field    1290240 Apr 26 16:01 ksyncd_1558.core.0.090426.1601

lcc2-re0:
--------------------------------------------------------------------------
/var/crash/kernel.*: No such file or directory
/tftpboot/corefiles/*core*: No such file or directory

/var/crash/cores:
total 21124008
-rw-r--r--  1 root  wheel  1022376528 May 2  06:43
core-LCC2-EGFPC7.core.0.090502.0643
-rw-r--r--  1 root  wheel  1022376528 May 2  08:13
core-LCC2-EGFPC7.core.0.090502.0813
-rw-r--r--  1 root  wheel  1022376544 May 5  06:15
core-LCC2-EGFPC7.core.0.090505.0615
-rw-r--r--  1 root  wheel  1022376544 May 6  10:59
core-LCC2-EGFPC7.core.0.090506.1059
-rw-r--r--  1 root  wheel  1022376528 May 2  06:58
core-LCC2-EGFPC7.core.1.090502.0658
-rw-r--r--  1 root  wheel  754271232 May 5  06:33
core-LCC2-EGFPC7.core.1.090505.0633
-rw-r--r--  1 root  wheel  264897536 May 6  11:12
core-LCC2-EGFPC7.core.1.090506.1112
-rw-r--r--  1 root  wheel  1022376528 May 2  07:22
core-LCC2-EGFPC7.core.2.090502.0722
-rw-r--r--  1 root  wheel  163633152 May 5  06:52
core-LCC2-EGFPC7.core.2.090505.0652
-rw-r--r--  1 root  wheel  171312128 May 6  12:13
core-LCC2-EGFPC7.core.2.090506.1213
-rw-r--r--  1 root  wheel  1022376528 May 2  07:39
core-LCC2-EGFPC7.core.3.090502.0739
-rw-r--r--  1 root  wheel  1022376528 May 2  07:55
core-LCC2-EGFPC7.core.4.090502.0755
-rw-r--r--  1 root  wheel  427277312 May 7  04:47
core-LCC2-STFPC4.core.0.090507.0447
-rw-r--r--  1 root  wheel  419609600 May 7  04:47
core-LCC2-STFPC5.core.0.090507.0447
-rw-r--r--  1 root  wheel  432356352 May 7  04:47
core-LCC2-STFPC6.core.0.090507.0447

/var/tmp/cores:
total 2568
-rw-r--r--  1 root  field    1290240 May 14 14:26 ksyncd_1540.core.0.090514.1426
...
```


show system directory-usage

Syntax

show system directory-usage
<depth *number*>
<*path*>

Syntax (EX Series Switch)

show system directory-usage
<all-members>
<depth *number*>
<local>
<member *member-id*>
<*path*>

Syntax (TX Matrix Router)

show system directory-usage
<all-chassis | all-lcc | lcc *number* | scc>
<depth *number*>
<*path*>

Syntax (TX Matrix Plus Router)

show system directory-usage
<all-chassis | all-lcc | lcc *number* | sfc *number*>
<depth *number*>
<*path*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display directory usage information.

Options

none—Display all directory usage information.

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.

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.

all-members—(EX4200 switches only) (Optional) Display directory information for all members of the Virtual Chassis configuration.

depth *number*—(Optional) Depth of the directory to traverse. This option is useful when you want to limit the output shown for a large file system.

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 855
show system directory-usage sfc (TX Matrix Plus Router) on page 855

Output Fields

Table 137 on page 854 describes the output fields for the **show system directory-usage** command. Output fields are listed in the approximate order in which they appear.

Table 137: show system directory-usage Output Fields

Field Name	Field Description
bytes	Number of bytes used by files in a directory.
directory-name	Name of the directory.

show system directory-usage scc (TX Matrix Router)

```
user@host> show system directory-usage /var/tmp scc
          /var/tmp
1.0K      /var/tmp/vi.recover
2.0K      /var/tmp/instmp.tPMk8u
1.0K      /var/tmp/install
          /var/tmp/instmp.GUMpur
4.8M      /var/tmp/instmp.GUMpur/packages
6.4M      /var/tmp/troy1
297M      /var/tmp/dsw
          /var/tmp/pkg_tmp.2073
83K       /var/tmp/pkg_tmp.2073/bin
          /var/tmp/instmp.oMIDbl
89K       /var/tmp/instmp.oMIDbl/bin
          /var/tmp/instmp.byhMjR
4.6M      /var/tmp/instmp.byhMjR/packages
          /var/tmp/instmp.6fqHf3
1.7M      /var/tmp/instmp.6fqHf3/packages
          /var/tmp/instmp.mljECe
4.6M      /var/tmp/instmp.mljECe/packages
```

show system directory-usage sfc (TX Matrix Plus Router)

```
user@host> show system directory-usage /var/tmp sfc 0
sfc0-re0:
--------------------------------------------------------------------------
          /var/tmp
46K       /var/tmp/gres-tp
          /var/tmp/sec-download
2.0K      /var/tmp/sec-download/sub-download
2.0K      /var/tmp/vi.recover
2.0K      /var/tmp/install
795M      /var/tmp/cores
766K      /var/tmp/pr440594
```

show system firmware

Syntax

show system firmware
<compatibility>

Release Information

Command introduced in Junos OS Release 7.4.
Command introduced in Junos OS Release 9.4 for EX Series switches.

Description

(J Series routers and EX8200 switches only) Display firmware information.

Options

compatibility—(Optional) Display firmware compatibility information.

Required Privilege Level

view

List of Sample Output

show system firmware on page 856
show system firmware compatibility on page 856

Output Fields

Table 138 on page 856 lists the output fields for the show system firmware command. Output fields are listed in the approximate order in which they appear.

Table 138: show system firmware Output Fields

Field Name	Field Description
Part	Physical part on the router or switch affected by the firmware.
Type	Type of firmware on the router or switch.
Tag	Location of the firmware on the interface.
Current version	Firmware version on the affected router or switch parts.
Available version	New versions of firmware for upgrading or downgrading.
Status	Firmware condition on the router or switch.
Action	Whether you can upgrade or downgrade, or if no action is available (**none**).

show system firmware

```
user@host> show system firmware
Part              Type           Tag Current   Available Status
                                     version   version
FPC 0             ROM Monitor 0  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   Available Action
                                     version   version
```

```
FPC 0            ROM Monitor 0  0   6.4.10              None
Routing Engine 0 RE BIOS        0   0                   None
```

show system license

Syntax

show system license
<installed | keys | usage>

Release Information

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

Description

Display licenses and information about how they are used.

Options

none—Display all license information.

installed—(Optional) Display installed licenses only.

keys—(Optional) Display a list of license keys. Use this information to verify that each expected license key is present.

usage—(Optional) Display the state of licensed features.

Required Privilege Level

maintenance

List of Sample Output

show system license on page 859
show system license installed on page 859
show system license keys on page 860
show system license usage on page 860

Output Fields

Table 139 on page 858 lists the output fields for the **show system license** command. Output fields are listed in the approximate order in which they appear.

Table 139: show system license Output Fields

Field Name	Field Description
Feature name	Name assigned to the configured feature. You use this information to verify that all the features for which you installed licenses are present.
Licenses used	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. NOTE: In Junos OS Release 10.1 and later, the **Licenses used** 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 (**scale-subscriber**), L2TP (**scale-l2tp**), Mobile IP (**scale-mobile-ip**), and so on.

Table 139: show system license Output Fields *(continued)*

Field Name	Field Description
Licenses installed	Information about the installed license key: • **License identifier**—Identifier associated with a license key. • **State**—State of the license key:**valid** or **invalid**. An **invalid** state indicates that the key was entered incorrectly or is not valid for the specific device. • **License version**—Version of a license. The version indicates how the license is validated, the type of signature, and the signer of the license key. • **Valid for device**—Device that can use a license key. • **Group defined**—Group membership of a device. • **Features**—Feature associated with a license, such as data link switching (DLSw).
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.

show system license

```
user@host> show system license

License usage:
                                  Licenses     Licenses    Licenses    Expiry
  Feature name                        used    installed      needed
  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
         xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
         xxxxxx xxxxxx xxx
```

show system license usage

```
user@host> show system license usage
License usage:
                                 Licenses     Licenses    Licenses    Expiry
  Feature name                       used    installed      needed
  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

Syntax show system name-resolution

Release Information Command introduced in Junos OS Release 9.6.

Description Display hostname-to-IP-address mappings.

Options This command has no options.

Required Privilege Level view

Output Fields Table 140 on page 861 lists the output fields for the **show system name-resolution** command. Output fields are listed in the approximate order in which they appear.

Table 140: 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

Syntax

show system processes
<brief | detail | extensive | summary>
<health (pid *process-identifer* | process-name *process-name*)>
<providers>
<resource-limits (brief | detail) *process-name*>
<wide>

Syntax (EX Series Switch)

show system processes
<all-members>
<brief | detail | extensive | summary>
<health (pid *process-identifer* | process-name *process-name*)>
<local>
<member *member-id*>
<providers>
<resource-limits (brief | detail) *process-name*>
<wide>

Syntax (TX Matrix Router)

show system processes
<brief | detail | extensive | summary>
<all-chassis| all-lcc | lcc *number* | scc>
<wide>

Syntax (TX Matrix Plus Router)

show system processes
<brief | detail | extensive | summary>
<all-chassis| all-lcc | lcc *number* | sfc *number*>
<wide>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display information about software processes that are running on the router or switch and that have controlling terminals.

Options

none—Display standard information about system processes.

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.

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-identifer* | 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

Output Fields Table 141 on page 865 describes the output fields for the **show system processes** command. Output fields are listed in the approximate order in which they appear.

Table 141: show system processes Output Fields

Field Name	Field Description	Level of Output
last PID	Last process identifier assigned to the process.	**brief extensive summary**
load averages	Three load averages followed by the current time.	**brief extensive summary**
processes	Number of existing processes and the number of processes in each state (**sleeping, running, starting, zombies**, and **stopped**).	**brief extensive summary**
Mem	Information about physical and virtual memory allocation.	**brief extensive summary**
Swap	Information about physical and virtual memory allocation.	**brief extensive summary**
PID	Process identifier.	**detail extensive summary**
TT	Control terminal name.	none **detail**
STAT	Symbolic process state. The state is given by a sequence of letters. The first letter indicates the run state of the process: • **D**—In disk or other short-term, uninterruptible wait • **I**—Idle (sleeping longer than about 20 seconds) • **R**—Runnable • **S**—Sleeping for less than 20 seconds • **T**—Stopped • **Z**—Dead (zombie) • **+** —The process is in the foreground process group of its control terminal. • **<** —The process has raised CPU scheduling priority. • **>** —The process has specified a soft limit on memory requirements and is currently exceeding that limit; such a process is not swapped. • **A**—The process requested random page replacement. • **E**—The process is trying to exit. • **L**—The process has pages locked in core. • **N**—The process has reduced CPU scheduling priority. • **S**—The process requested first-in, first-out (FIFO) page replacement. • **s**—The process is a session leader. • **V**—The process is temporarily suspended. • **W**—The process is swapped out. • **X**—The process is being traced or debugged.	none **detail**
UID	User identifier.	**detail**

Table 141: show system processes Output Fields *(continued)*

Field Name	Field Description	Level of Output
USERNAME	Process owner.	**extensive summary**
PPID	Parent process identifier.	**detail**
CPU	(D)—Short-term CPU usage. (E and S)—Raw (unweighted) CPU usage. The value of this field is used to sort the processes in the output.	**detail extensive summary**
RSS	Resident set size.	**detail**
WCHAN	Symbolic name of the wait channel.	**detail**
STARTED	Local time when the process started running.	**detail**
PRI	Current priority of the process. A lower number indicates a higher priority.	**detail extensive summary**
NI or NICE	UNIX "niceness" value. A lower number indicates a higher priority.	**detail extensive summary**
SIZE	Total size of the process (text, data, and stack), in kilobytes.	**extensive summary**
RES	Current amount of resident memory, in kilobytes.	**extensive summary**
STATE	Current state of the process (for example, **sleep**, **wait**, **run**, **idle**, **zombie**, or **stop**).	**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**

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  (vmdaemo
    4     0     0   0  28  0   12 update  1:51PM   ??  DL     0:07.15  (update)
    5     0     0   0   2  0   12 pfesel  1:51PM   ??  IL     0:02.90  (if_pfe)
   27     0     1   0  10  0 17936 mfsidl  1:51PM  ??  Is     0:00.46 mfs /dev/
   81     0     1   0   2  0  496 select  1:52PM   ??  Ss     0:31.21 syslogd -
  119     1     1   0   2  0  492 select  1:52PM   ??  Is     0:00.00 portmap
  134     0     1   0   2  0  580 select  1:52PM   ??  S      0:02.95 amd -p -a
  151     0     1   0  18  0  532 pause   1:52PM   ??  Is     0:00.34 cron
  183     0     1   0   2  0  420 select  1:52PM   ??  Ss     0:00.07 /usr/loca
  206     0     1   0  18  0   72 pause   1:52PM   ??  S      0:00.51 /sbin/wat
  207     0     1   0   2  0  520 select  1:52PM   ??  I      0:00.16 /usr/sbin
  208     0     1   0   2  0  536 select  1:52PM   ??  S      0:08.21 /sbin/dcd
  210     0     1 255   2 -12  740 select  1:52PM  ??  S<     0:05.83 /usr/sbin
  211     0     1   0   2  0  376 select  1:52PM   ??  S      0:00.03 /usr/sbin
  215     0     1   0   2  0  548 select  1:52PM   ??  I      0:00.50 /usr/sbin
  219     0     1   0   3  0  540 ttyin   1:52PM   v0  Is+    0:00.02 /usr/libe
  220     0     1   0   3  0  540 ttyin   1:52PM   v1  Is+    0:00.01 /usr/libe
  221     0     1   0   3  0  540 ttyin   1:52PM   v2  Is+    0:00.01 /usr/libe
  222     0     1   0   3  0  540 ttyin   1:52PM   v3  Is+    0:00.01 /usr/libe
  735     0     1   0   2  0  468 select  2:47PM   ??  S      0:19.14 /usr/sbin
  736     0     1   0   2  0  212 select  2:47PM   ??  S      0:14.13 /usr/sbin
 1380     0     1   0   3  0  888 ttyin   7:32PM   d0  Is+    0:00.46 bash
 3019     0   207   0   2  0  636 select 10:49AM   ??  Ss     0:02.93 tnp.chass
 3122     0  1380   0   2  0 1764 select 12:33PM   d0  S      0:00.77 ./rpd -N
 3128     0   215   0   2  0  580 select 12:45PM   ??  Ss     0:00.12 rlogind
 3129  1049  3128   0  18  0  944 pause  12:45PM   p0  Ss     0:00.14 -tcsh (tc
    0     0     0   0 -18  0    0 sched   1:51PM   ??  DLs    0:00.10  (swapper
```

show system processes extensive

```
user@host> show system processes extensive
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% rpd
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 [vnlru]
   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/ttyp2 (mgd)
36867  ??  S      0:03.14 /usr/sbin/rpd -N
```

```
36874  ??  S      0:00.08 /usr/sbin/lmpd
36876  ??  S      0:00.17 /usr/sbin/lacpd -N
36877  ??  S      0:00.15 /usr/sbin/bfdd -N
36878  ??  S      0:05.05 /usr/sbin/ppmd -N
36907  ??  S      0:25.07 /usr/sbin/chassisd -N
37775  ??  S      0:00.01 /usr/sbin/bdbrepd -N
45727  ??  S      0:00.02 /usr/sbin/xntpd -j -N -g (ntpd)
45729  ??  S      0:00.38 /usr/sbin/l2ald -N
45730  ??  S<     0:00.12 /usr/sbin/apsd -N
45731  ??  SN     0:00.10 /usr/sbin/sampled -N
45732  ??  S      0:00.03 /usr/sbin/ilmid -N
45733  ??  S      0:00.09 /usr/sbin/rmopd -N
45734  ??  S      0:00.30 /usr/sbin/cosd
45735  ??  I      0:00.00 /usr/sbin/rtspd -N
45736  ??  S      0:00.06 /usr/sbin/fsad -N
45737  ??  S      0:00.05 /usr/sbin/rdd -N
45738  ??  S      0:00.10 /usr/sbin/pppd -N
45739  ??  S      0:00.05 /usr/sbin/dfcd -N
45740  ??  S      0:00.07 /usr/sbin/lfmd -N
45741  ??  S      0:00.01 /usr/sbin/mplsoamd -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 [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     0:03.40 [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 [vnlru]
   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.sntpd -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/ttyp2 (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/apsd -N
45731  ??  SN     0:00.10 /usr/sbin/sampled -N
45732  ??  S      0:00.03 /usr/sbin/ilmid -N
45733  ??  S      0:00.09 /usr/sbin/rmopd -N
45734  ??  S      0:00.31 /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/mplsoamd -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/ttyp0 (mgd)
56577  ??  Ss     0:00.00 mgd: (mgd) (root) (mgd)
56578  ??  R      0:00.00 /bin/ps -ax
```

```
 1142  d0- S      0:00.01 /usr/sbin/usbd -N
 1160  d0- S      0:29.71 /usr/sbin/eventd -N -r -s -A
 6527  d0  Is+    0:00.00 /usr/libexec/getty std.9600 ttyd0
56482  p0  Is     0:00.00 login [pam] (login)
56483  p0  S      0:00.01 -csh (csh)
56547  p0  S+     0:00.02 cli
 2392  p1  Is     0:00.00 login [pam] (login)
 2393  p1  I      0:00.00 -csh (csh)
 2394  p1  I      0:00.00 su -
 2395  p1  I+     0:00.01 -su (csh)
23782  p2  Is     0:00.00 login [pam] (login)
23881  p2  I      0:00.00 -csh (csh)
23925  p2  S+     0:00.03 cli
 7332  p3  Is     0:00.00 login [pam] (login)
 7333  p3  I      0:00.00 -csh (csh)
23780  p3  S+     0:00.02 telnet aj
```

show system processes lcc wide (TX Matrix Plus Routing Matrix)

```
user@host> show system processes lcc 2 wide
lcc2-re0:
--------------------------------------------------------------------------
  PID  TT  STAT      TIME PROVIDER COMMAND
    0  ??  WLs    0:00.00 (null)   [swapper]
    1  ??  ILs    0:00.19          /packages/mnt/jbase/sbin/init --
    2  ??  DL     0:00.02          [g_event]
    3  ??  DL     0:00.19          [g_up]
    4  ??  DL     0:00.13          [g_down]
    5  ??  DL     0:00.00          [thread taskq]
    6  ??  DL     0:00.00          [kqueue taskq]
    7  ??  DL     0:00.00          [pagedaemon]
    8  ??  DL     0:00.00          [vmdaemon]
    9  ??  DL     0:01.77          [pagezero]
   10  ??  DL     0:00.00          [ktrace]
   11  ??  RL    20:33.81          [idle]
   12  ??  WL     0:00.38          [swi2: net]
   13  ??  WL     0:01.43          [swi7: clock sio]
   14  ??  WL     0:00.00          [swi6: vm]
   15  ??  DL     0:00.14          [yarrow]
   16  ??  WL     0:00.00          [swi9: +]
   17  ??  WL     0:00.00          [swi8: +]
   18  ??  WL     0:00.00          [swi5: cambio]
   19  ??  WL     0:00.00          [swi9: task queue]
   20  ??  WL     0:03.18          [irq10: bcm0 uhci1*]
   21  ??  WL     0:00.03          [irq11: cb0 uhci0+*]
   22  ??  DL     0:00.00          [usb0]
   23  ??  DL     0:00.00          [usbtask]
   24  ??  DL     0:00.00          [usb1]
   25  ??  DL     0:00.06          [usb2]
   26  ??  DL     0:00.00          [usb3]
   27  ??  DL     0:00.00          [usb4]
   28  ??  DL     0:00.00          [usb5]
   29  ??  DL     0:00.05          [usb6]
   30  ??  DL     0:00.00          [usb7]
   31  ??  WL     0:00.00          [irq14: ata0]
   32  ??  WL     0:00.00          [irq15: ata1]
   33  ??  WL     0:00.00          [irq1: atkbd0]
   34  ??  WL     0:00.00          [swi0: sio]
   35  ??  WL     0:00.00          [swi3: ip6opt ipopt]
   36  ??  WL     0:00.00          [swi4: ip6mismatch+]
   37  ??  WL     0:00.00          [swi1: ipfwd]
   38  ??  DL     0:00.00          [bufdaemon]
   39  ??  DL     0:00.00          [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 -Jpww
 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 queues

Syntax

show system queues

Syntax (TX Matrix Router)

show system queues
<all-chassis| all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system queues
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display queue statistics.

Options

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.

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.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

scc—(TX Matrix routers only) (Optional) Display queue statistics for the TX Matrix router.

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

Additional Information

By default, when you issue the **show system queues** 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.

Required Privilege Level

maintenance

List of Sample Output

show system queues on page 882
show system queues scc (TX Matrix Router) on page 882
show system queues sfc (TX Matrix Router) on page 883

Output Fields

Table 142 on page 882 lists the output fields for the **show system queues** command. Output fields are listed in the approximate order in which they appear.

Table 142: show system queues Output Fields

Field Name	Field Description
Output interface	Interface on the router on which the queue exists: • **fxp0**—Management Ethernet interface • **fxp1**—Internal Ethernet interface • **lsi**—Internally generated interface and not configurable • **dsc**—Discard interface
bytes	Number of bytes in the queue.
max	Maximum number of bytes allowed in the queue.
packets	Number of packets in the queue.
max	Maximum number of packets allowed in the queue.
drops	Number of packets dropped from the queue.

show system queues

```
user@host> show system queues
output interface             bytes          max  packets      max    drops
fxp0                             0      1250000        0     4166        6
fxp1                             0      1250000        0     4166       19
lsi                              0        12500        0       41        0
dsc                              0            0        0        0        0
```

show system queues scc (TX Matrix Router)

```
user@host> show system queues scc
output interface             bytes          max  packets      max    drops
fxp0                             0      1250000        0     4166        5
lsi                              0        12500        0       41        0
dsc                              0            0        0        0        0
lo0                              0            0        0        0        0
bcm0                             0     12500000        0    30000        0
em0                              0     12500000        0    30000        0
gre                              0        12500        0       41        0
ipip                             0        12500        0       41        0
tap                              0            0        0        0        0
pime                             0        12500        0       41        0
pimd                             0        12500        0       41        0
mtun                             0        12500        0       41        0
so-1/0/0                         0       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
splfwdq                         0      1000000        0     1000        0
splnetq                         0      1000000        0     1000        0
arpintrq                        0         1000        0       50        0
optionq                         0       200000        0      200        0
icmpq                           0        50000        0       50        0
frlmiq                          0            0        0        0        0
spppintrq                       0        25000        0      250        0
clnlintrq                       0       200000        0      200        0
tnpintrq                        0      1250000        0     4166        0
tagintrq                        0       200000        0      200        0
tagfragq                        0       200000        0      200        0
```

show system queues sfc (TX Matrix Router)

```
user@host> show system queues sfc 0
sfc0-re0:
--------------------------------------------------------------------------
output interface            bytes          max  packets      max    drops
ixgbe1                          0    125000000        0    45000     4384
ixgbe0                          0    125000000        0    45000        0
lsi                             0        12500        0       41        0
dsc                             0            0        0        0        0
lo0                             0            0        0        0        0
em0                             0     12500000        0    41666        1
gre                             0        12500        0       41        0
ipip                            0        12500        0       41        0
tap                             0            0        0        0        0
pime                            0        12500        0       41        0
pimd                            0        12500        0       41        0
mtun                            0        12500        0       41        0
xe-12/0/0                       0      1250000        0     4166        0
xe-12/0/1                       0      1250000        0     4166        0
xe-12/0/2                       0      1250000        0     4166        0
xe-12/0/3                       0      1250000        0     4166        0
xe-12/1/0                       0      1250000        0     4166        0
xe-12/1/1                       0      1250000        0     4166        0
xe-12/1/2                       0      1250000        0     4166        0
xe-12/1/3                       0      1250000        0     4166        0
xe-20/0/0                       0      1250000        0     4166        0
xe-20/0/1                       0      1250000        0     4166        0
xe-20/0/2                       0      1250000        0     4166        0
xe-20/0/3                       0      1250000        0     4166        0
xe-20/1/0                       0      1250000        0     4166        0
xe-20/1/1                       0      1250000        0     4166        0
xe-20/1/2                       0      1250000        0     4166        0
xe-20/1/3                       0      1250000        0     4166        0
ge-15/0/0                       0      1250000        0     4166       75
ge-15/0/1                       0      1250000        0     4166        0
ge-15/0/2                       0      1250000        0     4166       75
ge-15/0/3                       0      1250000        0     4166       75
ge-15/0/4                       0      1250000        0     4166        0
ge-15/0/5                       0      1250000        0     4166        0
ge-15/0/6                       0      1250000        0     4166        0
ge-15/0/7                       0      1250000        0     4166        0
```

ge-15/0/8	0	1250000	0	4166	0
ge-15/0/9	0	1250000	0	4166	0
xe-4/0/0	0	1250000	0	4166	0
xe-4/0/1	0	1250000	0	4166	0
xe-4/0/2	0	1250000	0	4166	0
xe-4/0/3	0	1250000	0	4166	0
xe-4/1/0	0	1250000	0	4166	0
xe-4/1/1	0	1250000	0	4166	0
xe-4/1/2	0	1250000	0	4166	0
xe-4/1/3	0	1250000	0	4166	0
xe-24/0/0	0	1250000	0	4166	0
xe-24/0/1	0	1250000	0	4166	0
xe-24/0/2	0	1250000	0	4166	0
xe-24/0/3	0	1250000	0	4166	0
xe-24/1/0	0	1250000	0	4166	0
xe-24/1/1	0	1250000	0	4166	0
xe-24/1/2	0	1250000	0	4166	0
xe-24/1/3	0	1250000	0	4166	0
ge-7/0/0	0	1250000	0	4166	0
ge-7/0/1	0	1250000	0	4166	0
ge-7/0/2	0	1250000	0	4166	0
ge-7/0/3	0	1250000	0	4166	75
ge-7/0/4	0	1250000	0	4166	0
ge-7/0/5	0	1250000	0	4166	0
ge-7/0/6	0	1250000	0	4166	0
ge-7/0/7	0	1250000	0	4166	0
ge-7/0/8	0	1250000	0	4166	0
ge-7/0/9	0	1250000	0	4166	0
so-7/1/0	0	125000	0	416	0
so-7/2/0	0	125000	0	416	0
xe-21/0/0	0	1250000	0	4166	0
xe-21/0/1	0	1250000	0	4166	0
xe-21/0/2	0	1250000	0	4166	0
xe-21/0/3	0	1250000	0	4166	0
xe-21/1/0	0	1250000	0	4166	0
xe-21/1/1	0	1250000	0	4166	0
xe-21/1/2	0	1250000	0	4166	0
xe-21/1/3	0	1250000	0	4166	0
xe-14/0/0	0	1250000	0	4166	0
xe-14/0/1	0	1250000	0	4166	0
xe-14/0/2	0	1250000	0	4166	0
xe-14/0/3	0	1250000	0	4166	0
xe-14/1/0	0	1250000	0	4166	0
xe-14/1/1	0	1250000	0	4166	0
xe-14/1/2	0	1250000	0	4166	0
xe-14/1/3	0	1250000	0	4166	0
xe-25/0/0	0	1250000	0	4166	0
xe-25/0/1	0	1250000	0	4166	0
xe-25/0/2	0	1250000	0	4166	0
xe-25/0/3	0	1250000	0	4166	0
xe-25/1/0	0	1250000	0	4166	0
xe-25/1/1	0	1250000	0	4166	0
xe-25/1/2	0	1250000	0	4166	0
xe-25/1/3	0	1250000	0	4166	0
so-22/0/0	0	125000	0	416	0
so-22/0/1	0	125000	0	416	0
so-22/0/2	0	125000	0	416	0
so-22/0/3	0	125000	0	416	0
xe-22/1/0	0	1250000	0	4166	0
xe-22/1/1	0	1250000	0	4166	0
xe-22/1/2	0	1250000	0	4166	0

```
xe-22/1/3                       0      1250000        0     4166        0
xe-6/0/0                        0      1250000        0     4166        0
xe-6/0/1                        0      1250000        0     4166        0
xe-6/0/2                        0      1250000        0     4166        0
xe-6/0/3                        0      1250000        0     4166        0
xe-6/1/0                        0      1250000        0     4166        0
xe-6/1/1                        0      1250000        0     4166        0
xe-6/1/2                        0      1250000        0     4166        0
xe-6/1/3                        0      1250000        0     4166        0
xe-26/0/0                       0      1250000        0     4166        0
xe-26/0/1                       0      1250000        0     4166        0
xe-26/0/2                       0      1250000        0     4166        0
xe-26/0/3                       0      1250000        0     4166        0
xe-26/1/0                       0      1250000        0     4166        0
xe-26/1/1                       0      1250000        0     4166        0
xe-26/1/2                       0      1250000        0     4166        0
xe-26/1/3                       0      1250000        0     4166        0
ge-31/0/0                       0      1250000        0     4166        0
ge-31/0/1                       0      1250000        0     4166        0
ge-31/0/2                       0      1250000        0     4166        0
ge-31/0/3                       0      1250000        0     4166        0
ge-31/0/4                       0      1250000        0     4166       75
ge-31/0/5                       0      1250000        0     4166        0
ge-31/0/6                       0      1250000        0     4166       75
ge-31/0/7                       0      1250000        0     4166        0
ge-31/0/8                       0      1250000        0     4166        0
ge-31/0/9                       0      1250000        0     4166        0
pd-31/1/0                       0        12500        0       41        0
pe-31/1/0                       0        12500        0       41        0
gr-31/1/0                       0        12500        0       41        0
ip-31/1/0                       0        12500        0       41        0
vt-31/1/0                       0        12500        0       41        0
mt-31/1/0                       0        12500        0       41        0
lt-31/1/0                       0        12500        0       41        0
so-29/0/0                       0       125000        0      416        0
so-29/0/1                       0       125000        0      416        0
so-29/0/2                       0       125000        0      416        0
so-29/0/3                       0       125000        0      416        0
xe-29/1/0                       0      1250000        0     4166        0
xe-29/1/1                       0      1250000        0     4166        0
xe-29/1/2                       0      1250000        0     4166        0
xe-29/1/3                       0      1250000        0     4166        0
so-28/0/0                       0       125000        0      416        0
so-28/0/1                       0       125000        0      416        0
so-28/0/2                       0       125000        0      416        0
so-28/0/3                       0       125000        0      416        0
ge-23/0/0                       0      1250000        0     4166        0
ge-23/0/1                       0      1250000        0     4166        0
ge-23/0/2                       0      1250000        0     4166        0
ge-23/0/3                       0      1250000        0     4166        0
ge-23/0/4                       0      1250000        0     4166        0
ge-23/0/5                       0      1250000        0     4166        0
ge-23/0/6                       0      1250000        0     4166        0
ge-23/0/7                       0      1250000        0     4166        0
ge-23/0/8                       0      1250000        0     4166        0
ge-23/0/9                       0      1250000        0     4166        0
input protocol              bytes          max  packets      max    drops
splfwdq                         0      1000000        0     1000        0
splnetq                         0      1000000        0     1000        0
arpintrq                        0         1000        0       50        0
optionq                         0       200000        0      200        0
```

```
icmpq                          0        50000        0       50        0
frlmiq                         0            0        0        0        0
spppintrq                      0        25000        0      250        0
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

Syntax

show system reboot
<both-routing-engines>

Syntax (EX Series Switch)

show system reboot
<all-members>
<both-routing-engines>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system reboot
<all-chassis | all-lcc | lcc *number* | scc>
<both-routing-engines>

Syntax (TX Matrix Plus Router)

show system reboot
<all-chassis| all-lcc | lcc *number* | sfc *number*>
<both-routing-engines>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display pending system reboots or halts.

Options

none—Display pending reboots or halts on the active Routing Engine.

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 router, display halt or reboot request information for all the T1600 routers in the chassis that are connected to the TX Matrix Plus router.

all-members—(EX4200 switches only) (Optional) Display halt or reboot request information for all members of the Virtual Chassis configuration.

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

both-routing-engines—(Systems with multiple Routing Engines) (Optional) Display halt or reboot request information on both Routing Engines.

lcc *number*—(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 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 888
show system reboot all-lcc (TX Matrix Router) on page 889
show system reboot sfc (TX Matrix Plus Router) on page 889

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 rollback

Syntax

show system rollback *number*
<compare *number*>

Release Information

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

Description

Display the contents of a previously committed configuration, or the differences between two previously committed configurations.

Options

number—Number of a configuration to view. The output displays the configuration. The range of values is **0** through **49**.

compare *number* —(Optional) Number of another previously committed (rollback) configuration to compare to rollback ***number***. The output displays the differences between the two configurations. The range of values is **0** through **49**.

Required Privilege Level

view

List of Sample Output

show system rollback compare on page 890

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

Syntax

show system services dhcp binding
<detail>
<address>

Release Information

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

Description

(J Series routers only) Display Dynamic Host Configuration Protocol (DHCP) server client binding information.

Options

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.

Required Privilege Level

view and system

Related Documentation

- **clear system services dhcp binding on page 688**

List of Sample Output

show system services dhcp binding on page 893
show system services dhcp binding address on page 893
show system services dhcp binding address detail on page 893

Output Fields

Table 143 on page 892 describes the output fields for the **show system services dhcp binding** command. Output fields are listed in the approximate order in which they appear.

Table 143: show system services dhcp binding Output Fields

Field Name	Field Description	Level of Output
Allocated address	List of IP addresses the DHCP server has assigned to clients.	All levels
MAC address	Corresponding media access control (MAC) hardware address of the client.	All levels
Client identifier	(***address*** 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
Binding Type	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
Lease Expires at	Time the lease expires or **never** for leases that do not expire.	All levels
Lease Obtained at	(***address*** option only) Time the client obtained the lease from the DHCP server.	**detail**

Table 143: show system services dhcp binding Output Fields *(continued)*

Field Name	Field Description	Level of Output
State	Status of the binding. Bindings can be active or expired.	**detail**
Pool	Address pool that contains the IP address assigned to the client.	**detail**
Request received on	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.	**detail**
DHCP options	User-defined options created for the DHCP server. If no options have been defined, this field is blank.	**detail**

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

Syntax show system services dhcp conflict

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

Description (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.

Options This command has no options.

Required Privilege Level view and system

Related Documentation

- **clear system services dhcp conflict on page 689**

List of Sample Output **show system services dhcp conflict on page 894**

Output Fields Table 144 on page 894 describes the output fields for the **show system services dhcp conflict** command. Output fields are listed in the approximate order in which they appear.

Table 144: show system services dhcp conflict Output Fields

Field Name	Field Description
Detection time	Date and time the client detected the conflict.
Detection method	How the conflict was detected.
Address	IP address where the conflict occurs. The addresses in the conflicts list remain excluded from the pool until you use a **clear system services dhcp conflict** command to manually clear the list.

show system services dhcp conflict

```
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

Syntax show system services dhcp global

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

Description (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.

Options This command has no options.

Required Privilege Level view and system

List of Sample Output **show system services dhcp global on page 896**

Output Fields Table 145 on page 895 describes the output fields for the **show system services dhcp global** command. Output fields are listed in the approximate order in which they appear.

Table 145: show system services dhcp global Output Fields

Field Name	Field Description
BOOTP lease length	Length of lease time assigned to BOOTP clients.
Default lease time	Lease time assigned to clients that do not request a specific lease time.
Minimum lease time	Minimum time a client retains an IP address lease on the server.
Maximum lease time	Maximum time a client can retain an IP address lease on the server.
DHCP options	User-defined options created for the DHCP server. If no options have been defined, this field is blank.

show system services dhcp global

```
user@host> show system services 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

Syntax

show system services dhcp pool
<detail>
<subnet-address>

Release Information

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

Description

(J Series routers and EX Series switches only) Display Dynamic Host Configuration Protocol (DHCP) server IP address pools.

Options

none—Display brief information about all IP address pools.

detail—(Optional) Display detailed information.

subnet-address—(Optional) Display information for the specified subnet address.

Required Privilege Level

view and system

List of Sample Output

show system services dhcp pool on page 898
show system services dhcp pool subnet-address on page 898
show system services dhcp pool subnet-address detail on page 898

Output Fields

Table 146 on page 897 describes the output fields for the **show system services dhcp pool** command. Output fields are listed in the approximate order in which they appear.

Table 146: 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	(***subnet-address*** option only) Subnet to which the specified address pool belongs.	None specified
Address range	(***subnet-address*** 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 146: 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**

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 subnet-address

```
user@host> show system services dhcp pool 3.3.3.0/24

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 subnet-address detail

```
user@host> show system services dhcp pool 3.3.3.0/24 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

Syntax show system services dhcp statistics

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

Description (J Series routers and EX Series switches only) Display Dynamic Host Configuration Protocol (DHCP) server statistics.

Options This command has no options.

Required Privilege Level view and system

Related Documentation
- **clear system services dhcp statistics on page 690**

List of Sample Output **show system services dhcp statistics on page 900**

Output Fields Table 147 on page 899 describes the output fields for the **show system services dhcp statistics** command. Output fields are listed in the approximate order in which they appear.

Table 147: show system services dhcp statistics Output Fields

Field Name	Field Description
Default lease time	Lease time assigned to clients that do not request a specific lease time.
Minimum lease time	Minimum time a client can retain an IP address lease on the server.
Maximum lease time	Maximum time a client can retain an IP address lease on the server.
Packets dropped	Total number of packets dropped and number of packets dropped because of: • Invalid hardware address • Invalid opcode • Invalid server address • No available address • No interface match • No routing instance match • No valid local addresses • Packet too short • Read error • Send error

Table 147: show system services dhcp statistics Output Fields *(continued)*

Field Name	Field Description
Messages received	Number of the following message types sent from DHCP clients and received by the DHCP server: • BOOTREQUEST • DHCPDECLINE • DHCPDISCOVER • DHCPINFORM • DHCPRELEASE • DHCPREQUEST
Messages sent	Number of the following message types sent from the DHCP server to DHCP clients: • BOOTREPLY • DHCPACK • DHCPOFFER • DHCPNAK

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

Syntax show system services service-deployment

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

Description Display information about a Session and Resource Control (SRC) client.

Options This command has no options.

Required Privilege Level view and system

List of Sample Output **show system services service-deployment on page 901**

show system services service-deployment

```
user@host> 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
```

show system snapshot

Syntax

show system snapshot

Syntax (EX Series Switch)

show system snapshot
<all-members>
<local>
<member *member-id*>

Release Information

Command introduced in Junos OS Release 7.6.
Command introduced in Junos OS Release 9.0 for EX Series switches.

Description

Display information about the backup software that is located in the **/altroot** and **/altconfig** file systems. To back up software, use the **request system snapshot** command.

Options

none—Display information about the backup software.

all-members—(EX4200 switches only) (Optional) Display information about the backup software for all members of the Virtual Chassis configuration.

local—(EX4200 switches only) (Optional) Display information about the backup software for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display information about the backup software for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

Required Privilege Level

view

Related Documentation

- **request system snapshot on page 734**

List of Sample Output

show system snapshot on page 902

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

Syntax

show system software
<detail>

Syntax (EX Series Switch)

show system software
<all-members>
<detail>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system software
<all-chassis | all-lcc | lcc *number* | scc>
<detail>

Syntax (TX Matrix Plus Router)

show system software
<all-chassis | all-lcc | lcc *number* | sfc *number*>
<detail>

Syntax (J Series Routers)

show system software
<backup>
<detail>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display the Junos OS extensions loaded on your router or switch.

Options

none—Display standard information about all loaded Junos OS extensions.

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.

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

all-members—(EX4200 switches only) (Optional) Display the system software running on all members of the Virtual Chassis configuration.

backup—(J Series routers only) (Optional) Display the status of old system software packages only.

detail—(Optional) Display detailed information about available Junos OS extensions.

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 904
show system software (TX Matrix Plus Router) on page 905

show system software

```
user@host> show system software
Information for jbase:

Comment:
JUNOS Base OS Software Suite [7.2R1.7]


Information for jcrypto:

Comment:
JUNOS Crypto Software Suite [7.2R1.7]
Information for jdocs:

Comment:
JUNOS Online Documentation [7.2R1.7]


Information for jkernel:

Comment:
JUNOS Kernel Software Suite [7.2R1.7]


Information for jpfe:

Comment:
JUNOS Packet Forwarding Engine Support (M20/M40) [7.2R1.7]


Information for jroute:

Comment:
JUNOS Routing Software Suite [7.2R1.7]


Information for junos:
```



```
Comment:
JUNOS Base OS boot [7.2R1.7]
```

show system software (TX Matrix Plus Router)

```
user@host> show system software
sfc0-re0:
--------------------------------------------------------------------------
Information for jbase:

Comment:
JUNOS Base OS Software Suite [9.6-20090515.0]



Information for jcrypto:

Comment:
JUNOS Crypto Software Suite [9.6-20090515.0]



Information for jdocs:

Comment:
JUNOS Online Documentation [9.6-20090515.0]
Information for jkernel:

Comment:
JUNOS Kernel Software Suite [9.6-20090515.0]



Information for jpfe:

Comment:
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090515.0]



Information for jpfe-common:

Comment:
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090515.0]



Information for jroute:Comment:
JUNOS Routing Software Suite [9.6-20090515.0]



Information for jservices-aacl:

Comment:
JUNOS Services AACL 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 AACL 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

Syntax

show system statistics

Syntax (EX Series Switch)

show system statistics
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide protocol-related statistics.

Options

none—Display system statistics for all the following protocols:

- **arp**—Address Resolution Protocol
- **clns**—Connectionless Network Service
- **esis**—End System-to-Intermediate System
- **icmp**—Internet Control Message Protocol
- **icmp6**—Internet Control Message Protocol version 6
- **igmp**—Internet Group Management Protocol
- **ip**—Internet Protocol version 4
- **ip6**—Internet Protocol version 6
- **mpls**—Multiprotocol Label Switching
- **rdp**—Reliable Datagram Protocol
- **tcp**—Transmission Control Protocol
- **tnp**—Trivial Network Protocol
- **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

show system statistics on page 910
show system statistics (EX Series Switch) on page 917
show system statistics (TX Matrix Router) on page 927

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 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
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
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
clnl:
        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
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
        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 (EX Series Switch)

```
user@host> 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 destinaton 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 IGMPL2 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 IGMPL2 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
        clnl:
                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 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
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 nexhop 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

lcc0-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 arp

Syntax

show system statistics arp

Syntax (EX Series Switch)

show system statistics arp
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics arp
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics arp
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide Address Resolution Protocol (ARP) statistics.

Options

none—Display system-wide ARP statistics.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display ARP 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-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

all-members—(EX4200 switches only) (Optional) Display ARP statistics 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 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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Display ARP statistics for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display ARP statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

scc—(TX Matrix routers only) (Optional) Display ARP statistics for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display ARP statistics for the TX Matrix Plus router (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 935
show system statistics arp (EX Series Switch) on page 935
show system statistics arp (TX Matrix Plus Router) on page 936

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

Syntax

show system statistics clns

Syntax (TX Matrix Router)

show system statistics clns
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics clns
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide Connectionless Network Service (CLNS) statistics.

Options

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for CLNS 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 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.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

scc—(TX Matrix routers only) (Optional) Display system statistics for CLNS for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display system statistics for CLNS 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 clns** 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 clns on page 941
show system statistics clns (EX Series Switch) on page 941

show system statistics clns (TX Matrix Plus Router) on page 942

show system statistics clns

```
user@host> show system statistics clns
clnl:
        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
clnl:
         0 Total packets received
         0 Packets delivered
         0 Too small packets
         0 Packets with bad header length
         0 Packets with bad checksum
         0 Bad version packets
         0 Unknown or unsupported protocol packets
         0 Packets with bogus sdl size
         0 No free memory in socket buffer
         0 Send packets discarded
         0 Sbappend failure
         0 Mcopy failure
         0 Address fields were not reasonable
         0 Segment information forgotten
         0 Forwarded packets
         0 Total packets sent
         0 Output packets discarded
         0 Non-forwarded packets
         0 Packets fragmented
         0 Fragments sent
         0 Fragments discarded
         0 Fragments timed out
         0 Fragmentation prohibited
         0 Packets reconstructed
         0 Packets destined to dead nexthop
         0 Packets discarded due to no route
```

```
         0 Error pdu rate drops
         0 ER pdu generation failure
```

show system statistics clns (TX Matrix Plus Router)

```
user@host> show system statistics clns
sfc0-re0:
--------------------------------------------------------------------------
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

lcc0-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

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:
--------------------------------------------------------------------------
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
```

show system statistics esis

Syntax

show system statistics esis

Syntax (EX Series Switch)

show system statistics esis
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics esis
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics esis
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide End System-to-Intermediate System (ES-IS) statistics.

Options

none—Display system statistics for ES-IS.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for ES-IS 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 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.

all-members—(EX4200 switches only) (Optional) Display ES-IS statistics 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 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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Display ES-IS statistics for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display ES-IS statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

scc—(TX Matrix routers only) (Optional) Display system statistics for ES-IS for the TX Matrix router (or switch-card chassis).

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 946
show system statistics esis (EX Series Switch) on page 946
show system statistics esis (TX Matrix Plus Router) on page 946

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

lcc0-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

lcc1-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

lcc2-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

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 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 icmp

Syntax

show system statistics icmp

Syntax (EX Series Switch)

show system statistics icmp
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics icmp
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics icmp
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide Internet Control Message Protocol (ICMP) statistics.

Options

none—Display system statistics for ICMP.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for ICMP 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 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.

all-members—(EX4200 switches only) (Optional) Display ICMP statistics 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 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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Display ICMP statistics for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display ICMP statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

scc—(TX Matrix routers only) (Optional) Display system statistics for ICMP for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers 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 950
show system statistics icmp (EX Series Switch) on page 950
show system statistics icmp (TX Matrix Plus Router) on page 951

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 destinaton 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 destinaton 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 destinaton 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 destinaton 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 destinaton 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 destinaton address
        0 timestamp drops with broadcast or multicast destination address
        Input histogram:
                echo: 22
        22 message responses generated
```

show system statistics icmp6

Syntax

show system statistics icmp6

Syntax (EX Series Switch)

show system statistics icmp6
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics icmp6
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics icmp6
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide Internet Control Message Protocol for IPv6 (ICMPv6) statistics.

Options

none—Display system statistics for ICMPv6.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for ICMPv6 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 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.

all-members—(EX4200 switches only) (Optional) Display ICMPv6 statistics 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 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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Display ICMPv6 statistics for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display ICMPv6 statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

scc—(TX Matrix routers only) (Optional) Display system statistics for ICMPv6 for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display system statistics for ICMPv6 for the TX Matrix Plus router (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 954
show system statistics icmp6 (EX Series Switch) on page 954
show system statistics icmp6 (TX Matrix Plus Router) on page 955

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
```

show system statistics icmp6 (TX Matrix Plus Router)

```
user@host> show system statistics icmp6
sfc0-re0:
--------------------------------------------------------------------------
icmp6:
        0 calls to icmp_error
        0 errors not generated because old message was icmp error or so
        0 errors not generated because rate limitation
        Output histogram:
                neighbor solicitation: 12
                neighbor advertisment: 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 advertisment: 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 advertisment: 4
        0 messages with bad code fields
        0 messages < minimum length
        0 bad checksums
        0 messages with bad length
        Input histogram:
                neighbor advertisment: 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 advertisment: 4
        0 messages with bad code fields
        0 messages < minimum length
        0 bad checksums
        0 messages with bad length
        Input histogram:
                neighbor advertisment: 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 advertisment: 4
        0 messages with bad code fields
        0 messages < minimum length
        0 bad checksums
        0 messages with bad length
        Input histogram:
                neighbor advertisment: 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

Syntax

show system statistics igmp

Syntax (EX Series Switch)

show system statistics igmp
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics igmp
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics igmp
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide Internet Group Management Protocol (IGMP) statistics.

Options

none—Display system statistics for IGMP.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for IGMP 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 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.

all-members—(EX4200 switches only) (Optional) Display IGMP statistics 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 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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Display IGMP statistics for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display IGMP statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

scc—(TX Matrix routers only) (Optional) Display system statistics for IGMP for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display system statistics for IGMP for the TX Matrix Plus router (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 959
show system statistics igmp (EX Series Switch) on page 959
show system statistics igmp (TX Matrix Plus Router) on page 959

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

Syntax

show system statistics ip

Syntax (EX Series Switch)

show system statistics ip
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics ip
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics ip
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide IPv4 statistics.

Options

none—Display system statistics for IPv4.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for IPv4 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 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.

all-members—(EX4200 switches only) (Optional) Display IPv4 statistics 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 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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Display IPv4 statistics for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display IPv4 statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

scc—(TX Matrix routers only) (Optional) Display system statistics for IPv4 for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display system statistics for IPv4 for the TX Matrix Plus router (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 962
show system statistics ip (EX Series Switch) on page 963
show system statistics ip (TX Matrix Plus Router) on page 963

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

Syntax

show system statistics ip6

Syntax (EX Series Switch)

show system statistics ip6
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics ip6
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics ip
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide IPv6 statistics.

Options

none—Display system statistics for IPv6.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for IPv6 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 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.

all-members—(EX4200 switches only) (Optional) Display IPv6 statistics 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 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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Display IPv6 statistics for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display IPv6 statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

scc—(TX Matrix routers only) (Optional) Display system statistics for IPv6 for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display system statistics for IPv6 for the TX Matrix Plus router (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 969
show system statistics ip6 (EX Series Switch) on page 970
show system statistics ip6 (TX Matrix Router) on page 970

show system statistics ip6

```
user@host> show system statistics ip6
ip6:
        0 total packets received
        0 with size smaller than minimum
        0 with data size < data length
        0 with bad options
        0 with incorrect version number
        0 fragments received
        0 fragments dropped (dup or out of space)
        0 fragments dropped after timeout
        0 fragments that exceeded limit
        0 packets reassembled ok
        0 packets for this host
        0 packets forwarded
        0 packets not forwardable
        0 redirects sent
        0 packets sent from this host
        0 packets sent with fabricated ip header
        0 output packets dropped due to no bufs, etc.
        0 output packets discarded due to no route
        0 output datagrams fragmented
        0 fragments created
        0 datagrams that can't be fragmented
        0 packets that violated scope rules
        0 multicast packets which we don't join
        Mbuf statistics:
        0 packets whose headers are not continuous
        0 tunneling packets that can't find gif
        0 packets discarded due to too may headers
        0 failures of source address selection
        0 forward cache hit
        0 forward cache miss
        0 packets destined to dead next hop
        0 option packets dropped due to rate limit
        0 packets dropped (src and int don't match)
        0 packets dropped due to bad protocol
```

show system statistics ip6 (EX Series Switch)

```
user@host> show system statistics ip6
ip6:
          0 total packets received
          0 packets with size smaller than minimum
          0 packets with data size < data length
          0 packets with bad options
          0 packets with incorrect version number
          0 fragments received
          0 fragments dropped (dup or out of space)
          0 fragments dropped after timeout
          0 fragments that exceeded limit
          0 packets reassembled ok
          0 packets for this host
          0 packets forwarded
          0 packets not forwardable
          0 redirects sent
          0 packets sent from this host
          0 packets sent with fabricated ip header
          0 output packets dropped due to no bufs, etc.
          0 output datagrams fragmented
          0 fragments created
          0 datagrams that can't be fragmented
          0 packets that violated scope rules
          0 multicast packets which we don't join
          0 packets whose headers are not continuous
          0 tunneling packets that can't find gif
          0 packets discarded due to too may headers
          0 failures of source address selection
          0 forward cache hit
          0 forward cache miss
          0 Packets destined to dead next hop
          0 option packets dropped due to rate limit
          0 Packets dropped (src and int don't match)
          0 packets dropped due to bad protocol
          0 transit re packet(null) dropped on mgmt i/f
```

show system statistics ip6 (TX Matrix Router)

```
user@host> show system statistics ip6
sfc0-re0:
--------------------------------------------------------------------------
ip6:
        0 total packets received
        0 with size smaller than minimum
        0 with data size < data length
        0 with bad options
        0 with incorrect version number
        0 fragments received
        0 fragments dropped (dup or out of space)
        0 fragments dropped after timeout
        0 fragments that exceeded limit
        0 packets reassembled ok
        0 packets for this host
        0 packets forwarded
        0 packets not forwardable
        0 redirects sent
        0 packets sent from this host
        0 packets sent with fabricated ip header
        0 output packets dropped due to no bufs, etc.
        0 output packets discarded due to no route
        0 output datagrams fragmented
        0 fragments created
        0 datagrams that can't be fragmented
```

```
        0 packets that violated scope rules
        0 multicast packets which we don't join
        Mbuf statistics:
        0 packets whose headers are not continuous
        0 tunneling packets that can't find gif
        0 packets discarded due to too 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 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

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

Syntax

show system statistics mpls

Syntax (EX Series Switch)

show system statistics mpls
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics mpls
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics mpls
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide Multiprotocol Label Switching (MPLS) statistics.

Options

none—Display system statistics for MPLS.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for MPLS 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 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.

all-members—(EX4200 switches only) (Optional) Display MPLS statistics 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 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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Display MPLS statistics for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display MPLS statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

scc—(TX Matrix routers only) (Optional) Display system statistics for MPLS for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display system statistics for MPLS for the TX Matrix Plus router (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 976
show system statistics mpls (EX Series Switch) on page 976
show system statistics mpls (TX Matrix Plus Router) on page 976

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

Syntax

show system statistics rdp

Syntax (EX Series Switch)

show system statistics rdp
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics rdp
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics rdp
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide Reliable Datagram Protocol (RDP) statistics.

Options

none—Display system statistics for RDP.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for RDP 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 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.

all-members—(EX4200 switches only) (Optional) Display RDP statistics 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 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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Display RDP statistics for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display RDP statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

scc—(TX Matrix routers only) (Optional) Display system statistics for RDP for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display system statistics for RDP for the TX Matrix Plus router (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 980
show system statistics rdp (EX Series Switch) on page 980
show system statistics rdp (TX Matrix Plus Router) on page 980

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

Syntax

show system statistics tcp

Syntax (EX Series Switch)

show system statistics tcp
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics tcp
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics tcp
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide Transmission Control Protocol (TCP) statistics.

Options

none—Display system statistics for TCP.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for TCP 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 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.

all-members—(EX4200 switches only) (Optional) Display TCP statistics 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 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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Display TCP statistics for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display TCP statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

scc—(TX Matrix routers only) (Optional) Display system statistics for TCP for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers 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 984
show system statistics tcp (EX Series Switch) on page 985
show system statistics tcp lcc (TX Matrix Router) on page 987
show system statistics tcp (TX Matrix Plus Router) on page 987

show system statistics tcp

```
user@host> show system statistics tcp
tcp:
        3844 packets sent
                3618 data packets (1055596 bytes)
                0 data packets (0 bytes) retransmitted
                0 resends initiated by MTU discovery
                205 ack-only packets (148 packets delayed)
                0 URG only packets
                0 window probe packets
                0 window update packets
                1079 control packets
        5815 packets received
                3377 acks (for 1055657 bytes)
                24 duplicate acks
                0 acks for unsent data
                2655 packets (15004 bytes) received in-sequence
                1 completely duplicate packet  (0 bytes)
                0 old duplicate packets
                0 packets with some dup. data (0 bytes duped)
                0 out-of-order packets (0 bytes)
                0 packets (0 bytes) of data after window
                0 window probes
                7 window update packets
                0 packets received after close
                0 discarded for bad checksums
                0 discarded for bad header offset fields
                0 discarded because packet too short
        1 connection request
        32 connection accepts
        0 bad connection attempts
        0 listen queue overflows
        33 connections established (including accepts)
        30 connections closed (including 0 drops)
                27 connections updated cached RTT on close
                27 connections updated cached RTT variance on close
                0 connections updated cached ssthresh on close
        0 embryonic connections dropped
```

```
3374 segments updated rtt (of 3220 attempts)
0 retransmit timeouts
        0 connections dropped by rexmit timeout
0 persist timeouts
        0 connections dropped by persist timeout
344 keepalive timeouts
        0 keepalive probes sent
        0 connections dropped by keepalive
1096 correct ACK header predictions
1314 correct data packet header predictions
32 syncache entries added
        0 retransmitted
        0 dupsyn
        0 dropped
        32 completed
        0 bucket overflow
        0 cache overflow
        0 reset
        0 stale
        0 aborted
        0 badack
        0 unreach
        0 zone failures
0 cookies sent
0 cookies received
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
1058 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
```

show system statistics tcp (EX Series Switch)

```
user@host> show system statistics tcp
Tcp:
         572724 packets sent
                 21936 data packets (1887657 bytes)
                 2 data packets retransmitted (20 bytes)
                 0 resends initiated by MTU discovery
                 3724 ack only packets (537 packets delayed)
                 0 URG only packets
                 1 window probe packets
                 1 window update packets
                 1094083 control packets
         1134258 packets received
                 21371 acks(for 1886660 bytes)
                 5870 duplicate acks
                 0 acks for unsent data
                  19908  packets received in-sequence(267794 bytes)
                 3022 completely duplicate packets(0 bytes)
                 0 old duplicate packets
                 4 packets with some duplicate data(4 bytes duped)
                 2 out-of-order packets(2 bytes)
                 0 packets of data after window(0 bytes)
                 0 window probes
                 40 window update packets
                 0 packets received after close
                 0 discarded for bad checksums
                 0 discarded for bad header offset fields
                 0 discarded because packet too short
```

```
547027 connection requests
80 connection accepts
0 bad connection attempts
0 listen queue overflows
103 connections established (including accepts)
547106 connections closed (including 6 drops)
        47 connections updated cached RTT on close
        47 connections updated cached RTT variance on close
        0 connections updated cached ssthresh on close
547004 embryonic connections dropped
20862 segments updated rtt(of 567830 attempts)
2 retransmit timeouts
        0 connections dropped by retransmit timeout
0 persist timeouts
        0 connections dropped by persist timeout
3032 keepalive timeouts
        3031 keepalive probes sent
        1 connections dropped by keepalive
7823 correct ACK header predictions
12533 correct data packet header predictions
80 syncache entries added
        0 retransmitted
        0 dupsyn
        4 dropped
        80 completed
        0 bucket overflow
        0 cache overflow
        0 reset
        0 stale
        0 aborted
        0 badack
        0 unreach
        0 zone failures
0 cookies sent
0 cookies received
1 SACK recovery episodes
1 segment retransmits in SACK recovery episodes
1 byte retransmits in SACK recovery episodes
71 SACK options (SACK blocks) received
1 SACK options (SACK blocks) sent
0 SACK scoreboard overflow
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
547024 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
0 outgoing segments dropped due to policing
```

show system statistics tcp lcc (TX Matrix Router)

```
user@host> show system statistics tcp lcc 2
lcc2-re0:
--------------------------------------------------------------------------
tcp:
        21271 packets sent
                11069 data packets (12044 bytes)
                0 data packets (0 bytes) retransmitted
                0 resends initiated by MTU discovery
                10198 ack-only packets (10194 packets delayed)
                0 URG only packets
                0 window probe packets
                0 window update packets
                4 control packets
        13363 packets received
                11073 acks (for 12044 bytes)
                0 duplicate acks
                0 acks for unsent data
                12895 packets (2400874 bytes) received in-sequence
                0 completely duplicate packets (0 bytes)
                0 old duplicate packets
                0 packets with some dup. data (0 bytes duped)
                0 out-of-order packets (0 bytes)
                0 packets (0 bytes) of data after window
                0 window probes
                0 window update packets
                0 packets received after close
                0 discarded for bad checksums
                0 discarded for bad header offset fields
                0 discarded because packet too short
        4 connection requests
        0 connection accepts
        0 bad connection attempts
        0 listen queue overflows
        4 connections established (including accepts)
        33 connections closed (including 0 drops)
                0 connections updated cached RTT on close
                0 connections updated cached RTT variance on close
                0 connections updated cached ssthresh on close
        0 embryonic connections dropped
        11073 segments updated rtt (of 11073 attempts)
0 retransmit timeouts
                0 connections dropped by rexmit timeout
        0 persist timeouts
                0 connections dropped by persist timeout
        0 keepalive timeouts
                0 keepalive probes sent
                0 connections dropped by keepalive
        464 correct ACK header predictions
        2172 correct data packet header predictions
        0 ACKs sent in response to in-window but not exact RSTs
        0 ACKs sent in response to in-window SYNs on established connections
        0 out-of-sequence segment drops due to insufficient memory
        0 RST packets
        0 ICMP packets ignored by TCP
```

show system statistics tcp (TX Matrix Plus Router)

```
user@host> show system statistics tcp
sfc0-re0:
--------------------------------------------------------------------------
Tcp:
         10420 packets sent
                 10203 data packets (2374613 bytes)
```

```
        0 data packets retransmitted (0 bytes)
        0 resends initiated by MTU discovery
        202 ack only packets (120 packets delayed)
        0 URG only packets
        0 window probe packets
        0 window update packets
        30 control packets
16635 packets received
        9468 acks(for 2374674 bytes)
        32 duplicate acks
        0 acks for unsent data
        7764  packets received in-sequence(38286 bytes)
        20 completely duplicate packets(0 bytes)
        0 old duplicate packets
        0 packets with some duplicate data(0 bytes duped)
        0 out-of-order packets(0 bytes)
        0 packets of data after window(0 bytes)
        0 window probes
        356 window update packets
        0 packets received after close
        0 discarded for bad checksums
        0 discarded for bad header offset fields
        0 discarded because packet too short
10 connection requests
33 connection accepts
0 bad connection attempts
0 listen queue overflows
34 connections established (including accepts)
50 connections closed (including 0 drops)
        24 connections updated cached RTT on close
        24 connections updated cached RTT variance on close
        0 connections updated cached ssthresh on close
9 embryonic connections dropped
9468 segments updated rtt(of 9256 attempts)
0 retransmit timeouts
        0 connections dropped by retransmit timeout
0 persist timeouts
        0 connections dropped by persist timeout
14 keepalive timeouts
        14 keepalive probes sent
        0 connections dropped by keepalive
6220 correct ACK header predictions
6625 correct data packet header predictions
33 syncache entries added
        0 retransmitted
        0 dupsyn
        0 dropped
        33 completed
        0 bucket overflow
        0 cache overflow
        0 reset
        0 stale
        0 aborted
        0 badack
        0 unreach
        0 zone failures
0 cookies sent
0 cookies received
0 SACK recovery episodes
0 segment retransmits in SACK recovery episodes
0 byte retransmits in SACK recovery episodes
```

```
        0 SACK options (SACK blocks) received
        0 SACK options (SACK blocks) sent
        0 SACK scoreboard overflow
        0 ACKs sent in response to in-window but not exact RSTs
        0 ACKs sent in response to in-window SYNs on established connections
        0 rcv packets dropped by TCP due to bad address
        0 out-of-sequence segment drops due to insufficient memory
        15 RST packets
        0 ICMP packets ignored by TCP
        0 send packets dropped by TCP due to auth errors
        0 rcv packets dropped by TCP due to auth errors
        0 outgoing segments dropped due to policing

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

Syntax

show system statistics tnp

Syntax (EX Series Switch)

show system statistics tnp
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics tnp
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics tcp
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide Trivial Network Protocol (TNP) statistics.

Options

none—Display system statistics for TNP.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for TNP 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 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.

all-members—(EX4200 switches only) (Optional) Display TNP statistics 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 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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Display TNP statistics for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display TNP statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

scc—(TX Matrix routers only) (Optional) Display system statistics for TNP for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display system statistics for TNP for the TX Matrix Plus router (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 992
show system statistics tnp (EX Series Switch) on page 992
show system statistics tnp (TX Matrix Plus Router) on page 993

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

Syntax

show system statistics tudp

Syntax (EX Series Switch)

show system statistics tudp
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics tudp
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics tudp
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide Trivial User Datagram Protocol (TUDP) statistics.

Options

none—Display system statistics for TUDP.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for TUDP 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 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.

all-members—(EX4200 switches only) (Optional) Display TUDP statistics 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 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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Display TUDP statistics for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display TUDP statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

scc—(TX Matrix routers only) (Optional) Display system statistics for TUDP for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display system statistics for TUDP for the TX Matrix Plus router (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 998
show system statistics tudp (TX Matrix Plus Router) on page 998

show system statistics tudp

```
user@host> show system statistics tudp
tudp:
        337109 datagrams received
        0 with incomplete header
        0 with bad data length field
        0 with bad checksum
        0 dropped due to no socket
        0 broadcast/multicast datagrams dropped due to no socket
        0 dropped due to full socket buffers
        337109 delivered
        337109 datagrams output
```

show system statistics tudp (TX Matrix Plus Router)

```
user@host> show system statistics tudp
sfc0-re0:
--------------------------------------------------------------------------
tudp:
        104389 datagrams received
        0 with incomplete header
        0 with bad data length field
        0 with bad checksum
        0 dropped due to no socket
        0 broadcast/multicast datagrams dropped due to no socket
        0 dropped due to full socket buffers
        104389 delivered
        95619 datagrams output

lcc0-re0:
--------------------------------------------------------------------------
tudp:
        148623 datagrams received
        0 with incomplete header
        0 with bad data length field
        0 with bad checksum
        2 dropped due to no socket
        1 broadcast/multicast datagram  dropped due to no socket
        0 dropped due to full socket buffers
        148620 delivered
        150327 datagrams output
```

```
lcc1-re0:
--------------------------------------------------------------------------
tudp:
        145493 datagrams received
        0 with incomplete header
        0 with bad data length field
        0 with bad checksum
        0 dropped due to no socket
        1 broadcast/multicast datagram  dropped due to no socket
        0 dropped due to full socket buffers
        145492 delivered
        147244 datagrams output

lcc2-re0:
--------------------------------------------------------------------------
tudp:
        164873 datagrams received
        0 with incomplete header
        0 with bad data length field
        0 with bad checksum
        2 dropped due to no socket
        0 broadcast/multicast datagrams dropped due to no socket
        0 dropped due to full socket buffers
        164871 delivered
        166339 datagrams output

lcc3-re0:
--------------------------------------------------------------------------
tudp:
        220320 datagrams received
        0 with incomplete header
        0 with bad data length field
        0 with bad checksum
        6 dropped due to no socket
        0 broadcast/multicast datagrams dropped due to no socket
        0 dropped due to full socket buffers
        220314 delivered
        221735 datagrams output
```

show system statistics udp

Syntax

show system statistics udp

Syntax (EX Series Switch)

show system statistics udp
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics udp
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics udp
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide User Datagram Protocol (UDP) statistics.

Options

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 *number*—(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 ***number*** with a value from **0** through **3**.

local—(EX4200 switches only) (Optional) Display UDP statistics for the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Display TUDP statistics for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value from 0 through 9.

scc—(TX Matrix routers only) (Optional) Display system statistics for UDP for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix 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 1001
show system statistics udp (TX Matrix Plus Router) on page 1001

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

Syntax

show system statistics vpls

Syntax (TX Matrix Router)

show system statistics vpls
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics vpls
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display system-wide Virtual Private LAN Service (VPLS) statistics.

Options

none—Display system statistics for VPLS.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for VPLS 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 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.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

scc—(TX Matrix routers only) (Optional) Display system statistics for VPLS for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display system statistics for VPLS 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 vpls** 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 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:
--------------------------------------------------------------------------
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

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

Syntax

show system storage
<detail>

Syntax (EX Series Switch)

show system storage
<detail>
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system storage
<detail>
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system storage
<detail>
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display statistics about the amount of free disk space in the router's or switch's file systems.

Options

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 *number*—(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 ***number*** 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 1009
show system storage (TX Matrix Plus Router) on page 1010

Output Fields

Table 148 on page 1009 describes the output fields for the **show system storage** command. Output fields are listed in the approximate order in which they appear.

Table 148: show system storage Output Fields

Field Name	Field Description
Filesystem	Name of the file system.
Size	Size of the file system.
Used	Amount of space used in the file system.
Avail	Amount of space available in the file system.
Capacity	Percentage of the file system's space that is being used.
Mounted on	Directory in which the file system is mounted.

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 switchover

Syntax

show system switchover

Syntax (TX Matrix Router)

show system switchover
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system switchover
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

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 1015
show system switchover all-lcc (Routing Matrix) on page 1015

Output Fields

Table 149 on page 1014 describes the output fields for the **show system switchover** command. Output fields are listed in the approximate order in which they appear.

Table 149: show system switchover Output Fields

Field Name	Field Description
Graceful switchover	Display graceful Routing Engine switchover status: • **On**—Indicates **graceful-switchover** is specified for the **routing-options** configuration command. • **Off**—Indicates **graceful-switchover** is not specified for the **routing-options** configuration command.
Configuration database	State of the configuration database: • **Ready**—Configuration database has synchronized. • **Synchronizing**—Configuration database is synchronizing. Displayed when there are updates within the last 5 seconds. • **Synchronize failed**—Configuration database synchronize process failed.

Table 149: show system switchover Output Fields *(continued)*

Field Name	Field Description
Kernel database	State of the kernel database: • **Ready**—Kernel database has synchronized. • **Synchronizing**—Kernel database is synchronizing. Displayed when there are updates within the last 5 seconds. • **Version incompatible**—The primary and standby Routing Engines are running incompatible kernel database versions. • **Replication error**—An error occurred when the state was replicated from the primary Routing Engine. Inspect **/var/log/ksyncd** for possible causes, or notify Juniper Networks customer support.
Peer state	Routing Engine peer state: • **Steady State**—Peer completed switchover transition. • **Peer Connected**—Peer in switchover transition.

show system switchover (Backup Routing Engine)

```
user@host> show system switchover
Graceful switchover: On
Configuration database: Ready
Kernel database: Ready
Peer state: Steady State
```

show system switchover all-lcc (Routing Matrix)

```
user@host> show system switchover all-lcc

lcc0-re0:
--------------------------------------------------------------------------
Multichassis replication: On
Configuration database: Ready
Kernel database: Ready
Peer state: Steady State
lcc2-re0:
--------------------------------------------------------------------------
Multichassis replication: On
Configuration database: Ready
Kernel database: Ready
Peer state: Steady State
```

show system uptime

Syntax

show system uptime

Syntax (EX Series Switch)

show system uptime
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system uptime
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system uptime
<detail>
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display the current time and information about how long the router or switch, router or switch software, and routing protocols have been running.

Options

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 *number*—(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 ***number*** with a value from **0** through **3**.

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

List of Sample Output

show system uptime on page 1017
show system uptime all-lcc (TX Matrix Router) on page 1018
show system uptime all-lcc (TX Matrix Plus Router) on page 1018

Output Fields

Table 150 on page 1017 describes the output fields for the **show system uptime** command. Output fields are listed in the approximate order in which they appear.

Table 150: show system uptime Output Fields

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

show system uptime

```
user@host> show system uptime
Current time:      1998-10-13 19:45:47 UTC
System booted:     1998-10-12 20:51:41 UTC (22:54:06 ago)
Protocols started: 1998-10-13 19:33:45 UTC (00:12:02 ago)
```

```
Last configured:   1998-10-13 19:33:45 UTC (00:12:02 ago) by abc
12:45PM  up 22:54, 2 users, load averages: 0.07, 0.02, 0.01
```

show system uptime all-lcc (TX Matrix Router)

```
user@host> show system uptime all-lcc
lcc0-re0:
--------------------------------------------------------------------------
Current time: 2004-09-13 09:55:35 PDT
System booted: 2004-09-13 03:13:55 PDT (06:41:40 ago)
Last configured: 2004-09-13 03:17:48 PDT (06:37:47 ago) by root
9:55AM PDT up 6:42, 1 user, load averages: 0.02, 0.03, 0.00
lcc2-re0:
--------------------------------------------------------------------------
Current time: 2004-09-13 09:55:35 PDT
System booted: 2004-09-12 03:23:43 PDT (1d 06:31 ago)
Last configured: 2004-09-13 03:05:36 PDT (06:49:59 ago) by root
9:55AM PDT up 1 day,  6:32, 1 user, load averages: 0.02, 0.01, 0.00
```

show system uptime all-lcc (TX Matrix Plus Router)

```
user@host> show system uptime all-lcc
sfc0-re0:
--------------------------------------------------------------------------
Current time: 2009-05-25 00:24:30 PDT
System booted: 2009-05-24 06:39:33 PDT (17:44:57 ago)
Protocols started: 2009-05-24 06:40:30 PDT (17:44:00 ago)
Last configured: 2009-05-24 06:33:27 PDT (17:51:03 ago) by gregdo
12:24AM  up 17:45, 2 users, load averages: 0.07, 0.05, 0.01

lcc0-re0:
--------------------------------------------------------------------------
Current time: 2009-05-25 00:24:30 PDT
System booted: 2009-05-24 06:39:46 PDT (17:44:44 ago)
error: the routing subsystem is not running
Last configured: 2009-05-24 06:40:47 PDT (17:43:43 ago) by root
12:24AM  up 17:45, 0 users, load averages: 0.00, 0.00, 0.00

lcc1-re0:
--------------------------------------------------------------------------
Current time: 2009-05-25 00:24:30 PDT
System booted: 2009-05-24 06:39:38 PDT (17:44:52 ago)
error: the routing subsystem is not running
Last configured: 2009-05-24 06:40:18 PDT (17:44:12 ago) by root
12:24AM  up 17:45, 0 users, load averages: 0.00, 0.00, 0.00

lcc2-re0:
--------------------------------------------------------------------------
Current time: 2009-05-25 00:24:30 PDT
System booted: 2009-05-24 06:39:48 PDT (17:44:42 ago)
error: the routing subsystem is not running
Last configured: 2009-05-24 06:40:44 PDT (17:43:46 ago) by root
12:24AM  up 17:45, 0 users, load averages: 0.00, 0.00, 0.00

lcc3-re0:
--------------------------------------------------------------------------
Current time: 2009-05-25 00:24:30 PDT
System booted: 2009-05-24 06:39:44 PDT (17:44:46 ago)
error: the routing subsystem is not running
Last configured: 2009-05-24 06:40:08 PDT (17:44:22 ago) by root
12:24AM  up 17:45, 0 users, load averages: 0.00, 0.00, 0.00
```

show system users

Syntax

show system users
<no-resolve>

Syntax (TX Matrix Router)

show system users
<all-chassis | all-lcc | lcc *number* | scc>
<no-resolve>

Syntax (TX Matrix Plus Router)

show system users
<detail>
<all-chassis | all-lcc | lcc *number* | sfc *number*> <no-resolve>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

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.

Options

none—List information about the users who are currently logged in to the router or switch.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Show users currently logged in to all the routers in the chassis.

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.

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 ***number*** with a value from **0** through **3**.

no-resolve—(Optional) Do not attempt to resolve IP addresses to hostnames.

scc—(TX Matrix routers only) (Optional) Show users currently logged in to the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Show users currently logged in to the TX Matrix Plus router (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 1020
show system users lcc no-resolve (TX Matrix and TX Matrix Plus Router) on page 1020
show system users (TX Matrix Plus Router) on page 1021

Output Fields

Table 151 on page 1020 describes the output fields for the **show system users** command. Output fields are listed in the approximate order in which they appear.

Table 151: show system users Output Fields

Field Name	Field Description
time and up	Current time, in the local time zone, and how long the router or switch has been operational.
users	Number of users logged in to the router or switch.
load averages	Load averages for the last 1 minute, 5 minutes, and 15 minutes.
USER	Username.
TTY	Terminal through which the user is logged in.
FROM	System from which the user has logged in. A hyphen indicates that the user is logged in through the console.
LOGIN@	Time when the user logged in.
IDLE	How long the user has been idle.
WHAT	Processes that the user is running.

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 level5.company.net 7:30PM     - cli
```

show system users lcc no-resolve (TX Matrix

```
user@host> show system users lcc 2 no-resolve

lcc2-re0:
```

and TX Matrix Plus Router)

```
--------------------------------------------------------------------------
10:34AM PDT up 1 day,  7:11, 5 users, load averages: 0.03, 0.01, 0.00
USER     TTY      FROM                              LOGIN@  IDLE WHAT
root     d0       -                                3:21AM   7:12 /bin/csh
regress  p0       scc-re0                          10:15AM     - telnet hostA
regress  p1       scc-re0                          10:16AM     - telnet hostA
regress  p2       scc-re0                          10:19AM     - telnet hostA
regress  p3       scc-re0                          10:24AM     - telnet hostA
```

show system users (TX Matrix Plus Router)

```
user@host> show system users
sfc0-re0:
--------------------------------------------------------------------------
 1:41AM  up 26 mins, 3 users, load averages: 0.08, 0.04, 0.03
USER     TTY      FROM                              LOGIN@  IDLE WHAT
regress  p0       10.209.208.123                   1:18AM     21 cli
regress  p1       172.17.29.207                    1:37AM      2 cli
regress  p2       172.17.28.19                     1:40AM      - cli

lcc0-re0:
--------------------------------------------------------------------------
 1:41AM  up 26 mins, 0 users, load averages: 0.00, 0.00, 0.03

lcc1-re0:
--------------------------------------------------------------------------
 1:41AM  up 26 mins, 0 users, load averages: 0.00, 0.02, 0.03

lcc2-re0:
--------------------------------------------------------------------------
 1:41AM  up 26 mins, 0 users, load averages: 0.16, 0.06, 0.02

lcc3-re0:
--------------------------------------------------------------------------
 1:41AM  up 26 mins, 0 users, load averages: 0.12, 0.04, 0.04

regress@aj> show system users
sfc0-re0:
--------------------------------------------------------------------------
 1:42AM  up 28 mins, 4 users, load averages: 0.02, 0.03, 0.02
USER     TTY      FROM                              LOGIN@  IDLE WHAT
regress  p0       pssraj-t61.jnpr.net              1:18AM     22 cli
regress  p1       eng-shell4.juniper.net           1:37AM      - cli
regress  p2       bigpink.juniper.net              1:40AM      - cli
regress  p3       sv-cuty-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 virtual-memory

Syntax

show system virtual-memory

Syntax (EX Series Switch)

show system virtual-memory
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system virtual-memory
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system virtual-memory
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display the usage of Junos kernel memory listed first by size of allocation and then by type of usage. Use **show system virtual-memory** for troubleshooting with Juniper Networks Customer Support.

Options

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 *number*—(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 ***number*** 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 *member-id*—(EX4200 switches only) (Optional) Display kernel dynamic memory usage information 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 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 1025
show system virtual-memory scc (TX Matrix Router) on page 1029
show system virtual-memory sfc (TX Matrix Plus Router) on page 1030
show system virtual-memory | display xml on page 1033

Output Fields

Table 152 on page 1024 lists the output fields for the **show system virtual-memory** command. Output fields are listed in the approximate order in which they appear.

Table 152: show system virtual-memory Output Fields

Field Name	Field Description
Memory statistics by bucket size	
Size	Memory block size (bytes). The kernel memory allocator appropriates blocks of memory whose size is exactly a power of 2.
In Use	Number of memory blocks of this size that are in use (bytes).
Free	Number of memory blocks of this size that are free (bytes).
Requests	Number of memory allocation requests made.
HighWater	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.
Couldfree	Total number of times that the free elements for a bucket size exceed the high-water mark for that bucket size.
Memory usage type by bucket size	
Size	Memory block size (bytes).
Type(s)	Kernel modules that are using these memory blocks. For a definition of each type, refer to a FreeBSD book.
Memory statistics by type	
Type	Kernel module that is using dynamic memory.
InUse	Number of memory blocks used by this type. The number is rounded up.
MemUse	Amount of memory in use, in kilobytes (KB).
HighUse	Maximum memory ever used by this type.
Limit	Maximum memory that can be allocated to this type.
Requests	Total number of dynamic memory allocation requests this type has made.
Type Limit	Number of times requests were blocked for reaching the maximum limit.
Kern Limit	Number of times requests were blocked for kernel map.
Size(s)	Memory block sizes this type is using.
Memory Totals	
In Use	Total kernel dynamic memory in use (bytes, rounded up).
Free	Total kernel dynamic memory free (bytes, rounded up).

Table 152: show system virtual-memory Output Fields *(continued)*

Field Name	Field Description
Requests	Total number of memory allocation requests.
ITEM	Kernel module that is using memory.
Size	Memory block size (bytes).
LImit	Maximum memory that can be allocated to this type.
Used	Number of memory blocks used by this type. The number is rounded up.
Free	Number of memory blocks available to this type.
Requests	Total number of memory allocation requests this type has made.
interrupt	Timer events and scheduling interruptions.
total	Total number of interruptions for each type.
rate	Interruption rate.
Total	Total for all interruptions.

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 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  Kern
        Type  InUse MemUse HighUse  Limit Requests Limit Limit Size(s)
       isadev    12     1K      1K166400K       12    0     0  64
     atkbddev     2     1K      1K166400K        2    0     0  32
   uc_devlist    24     3K      3K166400K       24    0     0  16,2K
....
```

```
Memory Totals:  In Use    Free    Requests
                 6091K   1554K     2897122
```

show system virtual-memory sfc (TX Matrix Plus Router)

```
user@host> show system virtual-memory sfc 0
sfc0-re0:
--------------------------------------------------------------------------
         Type InUse MemUse HighUse Requests  Size(s)
CAM dev queue     1     1K       -        1  64
      entropy  1024    64K       -     1024  64
       linker   487  6272K       -     1163  16,32,64,4096,32768,131072
          USB   127    10K       -      127  16,32,64,128,256,1024,2048
        lockf    46     3K       -    98418  64
       USBdev    10     2K       -       34  16,128,2048,16384
ifstateSLLNode     0     0K       -     1096 16
       devbuf 21243 15683K       -    21810
16,32,64,128,256,512,1024,2048,4096,8192,16384,32768,65536,131072
         temp  1283   151K       -  2483472
16,32,64,128,256,512,2048,4096,8192,16384,32768,65536,131072
       ip6ndp     0     0K       -        4  64
   in6ifmulti     1     1K       -        1  64
   in6grentry     1     1K       -        1  64
    iflogical    20     5K       -       29  2048
     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
       rtsmsg     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
    sysctloid  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
     iffamily    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
```

```
       rtsmsg     0     0K       -        3  131072
       module   250    16K       -      250  64,128
     mtx_pool     1     8K       -        1  64,128
       DEVFS3   108    12K       -      109  256
       DEVFS1   101    23K       -      101  2048
         pgrp     5     1K       -      917  64
      session     5     1K       -      917  512
         proc     2     1K       -        2  16384
      subproc   217   441K       -     4867  2048,131072
         cred    21     3K       -    48719  256
       plimit     9     2K       -     5255  2048
      uidinfo     2     1K       -        2  32,512
    sysctloid  2786    85K       -     2786  16,32,64
    sysctltmp     0     0K       -     1833  16,32,64,1024
         umtx   126     8K       -      126  64
         SWAP     2   277K       -        2  64
          bus   780   125K       -     2734  16,32,64,128,32768
       bus-sc    69    69K       -     1194
16,32,64,512,1024,2048,8192,16384,65536,131072
      devstat     8    17K       -        8  16,131072
 eventhandler    45     2K       -       46  32,128
         kobj    93   186K       -      111  65536
        DEVFS     8     1K       -        9  16,64
         rman    94     6K       -      477  16,32,64
         sbuf     0     0K       -      532  16,32,32768,131072
  NULLFS hash     1     1K       -        1  64
    taskqueue     5     1K       -        5  64
   turnstiles   127     8K       -      127  64
       Unitno     6     1K       -       44  16,64
     ioctlops     0     0K       -  1771718  16,32,64,128,8192,16384,65536,131072

          iov     0     0K       -    79425  16,64,128,256,512,1024,2048,131072
          msg     4    25K       -        4  32768,131072
          sem     4     7K       -        4  16384,32768,131072
          shm     2    13K       -        4  32768
         ttys    93    16K       -      195  512,32768
       soname    31     3K       -   389284  16,32,64,256
          pcb   101    16K       -     4374
16,32,64,128,1024,2048,4096,16384,65536
   BIO buffer    40    80K       -      750  65536
     vfscache     1   512K       -        1  65536
cluster_save buffer     0     0K       -       55 32,64
     VFS hash     1   256K       -        1  32,64
       vnodes     1     1K       -        1  512
        mount   266    21K       -      481  16,32,64,128,256,4096,32768
  vnodemarker     0     0K       -     2497  16384
    pfs_nodes    25     3K       -       25  128
  pfs_vncache   144     5K       -      386  32
          STP     1     1K       -        1  64
         GEOM   173    15K       -     1068
16,32,64,128,256,512,2048,16384,32768,131072
     syncache     1     8K       -        1
16,32,64,128,256,512,2048,16384,32768,131072
     tlv_stat     0     0K       -      223
16,32,64,128,256,512,2048,16384,32768,131072
   NFS daemon     1     8K       -        1
16,32,64,128,256,512,2048,16384,32768,131072
     p1003.1b     1     1K       -        1  16
      MD disk     9    18K       -        9  65536
  ata_generic     2     2K       -       25  16,16384,32768
  ISOFS mount     7     1K       -       13  512
```

```
   ISOFS node  1439   135K       -     1453  128
      CAM SIM     1     1K       -        1  64
      CAM XPT     6     1K       -        9  16,64,16384
   CAM periph     1     1K       -        1  128
    ad_driver     2     1K       -        2  256
      pagedep     1    64K       -      105  64
     inodedep     1   256K       -      552  256
       newblk     1     1K       -      327  64,4096
    bmsafemap     0     0K       -       19  64
  allocdirect     0     0K       -      326  128
     freefrag     0     0K       -       31  32
     freeblks     0     0K       -      103  2048
     freefile     0     0K       -      175  32
       diradd     0     0K       -      590  64
        mkdir     0     0K       -      166  32
       dirrem     0     0K       -      382  32
     savedino     0     0K       -      283  512
    UFS mount    15    36K       -       15  2048,65536,131072
      ata_dma     6     1K       -        6  256
      UMAHash     1     4K       -        5  4096,16384,32768,65536,131072
         cdev    26     3K       -       26  256
    file desc   111    25K       -     5199  16,1024,2048,16384
    VM pgdata     2    65K       -        2  64
        sigio     1     1K       -       27  32
         kenv    30     5K       -       33  16,32,64,131072
     atkbddev     2     1K       -        2  32
       kqueue     0     0K       -       88  1024,4096,32768
    proc-args    28     2K       -     3970  32,64,128,256,512,1024
       isadev    23     2K       -       23  64
       zombie     1     1K       -     4651  128
      ithread    92     7K       -       92  16,64,256
    legacydrv     3     1K       -        3  16
      memdesc     1     4K       -        1  131072
     nexusdev     2     1K       -        2  16
    CAM queue     3     1K       -        3  16
       KTRACE   100    10K       -      100  128
       kbdmux     5     9K       -        5  128,2048,65536,131072
ITEM            SIZE     LIMIT     USED    FREE  REQUESTS
UMA Kegs:        136,        0,      71,      1,       71
...
```

show system virtual-memory | display xml

```
user@host> show system virtual-memory | display xml
<rpc-reply xmlns:junos="http://xml.juniper.net/junos/10.2R1/junos">
    <system-virtual-memory-information>
        <vmstat-memstat-malloc>
            <memstat-name>CAM dev queue</memstat-name>
            <inuse>1</inuse>
            <memuse>1</memuse>
            <high-use>-</high-use>
            <memstat-req>1</memstat-req>
            <memstat-size>64</memstat-size>
            <memstat-name>entropy</memstat-name>
            <inuse>1024</inuse>
            <memuse>64</memuse>
            <high-use>-</high-use>
            <memstat-req>1024</memstat-req>
            <memstat-size>64</memstat-size>
            <memstat-name>linker</memstat-name>
            <inuse>481</inuse>
            <memuse>1871</memuse>
            <high-use>-</high-use>
```

```
                <memstat-req>1145</memstat-req>
                <memstat-size>16,32,64,4096,32768,131072</memstat-size>
                <memstat-name>lockf</memstat-name>
                <inuse>56</inuse>
                <memuse>4</memuse>
                <high-use>-</high-use>
                <memstat-req>5998</memstat-req>
                <memstat-size>64</memstat-size>
                <memstat-name>devbuf</memstat-name>
                <inuse>2094</inuse>
                <memuse>3877</memuse>
                <high-use>-</high-use>
                <memstat-req>2099</memstat-req>

<memstat-size>16,32,64,128,512,1024,4096,8192,16384,32768,65536,131072</memstat-size>

                <memstat-name>temp</memstat-name>
                <inuse>21</inuse>
                <memuse>66</memuse>
                <high-use>-</high-use>
                <memstat-req>3127</memstat-req>

<memstat-size>16,32,64,128,256,512,2048,4096,8192,16384,32768,65536,131072</memstat-size>

                <memstat-name>ip6ndp</memstat-name>
                <inuse>0</inuse>
                <memuse>0</memuse>
                <high-use>-</high-use>
                <memstat-req>4</memstat-req>
                <memstat-size>64</memstat-size>
                <memstat-name>in6ifmulti</memstat-name>
                <inuse>1</inuse>
                <memuse>1</memuse>
                <high-use>-</high-use>
                <memstat-req>1</memstat-req>
                <memstat-size>64</memstat-size>
                <memstat-name>in6grentry</memstat-name>
                <inuse>1</inuse>
                <memuse>1</memuse>
                <high-use>-</high-use>
                <memstat-req>1</memstat-req>
                <memstat-size>64</memstat-size>
                <memstat-name>iflogical</memstat-name>
                <inuse>13</inuse>
                <memuse>3</memuse>
                <high-use>-</high-use>
                <memstat-req>13</memstat-req>
                <memstat-size>64,2048</memstat-size>
                <memstat-name>iffamily</memstat-name>
                <inuse>28</inuse>
                <memuse>4</memuse>
                <high-use>-</high-use>
                <memstat-req>28</memstat-req>
                <memstat-size>32,1024,2048</memstat-size>
                <memstat-name>rtnexthop</memstat-name>
                <inuse>127</inuse>
                <memuse>18</memuse>
                <high-use>-</high-use>
                <memstat-req>129</memstat-req>
                <memstat-size>32,256,512,1024,2048,4096</memstat-size>
                <memstat-name>metrics</memstat-name>
```



```
                <inuse>3</inuse>
                <memuse>1</memuse>
                <high-use>-</high-use>
                <memstat-req>5</memstat-req>
                <memstat-size>256</memstat-size>
                <memstat-name>inifmulti</memstat-name>
                <inuse>3</inuse>
                <memuse>1</memuse>
                <high-use>-</high-use>
                <memstat-req>3</memstat-req>
                <memstat-size>64</memstat-size>
                <memstat-name>ingrentry</memstat-name>
                <inuse>6</inuse>
                <memuse>1</memuse>
                <high-use>-</high-use>
                <memstat-req>6</memstat-req>
                <memstat-size>64</memstat-size>
                <memstat-name>rnode</memstat-name>
                <inuse>68</inuse>
                <memuse>2</memuse>
                <high-use>-</high-use>
                <memstat-req>76</memstat-req>
                <memstat-size>16,32</memstat-size>
                <memstat-name>rcache</memstat-name>
                <inuse>4</inuse>
                <memuse>8</memuse>
                <high-use>-</high-use>
                <memstat-req>4</memstat-req>
                <memstat-size>65536</memstat-size>
                <memstat-name>ifdevice</memstat-name>
                <inuse>4</inuse>
                <memuse>1</memuse>
                <high-use>-</high-use>
                <memstat-req>4</memstat-req>
                <memstat-size>16</memstat-size>
                <memstat-name>ifstat</memstat-name>
                <inuse>40</inuse>
                <memuse>22</memuse>
                <high-use>-</high-use>
                <memstat-req>40</memstat-req>
                <memstat-size>512,16384,32768</memstat-size>
                <memstat-name>ipfw</memstat-name>
                <inuse>42</inuse>
                <memuse>23</memuse>
                <high-use>-</high-use>
                <memstat-req>91</memstat-req>

<memstat-size>16,32,64,128,256,512,1024,16384,32768,65536,131072</memstat-size>
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                <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 1058**
- **show task memory on page 1060**

List of Sample Output

show task on page 1057

Output Fields

Table 153 on page 1056 describes the output fields for the **show task** command. Output fields are listed in the approximate order in which they appear.

Table 153: 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 153: show task Output Fields *(continued)*

Field Name	Field Description
Flags	Flags for the task: • **Accept**—Task is waiting for incoming connections. • **Connect**—Task is waiting for a connection to be completed. • **Delete**—Task has been deleted and is being cleaned up. • **LowPrio**—Task will be dispatched to read its socket after other higher-priority tasks.

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

Syntax

show task io
<logical-system (all | *logical-system-name*)>

Syntax (EX Series Switch)

show task io

Release Information

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

Description

Display I/O statistics for routing protocol tasks on the Routing Engine.

Options

none—Display I/O statistics for routing protocol tasks on the Routing Engine.

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

Required Privilege Level

view

List of Sample Output

show task io on page 1058

Output Fields

Table 154 on page 1058 describes the output fields for the **show task io** command. Output fields are listed in the approximate order in which they appear.

Table 154: 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.

show task io

```
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

Syntax

show task memory
<brief | detail | history | summary>
<logical-system (all | *logical-system-name*)>

Syntax (EX Series Switch)

show task memory
<brief | detail | history | summary>

Release Information

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

Description

Display memory utilization for routing protocol tasks on the Routing Engine.

Options

none—Display standard information about memory utilization for routing protocol tasks on the Routing Engine on all logical systems.

brief | detail | history | summary—(Optional) Display the specified level of output. Use the **history** option to display a history of memory utilization information.

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

Required Privilege Level

view

List of Sample Output

show task memory on page 1061
show task memory detail on page 1062

Output Fields

Table 155 on page 1060 describes the output fields for the **show task memory** command. Output fields are listed in the approximate order in which they appear.

Table 155: show task memory Output Fields

Field Name	Field Description	Level of Output
Memory Currently In Use	Memory currently in use.	All levels
Memory Maximum Ever Used	Maximum memory ever used.	none specified, **brief**, **history**
Memory Available	Memory currently available.	none specified, **brief**
Size (kB)	Memory capacity in 1000-byte kilobytes.	none specified, **brief**, **history**, **summary**
%Available	Percentage of memory currently available.	none specified, **brief**
When	Timestamp.	none specified, **brief**, **history**

Table 155: show task memory Output Fields *(continued)*

Field Name	Field Description	Level of Output
Overall Memory Report	Memory utilization by memory size: • **Size**—Block size, in bytes. • **TPT**—indicates transient memory, and P indicates full page. • **Allocs**—Number of blocks allocated for named objects. • **Mallocs**—Number of blocks allocated for anonymous objects. • **Alloc Bytes**—Number of blocks allocated times block size. • **MaxAllocs**—Maximum value of**Allocs**. • **MaxBytes**—Maximum value of **Alloc Bytes**. • ***FreeBytes***—Total number of bytes unused on memory pages for this block size.	**detail**
Allocator Memory Report	Memory utilization by named objects: • **Size**—Size of the named object in bytes. • **Alloc Size**—Actual memory used by that object in bytes. • **DTP**—indicates debug,**D T** indicates transient, and **P** indicates full page. • **Alloc Blocks**—Number of named objects allocated. • **AllocBytes**—Number of blocks allocated times block size. • **MaxAlloc Blocks**—Maximum value of **Alloc Blocks**. • **Max Alloc Bytes**—Maximum value of **AllocBytes**.	**detail**
Malloc Usage Report	Memory utilization for miscellaneous use: • **Allocs**—Number of allocations. • **Bytes**—Total bytes consumed. • **MaxAllocs**—Maximum value of **Allocs**. • **MaxBytes**—Maximum value of **Bytes**. • **FuncCalls**—Cumulative number of **Allocs**.	**detail**
Dynamically allocated memory	Memory allocated dynamically by the system.	**detail**
Program data+BSS memory	Program and base station subsystem (BSS) memory.	**detail**
Page data overhead	Internal memory overhead.	**detail**
Page directory size	Internal memory overhead.	**detail**
Total bytes in use	Total memory, in bytes, that is currently in use and percentage of available memory (in parentheses).	**detail**

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 detail

```
user@host> show task memory 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       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

Syntax **show task replication**

Release Information Command introduced in Junos OS Release 8.5.
Command introduced in Junos OS Release 9.0 for EX Series switches.

Description 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.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show task replication (Issued on the Master Routing Engine) on page 1064**
show task replication (Issued on the Backup Routing Engine) on page 1064

Output Fields Table 156 on page 1064 lists the output fields for the **show task replication** command. Output fields are listed in the approximate order in which they appear.

Table 156: show task replication Output Fields

Field Name	Field Description
Stateful replication	Displays whether or not graceful Routing Engine switchover is configured. The status can be **Enabled** or **Disabled**.
RE mode	Displays the Routing Engine on which the command is issued: **Master**, **Backup**, or **Not applicable** (when the router has only one Routing Engine).
Protocol	Protocol that are supported by nonstop active routing.
Synchronization Status	Nonstop active routing synchronization status for the supported protocols. States are **NotStarted**, **InProgress**, and **Complete**.

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
```

show task replication (Issued on the Backup Routing Engine)

```
user@host> show task replication
        Stateful Replication: Enabled
        RE mode: Master
```


show version

Syntax

show version
<brief | detail>

Syntax (EX Series Switch)

show version
<all-members>
<brief | detail>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show version
<brief | detail>
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show version
<all-chassis | all-lcc | lcc *number* | sfc *number*>
<brief | detail>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.

Description

Display the hostname and version information about the software running on the router or switch.

Options

none—Display standard information about the hostname and version of the software running on the router or switch.

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

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.

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.

lcc *number*—(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 ***number*** with a value from **0** through **3**.

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 1067
show version (TX Matrix Plus Router) on page 1067

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 Matrix Plus Router)

```
user@host> show version
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
     iffamily    45     6K       -       63  32,1024,2048
    rtnexthop   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
        tagnh    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
    sysctloid  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     0K       -    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     0K       -       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     0K       -       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     0K       -     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     0K       -      238
   NFS daemon     1     8K       -        1
      pagedep     1    64K       -      124  64
     inodedep     1   256K       -      605  256
       newblk     1     1K       -      611  64,4096
    bmsafemap     0     0K       -       47  64
  allocdirect     0     0K       -      605  128
     indirdep     0     0K       -        6  32
   allocindir     0     0K       -        5  64
     freefrag     0     0K       -       91  32
     freeblks     0     0K       -       93  2048
     freefile     0     0K       -      161  32
       diradd     0     0K       -      603  64
        mkdir     0     0K       -      166  32
       dirrem     0     0K       -      312  32
    newdirblk     0     0K       -        1  32
     savedino     0     0K       -      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     0K       -   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
```

start shell

Syntax

start shell (csh | sh)
<user *username*>

Release Information

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

Description

Exit from the CLI environment and create a UNIX-level shell. To return to the CLI, type **exit** from the shell.

NOTE:

- To issue this command, the user must have the required login access privileges configured by including the **permissions** statement at the **[edit system login class *class-name*]** hierarchy level.
- UNIX wheel group membership or permissions are no longer required to issue this command.

Options

csh—Create a UNIX C shell.

sh—Create a UNIX Bourne shell.

user *username*—(Optional) Start the shell as another user.

Additional Information

When you are in the shell, the shell prompt has the following format:

username@hostname%

An example of the prompt is:

root@router%

Required Privilege Level

shell and maintenance

List of Sample Output

start shell csh on page 1073

Output Fields

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

start shell csh

```
user@host> start shell csh
%

exit
%

username@hostname% start shell sh
%

exit
```

```
user@host>
```

test configuration

Syntax test configuration *filename*

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

Description 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.

Options *filename*—Name of the configuration file.

Required Privilege Level view

List of Sample Output **test configuration on page 1075**

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

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

CHAPTER 14

Class-of-Service Operational Mode Commands

Table 157 on page 1079 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 157: Class-of-Service (CoS) Operational Mode Commands

Task	Command
Display the entire CoS configuration, including system-chosen defaults.	**show class-of-service**
(J Series routers only) Display trigger points and associated rates for CoS adaptive shapers.	**show class-of-service adaptive-shaper**
For each CoS classifier, display the mapping of code point value to forwarding class and loss priority.	**show class-of-service classifier**
Display the mapping of CoS code point aliases to corresponding bit patterns.	**show class-of-service code-point-aliases**
Display data points for each CoS random early detection (RED) drop profile.	**show class-of-service drop-profile**
(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.	**show class-of-service fabric scheduler-map**
(M320 routers and T Series routers only) Display CoS switch fabric queue statistics.	**show class-of-service fabric statistics**
Display the mapping of forwarding class names to queue numbers.	**show class-of-service forwarding-class**
Display entire CoS configuration as it exists in the forwarding table.	**show class-of-service forwarding-table**

Table 157: 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.	**show class-of-service forwarding-table classifier**
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.	**show class-of-service forwarding-table classifier mapping**
Display the data points of all random early detection (RED) drop profiles as they exist in the forwarding table.	**show class-of-service forwarding-table drop-profile**
(M320 routers and T Series routers only) Display the scheduler map information as it exists in the forwarding table for switch fabric.	**show class-of-service forwarding-table fabric scheduler-map**
(J Series routers only) Display the mapping of code point value to loss priority as it exists in the forwarding table.	**show class-of-service forwarding-table loss-priority-map**
(J Series routers only) For each logical interface, display the loss priority table index.	**show class-of-service forwarding-table loss-priority-map mapping**
Display mapping of queue number and loss priority to code point value for each rewrite rule as it exists in the forwarding table.	**show class-of-service forwarding-table rewrite-rule**
For each logical interface, display the table identifier of the rewrite rule map for each code point type.	**show class-of-service forwarding-table rewrite-rule mapping**
For each physical interface, display the scheduler map information as it exists in the forwarding table.	**show class-of-service forwarding-table scheduler-map**
For Adaptive Services (AS) PIC link services IQ interfaces (lsq) only, display fragmentation properties for specific forwarding classes.	**show class-of-service fragmentation-map**
Display the logical and physical interface associations for the classifier, rewrite rules, and scheduler map objects.	**show class-of-service interface**
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).	**show class-of-service interface-set**

Table 157: Class-of-Service (CoS) Operational Mode Commands *(continued)*

Task	Command
(J Series routers only) Display mapping of code point value to loss priority.	**show class-of-service loss-priority-map**
Display the mapping of forwarding classes and loss priority to code point values.	**show class-of-service rewrite-rule**
(M Series and T Series routers only) Display mapping of CoS objects to routing instances.	**show class-of-service routing-instance**
Display mapping of schedulers to forwarding classes and a summary of scheduler parameters for each entry.	**show class-of-service scheduler-map**
For Gigabit Ethernet IQ and Channelized IQ PICs only, display traffic shaping and scheduling profiles.	**show class-of-service traffic-control-profile**
For IQE PICs only, display translation table information.	**show class-of-service translation-table**
(J Series routers only) Display virtual channel information.	**show class-of-service virtual-channel**
(J Series routers only) Display virtual channel group information.	**show class-of-service virtual-channel-group**

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

Syntax show class-of-service

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

Description Display the entire class-of-service (CoS) configuration, including system-chosen defaults. Executing this command is equivalent to executing all **show class-of-service** commands in succession.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show class-of-service on page 1082**

Output Fields See the output field descriptions for the commands.

show class-of-service

```
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

Syntax

show class-of-service adaptive-shaper
<adaptive-shaper-name>

Release Information

Introduced before Junos OS Release 7.4.

Description

(J Series routers only) Display trigger points and associated rates for class-of-service (CoS) adaptive shapers.

Options

none—Display all adaptive shaper information.

adaptive-shaper-name—(Optional) Display information for the named adaptive shaper.

Required Privilege Level

view

List of Sample Output

show class-of-service adaptive-shaper on page 1084

Output Fields

Table 158 on page 1084 describes the output fields for the **show class-of-service adaptive-shaper** command. Output fields are listed in the approximate order in which they appear.

Table 158: 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.

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

Syntax

show class-of-service classifier
<name *name*>
<type dscp | type dscp-ipv6 | type exp | type ieee-802.1 | type inet-precedence>

Release Information

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

Description

For each class-of-service (CoS) classifier, display the mapping of code point value to forwarding class and loss priority.

Options

none—Display all classifiers.

name *name*—(Optional) Display named classifier.

type dscp—(Optional) Display all classifiers of the Differentiated Services code point (DSCP) type.

type dscp-ipv6—(Optional) Display all classifiers of the DSCP for IPv6 type.

type exp—(Optional) Display all classifiers of the MPLS experimental (EXP) type.

type ieee-802.1—(Optional) Display all classifiers of the ieee-802.1 type.

type inet-precedence—(Optional) Display all classifiers of the inet-precedence type.

Required Privilege Level

view

List of Sample Output

show class-of-service classifier type ieee-802.1 on page 1086

Output Fields

Table 159 on page 1085 describes the output fields for the **show class-of-service classifier** command. Output fields are listed in the approximate order in which they appear.

Table 159: show class-of-service classifier Output Fields

Field Name	Field Description
Classifier	Name of the classifier.
Code point type	Type of the classifier: **exp** (not on EX Series switch), **dscp**, **dscp-ipv6** (not on EX Series switch), **ieee-802.1**, or **inet-precedence**.
Index	Internal index of the classifier.
Code point	Code point value used for classification
Forwarding class	Classification of a packet affecting the forwarding, scheduling, and marking policies applied as the packet transits the router.

Table 159: 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 **high** or **low**. For some platforms, the value is **high**, **medium-high**, **medium-low**, or **low**.

show class-of-service 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 code-point-aliases

Syntax

show class-of-service code-point-aliases
<dscp | dscp-ipv6 | exp | ieee-802.1 | inet-precedence>

Release Information

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

Description

Display the mapping of class-of-service (CoS) code point aliases to corresponding bit patterns.

Options

none—Display code point aliases of all code point types.

dscp—(Optional) Display Differentiated Services code point (DSCP) aliases.

dscp-ipv6—(Optional) Display IPv6 DSCP aliases.

exp—(Optional) Display MPLS EXP code point aliases.

ieee-802.1—(Optional) Display IEEE-802.1 code point aliases.

inet-precedence—(Optional) Display IPv4 precedence code point aliases.

Required Privilege Level

view

List of Sample Output

show class-of-service code-point-aliases exp on page 1088

Output Fields

Table 160 on page 1087 describes the output fields for the **show class-of-service code-point-aliases** command. Output fields are listed in the approximate order in which they appear.

Table 160: show class-of-service code-point-aliases Output Fields

Field Name	Field Description
Code point type	Type of the code points displayed: **dscp**, **dscp-ipv6** (not on EX Series switch), **exp** (not on EX Series switch), **ieee-802.1**, or **inet-precedence**.
Alias	Alias for a bit pattern.
Bit pattern	Bit pattern for which the alias is displayed.

show class-of-service code-point-aliases exp

```
user@host> show class-of-service 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

Syntax

show class-of-service drop-profile
<profile-name *profile-name*>

Release Information

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

Description

Display data points for each class-of-service (CoS) random early detection (RED) drop profile.

Options

none—Display all drop profiles.

profile-name *profile-name*—(Optional) Display the specified profile only.

Required Privilege Level

view

List of Sample Output

show class-of-service drop-profile on page 1090

Output Fields

Table 161 on page 1089 describes the output fields for the **show class-of-service drop-profile** command. Output fields are listed in the approximate order in which they appear.

Table 161: show class-of-service drop-profile Output Fields

Field Name	Field Description
Drop profile	Name of a drop profile.
Type	Type of this drop profile: **discrete** or **interpolated**.
Index	Internal index of this drop profile.
Fill Level	Percentage fullness of a queue.
Drop probability	Drop probability at this fill level.

show class-of-service drop-profile

```
user@host> show class-of-service 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

Syntax show class-of-service fabric scheduler-map

Release Information Command introduced before Junos OS Release 7.4.

Description (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.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show class-of-service fabric scheduler-map on page 1091**

Output Fields Table 162 on page 1091 describes the output fields for the **show class-of-service fabric scheduler-map** command. Output fields are listed in the approximate order in which they appear.

Table 162: show class-of-service fabric scheduler-map Output Fields

Field Name	Field Description
Fabric priority	Indicates the fabric traffic priority. Currently, two priorities are supported: **low** and **high**.
Scheduler	Name of the scheduler.
Index	Index of the indicated object. Objects that have indexes in this output include schedulers and drop profiles.
Drop profiles	Display the assignment of drop profile by name and index to a given loss priority and protocol pair: • **Loss priority**—Packet loss priority for drop profile assignment. • **Protocol**—Transport protocol for drop profile assignment. • **Name**—Name of the drop profile.

show class-of-service fabric scheduler-map

```
user@host> 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

Syntax

show class-of-service fabric statistics
<destination *fpc-number*>
<source *fpc-number*>
<summary>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M320 routers and T Series routers only) Display class-of-service (CoS) switch fabric queue statistics.

Options

none—Same as summary.

destination *fpc-number*—(Optional) Display details for the specified destination Flexible PIC Concentrator (FPC). The FPC number is a value from 0 through 7.

source *fpc-number*—(Optional) Display details for the specified source FPC. The FPC number is a value from 0 through 7.

summary—(Optional) Display all switch fabric statistics.

Required Privilege Level

view

List of Sample Output

show class-of-service fabric statistics on page 1094

Output Fields

Table 163 on page 1093 describes the output fields for the **show class-of-service fabric statistics** command. Output fields are listed in the approximate order in which they appear.

Table 163: show class-of-service fabric statistics Output Fields

Field Name	Field Description
Destination FPC Index	Index number associated with the destination FPC
Source PFC Index	Index number associated with the source FPC.
Total statistics	Fabric queue statistic totals: • **Packets**—Total packet count for high-priority and low-priority queues. • **Bytes**—Total byte count for high-priority and low-priority queues. • **pps**—Total packets-per-second count for high-priority and low-priority queues. • **bps**—Total bytes-per-second count for high-priority and low-priority queues.
Tx statistics	Fabric queue statistics for transmitted traffic: • **Packets**—Transmitted packet count for high-priority and low-priority queues. • **Bytes**—Transmitted byte count for high-priority and low-priority queues. • **pps**—Transmitted packets-per-second count for high-priority and low-priority queues. • **bps**—Transmitted bytes-per-second count for high-priority and low-priority queues.

Table 163: show class-of-service fabric statistics Output Fields *(continued)*

Field Name	Field Description
Drop statistics	Fabric queue statistics for dropped traffic: • **Packets**—Dropped packet count for high-priority and low-priority queues. • **Bytes**—Dropped byte count for high-priority and low-priority queues. • **pps**—Dropped packets-per-second count for high-priority and low-priority queues. • **bps**—Dropped bytes-per-second count for high-priority and low-priority queues.

show class-of-service fabric statistics

```
user@host> show class-of-service 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

Syntax show class-of-service forwarding-class <forwarding-class-map-*name*>

Release Information Command introduced before Junos OS Release 7.4.

Description Display the mapping of forwarding class maps and names to queue numbers.

Options 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.

Required Privilege Level view

List of Sample Output
show class-of-service forwarding-class on page 1095
show class-of-service forwarding-class forwarding-class-map-name on page 1096

Output Fields Table 164 on page 1095 describes the output fields for the **show class-of-service forwarding-class** command. Output fields are listed in the approximate order in which they appear.

Table 164: show class-of-service forwarding-class Output Fields

Field Name	Field Description
Forwarding class map	Classification of a packet affecting the forwarding, scheduling, and marking policies applied as the packet transits the router.
ID	Forwarding class identifier.
Queue	Queue corresponding to the forwarding class name.
Restricted Queue	(T Series platforms only) Forwarding class restricted queue number. The queue number assigned if the PIC is restricted to four queues.
Fabric Priority	(M320 and T Series platforms only) Forwarding class queue priority.

show class-of-service forwarding-class

```
user@host> 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
```

show class-of-service forwarding-class forwarding-class-map-name

```
user@host> show class-of-service forwarding-class FCMAP1
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
```

show class-of-service forwarding-table

Syntax

show class-of-service forwarding-table

Syntax (TX Matrix and TX Matrix Plus Router)

show class-of-service forwarding-table
<lcc *number*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display the entire class-of-service (CoS) configuration as it exists in the forwarding table. Executing this command is equivalent to executing all **show class-of-service forwarding-table** commands in succession.

Options

lcc *number*—(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 ***number*** with a value from **0** through **3**.

Required Privilege Level

view

List of Sample Output

show class-of-service forwarding-table on page 1097
show class-of-service forwarding-table lcc (TX Matrix Plus Router) on page 1098

Output Fields

See the output field descriptions for **show class-of-service forwarding-table** commands:

- **show class-of-service forwarding-table classifier**
- **show class-of-service forwarding-table classifier mapping**
- **show class-of-service forwarding-table drop-profile**
- **show class-of-service forwarding-table fabric scheduler-map**
- **show class-of-service forwarding-table loss-priority-map**
- **show class-of-service forwarding-table loss-priority-map mapping**
- **show class-of-service forwarding-table rewrite-rule**
- **show class-of-service forwarding-table rewrite-rule mapping**
- **show class-of-service forwarding-table scheduler-map**

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
```

```
                        Table Index/
Interface      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(%)   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

Syntax show class-of-service forwarding-table classifier

Release Information Command introduced before Junos OS Release 7.4.

Description Display the mapping of code point value to queue number and loss priority for each classifier as it exists in the forwarding table.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show class-of-service forwarding-table classifier on page 1100**

Output Fields Table 165 on page 1100 describes the output fields for the **show class-of-service forwarding-table classifier** command. Output fields are listed in the approximate order in which they appear.

Table 165: show class-of-service forwarding-table classifier Output Fields

Field Name	Field Description
Classifier table index	Index of the classifier table.
Entries	Total number of entries.
Table type	Type of code points in the table: **DSCP**, **EXP**, **IEEE 802.1**, **IPv4 precedence**, or **IPv6 DSCP**.
Entry #	Entry number.
Code point	Code point value used for classification.
Forwarding-class #	Forwarding class to which the code point is assigned.
PLP	Packet loss priority value set by classification. For most platforms, the value can be **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.

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

Syntax show class-of-service forwarding-table classifier mapping

Release Information Command introduced before Junos OS Release 7.4.

Description 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.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show class-of-service forwarding-table classifier mapping on page 1102**

Output Fields Table 166 on page 1102 describes the output fields for the**show class-of-service forwarding-table classifier mapping** command. Output fields are listed in the approximate order in which they appear.

Table 166: show class-of-service forwarding-table classifier mapping Output Fields

Field Name	Field Description
Table index/	If the type is **Fixed**, 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.
Q num	Queue number to which this entry is assigned.
Table type	Type of code points in the table: **DSCP**, **EXP**, **IEEE 802.1**, **IPv4 precedence**, or **IPv6 DSCP**.

show class-of-service forwarding-table classifier mapping

```
user@host> 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

Syntax show class-of-service forwarding-table drop-profile

Release Information Command introduced before Junos OS Release 7.4.

Description Display the data points of all random early detection (RED) drop profiles as they exist in the forwarding table.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show class-of-service forwarding-table drop-profile on page 1103**

Output Fields Table 167 on page 1103 describes the output fields for the**show class-of-service forwarding-table drop-profile** command. Output fields are listed in the approximate order in which they appear.

Table 167: 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.

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

Syntax show class-of-service forwarding-table fabric scheduler-map

Release Information Command introduced before Junos OS Release 7.4.

Description (M320 routers and T Series routers only) Display the scheduler map information as it exists in the forwarding table for switch fabric.

Options This command has no options.

Additional Information For information about how PLP priority is assigned to packets, see the *Junos OS Class of Service Configuration Guide*.

Required Privilege Level view

List of Sample Output **show class-of-service forwarding-table fabric scheduler-map on page 1105**

Output Fields Table 168 on page 1105 describes the output fields for the**show class-of-service forwarding-table fabric scheduler-map** command. Output fields are listed in the approximate order in which they appear.

Table 168: show class-of-service forwarding-table fabric scheduler-map Output Fields

Field Name	Field Description
Fabric priority	Fabric traffic priority: **low** and **high**.
Scheduler index	Index of the scheduler applied to a fabric traffic priority.
PLP high	Drop profile index for high-packet-loss-priority (PLP) packets.
PLP low	Drop profile index for low-PLP packets.
TCP PLP high	Drop profile index for low-PLP and Transmission Control Protocol (TCP) packets.
TCP PLP low	Drop profile index for high-PLP and TCP packets.

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

Syntax show class-of-service forwarding-table loss-priority-map

Release Information Command introduced before Junos OS Release 7.4.

Description (J Series routers only) Display the mapping of code point value to loss priority as it exists in the forwarding table.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show class-of-service forwarding-table loss-priority-map on page 1106**

Output Fields Table 169 on page 1106 describes the output fields for the **show class-of-service forwarding-table loss-priority-map** command. Output fields are listed in the approximate order in which they appear.

Table 169: 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: **Frame-Relay DE**.
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.

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

Syntax show class-of-service forwarding-table loss-priority-map mapping

Release Information Command introduced before Junos OS Release 7.4.

Description (J Series Services Routers only) For each logical interface, display the loss priority table index.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show class-of-service forwarding-table loss-priority-map mapping on page 1107**

Output Fields Table 170 on page 1107 describes the output fields for the **show class-of-service forwarding-table loss-priority-map mapping** command. Output fields are listed in the approximate order in which they appear.

Table 170: show class-of-service forwarding-table loss-priority-map mapping Output Fields

Field Name	Field Description
Interface	Name of the logical interface.
Index	Logical interface index.
Table index	Loss priority table index.
Table type	Table type: **Frame-Relay DE**.

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
t1-0/0/2.0         69       2212      Frame-Relay DE
```

show class-of-service forwarding-table rewrite-rule

Syntax show class-of-service forwarding-table rewrite-rule

Release Information Command introduced before Junos OS Release 7.4.

Description Display mapping of queue number and loss priority to code point value for each rewrite rule as it exists in the forwarding table.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show class-of-service forwarding-table rewrite-rule on page 1108**

Output Fields Table 171 on page 1108 describes the output fields for the **show class-of-service forwarding-table rewrite-rule** command. Output fields are listed in the approximate order in which they appear.

Table 171: show class-of-service forwarding-table rewrite-rule Output Fields

Field Name	Field Description
Rewrite table index	Index for this rewrite rule.
# entries	Number of entries in this rewrite rule.
Table type	Type of table: **DSCP**, **EXP**, **EXP-PUSH-3**, **EXP-SWAP-PUSH-2**, (J Series routers only), **IEEE 802.1**,**IPv4 precedence**, **IPv6 DSCP**, or **Fixed**.
Q#	Queue number to which this entry is assigned.
Low bits	Code point value for low-priority loss profile.
State	State of this code point: **enabled**, **rewritten**, or **disabled**
High bits	Code point value for high-priority loss profile.

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

Syntax show class-of-service forwarding-table rewrite-rule mapping

Release Information Command introduced before Junos OS Release 7.4.

Description For each logical interface, display the table identifier of the rewrite rule map for each code point type.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show class-of-service forwarding-table rewrite-rule mapping on page 1109**

Output Fields Table 172 on page 1109 describes the output fields for the **show class-of-service forwarding-table rewrite-rule mapping** command. Output fields are listed in the approximate order in which they appear.

Table 172: show class-of-service forwarding-table rewrite-rule mapping Output Fields

Field Name	Field Description
Interface	Name of the logical interface.
Index	Logical interface index.
Table index	Rewrite table index.
Type	Type of classifier: **DSCP**, **EXP**, **EXP-PUSH-3**, **EXP-SWAP-PUSH-2**,**Frame-Relay DE** (J Series routers only), **IEEE 802.1**, **IPv4 precedence**, **IPv6 DSCP**, or **Fixed**.

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

Syntax show class-of-service forwarding-table scheduler-map

Release Information Command introduced before Junos OS Release 7.4.

Description For each physical interface, display the scheduler map information as it exists in the forwarding table.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show class-of-service forwarding-table scheduler-map on page 1111**

Output Fields Table 173 on page 1110 describes the output fields for the **show class-of-service forwarding-table scheduler-map** command. Output fields are listed in the approximate order in which they appear.

Table 173: show class-of-service forwarding-table scheduler-map Output Fields

Field Name	Field Description
Interface	Name of the physical interface.
Index	Physical interface index.
Map index	Scheduler map index.
Num of queues	Number of queues defined in this scheduler map.
Entry	Number of this entry in the scheduler map.
Scheduler index	Scheduler policy index.
Forwarding-class #	Forwarding class number to which this entry is applied.
Tx rate	Configured transmit rate of the scheduler (in bps). The rate is a percentage of the total interface bandwidth, or the keyword **remainder**, which indicates that the scheduler receives the remaining bandwidth of the interface.
Max buffer delay	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 **remainder**, which indicates that the buffer is sized according to what remains after other scheduler buffer allocations.
High priority is set	If this line appears in the output, the queue priority is high. Otherwise, it is low.
PLP high	Drop profile index for a high packet loss priority profile.
PLP low	Drop profile index for a low packet loss priority profile.

Table 173: show class-of-service forwarding-table scheduler-map Output Fields *(continued)*

Field Name	Field Description
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.

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

Syntax show class-of-service fragmentation-map

Release Information Command introduced in Junos OS Release 7.5.

Description For Adaptive Services (AS) PIC link services IQ interfaces (**lsq**) only, display fragmentation properties for specific forwarding classes.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show class-of-service fragmentation-map on page 1112**

Output Fields Table 174 on page 1112 describes the output fields for the **show class-of-service fragmentation-map** command. Output fields are listed in the approximate order in which they appear.

Table 174: show class-of-service fragmentation-map Output Fields

Field Name	Field Description
Fragmentation map	Name of the class of service (CoS) fragmentation map.
Index	Index number of the CoS fragmentation map.
Forwarding class	Name of the associated forwarding class.
Fragmentation threshold	Maximum size of each multilink fragment.
No Fragmentation	Packets of this class are not fragmented.
Multilink Class	For multilink multiclass PPP only, the multilink class number corresponding to the forwarding class.

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

Syntax

show class-of-service interface
<interface-name>

Release Information

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.

Description

Display the logical and physical interface associations for the classifier, rewrite rules, and scheduler map objects.

Options

none—Display class of service (CoS) associations for all physical and logical interfaces.

interface-name—(Optional) Display CoS associations for the specified interface.

Required Privilege Level

view

List of Sample Output

show class-of-service interface (Physical) on page 1115
show class-of-service interface (Logical) on page 1115
show class-of-service interface (Gigabit Ethernet) on page 1116

Output Fields

Table 175 on page 1114 describes the output fields for the **show class-of-service interface** command. Output fields are listed in the approximate order in which they appear.

Table 175: 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 **Shaping rate** 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 175: show class-of-service interface Output Fields *(continued)*

Field Name	Field Description
Input scheduler map	For Gigabit Ethernet IQ2 PICs, name of the input scheduler map associated with this interface.
Chassis scheduler map	Name of the scheduler map associated with the packet forwarding component queues.
Rewrite	Name and type of the rewrite rules associated with this interface.
Classifier	Name and type of classifiers associated with this interface.
Forwaridng-class-map	Name of the forwarding map associated with this interface.
Logical interface	Name of a logical interface.
Shaping rate	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 **Shaping rate** field is displayed for the physical interface or the logical interface, but not both.
Object	Category of an object: **Classifier**, **Fragmentation-map** (for LSQ interfaces only), **Scheduler-map**, **Rewrite**, or **Translation Table** (for IQE PICs only).
Name	Name of an object.
Type	Type of an object: **dscp**, **dscp-ipv6**, **exp**, **ieee-802.1**, **ip**, or **inet-precedence**.

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                   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 (Gigabit Ethernet)

```
user@host> show class-of-service interface ge-6/2/0
Physical interface: ge-6/2/0, Index: 175
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

Syntax **show class-of-service interface-set** *<interface-set-name>*

Release Information Command introduced in Junos OS Release 9.4.

Description Display the configured shaping rate and the adjusted shaping rate for each logical interface set configured for hierarchical class of service (CoS).

Options none—Display CoS associations for all logical interface sets.

interface-set-name—(Optional) Display CoS associations for the specified interface set.

Required Privilege Level view

List of Sample Output **show class-of-service interface-set on page 1118**

Output Fields Table 176 on page 1117 lists the output fields for the **show class-of-service interface-set** command. Output fields are listed in the approximate order in which they appear.

Table 176: show class-of-service interface-set Output Fields

Field Name	Field Description
Interface-set	Name of a logical interface set composed of one or more logical interfaces for which hierarchical scheduling is enabled.
Index	Index of this interface set or the internal index of this object.
Physical interface	Name of a physical interface.
Queues supported	Number of queues you can configure on the interface.
Queues in use	Number of queues currently configured.
Output traffic control profile	Name of the output traffic-control profile attached to the logical interface set.
Adjusting application	Name of the application that communicates shaping-rate adjustment information to the Junos class-of-service process (**cosd**) 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: ancp LS-0—Junos Access Node Control Profile process (**ancpd**) 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, **ancpd** communicates the local loop speed to **cosd** over the default logical system, **LS-0**, and then the BSR throttles the shaping rate on the scheduler node to the loop speed.

Table 176: show class-of-service interface-set Output Fields *(continued)*

Field Name	Field Description
Adjustment type	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.
Configured shaping rate	The maximum transmission rate on the physical interface as configured by the output traffic-control profile attached to the scheduler node.
Adjustment value	Value of the shaping-rate adjustment information sent by the adjusting application to **cosd**.

show class-of-service interface-set

```
user@host> show class-of-service interface-set example-ifset-ge-4/0/0-7
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

Syntax

show class-of-service loss-priority-map
<name *name*>
<type frame-relay-de>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(J Series Services Router only) Display mapping of code point value to loss priority.

Options

none—Display all loss priority maps.

name *name*—(Optional) Display the specified loss priority map.

type frame-relay-de—(Optional) Display Frame Relay discard eligible code point.

Required Privilege Level

view

List of Sample Output

show class-of-service loss-priority-map on page 1119

Output Fields

Table 177 on page 1119 describes the output fields for the **show class-of-service loss-priority-map** command. Output fields are listed in the approximate order in which they appear.

Table 177: 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**.

show class-of-service loss-priority-map

```
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

Syntax

show class-of-service rewrite-rule
<name *name*>
<type *type*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display the mapping of forwarding classes and loss priority to code point values.

Options

none—Display all rewrite rules.

name *name*—(Optional) Display the specified rewrite rule.

type *type*—(Optional) Display the rewrite rule of specified type. The rewrite rule type can be one of the following:

- **dscp**—For IPv4 traffic.
- **dscp-ipv6**—For IPv6 traffic.
- **exp**—For MPLS traffic.
- **frame-relay-de**—(J Series routers only) For Frame Relay traffic.
- **ieee-802.1**—For Layer 2 traffic.
- **inet-precedence**—For IPv4 traffic.

Required Privilege Level

view

List of Sample Output

show class-of-service rewrite-rule type dscp on page 1122

Output Fields

Table 178 on page 1121 describes the output fields for the **show class-of-service rewrite-rule** command. Output fields are listed in the approximate order in which they appear.

Table 178: show class-of-service rewrite-rule Output Fields

Field Name	Field Description
Rewrite rule	Name of the rewrite rule.
Code point type	Type of rewrite rule: **dscp**, **dscp-ipv6**, **exp**, **frame-relay-de**, or **inet-precedence**.
Forwarding class	Classification of a packet affecting the forwarding, scheduling, and marking policies applied as the packet transits the router or switch.
Index	Internal index for this particular rewrite rule.
Loss priority	Loss priority for rewriting.
Code point	Code point value to rewrite.

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
```

show class-of-service routing-instance

Syntax

show class-of-service routing-instance
<routing-instance-name>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M Series and T Series routers only) Display mapping of class of service (CoS) objects to routing instances.

Options

routing-instance-name—(Optional) Name of a routing instance.

Required Privilege Level

view

List of Sample Output

show class-of-service routing-instance on page 1123

Output Fields

Table 179 on page 1123 describes the output fields for the **show class-of-service routing-instance** command. Output fields are listed in the approximate order in which they appear.

Table 179: show class-of-service routing-instance Output Fields

Field Name	Field Description
Index	Internal index.
Name	Name of an object.
Object	Category of an object: **Classifier**.
Routing instance	Name of a routing instance.
Type	Type: **exp**.

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

Syntax show class-of-service scheduler-map
<name>

Release Information Command introduced before Junos OS Release 7.4.

Description Display the mapping of schedulers to forwarding classes and a summary of scheduler parameters for each entry.

Options none—Display all scheduler maps.

name—(Optional) Display a summary of scheduler parameters for each forwarding class to which the named scheduler is assigned.

Required Privilege Level view

List of Sample Output **show class-of-service scheduler-map on page 1125**

Output Fields Table 180 on page 1124 describes the output fields for the **show class-of-service scheduler-map** command. Output fields are listed in the approximate order in which they appear.

Table 180: show class-of-service scheduler-map Output Fields

Field Name	Field Description
Scheduler map	Name of the scheduler map.
Index	Index of the indicated object. Objects having indexes in this output include scheduler maps, schedulers, and drop profiles.
Scheduler	Name of the scheduler.
Forwarding class	Classification of a packet affecting the forwarding, scheduling, and marking policies applied as the packet transits the router.
Transmit rate	Configured transmit rate of the scheduler (in bps). The rate is a percentage of the total interface bandwidth, or the keyword **remainder**, which indicates that the scheduler receives the remaining bandwidth of the interface.
Rate Limit	Rate limiting configuration of the queue. Possible values are **none**, meaning no rate limiting, and **exact**, meaning the queue only transmits at the configured rate.
Maximum buffer delay	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 **remainder** to indicate that the buffer is sized according to what remains after other scheduler buffer allocations.
Priority	Scheduling priority: **low** or **high**.

Table 180: show class-of-service scheduler-map Output Fields *(continued)*

Field Name	Field Description
Drop profiles	Table displaying the assignment of drop profile by name and index to a given loss priority and protocol pair.
Loss priority	Packet loss priority for drop profile assignment.
Protocol	Transport protocol for drop profile assignment.
Name	Name of the drop profile.

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

Syntax

show class-of-service traffic-control-profile
<profile-name>

Release Information

Command introduced before Junos OS Release 7.4.

Description

For Gigabit Ethernet IQ, Channelized IQ PICs, EQ DPCs, and Trio MPC/MIC interfaces only, display traffic shaping and scheduling profiles.

Options

none—Display all profiles.

profile-name—(Optional) Display information about a single profile.

Required Privilege Level

view

List of Sample Output

show class-of-service traffic-control-profile on page 1127

Output Fields

Table 181 on page 1126 describes the output fields for the **show class-of-service traffic-control-profile** command. Output fields are listed in the approximate order in which they appear.

Table 181: 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.
Guaranteed rate	Configured guaranteed rate, in bps.

Table 181: show class-of-service traffic-control-profile Output Fields *(continued)*

Field Name	Field Description
Overhead accounting mode	Configured shaping mode, either **frame-mode** or **cell-mode**.
Overhead bytes	Configured byte adjustment value.

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

Syntax

show class-of-service translation–table
<name *translation-table-name*> |
<type (to-dscp–from–dscp | to-dscp-ipv6–from–dscp–ipv6 | to-exp–from–exp |
to-inet-precedence-from-inet-precedence)>

Release Information

Command introduced in Junos OS Release 9.3 for IQE PICs.

Description

Display the mapping of class-of-service (CoS) translation table code points to corresponding bit patterns.

Options

none—Display translation table code points for all translation tables.

name—(Optional) Display information for the named translation table.

type—(Optional) Display information for a certain translation table type:

- to-dscp-from-dscp—Display DSCP translation table information.
- to-dscp-ipv6-from-dscp-ipv6—Display DSCP IPv6 translation table information.
- to-exp-from-exp—Display MPLS EXP translation table information.
- to-inet-precedence-from-intet-precedence—Display Internet precedence translation table information.

Required Privilege Level

view

List of Sample Output

show class-of-service translation-table on page 1129
show class-of-service translation-table name exp-trans-table on page 1130
show class-of-service translation-table type to-dscp-ipv6-from-dscp-ipv6 on page 1130

Output Fields

Table 182 on page 1128 describes the output fields for the **show class-of-service translation-table** command. Output fields are listed in the approximate order in which they appear.

Table 182: show class-of-service translation-table Output Fields

Field Name	Field Description
Translation Table	Name of the translation table.
Translation table type	Name of the translation table.
Index	Internal index number of the translation table.
From Code Point	Value of code point received.
To Code Point	Value of translated code point.

show class-of-service translation-table

```
user@host> show class-of-service 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 1132**

Output Fields Table 183 on page 1132 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 183: show class-of-service virtual-channel Output Fields

Field Name	Field Description
Virtual channel	Name of a virtual channel.
Index	Internal index.

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

Syntax

show class-of-service virtual channel group
<virtual-channel-group-name>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(J Series Services Router only) Display virtual channel group information.

Options

none—Display all virtual channel groups.

virtual-channel-group-name—(Optional) Display the specified virtual channel group only.

Required Privilege Level

view

List of Sample Output

show class-of-service virtual-channel-group on page 1133

Output Fields

Table 184 on page 1133 describes the output fields for the **show class-of-service virtual-channel-group** command. Output fields are listed in the approximate order in which they appear.

Table 184: 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.

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

CHAPTER 15

Border Signaling Gateway Operational Mode Commands

Table 185 on page 1137 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot border signaling gateway operations.

Table 185: Border Signaling Gateway Operational Mode Commands

Task	Command
Clear entries in the denied messages log.	**clear services border-signaling-gateway denied-messsages**
Clear entries in the name resolution cache.	**clear services border-signaling-gateway name-resolution-cache**
Clear registration statistics.	**clear services border-signaling-gateway registrations statistics**
Clear subscriber registrations.	**clear services border-signaling-gateway registrations subscription**
Clear border signaling gateway statistical counters.	**clear services border-signaling-gateway statistics**
Show address bindings for registered subscribers.	**show services border-signaling-gateway address-of-record bindings**
Display border signaling gateway admission control information.	**show services border-signaling-gateway admission-control**
Display border signaling gateway processing statistics for a given contact.	**show services border-signaling-gateway by-contact**
Display border signaling gateway processing statistics for a given request Uniform Resource Identifier (URI).	**show services border-signaling-gateway by-request-uri**
Display border signaling gateway processing statistics for all calls grouped by server or for a selected server.	**show services border-signaling-gateway calls by-server**

Table 185: 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.	**show services border-signaling-gateway calls by-service-point**
Display a histogram of call durations for the border signaling gateway group by server or for a selected server.	**show services border-signaling-gateway calls-duration by-server**
Display a histogram of call durations for the border signaling gateway group by service point or for a selected service point.	**show services border-signaling-gateway calls-duration by-service-point**
Display border signaling gateway processing statistics for failed calls grouped by server or for a selected server.	**show services border-signaling-gateway calls-failed by-server**
Display border signaling gateway processing statistics for failed calls grouped by service point or for a selected service point.	**show services border-signaling-gateway calls-failed by-service-point**
Display border signaling gateway denied messages information.	**show services border-signaling-gateway denied-messages**
Display entries in the border signaling gateway name resolution cache.	**show services border-signaling-gateway name-resolution-cache**
Display registrations information.	**show services border-signaling-gateway registrations**
Display routing blacklist information.	**show services border-signaling-gateway routing-blacklist**
Display border signaling gateway high availability, B2BUA, and SIP stack status.	**show services border-signaling-gateway status**

clear services border-signaling-gateway denied-messsages

Syntax

clear services border-signaling-gateway denied-messages
gateway *gateway*
<backup | master>

Release Information

Command introduced in Junos OS Release 9.4.

Description

This command clears border signaling gateway (BSG) denied messages information for the specified gateway and updates the last reset date and time.

Options

gateway *gateway*—The BSG for which denied messages information is to be cleared.

backup | master—(Optional) Clear denied messages information for the backup BSG or for the master BSG. If you do not specify an option, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

clear services border-signaling-gateway gateway statistics on page 1139

Output Fields

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

clear services border-signaling-gateway gateway statistics

```
user@host> clear services border-signaling-gateway statistics
Last Reset 2008 12 18 06:00
```

clear services border-signaling-gateway name-resolution-cache

Syntax

**clear services border-signaling-gateway name-resolution-cache (all | by-fqdn *fqdn*) gateway *gateway-name*
<backup | master>**

Release Information

Command introduced in Junos OS Release 10.0.

Description

Clear entries in the Domain Name System (DNS) name resolution cache.

Options

all—Clear all entries in the name resolution cache.

by-fqdn *fqdn*—Clear cache entries for a specific fully qualified domain name (FQDN).

gateway *gateway-name*—Clear cache entries associated with this border signalling gateway (BSG).

backup—(Optional) Clear cache entries for the backup BSG.

master—(Optional) Clear cache entries for the master BSG. If you do not specify the **master** or **backup** option, the **master** option is the default.

Required Privilege Level

view

Related Documentation

- **show services border-signaling-gateway name-resolution-cache on page 1170**

List of Sample Output

clear services border-signaling-gateway name-resolution-cache on page 1140

Output Fields

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

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

Syntax **clear services border-signaling-gateway registrations statistics gateway *gateway-name* <backup | master>**

Description Clear registration statistics for the BSG.

Options gateway *gateway-name*—Clear registration statistics associated with this border signalling gateway (BSG).

backup—(Optional) Clear registration statistics for the backup BSG.

master—(Optional) Clear registration statistics for the master BSG. If you do not specify the **master** or **backup** option, the **master** option is the default.

Required Privilege Level view

Related Documentation

- **clear services border-signaling-gateway registrations subscription on page 1142**
- **show services border-signaling-gateway registrations on page 1172**

List of Sample Output **clear services border-signaling-gateway registration statistics on page 1141**

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

clear services border-signaling-gateway registration statistics

```
user@host> clear services border-signaling-gateway registration statistics gateway bsg-1
```

clear services border-signaling-gateway registrations subscription

Syntax

clear services border-signaling-gateway registrations statistics gateway ***gateway-name*** **all |*AOR***
graceful | forceful
<backup | master>

Description

Clear subscriber registration AOR mapping from the BSG and, optionally, send unregister messages to the Registrar.

Options

all—Clear AOR mapping for all subscriber AORs .

AOR—Clear AOR mapping for this subscriber AOR only.

forceful—Do not send unregister messages to the Registrar.

graceful—Send information to the registrar.

gateway-name—Clear information for this BSG.

backup—(Optional) Clear information for the backup BSG.

master—(Optional) Clear information for the master BSG. If you do not specify the **master** or **backup** option, the **master** option is the default.

Required Privilege Level

view

clear services border-signaling-gateway statistics

Syntax

clear services border-signaling-gateway gateway *gateway* statistics <backup | master>

Release Information

Command introduced in Junos OS Release 9.4.

Description

This command clears a border signaling gateway (BSG) statistics for the specified gateway.

Options

gateway-name—The BSG for which statistics are to be cleared.

backup—(Optional) Clear statistics for the backup BSG.

master—(Optional) Clear statistics for the master BSG. If you do not specify the **master** or **backup** option, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

clear services border-signaling-gateway gateway statistics on page 1143

Output Fields

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

clear services border-signaling-gateway gateway statistics

```
user@host> clear services border-signaling-gateway statistics
```

show services border-signaling-gateway address-of-record bindings

Syntax

show services border-signaling-gateway address-of-record bindings gateway *gateway-name* | all
<summary | detail>
<backup | master>

Release Information

Command introduced in Junos OS Release 10.2.

Description

Display subscriber registration information based on the subscriber's address-of-record (AOR) information for the BSG.

Options

all—Show information for all subscribers.

—Show information for this subscriber.

summary—Show summary information only for this AOR (subscriber).

detail—Show detailed information for a specified AOR.

gateway-name—Show information for this BSG.

backup—(Optional) Show information for the backup BSG.

master—(Optional) Show statistics for the master BSG. If you do not specify the **master** or **backup** option, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

show services border-signaling-gateway address-of-record bindings summary on page 1145
show services border-signaling-gateway address-of-record bindings detailed on page 1145
show services border-signaling-gateway address-of-record bindings all detailed on page 1145

Output Fields

Table 186 on page 1144 lists the output fields for the **show services border-signaling-gateway address-of-record bindings** command. Output fields are listed in the approximate order in which they appear.

Table 186: show services border-signaling-gateway address-of-record bindings Output Fields

Field Name	Field Description	Level of Output
bindings	Subscriber registrations.	
URI	The URI of a unique subscriber registration.	summary detail
Registered from Realm	The signaling realm from which the subscriber registered.	summary detail
First registration time	The first time a subscriber registered from this URI.	detail

Table 186: 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

show services border-signaling-gateway address-of-record bindings summary

```
user@host> show services border-signaling-gateway address-of-record bindings
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 border-signaling-gateway address-of-record bindings detailed

```
user@host> show services border-signaling-gateway address-of-record bindings
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 border-signaling-gateway address-of-record bindings all detailed

```
user@host> show services border-signaling-gateway address-of-record bindings all 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

 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

Syntax **show services border-signaling-gateway admission-control gateway *gateway-name* <backup | master>**

Release Information Command introduced in Junos OS Release 9.5.

Description Display border signaling gateway (BSG) Call Admission Control (CAC) information.

Options *gateway-name*—Display information about each CAC controller associated with this BSG.

backup—(Optional) Show statistics for the backup BSG.

master—(Optional) Show statistics for the primary BSG. If you do not specify the **master** or **backup** options, the **master** option is the default.

Required Privilege Level view

List of Sample Output **show services border-signaling-gateway admission-control on page 1148**

Output Fields Table 187 on page 1147 lists the output fields for the **show services border-signaling-gateway admission-control** command. Output fields are listed in the approximate order in which they appear.

Table 187: show services border-signaling-gateway admission-control Output Fields

Field Name	Field Description
Admission controller	The admission controller for which statistics are displayed.
Dialogs	Information on CAC for dialogs, including the following: • **Active**—Active dialogs shown as a percentage of CAC maximum concurrent dialogs, the number of active dialogs and the CAC maximum for concurrent dialogs. • **Events handled**—Number of events handled. • **Attempts rejected due to concurrent exception**—Number of attempts rejected because they exceeded the maximum concurrent dialogs limit. • **Attempts rejected due to rate exception**—Number of attempts rejected because they exceeded the maximum rate for admission of dialogs per second.
Transactions	Information on CAC for transactions, including the following: • **Active**—Active transactions shown as a percentage of CAC maximum concurrent transactions, the number of active transactions and the CAC maximum for concurrent transactions. • **Events handled**—Number of events handled. • **Attempts rejected due to concurrent exception**—Number of attempts rejected because they exceeded the maximum concurrent transactions limit. • **Attempts rejected due to rate exception**—Number of attempts rejected because they exceeded the maximum rate for admission of transactions per second.

show services border-signaling-gateway admission-control

```
user@host> show services border-signaling-gateway admission-control gateway bsg1
Admission controller: Controller1
  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

Syntax

show services border-signaling-gateway by-contact <*contact*> (brief | detail | summary)
gateway *gateway-name*
<backup | master>

Release Information

Command introduced in Junos OS Release 9.4.

Description

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 *contact*.

Options

contact—(Optional) Display information for this contact. When *contact* is omitted, information is displayed for all calls.

brief—Display abbreviated information for the specified contact.

detail—Display a detailed listing of BSG statistics for the specified contact.

summary—Display only the number of active calls for the contact.

gateway-name—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 **master** or **backup** option, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

show services border-signaling-gateway by-contact brief on page 1150
show services border-signaling-gateway by-contact detail on page 1150

Output Fields

Table 188 on page 1149 lists the output fields for the **show services border-signaling-gateway by-contact** command. Output fields are listed in the approximate order in which they appear.

Table 188: 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 188: show services border-signaling-gateway by-contact Output Fields *(continued)*

Field Name	Field Description	Level of Output
Remote Tag	Remote tag for the displayed call ID.	detail
Next Hop	Next hop address for the displayed call ID.	detail
Media IP	The IP through which the Real-Time Transport Protocol (RTP) is passed.	detail
Media Port	The port through which the RTP is passed.	detail
Media Status	The status of the media (Enabled or Disabled).	detail
Admission Control Profile	Admission control profiles for this BSG.	detail
Manipulation Rules	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

show services border-signaling-gateway by-contact brief

```
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

Syntax

**show services border-signaling-gateway by-request-uri <*request-uri*> (brief | detail | summary) gateway *gateway-name*
<backup | master>**

Release Information

Command introduced in Junos OS Release 9.4.

Description

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 *contact*.

Options

request-uri—(Optional) Display information for this request URI. When *contact* is omitted, information is displayed for all calls.

brief—Display abbreviated information for the request URI.

detail—Display a detailed listing of BSG statistics for the request URI.

summary—Display only the number of active calls for the request URI.

gateway-name—Display information about statistics associated with this VBGF.

backup—(Optional) Show statistics for the backup BSG.

master—(Optional) Show statistics for the master BSG. If you do not specify the **master** or **backup** option, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

show services border-signaling-gateway by-request-uri brief on page 1152
show services border-signaling-gateway by-request-uri sip:juniper.net detail on page 1152

Output Fields

Table 189 on page 1151 lists the output fields for the **show services border-signaling-gateway by-request-uri** command. Output fields are listed in the approximate order in which they appear.

Table 189: 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 189: show services border-signaling-gateway by-request-URI Output Fields *(continued)*

Field Name	Field Description	Level of Output
Local Tag	Local tag for the displayed call ID.	detail
Remote Tag	Remote tag for the displayed call ID.	detail
Next Hop	Next hop address for the displayed call ID.	detail
Media IP	The IP through which the RTP is passed.	detail
Media Port	The port through which the RTP is passed.	detail
Media Status	The status of the media (Enabled or Disabled).	detail
Admission Controller	Admission controllers for this BSG.	detail
Manipulation Rules	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

show services border-signaling-gateway by-request-uri brief

```
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

Syntax

**show services border-signaling-gateway calls by-server <*server-name*> gateway *gateway-name*
<backup | master>**

Release Information

Command introduced in Junos OS Release 10.2.

Description

Display border signaling gateway (BSG) call statistics grouped by server.

Options

server-name—(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.

gateway-name—Name of the gateway for which call statistics are displayed.

backup—(Optional) Show statistics for the backup BSG.

master—(Optional) Show statistics for the master BSG. If you do not specify the **master** or **backup** option, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

show services border-signaling-gateway calls by-server on page 1153

Output Fields

Table 190 on page 1153 lists the output fields for the **show services border-signaling-gateway statistics calls by-server** command. Output fields are listed in the approximate order in which they appear.

Table 190: show services border-signaling-gateway calls by-server Output Fields

Field Name	Field Description
Statistics Start	Date and time when accumulation of the current set of statistics began.
Server	Server for which statistics are displayed.
Failed Calls	Number of failed calls.
Completed Calls	Number of completed calls.
Active Calls	Number of active calls.

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

Syntax

show services border-signaling-gateway calls by-service-point <*service-point-name*>
gateway *gateway-name*
<backup | master>

Release Information

Command introduced in Junos OS Release 10.2.

Description

Display border signaling gateway (BSG) call statistics by service point .

Options

service-point-name—(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.

gateway-name—Name of the gateway for which call statistics are displayed.

backup—(Optional) Show statistics for the backup BSG.

master—(Optional) Show statistics for the master BSG. If you do not specify the **master** or **backup** option, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

show services border-signaling-gateway calls by-service-point on page 1156

Output Fields

Table 191 on page 1155 lists the output fields for the **show services border-signaling-gateway statistics calls by-service-point** command. Output fields are listed in the approximate order in which they appear.

Table 191: show services border-signaling-gateway calls by-service-point Output Fields

Field Name	Field Description
Statistics Start	Date and time when accumulation of the current set of statistics began.
Service point	Service point for which statistics are displayed.
Direction	Direction of calls on this service point. Possible values: • Egress—Calls are outbound from this service point. • Ingress—Calls are inbound to this service point.
Failed Calls	Number of failed calls.
Completed Calls	Number of completed calls.
Active Calls	Number of active calls.

show services border-signaling-gateway calls by-service-point

```
user@host> show services border-signaling-gateway calls by-service-point gateway bsg1
Statistics start    : 02-02-2010  11:38:00.

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

Syntax

**show services border-signaling-gateway calls-duration by-server <*server-name*> gateway *gateway-name*
<backup | master>**

Release Information

Command introduced in Junos OS Release 10.2.

Description

Display a histogram showing the number of calls, by duration, for a specific BSG since the last time statistics were cleared.

Options

server-name—(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.

gateway-name—Display information about statistics associated with this BSG.

backup—(Optional) Show statistics for the backup BSG.

master—(Optional) Show statistics for the primary BSG. If you do not specify the **master** or **backup** options, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

show services border-signaling-gateway calls-duration by-server on page 1157

Output Fields

Table 192 on page 1157 lists the output fields for the **show services border-signaling-gateway calls-duration by-server** command. Output fields are listed in the approximate order in which they appear.

Table 192: show services border-signaling-gateway calls-duration by-serverOutput 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

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

Syntax

show services border-signaling-gateway calls-duration by-service-point
<*service-point-name*> gateway *gateway-name*
<backup | master>

Release Information

Command introduced in Junos OS Release 10.2.

Description

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.

Options

service-point-name—(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.

gateway-name—Display information about statistics associated with this BSG.

backup—(Optional) Show statistics for the backup BSG.

master—(Optional) Show statistics for the primary BSG. If you do not specify the **master** or **backup** options, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

show services border-signaling-gateway calls-duration by-service-point on page 1160

Output Fields

Table 193 on page 1160 lists the output fields for the **show services border-signaling-gateway calls-duration by-service-point** command. Output fields are listed in the approximate order in which they appear.

Table 193: show services border-signaling-gateway calls-duration by-service-point Output Fields

Field Name	Field Description	Level of Output
Service Point	Service point for calls shown in the histogram.	none brief
Direction	Direction of calls on this service point. Possible values: • Egress—Calls are outbound from this service point. • Ingress—Calls are inbound to this service point.	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

show services border-signaling-gateway

```
user@host> show services border-signaling-gateway calls-duration by-service-point 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

Syntax

**show services border-signaling-gateway calls-failed by-server <*server-name*> gateway *gateway-name*
<backup | master>**

Release Information

Command introduced in Junos OS Release 10.2.

Description

Display BSG (border signaling gateway) failed call statistics by server.

Options

server-name—(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.

gateway-name—The gateway for which statistics are displayed.

backup—(Optional) Show statistics for the backup BSG.

master—(Optional) Show statistics for the master BSG. If you do not specify the **master** or **backup** options, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

show services border-signaling-gateway calls-failed by-server on page 1164

Output Fields

Table 194 on page 1163 lists the output fields for the **show services border-signaling-gateway calls-failed by-server** command. Output fields are listed in the approximate order in which they appear.

Table 194: show services border-signaling-gateway calls-failed by-server Output Fields

Field Name	Field Description
Statistics Start	Date and time when the accumulation of the current set of statistics began.
Server	Server name.
Protocol error	Number of calls that failed due to protocol errors.
Inactive timeout	Number of calls for which a dialog was closed due to an inactive call timeout violation.
Configured behavior policy rejection	Number of calls that failed due to configured rejection policy.
4/5/6XX response	Number of calls that failed because the call setup failed for reasons other than timeout.
Internal error	Number of calls that failed because the BSG sustained an internal error that terminated one of dialogs comprising a call during setup.
Setup media failure	Number of calls that failed due to a media failure during setup.

Table 194: 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: • An INVITE was sent by the BSG and no reply was received. • An INVITE was sent by the BSG, a 1XX was received, and nothing else was received after that. • An INVITE was received by the BSG and nothing else was sent on this open transaction.
Transport error	Number of calls that failed due to a transport error.
Canceled calls	Number of canceled calls.

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

Syntax

show services border-signaling-gateway calls-failed by-service-point <*service-point-name*>
gateway *gateway-name*
<backup | master>

Release Information

Command introduced in Junos OS Release 10.2.

Description

Display BSG (border signaling gateway) failed call statistics by service point.

Options

service-point-name—(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.

gateway-name—The gateway for which statistics are displayed.

backup—(Optional) Show statistics for the backup BSG.

master—(Optional) Show statistics for the master BSG. If you do not specify the **master** or **backup** options, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

show services border-signaling-gateway calls-failed by-service-point on page 1167

Output Fields

Table 195 on page 1166 lists the output fields for the **show services border-signaling-gateway calls-failed by-service-point** command. Output fields are listed in the approximate order in which they appear.

Table 195: show services border-signaling-gateway calls-failed by-service-point Output Fields

Field Name	Field Description
Statistics Start	Date and time when the accumulation of the current set of statistics began.
Service Point	Service-point name.
Direction	Direction of calls on this service point. Possible values: • Egress—Calls are outbound from this service point. • Ingress—Calls are inbound to this service point.
Protocol error	Number of calls that failed due to protocol errors.
Inactive timeout	Number of calls for which a dialog was closed due to an inactive call timeout violation.
Configured behavior policy rejection	Number of calls that failed due to configured rejection policy.
4/5/6XX response	Number of calls that failed because the call setup failed for reasons other than timeout.

Table 195: show services border-signaling-gateway calls-failed by-service-point Output Fields *(continued)*

Field Name	Field Description
Internal error	Number of calls that failed because the BSG sustained an internal error that terminated one of dialogs comprising a call during setup.
Setup media failure	Number of calls that failed due to a media failure during setup.
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: • An INVITE was sent by the BSG and no reply was received. • An INVITE was sent by the BSG, a 1XX was received, and nothing else was received after that. • An INVITE was received by the BSG and nothing else was sent on this open transaction.
Transport error	Number of calls that failed due to a transport error.
Canceled calls	Number of canceled calls.

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

Syntax **show services border-signaling-gateway denied-messages gateway *gateway-name* <backup | master>**

Release Information Command introduced in Junos OS Release 9.4.

Description Display border signaling gateway (BSG) statistics for messages denied due to an overload condition.

Options *gateway-name*—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 **master** or **backup** options, the **master** option is the default.

Required Privilege Level view

List of Sample Output **show services border-signaling-gateway denied-messages on page 1169**

Output Fields 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.

show services border-signaling-gateway denied-messages

```
user@host> 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
```

show services border-signaling-gateway name-resolution-cache

Syntax

**show services border-signaling-gateway name-resolution-cache (all | fqdn *fqdn*) gateway *gateway-name*
<backup | master>**

Release Information

Command introduced in Junos OS Release 10.0.

Description

Display entries in the name resolution cache.

Options

all—Display all entries in the name resolution cache.

fqdn *fqdn*—Display entries for a specific fully qualified domain name (FQDN).

gateway *gateway-name*—Display information about the name resolution cache associated with this border signaling gateway (BSG).

backup—(Optional) Display information about the name resolution cache associated with the backup BSG.

master—(Optional) Display information about the name resolution cache associated with the master BSG. If you do not specify the **master** or **backup** option, the **master** option is the default.

Required Privilege Level

view

Related Documentation

- **clear services border-signaling-gateway name-resolution-cache on page 1140**

List of Sample Output

show services border-signaling-gateway name-resolution-cache on page 1171

Output Fields

Table 196 on page 1170 lists the output fields for the **show services border-signaling-gateway name-resolution-cache** command. Output fields are listed in the approximate order in which they appear.

Table 196: show services border-signaling-gateway name-resolution-cache Output Fields

Field Name	Field Description
Name	Name of the SIP server. The value can be a server name or a service record name.
Type	Type of Domain Name System (DNS) record: • A—Address records • NAPTR—Name authority pointer (NAPTR) records • SRV—Service records

Table 196: show services border-signaling-gateway name-resolution-cache Output Fields *(continued)*

Field Name	Field Description
RData	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.
TTL Expiry	Time to live. Indicates the time in seconds that the server will remain in the cache.
Blacklist Expiry	If the server is on the blacklist, the time in seconds that the server will remain on the blacklist.

show services border-signaling-gateway name-resolution-cache

```
user@host> show services border-signaling-gateway name-resolution-cache by-fqdn
example.com gateway bsg-1

Name                   Type  RData                 TTL     Blacklist
                                                   Expiry  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

Syntax

show services border-signaling-gateway registrations gateway *gateway-name*
all | *realm*
<summary | detail>
<backup | master>

Release Information

Command introduced in Junos OS Release 10.2.

Description

Display registration statistics for the BSG.

Options

realm—Show information for this signaling realm.

all—Show information for all signaling realms.

gateway-name—Show information for this BSG.

backup—(Optional) Show information for the backup BSG.

master—(Optional) Show statistics for the master BSG. If you do not specify the **master** or **backup** option, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

show services border-signaling-gateway registrations realm on page 1172
show services border-signaling-gateway registrations realm all on page 1172

Output Fields

Table 197 on page 1172 lists the output fields for the **show services border-signaling-gateway registrations** command. Output fields are listed in the approximate order in which they appear.

Table 197: 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 ream (uncaptioned field).	

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 border-signaling-gateway registrations realm all

```
user@host> show services border-signaling-gateway registration realm all gateway
 Statistics Start        : 22/4/2009 13:24
    atlanta.com
     Active Registrations    : 3344
```

```
biloxi.com
 Active Registrations    : 17000
```

show services border-signaling-gateway routing-blacklist

Syntax **show services border-signaling-gateway routing-blacklist gateway *gateway-name* <backup | master>**

Release Information Command introduced in Junos OS Release 10.2.

Description Display unavailable server information from the routing blacklist.

Options *gateway-name*—Name of the gateway for which call statistics are displayed.

backup—(Optional) Show statistics for the backup BSG.

master—(Optional) Show statistics for the master BSG. If you do not specify the **master** or **backup** option, the **master** option is the default.

Required Privilege Level view

List of Sample Output **show services border-signaling-gateway routing-blacklist on page 1174**

Output Fields Table 198 on page 1174 lists the output fields for the **show services border-signaling-gateway statistics routing-blacklist** command. Output fields are listed in the approximate order in which they appear.

Table 198: 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 availablity	For servers that are not checked for availability, the time that the server is scheduled to be removed from the blacklist.

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

Syntax

show services border-signaling-gateway status gateway *gateway-name* <backup | master>

Release Information

Command introduced in Junos OS Release 9.10.

Description

Displays status information for the master or backup BSG, B2BUA connection, and SIP stack connection.

Options

gateway-name—Name of the gateway for which status is displayed.

backup—(Optional) Show status information for the backup BSG.

master—(Optional) Show status information for the master BSG. If you do not specify the **master** or **backup** options, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

show services border-signaling-gateway status on page 1176
show services border-signaling-gateway status backup (primary as backup) on page 1176

Output Fields

Table 199 on page 1175 lists the output fields for the **show services border-signaling-gateway status** command. Output fields are listed in the approximate order in which they appear.

Table 199: show services border-signaling-gateway status Output Fields

Field Name	Field Description
State	Redundancy state of the BSG being displayed. Possible values: • Master—The BSG is functioning as the master in a partnered pair. • Backup—The BSG is functioning as the backup in partnered. • Standalone—No backup is configured. The BSG is running in standalone mode. The state displayed is **backup** only if you specified the **backup** option in the command.

Local	Information about the local BSG, initially configured as the Master in a partnered pair, including:
	• Interface—The name of the service interface for the BSG.
	• IP address—The IP address of the service interface for the BSG.
	• RMS role—The configured role of this BSG. Possible values:
	  ◦ Primary—The BSG is configured as primary.
	  ◦ Secondary—The BSG is configured as secondary.

Table 199: show services border-signaling-gateway status Output Fields *(continued)*

Field Name	Field Description

Remote	Information about the remote BSG, initially configured as the Backup in a partnered pair, including:
	• Interface—The name of the interface for the BSG.
	• IP address—The IP address of the interface for the BSG.
	• RMS role—The configured role of this BSG. Possible values:
	  ◦ Primary—The BSG is configured as primary.
	  ◦ Primary—The BSG is configured as secondary.

B2BUA Connection	Information about the B2BUA connection, including:
	• Status—The connection status. Possible values:
	  ◦ Connected
	  ◦ Disconnected
	• TCP—Internal routing interface address.

SIP Stack	Information about the SIP stack connection, including:
	• Status—The connection status. Possible values:
	  ◦ Connected
	  ◦ Disconnected
	• TCP—Internal routing interface address.

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
```

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
```

CHAPTER 16

Compressed Real-Time Transport Protocol Operational Mode Commands

Table 200 on page 1179 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 200: CRTP Operational Mode Commands

Task	Command
Clear CRTP flows statistics.	**clear services crtp statistics**
Display CRTP output.	**show services crtp**
Display CRTP flows.	**show services crtp flows**

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

Syntax

clear services crtp statistics
<interface *interface-name*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Clear Compressed Real-Time Transport Protocol (CRTP) flow statistics.

Options

none—Clear CRTP flow statistics on all interfaces.

interface *interface-name*—(Optional) Clear CRTP flow statistics for the specified interface:

- On M Series and T Series routers, a link services IQ (**lsq-*fpc/pic/port***) or redundant link services IQ (**rlsq-*fpc/pic/port***) interface
- On the J Series router, a link services (**ls-*pim*/0/*port***) interface

Required Privilege Level

view

List of Sample Output

clear services crtp statistics on page 1180

Output Fields

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

clear services crtp statistics

```
user@host> clear services crtp statistics
```

show services crtp

Syntax

show services crtp
<extensive>
<interface *interface-name*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display Compressed Real-Time Transport Protocol (CRTP) extensive output.

Options

none—Display CRTP extensive output for all interfaces.

extensive—(Optional) Display extensive CRTP information.

interface *interface-name*—(Optional) Display CRTP flow statistics for the specified interface:

- On M Series and T Series routers, a link services IQ (**lsq-*fpc/pic/port***) or redundant link services IQ (**rlsq-*fpc/pic/port***) interface
- On the J Series router, a link services (**ls-*pim/0/port***) interface

Required Privilege Level

view

List of Sample Output

show services crtp extensive on page 1182

Output Fields

Table 201 on page 1181 lists the output fields for the **show services crtp** command. Output fields are listed in the approximate order in which they appear.

Table 201: show services crtp Output Fields

Field Name	Field Description
Interface	Name of the physical interface.
Port minimum **Port maximum**	Compression is applied to UDP packets with even ports in the specified range.
Maximum UDP compressed sessions	Maximum value of a context identifier in the space of context identifiers allocated for UDP.
CRTP maximum period	Maximum interval between full headers. Suggested value is 256.
CRTP maximum time	Maximum time interval between full headers. Suggested value is 5 seconds.
Compression ratio	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 ? 40/100 * 100 = 60%.

Table 201: show services crtp Output Fields *(continued)*

Field Name	Field Description
Decompression ratio	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 ? 40/100 * 100 = 60%.
Discards	Number of frames that the incoming packet match code discarded because they were not recognized.
Sessions	Total number of active CRTP sessions.
IP bytes	Number of IP bytes sent and received.
Compressed bytes	Number of compressed IP header bytes sent and received.
CRTP packets	Number of CRTP packets sent and received.
CUDP/CNTCP packets	Number of compressed UDP packets and compressed non-TCP packets sent and received.
Full header packets	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.
Context state packet	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.
IP packets	Number of IP packets sent and received.
Compressed packets	Number of compressed packets sent and received.

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

Syntax

show services crtp flows
<interface *interface-name*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display Compressed Real-Time Transport Protocol (CRTP) flows.

Options

none—Display CRTP flows for all interfaces.

interface *interface-name*—(Optional) Display CRTP flows for the specified interface:

- On M Series and T Series routers, a link services IQ (**lsq-*fpc/pic/port***) or redundant link services IQ (**rlsq-*fpc/pic/port***) interface
- On the J Series router, a link services (**ls-*pim/0/port***) interface

Required Privilege Level

view

List of Sample Output

show services crtp flows on page 1183

Output Fields

Table 202 on page 1183 lists the output fields for the **show services crtp flows** command. Output fields are listed in the approximate order in which they appear.

Table 202: show services crtp flows Output Fields

Field Name	Field Description
Interface	Name of the physical interface.
Flow	Received or transmitted flow.
Source	IP source address.
Destination	IP destination address.
SSRC ID	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.
Ctx ID	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.

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
```

CHAPTER 17

CoS Services Operational Mode Commands

Table 203 on page 1185 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 203: CoS Services Operational Mode Commands

Task	Command
Clear CoS statistics.	**clear services cos statistics**
Display CoS statistics.	**show services cos statistics**

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 (rsp*number*) 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

Syntax

clear services cos statistics
<interface *interface-name*>
<service-set *service-set-name*>

Release Information

Command introduced in Junos OS Release 8.1.

Description

Clear statistics for class-of-service (CoS) code point bit patterns and forwarding classes as configured in CoS services for the AS PIC.

Options

none—Clear all services CoS statistics.

interface *interface-name*—(Optional) Clear statistics for the specified interface only.

service-set *service-set-name*—(Optional) Clear statistics for the specified service set only.

Required Privilege Level

view

List of Sample Output

clear services cos statistics on page 1186

Output Fields

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

clear services cos statistics

```
user@host> clear services cos statistics
```

show services cos statistics

Syntax

show services cos statistics
<brief | detail | extensive>
<diffserv | forwarding-class>
<interface *interface-name*>
<service-set *service-set-name*>
<summary>

Release Information

Command introduced in Junos OS Release 8.1.

Description

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.

Options

none—Display all services CoS statistics.

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

diffserv | forwarding-class—(Optional) Display only the selected information, either DiffServ codepoints or forwarding classes.

interface *interface-name*—(Optional) Display statistics for the specified interface only.

service-set *service-set-name*—(Optional) Display statistics for the specified service set only.

summary—(Optional) Display summary of statistics on a per-interface basis.

Required Privilege Level

view

List of Sample Output

show services cos statistics on page 1188
show services cos statistics brief on page 1189
show services cos statistics detail on page 1189
show services cos statistics extensive on page 1189

Output Fields

Table 204 on page 1187 describes the output fields for the **show services cos statistics** command. Output fields are listed in the approximate order in which they appear.

Table 204: show services cos statistics Output Fields

Field Name	Field Description	Level of Output
Interface	Name of interface.	All levels
Service set	Name of service set.	All levels
DSCP	DiffServ code point bit pattern.	All levels
Packets in	Number of packets received.	All levels

Table 204: show services cos statistics Output Fields *(continued)*

Field Name	Field Description	Level of Output
Packets out	Number of packets transmitted.	All levels
Forwarding class	Forwarding class queue number.	All levels

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. For sample output, see **show services cos statistics**.

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. For sample output, see **show services cos statistics**.

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. For sample output, see **show services cos statistics**.

CHAPTER 18

Data Link Switching Operational Mode Commands

Table 205 on page 1191 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 205: DLSw Operational Mode Commands

Task	Command
Clear DLSw reachability.	**clear dlsw reachability**
Display DLSw peer capability.	**show dlsw capabilities**
Display information about configured DLSw circuits.	**show dlsw circuits**
Display DLSw peer information.	**show dlsw peers**
Display information about the cached media access control (MAC) entries.	**show dlsw reachability**
Display logical link control type 2 (LLC2) redundancy information for DLSw.	**show llc2 redundancy**
Display LLC2 redundancy statistics.	**show llc2 redundancy interface statistics**
Display LLC2 redundancy MAC translation information.	**show llc2 redundancy mac-translation**
Display LLC2 redundancy tracking information.	**show llc2 redundancy track**

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

Syntax clear dlsw reachability

Release Information Command introduced in Junos OS Release 8.0.

Description Clear the data-link switching (DLSw) reachability cache.

Options This command has no options.

Required Privilege Level view

Related Documentation

- **show dlsw reachability on page 1199**

List of Sample Output **clear dlsw reachability on page 1193**

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

clear dlsw reachability

```
user@host> clear dlsw reachability
```

show dlsw capabilities

Syntax show dlsw capabilities

Release Information Command introduced in Junos OS Release 7.4.

Description (J Series routers only) Display information about data link switching (DLSw) capabilities of a specific remote peer or all peers.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show dlsw capabilities on page 1194**

Output Fields Table 206 on page 1194 describes the output fields for the **show dlsw capabilities** command. Output fields are listed in the approximate order in which they appear.

Table 206: 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.

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

Syntax
show dlsw circuits
<brief | detail>

Release Information
Command introduced in Junos OS Release 7.4.

Description
(J Series router only) Display information about configured data link switching (DLSw) circuits.

Options
none—Display information about all DLSw circuits.

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

Required Privilege Level
view

List of Sample Output
show dlsw circuits on page 1196
show dlsw circuits detail on page 1196

Output Fields
Table 207 on page 1195 describes the output fields for the **show dlsw circuits** command. Output fields are listed in the approximate order in which they appear.

Table 207: 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 207: show dlsw circuits Output Fields *(continued)*

Field Name	Field Description	Level of Output
Statistics	Statistics: • **I-frames received**—Number of I-frames received. • **I-frames sent**—Number of I-frames sent. • **Bytes in I-frames received**—Number of bytes in I-frames received. • **Bytes in I-frames sent**—Number of bytes in I-frames sent. • **I-frames rejected**—Number of I-frames rejected. • **Bytes in I-frames rejected**—Number of bytes in I-frames rejected. • **I-frames retransmitted**—Number of I-frames retransmitted. • **Bytes in retransmitted I-frames**—Number of bytes in I-frames retransmitted. • **Reject frames received**—Number of reject frames received. • **Reject frames sent**—Number of reject frames sent. • **XID frames received**—Number of XID frames received. • **XID frames sent**—Number of XID frames sent.	**detail**

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 detail

```
user@host> show dlsw circuits 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

Syntax

show dlsw peers
<brief | detail>
<peer-ip *ip-address*>

Release Information

Command introduced in Junos OS Release 7.4.

Description

(J Series router only) Display data link switching (DLSw) peer status.

Options

none—Display information about all DLSw peers.

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

peer-ip *ip-address*—(Optional) Display information about only the specified DLSw peer.

Required Privilege Level

view

List of Sample Output

show dlsw peers brief on page 1198
show dlsw peers detail on page 1198

Output Fields

Table 208 on page 1197 describes the output fields for the **show dlsw peers** command. Output fields are listed in the approximate order in which they appear.

Table 208: 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 208: 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: • **Data packets received**—Number of packets received. • **Data packets sent**—Number of packets sent. • **Data bytes received**—Number of bytes received. • **Data bytes sent**—Number of bytes sent. • **Control packets received**—Number of control packets received. • **Control packets sent**—Number of control packets sent. • **CANUREACH_ex received**—Number of CANUREACH messages received. • **CANUREACH_ex sent**—Number of CANUREACH messages sent. • **ICANREACH_ex received**—Number of ICANREACH messages received. • **ICANREACH_ex sent**—Number of ICANREACH messages sent.	**detail**

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

Syntax show dlsw reachability

Release Information Command introduced in Junos OS Release 7.4.

Description (J Series router only) Display media access control (MAC) and IP addresses of remote data link switching (DLSw) peers.

Required Privilege Level view

List of Sample Output **show dlsw reachability on page 1199**

Output Fields Table 209 on page 1199 describes the output fields for the **show dlsw reachability** command. Output fields are listed in the approximate order in which they appear.

Table 209: show dlsw reachability Output Fields

Field Name	Field Description
MAC index	Number assigned to the DLSw peer.
MAC address	MAC address of the DLSw peer.
Location	Peer location: **local** or **remote**.
Peer/interface	Peer interface name or IP address.

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

Syntax

show llc2 redundancy
<brief | detail>
<interface statistics | mac-translation | track (dlsw-remote-destination | dlsw-remote-peer | interfaces)>

Release Information

Command introduced in Junos OS Release 7.5.

Description

(J Series router only) Display logical link control type 2 (LLC2) redundancy information for data link switching (DLSw).

Options

none—Display basic LLC2 redundancy information. Same as **brief**.

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

Required Privilege Level

view

List of Sample Output

show llc2 redundancy on page 1201
show llc2 redundancy detail on page 1201

Output Fields

Table 210 on page 1200 describes the output fields for the **show llc2 redundancy** command. Output fields are listed in the approximate order in which they appear.

Table 210: 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: **up** or **down**.	All levels
Er state or **state**	Indicates master or backup router.	All levels
Index	Number assigned to the router.	**detail**
Priority	Order to take over as master.	**detail**
Advertisement interval	Length of time between sending hello packets.	**detail**
Preempt	Master took over because of a failure.	**detail**
Advertisement timer	Times the advertisement intervals.	**detail**
Master router uptime	Length of time the master router has been available.	**detail**

Table 210: show llc2 redundancy Output Fields *(continued)*

Field Name	Field Description	Level of Output
Tracking	Whether tracking options or enabled or disabled.	**detail**

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 detail

```
user@host> show llc2 redundancy 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

Syntax show llc2 redundancy interface statistics

Release Information Command introduced in Junos OS Release 7.5.

Description (J Series router only) Display logical link control type 2 (LLC2) redundancy interface statistics for data link switching (DLSw).

Options This command has no options.

Required Privilege Level view

List of Sample Output **show llc2 redundancy interface statistics on page 1202**

Output Fields Table 211 on page 1202 lists the output fields for the **show llc2 redundancy interface statistics** command. Output fields are listed in the approximate order in which they appear.

Table 211: show llc2 redundancy interface statistics Output Fields

Field Name	Field Description
Interface	Name of the configured physical interface.
Index	Number assigned to the interface.
Group	Number of the redundancy group.
Interface ERED PDU statistics	
Advertisement sent	Number of packets sent to advertise the router on the network.
Advertisement received	Number of packets received as advertisements on the network.
Interface ERED PDU error statistics	
Invalid ERED TTL value received	Number of invalid Ethernet redundancy time-to-live (TTL) values.

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

Syntax show llc2 redundancy mac-translation

Release Information Command introduced in Junos OS Release 7.5.

Description (J Series router only) Display logical link control type 2 (LLC2) redundancy media access control (MAC) translation information for data link switching (DLSw).

Options This command has no options.

Required Privilege Level view

List of Sample Output **show llc2 redundancy mac-translation on page 1203**

Output Fields Table 212 on page 1203 lists the output fields for the **show llc2 redundancymac-translation** command. Output fields are listed in the approximate order in which they appear.

Table 212: show llc2 redundancy mac-translation Output Fields

Field Name	Field Description
Local mac	MAC address of the local DLSw peer router.
Remote mac	MAC address of the remote DLSw peer router.
Interface	Physical interface configured for Ethernet redundancy.
Group	Assigned redundancy group number.

show llc2 redundancy mac-translation

```
user@host> show llc2 redundancy mac-translation
Local mac                  Remote mac              Interface     group
  44:44:44:44:44:44          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

Syntax

show llc2 redundancy
<brief | detail>
<interface statistics | mac-translation | track (dlsw-remote-destination | dlsw-remote-peer | interfaces)>

Release Information

Command introduced in Junos OS Release 7.5.

Description

(J Series router only) Display logical link control type 2 (LLC2) redundancy tracking information for data link switching (DLSw).

Options

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

dlsw-remote-destination—(Optional) Display LLC2 remote destination tracking information.

dlsw-remote-peer—(Optional) Display LLC2 remote peer tracking information.

interfaces—(Optional) Display LLC2 interface tracking information.

Required Privilege Level

view

List of Sample Output

show llc2 redundancy track dlsw-remote-destination on page 1205
show llc2 redundancy track dlsw-remote-peer on page 1205
show llc2 redundancy track interfaces on page 1205

Output Fields

Table 213 on page 1204 lists the output fields for the **show llc2 redundancy track** command. Output fields are listed in the approximate order in which they appear.

Table 213: show llc2 redundancy track Output Fields

Field Name	Field Description
Remote dest	MAC address of the remote peer router.
Peer dest	IP address of the remote peer.
Track if	Physical interface configured for tracking.
Connectivity	Status of the connection.
Cost	Value assigned to place the router in a redundancy hierarchy.
Interface	Physical interfaces configured for DLSw redundancy.
Group	Assigned redundancy group number.
Cfg	Priority value configured on the router.
Run	Value after all priority values are applied.

Table 213: show llc2 redundancy track Output Fields *(continued)*

Field Name	Field Description
ER state	Status of the router: **master** or **backup**.

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
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

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
```

CHAPTER 19

Diameter Base Protocol Operational Mode Commands

Table 214 on page 1207 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot Diameter base protocol services.

Table 214: Diameter Base Protocol Operational Mode Commands

Task	Command
Clear Diameter function statistics.	**clear diameter function statistics**
Clear Diameter peers.	**clear diameter peer**
Display information about the Diameter node.	**show diameter**
Display information about Diameter functions.	**show diameter function**
Display Diameter function statistics.	**show diameter function statistics**
Display information about Diameter instances.	**show diameter instance**
Display information about Diameter network elements.	**show diameter network-element**
Display information about Diameter network element maps.	**show diameter network-element map**
Display information about Diameter peers.	**show diameter peer**
Display information about Diameter peer maps.	**show diameter peer map**
Display Diameter peer statistics.	**show diameter peer statistics**
Display information about Diameter routes.	**show diameter route**

NOTE: For information about how to configure Diameter Base Protocol services, see the *Junos OS Subscriber Access Configuration Guide*.

clear diameter function statistics

Syntax **clear diameter function <*function-name*> statistics**

Release Information Command introduced in Junos OS Release 9.6.
function-name option enhanced to support PTSP in Junos OS Release 10.2.

Description Clear current statistics accumulated for a specified function (application) or for all functions associated with the Diameter instance.

Options *function-name*—(Optional) Clear statistics for the specified function. Currently, JSRC and packet-triggered-subscribers are supported functions.

Required Privilege Level clear

Related Documentation

- **show diameter on page 1210**
- **show diameter function on page 1212**
- **show diameter function statistics on page 1215**

List of Sample Output **clear diameter function statistics on page 1208**

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

clear diameter function statistics

```
user@host> clear diameter function jsrc statistics
```


clear diameter peer

Syntax

clear diameter peer *peer-name*
<connection | statistics>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Delete the specified Diameter peer and clear all statistics or only current statistics for the specified peer.

Options

peer-name—Delete the Diameter peer.

connection—(Optional) Clear all peer statistics and restart the peer state machine for the specified Diameter peer. This is the default action.

statistics—(Optional) Clear current statistics for the specified Diameter peer.

Required Privilege Level

clear

Related Documentation

- **show diameter on page 1210**
- **show diameter peer on page 1226**
- **show diameter peer map on page 1230**
- **show diameter peer statistics on page 1233**

List of Sample Output

clear diameter peer on page 1209

Output Fields

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

clear diameter peer

```
user@host> clear diameter peer peer5 connection
```

show diameter

Syntax

show diameter
<brief | detail | summary>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display information about the Diameter node.

Options

brief | detail | summary—(Optional) Display the specified level of output. The **summary** output is displayed by default and includes Diameter node status. The **brief** output adds summary information about functions, instances, network elements, and peers. The **detail** output adds summary information about routes.

Required Privilege Level

view

Related Documentation

- **clear diameter function statistics on page 1208**
- **clear diameter peer on page 1209**

List of Sample Output

show diameter on page 1211

Output Fields

Table 215 on page 1210 lists the output fields for the **show diameter** command. Output fields are listed in the approximate order in which they appear.

Table 215: show diameter Output Fields

Field Name	Field Description	Level of Output
Diameter process id	ID number of the Diameter process.	All levels
Functions	Number of functions associated with Diameter.	All levels
Connected functions	Number of functions with active Diameter connections.	All levels
Instances	Number of configured Diameter instances.	All levels
Network elements (NEs)	Number of configured Diameter network elements.	All levels
Connected NEs	Number of Diameter network elements with active connections.	All levels
Peers	Number of Diameter peer nodes.	All levels
Activated peers	Number of Diameter peers with active connections.	All levels
Open peers	Number of peers in the open state, without active network element connections but available for a connection.	All levels

Table 215: 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

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

Syntax

show diameter function
<brief | detail | summary>
<function-name>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display information about all functions associated with Diameter instances or only the specified function.

Options

brief | detail | summary—(Optional) Display the specified level of output. The **summary** output is displayed by default and includes basic function information. The **brief** output displays the summary information in a different format. The **detail** output adds information to the **brief** output.

function-name—(Optional) Display information for only the specified function.

Required Privilege Level

view

Related Documentation

- **clear diameter function statistics on page 1208**

List of Sample Output

show diameter function on page 1214
show diameter function brief on page 1214
show diameter function detail on page 1214

Output Fields

Table 216 on page 1212 lists the output fields for the **show diameter function** command. Output fields are listed in the approximate order in which they appear.

Table 216: 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 216: show diameter function Output Fields *(continued)*

Field Name	Field Description	Level of Output
Routed destinations	Number of destinations that have this function associated with their routes.	All levels
Requests queued for network tx	Number of requests waiting to be sent to the Diameter peers for this function.	**detail**
Pending answers from network	Number of replies expected from the Diameter peers for this function.	**detail**
Answers queued for function tx	Number of replies waiting to be sent to this function.	**detail**
Total upstream transactions pending	Total number of messages queued for this function.	**detail**
Upstream transactions limit	Total number of messages queued for this function.	**detail**
Requests queued for function tx	Number of requests waiting to be sent to this function.	**detail**
Pending answers from function	Number of replies expected to be received from this function.	**detail**
Answers queued for network tx	Number of replies waiting to be sent to this function.	**detail**
Total downstream transactions pending	Total number of messages queued for the Diameter peers.	**detail**
Downstream transactions limit	Maximum number of messages that can be queued for the Diameter peers.	**detail**
Buffers used by network tx queue	Number of buffers used by messages queued for the Diameter peers.	**detail**
Limit on network tx queue buffers	Maximum buffer capacity available for messages queued for the Diameter peers.	**detail**
Buffers used by function tx queue	Number of buffers used by messages queued for this function.	**detail**
Limit on function tx queue buffers	Maximum buffer capacity available for messages queued for this function.	**detail**

show diameter function

```
user@host> show diameter function

Diameter function list:
                      Upstream    Downstream  Net Queue   Func Queue
                      Transaction Transaction Buffer      Buffer      Routed
                      Utilization Utilization Utilization Utilization Dests
  Function  State     %           %           %           %
  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

Syntax

show diameter function statistics
<brief | detail | summary>
<function-name>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display statistics about all functions associated with Diameter instances or only the specified function.

Options

brief | detail | summary—(Optional) Display the specified level of output. The **summary** output is displayed by default and includes basic function statistics. The **brief** output displays the summary information in a different format and adds numbers accumulated since the Diameter node was started. The **detail** output adds information to the **brief** output.

function-name—(Optional) Display information for only the specified function. When you specify a function, the **brief** output is displayed by default, even when you explicitly specify **summary**.

Required Privilege Level

view

Related Documentation

- **clear diameter function statistics on page 1208**

List of Sample Output

show diameter function statistics on page 1216
show diameter function statistics brief on page 1216
show diameter function statistics detail on page 1217

Output Fields

Table 217 on page 1215 lists the output fields for the **show diameter function statistics** command. Output fields are listed in the approximate order in which they appear.

Table 217: show diameter function statistics Output Fields

Field Name	Field Description	Level of Output
Function	Name of the function for which information is displayed.	All levels
Delivered Requests	Number of requests delivered by Diameter to the application.	All levels
Delivered Answers	Number of answers delivered by Diameter to the application.	All levels
Delivered Messages	Total number of messages delivered by Diameter to the application.	All levels
Forwarded Requests	Number of requests sent by Diameter to the network.	All levels
Forwarded Answers	Number of answers sent by Diameter to the network.	All levels

Table 217: show diameter function statistics Output Fields *(continued)*

Field Name	Field Description	Level of Output
Forwarded Messages	Number of messages sent by Diameter to the network.	All levels
Function name	Name of the function for which information is displayed.	All levels
Over-limit network requests	Number of requests sent to Diameter peers that exceeded the limit on the network transmit queue.	**detail**
Over-limit network answers	Number of answers sent to Diameter peers that exceeded the limit on the network transmit queue.	**detail**
Over-limit network messages	Total number of messages sent to Diameter peers that exceeded the limit on the network transmit queue.	**detail**
Failed to deliver requests	Number of requests sent by Diameter to its application that were not successfully delivered.	**detail**
Failed to deliver answers	Number of answers sent by Diameter to its application that were not successfully delivered.	**detail**
Failed to deliver messages	Total number of messages sent by Diameter to its application that were not successfully delivered.	**detail**
Over-limit function requests	Number of requests sent to Diameter peers that exceeded the limit on the function transmit queue.	**detail**
Over-limit function answers	Number of answers sent to Diameter peers that exceeded the limit on the function transmit queue.	**detail**
Over-limit function messages	Total number of messages sent to Diameter peers that exceeded the limit on the function transmit queue.	**detail**
Failed to forward requests	Number of requests that were not successfully sent by Diameter to the network.	**detail**
Failed to forward answers	Number of answers that were not successfully sent by Diameter to the network.	**detail**
Failed to forward messages	Total number of messages that were not successfully sent by Diameter to the network.	**detail**

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 function statistics brief

```
user@host> show diameter 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 function statistics detail

```
user@host> show diameter 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

Syntax

show diameter instance
<brief | detail | summary>
<instance-name>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display information about all Diameter instances or only the specified instance.

Options

brief | detail | summary—(Optional) Display the specified level of output. The **summary** output is displayed by default and includes basic instance information. The **brief** output displays the summary information in a different format. The **detail** output is the same as the **brief** output.

instance-name—(Optional) Display information for only the specified Diameter instance.

Required Privilege Level

view

List of Sample Output

show diameter instance on page 1219
show diameter instance detail on page 1219

Output Fields

Table 218 on page 1218 lists the output fields for the **show diameter instance** command. Output fields are listed in the approximate order in which they appear.

Table 218: show diameter instance Output Fields

Field Name	Field Description	Level of Output
name	Name of the Diameter instance.	**summary**
Origin-realm	Value of Origin-Realm AVP.	**summary**
Origin-host	Value of Origin-Host AVP.	**summary**
NE-total	Total number of network elements configured for this instance.	**summary**
NE-connected	Number of network elements with active Diameter connections.	**summary**
Instance name	Name of the Diameter instance.	**brief detail**
Origin realm	Value of Origin-Realm AVP.	**brief detail**
Origin host	Value of Origin-Host AVP.	**brief detail**
NEs	Total number of network elements configured for this instance.	**brief detail**
Connected NEs	Number of network elements with active Diameter connections.	**brief detail**

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

Syntax

show diameter network-element
<brief | detail | summary>
<element-name>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display information about all Diameter network elements or only the specified network element.

Options

brief | detail | summary—(Optional) Display the specified level of output. The **summary** output is displayed by default and includes basic network element information. The **brief** output displays the summary information in a different format. The **detail** output adds information to the **brief** output.

element-name—(Optional) Display information for only the specified network element.

Required Privilege Level

view

List of Sample Output

show diameter network-element on page 1221
show diameter network-element detail on page 1221

Output Fields

Table 219 on page 1220 lists the output fields for the **show diameter network-element** command. Output fields are listed in the approximate order in which they appear.

Table 219: show diameter network-element Output Fields

Field Name	Field Description	Level of Output
Name	Name of the Diameter network element.	**summary**
Instance	Name of the Diameter instance in which the network element is configured.	**summary**
State	State of the network element: • Connecting—None of the network element peers are in the open state and available for connection. • 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. • Partially-Connected—One network element peer is in the open state and connected. • 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. • Fully-connected—Two network element peers are in the open state and connected.	All levels
Primary peer	Primary peer for the network element, based on the configured peer priority.	All levels
Secondary peer	Secondary peer for the network element, based on the configured peer priority.	All levels

Table 219: show diameter network-element Output Fields *(continued)*

Field Name	Field Description	Level of Output
NE name	Name of the Diameter network element.	**brief detail**
Instance name	Name of the Diameter instance in which the network element is configured.	**brief detail**
Peers	Number of configured peers.	**brief detail**
Activated peers	Number of peers that have been activated.	**brief detail**
Open peers	Number of peers in the open state, without active network element connections but available for a connection.	**brief detail**
Routes	Number of routes configured for the network element.	**brief detail**
Invalid routes	Number of routes that are invalid because they lack one or more of the following: application and partition, Diameter instance, or destination realm.	**brief detail**
Activation delay	Period in milliseconds between peer activations by the network element.	**brief detail**
First selection delay	Period in milliseconds that the network element waited after connecting to the first peer to allow other peers to reach the open state.	**brief detail**
Post selection delay	Period in milliseconds that the network element waited after having two peers in the open state before deactivating all lower-priority peers.	**brief detail**

show diameter network-element

```
user@host> show diameter network-element

Diameter network-elements:
                                          Primary      Secondary
  Name         Instance     State           Peer          Peer
  ne0          master       Fully-connected p0            p1
```

show diameter network-element detail

```
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

Syntax

show diameter network-element map
<brief | detail | summary>
<element-name>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display network-element-to-peer mapping information for all Diameter network elements or only the specified network element.

Options

brief | detail | summary—(Optional) Display the specified level of output. The **summary** output is displayed by default. The **brief** output and **detail** output display the summary information in a different format.

element-name—(Optional) Display information for only the specified network element.

Required Privilege Level

view

List of Sample Output

show diameter network-element map on page 1224
show diameter network-element map detail on page 1224

Output Fields

Table 220 on page 1223 lists the output fields for the **show diameter network-element map** command. Output fields are listed in the approximate order in which they appear.

Table 220: show diameter network-element map Output Fields

Field Name	Field Description	Level of Output
Name	Name of the Diameter network element.	**summary**
Instance	Name of the Diameter instance in which the network element is configured.	**summary**
Peer	Name of the peer.	All levels
Priority	Priority configured for the peer. A lower number indicates a higher priority.	All levels
State	State of the peer: • Activated—Peer has been activated (selected) by the network element. • Not-Activated—Peer has not been selected by the network element. • Primary—Peer that is connected to the network element and has the higher priority of the two connected peers. • Secondary—Peer that is connected to the network element and has the lower priority of the two connected peers.	**summary**
NE name	Name of the Diameter network element.	**brief detail**
Instance name	Name of the Diameter instance in which the network element is configured.	**brief detail**

Table 220: show diameter network-element map Output Fields *(continued)*

Field Name	Field Description	Level of Output
Usage	State of the peer: • Activated—Peer has been activated (selected) by the network element. • Not-Activated—Peer has not been selected by the network element. • Primary—Peer that is connected to the network element and has the higher priority of the two connected peers. • Secondary—Peer that is connected to the network element and has the lower priority of the two connected peers.	**brief detail**

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

Syntax

show diameter peer
<brief | detail | summary>
<peer-name>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display information about all peers associated with Diameter instances or only the specified peer.

Options

brief | detail | summary—(Optional) Display the specified level of output. The **summary** output is displayed by default and includes basic peer information. The **brief** output displays the summary information in a different format. The **detail** output adds information to the **brief** output.

peer-name—(Optional) Display information for only the specified peer.

Required Privilege Level

view

Related Documentation

- **clear diameter peer on page 1209**

List of Sample Output

show diameter peer on page 1228
show diameter peer detail on page 1228

Output Fields

Table 221 on page 1226 lists the output fields for the **show diameter peer** command. Output fields are listed in the approximate order in which they appear.

Table 221: 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 221: show diameter peer Output Fields *(continued)*

Field Name	Field Description	Level of Output
State	State of the peer: • Disabled—Peer is administratively disabled. • No-Activation—Peer is not used by any Diameter network element. • Rejected—Connection was rejected by remote side of the connection. • Bad-Remote—Remote side does not conform to one of the decisions or is sending malformed messages. • Bad-Config—Misconfiguration. • Suspended—All other reasons to be suspended.. • Closed—Normal disconnect due to a request from the remote site or due to excessive watchdog timeouts. • Internal-error—Internal error has been detected and the peer is in the process of restarting. • Destructing—Peer to be deleted on the next timer tick; until then, it performs no actions.	All levels
NE-Count	Number of network elements associated with the peer.	**summary**
Activated Count	Activation status of the peer: • **1**—Peer is activated. • **0**—Peer is not activated.	All levels
Primary Count	Primary (**1**) versus secondary (**0**) status of the peer.	All levels
Secondary Count	Secondary (**0**) versus Primary (**1**) status of the peer.	All levels
Peer name	Name of the peer.	**brief detail**
NEs	Number of network elements associated with the peer.	**brief detail**
Vrf	Logical system:routing instance of the configuration.	**brief detail**
Remote address	Remote IP address of the peer.	**brief detail**
Remote port	Remote port on the peer on which the connection is made.	**brief detail**
Remote end origin realm	Name of the realm of the Diameter node that originates messages to the peer.	**brief detail**
Remote end origin host	Name of the host of the Diameter node that originates messages to the peer.	**brief detail**
Local address	Local IP address on the Diameter origin node.	**brief detail**
Local port	Local port on the Diameter origin node.	**brief detail**

Table 221: show diameter peer Output Fields *(continued)*

Field Name	Field Description	Level of Output
Time since last enable	Period since peer was enabled in *hh:mm.ss* format.	**brief detail**
In state time	Period that peer has been in present state in *hh:mm.ss* format.	**brief detail**
Remaining in state time	Period that peer will remain in present state in *hh:mm.ss* 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**

show diameter peer

```
user@host> show diameter peer

Diameter peer list:
                                                    Activated Primary Secondary
  Peer         Instance     State          NE-Count Count     Count   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

Syntax

show diameter peer map
<brief | detail | summary>
<peer-name>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display peer-to-network-element mapping information for all peers associated with Diameter instances or with the specified peer.

Options

brief | detail | summary—(Optional) Display the specified level of output. The **summary** output is displayed by default and includes basic peer information. The **brief** output displays the summary information in a different format. The **detail** output adds information to the **brief** output.

peer-name—(Optional) Display mapping information for only the specified peer.

Required Privilege Level

view

Related Documentation

- **clear diameter peer on page 1209**

List of Sample Output

show diameter peer map on page 1231
show diameter peer map detail on page 1231

Output Fields

Table 222 on page 1230 lists the output fields for the **show diameter peer map** command. Output fields are listed in the approximate order in which they appear.

Table 222: show diameter peer map Output Fields

Field Name	Field Description	Level of Output
Peer	Name of the peer.	All levels
Instance	Name of the Diameter instance in which the network element is configured.	All levels
NE	Name of the Diameter network element.	All levels
Priority	Priority configured for the peer. A lower number indicates a higher priority.	All levels
State	State of the peer: • Activated—Peer has been activated (selected) by the network element. • Not-Activated—Peer has not been selected by the network element. • Primary—Peer that is connected to the network element and has the higher priority of the two connected peers. • Secondary—Peer that is connected to the network element and has the lower priority of the two connected peers.	All levels
Instance name	Name of the Diameter instance in which the network element is configured.	**brief detail**

Table 222: 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, **Primary** or **Secondary**.	**brief detail**

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

Syntax

show diameter peer statistics
<brief | detail | summary>
<peer-name>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display statistics about all peers associated with Diameter instances or only the specified peer.

Options

brief | detail | summary—(Optional) Display the specified level of output. The **summary** output is displayed by default and includes basic function statistics. The **brief** output displays the summary information in a different format and adds numbers accumulated since the peer was connected. The **detail** output adds information to the **brief** output.

peer-name—(Optional) Display information for only the specified peer. When you specify a peer, the **brief** output is displayed by default, even when you explicitly specify **summary**.

Required Privilege Level

view

Related Documentation

- **clear diameter peer on page 1209**

List of Sample Output

show diameter peer statistics on page 1234
show diameter peer statistics detail on page 1234

Output Fields

Table 223 on page 1233 lists the output fields for the **show diameter peer statistics** command. Output fields are listed in the approximate order in which they appear.

Table 223: 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 223: show diameter peer statistics Output Fields *(continued)*

Field Name	Field Description	Level of Output
Tx	Total number of transmitted messages.	**summary brief**
Peer name	Name of the peer.	**detail**
Instance name	Name of the Diameter instance in which the network element is configured.	**detail**

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 teminations     :         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                 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 teminations     :         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                 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

Syntax

show diameter route
<brief | detail | summary>
<route-name>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display information about all routes associated with Diameter instances or only the specified route.

Options

brief | detail | summary—(Optional) Display the specified level of output. The **summary** output is displayed by default and includes basic function information. The **brief** output displays the summary information in a different format. The **detail** output adds information to the **brief** output.

route-name—(Optional) Display information for only the specified route.

Required Privilege Level

view

List of Sample Output

show diameter route on page 1238
show diameter route detail on page 1238

Output Fields

Table 224 on page 1237 lists the output fields for the **show diameter route** command. Output fields are listed in the approximate order in which they appear.

Table 224: show diameter route Output Fields

Field Name	Field Description	Level of Output
Route	Name of the route.	**summary brief**
NE	Name of the network element associated with the route.	**summary brief**
Instance	Name of the Diameter instance in which the route is configured.	**summary brief**
NE name	Name of the network element associated with the route.	**brief detail**
Instance name	Name of the Diameter instance in which the route is configured.	**brief detail**
Valid	Determination whether the route is valid, **yes** or **no**.	All levels
Up	State of the route, **yes** (up) or **no** (down).	All levels
Function	Name of the function associated with the route.	**brief detail**
Partition	Partition associated with the function.	**brief detail**
Dest-realm	Destination realm configured for the route.	**brief detail**

Table 224: show diameter route Output Fields *(continued)*

Field Name	Field Description	Level of Output
Dest-host	Destination hostname configured for the route.	**brief detail**
Metric	Metric associated with the destination and function to create the route.	**brief detail**
Score	Value that represents how a route is configured. The basic score is 0. Points are added according to the following scheme: • Function is specified—Add 3. • Function partition is specified—Add 1. • Destination realm is specified—Add 1. • Destination host is specified—Add 1.	**brief detail**

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 mame     : master
  Valid             : yes
  Up                : yes
  Function          : jsrc
  Partition         : jsrc-a
  Dest-realm        : outer-realm
  Dest-host         : outer-host
  Metric            :        50
  Score             :         6
```

CHAPTER 20

Dynamic Application Awareness Operational Mode Commands

Table 225 on page 1239 summarizes the command line interface (CLI) commands that you can use to monitor and troubleshoot services pertaining to Dynamic Application Awareness operations.

Table 225: Dynamic Application Awareness Operational Mode Commands

Task	Command
Clear entries from application system cache.	**clear services application-identification application-system-cache**
Clear application- aware access list (AACL) statistics.	**clear services application-aware-access-list statistics**
Clear application identification counters.	**clear services application-identification counter**
Clear IDP **ip-action** entries.	**clear services flows ip-action**
Clear local policy decision function (L-PDF) statistics.	**clear services local-policy-decision-function statistics**
Display application-aware-access-list (AACL) flows.	**show services application-aware-access-list flows**
Display application-aware-access-list (AACL) statistics.	**show services application-aware-access-list statistics**
Display the database of cached values stored by the application identification (APPID) system.	**show services application-identification application-system-cache**
Display application identification (APPID) counter statistics.	**show services application-identification counter**
Display local policy decision function (L-PDF) flows.	**show services local-policy-decision-function flows**

Table 225: Dynamic Application Awareness Operational Mode Commands *(continued)*

Task	Command
Display local policy decision function (L-PDF) statistics.	**show services local-policy-decision-function statistics**

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

clear services application-identification application-system-cache

Syntax **clear services application-identification application-system-cache**

Release Information Command introduced in Junos OS Release 9.5.

Description Clear entries from application system cache.

Options This command has no options.

Required Privilege Level clear

Related Documentation

- **show services application-identification application-system-cache on page 1250**

clear services application-aware-access-list statistics

Syntax clear services application-aware-access-list statistics

Release Information Command introduced in Junos OS Release 9.5.

Description Clear application aware access list (AACL) statistics.

Options This command has no options.

Required Privilege Level clear

Related Documentation

- **show services application-aware-access-list statistics on page 1248**

clear services application-identification counter

Syntax **clear services application-identification counter**

Release Information Command introduced in Junos OS Release 9.5.

Description Clear application identification counters.

Options This command has no options.

Required Privilege Level clear

Related Documentation

- **show services application-identification counter on page 1251**

clear services flows ip-action

Syntax clear services flows ip-action

Release Information Command introduced in Junos OS Release 10.0.

Description Clear **ip-action** 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 **[edit security idp idp-policy *policy-name* rulebase-ips rule *rule-name* then]** hierarchy level.

Options This command has no options.

Required Privilege Level clear

Output Fields 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                                        Flows removed
ms-4/0/0    idp-service                                                    1
```


clear services local-policy-decision-function statistics

Syntax clear services local-policy-decision-function statistics

Release Information Command introduced in Junos OS Release 9.5.

Description Clear local policy decision function (L-PDF) statistics.

Options This command has no options.

Required Privilege Level view

Related Documentation

- **show services local-policy-decision-function statistics on page 1255**

show services application-aware-access-list flows

Syntax

show services application-aware-access-list flows
<interface *interface-name*>
<subscriber *subscriber-name*>

Release Information

Command introduced in Junos OS Release 10.1.

Description

Display application-aware-access-list (AACL) flows

Options

interface *interface-name*—Displays AACL flows for the specified interface(s) only. The keyword, interface, must be appended to the command.

subscriber *subscriber-name*—Displays AACL flows for the specified subscriber(s) only. The keyword, subscriber, must be appended to the command.

Required Privilege Level

view

List of Sample Output

show services application-aware-access-list flows by interface on page 1247
show services application-aware-access-list flows by subscriber on page 1247

Output Fields

Table 226 on page 1246 lists the output fields for the **show services application-aware-access-list flows** command. Output fields are listed in the approximate order in which they appear.

Table 226: show services application-aware-access-list flows Output Fields

Field Name	Field Description	Level of Output
5-tuple	This field comprises five components of the given flow. The components are: • Src IP • Dest IP • Src Port • Dest Port • Protocol	All levels
Application-ID	The identification number associated with the application.	All levels
Dir	The direction in terms of input or output. • Input (I) • Output (O)	All levels
Off	The status of offload to Packet Forwarding Engine. The various options are: • Not Offloaded (-) • Policer Offloaded, Flow Not Offloaded (P) • Policer Not Offloaded, Flow Offloaded (F) • Policer and Offloaded (P+F)	All levels

Table 226: show services application-aware-access-list flows Output Fields *(continued)*

Field Name	Field Description	Level of Output
Actions	The types of actions displayed are: • discard: (D) • accept : A • accept, count [T]: C-A or C-G or C-T • accept, fwd-class [C]: FC • accept, policer [P]: P • accept, count [T], fwd-class [C]: C-T+FC • accept, count [T], policer [P]: C-T+P • accept, fwd-class [C], policer [P]: FC+P • accept, count[T],fwd-class[C],policer[P]: C-T+FC+P	All levels

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: aacl-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: ss1
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

Syntax

show services application-aware-access-list statistics
<interface *interface-name*>
<subscriber *subscriber-name*>

Release Information

Command introduced in Junos OS Release 9.5.

Description

Display application-aware-access-list (AACL) statistics.

Options

interface *interface-name*—(Optional) Dsiplays AACL statistics for the specified interface(s) only.

subscriber*subscriber-name*—(Optional) Dsiplays AACL statistics for the specified subscriber(s) only.

Required Privilege Level

view

List of Sample Output

show services application-aware-access-list statistics by interface on page 1249
show services application-aware-access-listtatistics by subscriber on page 1249

Output Fields

Table 227 on page 1248 lists the output fields for the **show services application-aware-access-list statistics** command. Output fields are listed in the approximate order in which they appear.

Table 227: show services application-aware-access-list statistics Output Fields

Field Name	Field Description	Level of Output
Interface	Interface name.	Subscriber option
Subscriber	Subscriber identifier.	Interface option
Service-set-interface	Service set interface name.	All levels
Service set	Service set name.	All levels
Application group	Application group identifier.	All levels
Packets in	Number of ingress packets.	All levels
Bytes in	Number of ingress bytes.	All levels
Packets out	Number of egress packets.	All levels
Bytes out	Number of egress bytes.	All levels

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

                      junos:ftp [63]        5                     334
        6                     346
```

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
 out
P2P                                 400                     32025            200
                     16284
FTP                                 20000                5231000       100
                8700
```

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 1250**

Output Fields Table 228 on page 1250 lists the output fields for the **command-name** command. Output fields are listed in the approximate order in which they appear.

Table 228: 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

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

Syntax **show services application-identification counter**
<interface *interface-name*>

Release Information Command introduced in Junos OS Release 9.5.
interface option added in Junos OS Release 10.1.

Description Display application identification (APPID) counter statistics.

Options **interface *interface-name***—Displays the services interfaces to query.

Required Privilege Level view

List of Sample Output **show services application-identification counter on page 1252**

Output Fields Table 229 on page 1251 lists the output fields for the **show services application-identification counter** command. Output fields are listed in the approximate order in which they appear.

Table 229: 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 229: 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.

show services application-identification counter

```
user@host> show services application-identification counter interface ms-1/0/0
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

Syntax **show services local-policy-decision-function flows (interface *interface-name* | subscriber *subscriber-name*)**

Release Information Command introduced in Junos OS Release 9.5.

Description Display local policy decision function (L-PDF) flows.

Options **interface *interface-name***—Display L-PDF flows for the specified interfaces only.

subscriber*subscriber-name*—Display L-PDF flows for the specified subscribers only.

Required Privilege Level view

List of Sample Output **show services local-policy-decision-function flows by interface on page 1254**
show services local-policy-decision-function flows by subscriber on page 1254

Output Fields Table 230 on page 1253 lists the output fields for the **show services local-policy-decision-function flows** command. Output fields are listed in the approximate order in which they appear.

Table 230: show services local-policy-decision-function flows Output Fields

Field Name	Field Description
Interface	Interface name.
service-set	Service set name.
service-set-interface	Service set interface name.
Currently active flows	Number of currently active flows.
High watermark flows	Maximum number of flows.
Protocol	(With **interface** option) Protocol identifier.
Source address	(With **interface** option) Source address.
Source port	(With **interface** option) Source port.
Destination address	(With **interface** option) Destination address.
Destination port	(With **interface** option) Destination port.
Application	(With **interface** option) Application name.
Application group	(With **interface** option) Application group identifier.

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: aacl_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

Syntax **show services local-policy-decision-function statistics (interface *interface-name* | subscriber *subscriber-name*)**

Release Information Command introduced in Junos OS Release 9.5.

Description Display local-policy-decision-function (L-PDF) statistics.

Options **interface *interface-name***—Display L-PDF statistics for the specified interface(s) only.

subscriber*subscriber-name*—Display L-PDF statistics for the specified subscriber(s) only.

Required Privilege Level view

List of Sample Output **show services local-policy-decision-function statistics by interface on page 1255**
show services local-policy-decision-function statistics by subscriber on page 1256

Output Fields Table 231 on page 1255 lists the output fields for the **show services local-policy-decision-function statistics** command. Output fields are listed in the approximate order in which they appear.

Table 231: show services local-policy-decision-function statistics Output Fields

Field Name	Field Description
Interface	Interface name.
service-set	Service set name.
service-set-interface	Service set interface name.
Application group	Application group identifier.
Application	Application name.
Packets in	Number of ingress packets.
Bytes in	Number of ingress bytes.
Packets out	Number of egress packets.
Bytes out	Number of egress bytes.

show services local-policy-decision-function statistics by interface

```
user@host> show services local-policy-decision-function statistics interface ge-1/1/0
Interface: ge-1/1/0.0

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 local-policy-decision-function statistics by subscriber

```
user@host> show services local-policy-decision-function statistics subscriber user@juniper.net
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
 out
P2P                                 400                     32025            200
                     16284
FTP                                 20000                5231000       100
                8700
```

CHAPTER 21

Flow Collection and Monitoring Operational Mode Commands

Table 232 on page 1257 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 232: Flow Collection and Monitoring Operational Commands

Task	Command
Active Flow Monitoring	
Display information about next-hop groups.	**show forwarding-options next-hop-group**
Display information about port-mirroring instances.	**show forwarding-options port-mirroring**
Display information about aggregated flows.	**show services accounting aggregation**
Display information about flow aggregation templates.	**show services accounting aggregation template**
Display error statistics.	**show services accounting errors**
Display the number of active flow statistics.	**show services accounting flow**
Display information about the flows being processed by the accounting service.	**show services accounting flow-detail**
Display memory and flow record statistics.	**show services accounting memory**
Display packet size distribution histogram.	**show services accounting packet-size-distribution**
Display available PICs for the service and redundancy model.	**show services accounting status**
Display the CPU usage of the PIC.	**show services accounting usage**

Table 232: Flow Collection and Monitoring Operational Commands *(continued)*

Task	Command
Dynamic Flow Capture	
Clear dynamic flow capture information.	**clear services dynamic-flow-capture**
Display information for a content destination.	**show services dynamic-flow-capture content-destination**
Display information for a control source.	**show services dynamic-flow-capture control-source**
Display dynamic flow capture statistics.	**show services dynamic-flow-capture statistics**
Flow Collection	
Clear the flow collector statistics for one interface or all interfaces.	**clear services flow-collector statistics**
Switch to the primary server.	**request services flow-collector change-destination primary interface**
Switch to the secondary server.	**request services flow-collector change-destination secondary interface**
Transfer a test file to the primary or secondary FTP server configured as a flow collector.	**request services flow-collector test-file-transfer**
Display information about the files present on the collector service.	**show services flow-collector file interface**
Display the number of packets received by one or more flow collection interfaces from one or all monitoring interfaces.	**show services flow-collector input interface**
Display overall statistics for the flow collector application.	**show services flow-collector interface**
Passive Flow Monitoring	
Clear passive monitoring statistics.	**clear passive-monitoring statistics**
Display error statistics.	**show passive-monitoring error**
Display the number of active flow statistics.	**show passive-monitoring flow**
Display memory and flow record statistics.	**show passive-monitoring memory**
Display available PICs for the service and redundancy model.	**show passive-monitoring status**

Table 232: Flow Collection and Monitoring Operational Commands *(continued)*

Task	Command
Display the CPU usage of the PIC.	**show passive-monitoring usage**

NOTE: Active flow monitoring is supported on the adaptive services interface (sp-*fpc/picport*) 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

Syntax

clear services dynamic-flow-capture capture-group *group-name*
<criteria-identifier *identifier*>
<destination-identifier *identifier*>
<force>
<static>

Release Information

Command introduced in Junos OS Release 7.4.

Description

(M320 routers and T Series routers only) Clear dynamic flow capture information for specified capture group.

Options

capture-group *group-name*—Capture-group identifier.

criteria-identifier *identifier*—(Optional) Criteria identifier.

destination-identifier *identifier*—(Optional) Content destination identifier.

force—(Optional) Force clearing of criteria.

static—(Optional) Clear static criteria.

Required Privilege Level

network

List of Sample Output

clear services dynamic-flow-capture on page 1260

Output Fields

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

clear services dynamic-flow-capture

```
user@host> clear services dynamic-flow-capture capture-group flow-a
```

clear passive-monitoring statistics

Syntax clear passive-monitoring statistics (all | interface *interface-name*)

Release Information Command introduced in Junos OS Release 7.6.

Description (M40e, M160, and M320 routers and T Series routers only) Clear statistics for one passive monitoring interface or for all passive monitoring interfaces.

Options all—Clear statistics for all configured passive monitoring interfaces.

interface *interface-name*—Clear statistics for the specified passive monitoring interface (**mo-*fpc/pic/port***).

Required Privilege Level network

List of Sample Output **clear passive-monitoring statistics on page 1261**

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

clear passive-monitoring statistics

```
user@host> clear passive-monitoring statistics interface mo-5/0/0
```

clear services flow-collector statistics

Syntax clear services flow-collector statistics (all | interface *interface-name*)

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e, M160, and M320 routers and T Series routers only) Clear statistics for one flow collector interface or for all flow collector interfaces.

Options all—Clear statistics for all configured flow collector interfaces.

interface *interface-name*—Clear statistics for the specified flow collector interface (cp-*fpc/pic/port*).

Required Privilege Level network

List of Sample Output clear services flow-collector statistics on page 1262

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

clear services flow-collector statistics

```
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

Syntax

request services flow-collector change-destination primary interface cp-*fpc/pic/port*
<clear-files>
<clear-logs>
<immediately | gracefully>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(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.

Options

none—Switch to the primary FTP server.

cp-*fpc/pic/port*—Specify the flow collector interface name for the primary destination.

clear-files—(Optional) Request clearing of existing data files in the FTP wait queue when the switch takes place.

clear-logs—(Optional) Request clearing of existing logs when the switch takes place.

immediately | gracefully—(Optional) Specify whether you want the switch to take place immediately, or to affect only newly created files.

Required Privilege Level

maintenance

List of Sample Output

request services flow-collector change-destination primary interface on page 1263

Output Fields

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

request services flow-collector change-destination primary interface

```
user@host> 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
```

request services flow-collector change-destination secondary interface

Syntax

request services flow-collector change-destination secondary interface cp-*fpc/pic/port*
<clear-files>
<clear-logs>
<immediately | gracefully>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(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.

Options

none—Switch to the secondary FTP server.

cp-*fpc/pic/port*—Specify the flow collector interface name (**cp-*fpc/pic/port***) for the secondary destination.

clear-files—(Optional) Request clearing of existing data files in the FTP wait queue when the switch takes place.

clear-logs—(Optional) Request clearing of existing logs when the switch takes place.

immediately | gracefully—(Optional) Specify whether you want the switch to take place immediately, or to affect only newly created files.

Required Privilege Level

maintenance

List of Sample Output

request services flow-collector change-destination secondary interface on page 1264

Output Fields

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

request services flow-collector change-destination secondary interface

```
user@host> 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
```

request services flow-collector test-file-transfer

Syntax

request services flow-collector test-file-transfer *filename* interface (all | cp-*fpc/pic/port*) (channel-zero | channel-one) (primary | secondary)

Release Information

Command introduced before Junos OS Release 7.4.

Description

(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.

Options

filename—Name of the test file to transfer.

interface all | cp-*fpc/pic/port*)—Transfer a test file of flows from all configured flow collector interfaces or from only the specified interface.

channel-zero | channel-one—Transfer a file from export channel 0 (unit 0) or channel 1 (unit 1) of the PIC.

primary | secondary—Transfer a file to the primary or secondary server configured as a flow collector.

Required Privilege Level

network

List of Sample Output

request services flow-collector test-file-transfer on page 1265

Output Fields

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

request services flow-collector test-file-transfer

```
user@router> request services flow-collector test-file-transfer test_file interface cp-7/1/0
channel-one primary

Flow collector interface: cp-7/1/0
Interface state: Collecting flows
Response: Test file transfer successfully scheduled
```

show forwarding-options next-hop-group

Syntax

show forwarding-options next-hop-group
<terse | brief | detail>
<group-name>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display current state of next-hop groups.

Options

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

group-name—(Optional) Display a single next-hop group.

Required Privilege Level

view

Related Documentation

- **show forwarding-options port-mirroring on page 1269**

List of Sample Output

show forwarding-options next-hop-group terse on page 1267
show forwarding-options next-hop-group brief on page 1267
show forwarding-options next-hop-group detail on page 1267

Output Fields

Table 233 on page 1266 lists the output fields for the **show forwarding-options next-hop-group** command. Output fields are listed in the approximate order in which they appear.

Table 233: show forwarding-options next-hop-group Output Fields

Field Name	Field Description	Level of Output
Next-hop-group	Name of next-hop group.	All levels
Type	Next-hop group type, such as **inet** or **layer-2**.	All levels
State	Next-hop group state, either **up** or **down**.	All levels
Members Interfaces	Names of interfaces to which next-hop group members belong.	**brief detail**
Members Subgroup	Names of subgroups to which next-hop group members belong.	**brief detail**
Number of members configured	Number of next-hop group members configured.	**detail**
Number of members that are up	Number of next-hop group members that are up.	**detail**

Table 233: 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

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

Syntax

show forwarding-options port-mirroring
<terse | detail>
<instance-name>

Release Information

Command introduced in Junos OS Release 9.6.

Description

Display current state of port-mirroring instances.

Options

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

instance-name—(Optional) Display a single port-mirroring instance.

Required Privilege Level

view

Related Documentation

- **show forwarding-options next-hop-group on page 1266**

List of Sample Output

show forwarding-options port-mirroring terse on page 1270
show forwarding-options port-mirroring detail on page 1270

Output Fields

Table 234 on page 1269 lists the output fields for the **show forwarding-options port-mirroring** command. Output fields are listed in the approximate order in which they appear.

Table 234: show forwarding-options port-mirroring Output Fields

Field Name	Field Description	Level of Output
Instance Name	Name of port-mirroring instance.	All levels
Instance Id	Instance identification number.	All levels
State	Instance state, either **up** or **down**.	All levels
Input parameters		
Rate	Rate (ratio of packets sampled).	**detail**
Run-length	Run length (number of consecutive packets sampled).	**detail**
Maximum-packet-length	Maximum packet length.	**detail**
Output parameters		
Family	Protocol family.	**detail**
State	Instance state, either **up** or **down**.	**detail**
Destination	Destination (next-hop group name).	**detail**

show 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

```
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

Syntax show passive-monitoring error (* | all | mo-*fpc/pic/port*)

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e, M160, and M320 routers and T Series routers only) Display passive monitoring error statistics.

Options * | all | mo-*fpc/pic/port*—Display error statistics for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.

Required Privilege Level view

List of Sample Output **show passive-monitoring error all on page 1272**

Output Fields Table 235 on page 1271 lists the output fields for the **show passive-monitoring error** command. Output fields are listed in the approximate order in which they appear.

Table 235: 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: • **Monitoring**—Specified interface is actively monitoring. • **Disabled**—Specified interface has been disabled from the CLI. • **Not monitoring**—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. • **Unknown**—Unknown state. • **Error**—An error occurred during the process of determining the state of the interface.
Error information	
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 235: show passive-monitoring error Output Fields *(continued)*

Field Name	Field Description
Memory allocation failures	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.
Memory free failures	Number of flow record memory free failures.
Memory free list failures	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.
Memory warning	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 **Yes** or **No**.
Memory overload	Whether the memory has been overloaded. The response can be **Yes** or **No.**
PPS overload	Whether the PIC is receiving more packets per second than the configured threshold. The response can be **Yes** or **No**.
BPS overload	Whether the PIC is receiving more bits per second than the configured threshold. The response can be **Yes** or **No**.

show passive-monitoring error all

```
user@host> show passive-monitoring error all
Passive monitoring interface: mo-4/0/0, Local interface index: 44
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

Syntax show passive-monitoring flow (* | all | mo-*fpc/pic/port*)

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e, M160, and M320 routers and T Series routers only) Display passive flow statistics.

Options * | all | mo-*fpc/pic/port*—Display passive flow statistics for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.

Required Privilege Level view

List of Sample Output **show passive-monitoring flow all on page 1274**

Output Fields Table 236 on page 1273 lists the output fields for the **show passive-monitoring flow** command. Output fields are listed in the approximate order in which they appear.

Table 236: 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: • **Monitoring**—Specified interface is actively monitoring. • **Disabled**—Specified interface has been disabled from the CLI. • **Not monitoring**—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. • **Unknown**—Unknown state. • **Error**—An error occurred during the process of determining the state of the interface.
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 236: show passive-monitoring flow Output Fields *(continued)*

Field Name	Field Description
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.

show passive-monitoring flow all

```
user@host> show passive-monitoring flow all
Passive monitoring interface: mo-4/0/0, Local interface index: 44
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

Syntax show passive-monitoring memory (* | all | mo-*fpc/pic/port*)

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e, M160, and M320 routers and T Series routers only) Display passive monitoring memory and flow record statistics

Options * | all | mo-*fpc/pic/port*—Display memory and flow record statistics for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.

Required Privilege Level view

List of Sample Output **show passive-monitoring memory all on page 1275**

Output Fields Table 237 on page 1275 lists the output fields for the **show passive-monitoring memory** command. Output fields are listed in the approximate order in which they appear.

Table 237: 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).

show passive-monitoring memory all

```
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

Syntax show passive-monitoring status (*| all | mo-*fpc/pic/port*)

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e, M160, and M320 routers and T Series routers only) Display passive monitoring status.

Options * | all | mo-*fpc/pic/port*—Display status for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.

Required Privilege Level view

List of Sample Output **show passive-monitoring status all on page 1278**

Output Fields Table 238 on page 1277 lists the output fields for the **show passive-monitoring status** command. Output fields are listed in the approximate order in which they appear.

Table 238: 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. • **Monitoring**—PIC is actively monitoring. • **Disabled**—PIC has been disabled using the CLI. • **Not monitoring**—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. • **Unknown**
Group index	Integer that represents the monitoring group of which the PIC is a member. **Group index** 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.

show passive-monitoring status all

```
user@host> show passive-monitoring status all
Passive monitoring interface: mo-4/0/0, Local interface index: 44
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

Syntax show passive-monitoring usage (* | all | mo-*fpc/pic/port*)

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e, M160, and M320 routers and T Series routers only) Display passive monitoring usage statistics.

Options * | all | mo-*fpc/pic/port*—Display usage statistics for monitoring interfaces. Use a wildcard character, specify all interfaces, or provide a specific interface name.

Required Privilege Level view

List of Sample Output **show passive-monitoring usage all on page 1279**

Output Fields Table 239 on page 1279 lists the output fields for the **show passive-monitoring usage** command. Output fields are listed in the approximate order in which they appear.

Table 239: 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.

show passive-monitoring usage all

```
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

Syntax

show services accounting aggregation *aggregation-type <aggregation-value>*
<detail | extensive | terse>
<limit *limit-value*>
< name *service-name*>
<order (bytes | packets)>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display information about the aggregated active flows being processed by the accounting service.

Options

aggregation-type <aggregation-value>—Display information for a particular aggregation type and optional value:

- **as <*source-as-value* | *destination-as-value* | *input-snmp-interface-index-value* | *output-snmp-interface-index-value*>**—Aggregate by autonomous system (AS).
- **destination-prefix <*destination-prefix-value* | *destination-as-value* | *output-snmp-interface-index-value*>**—Aggregate by destination prefix.
- **protocol-port <*protocol-value* | *source-port-value* | *destination-port-value*>**—Aggregate by protocol and port.
- **source-destination-prefix <*source-prefix-value* | *destination-prefix-value* | *destination-as-value* | *source-as-value* | *input-snmp-interface-index-value* | *output-snmp-interface-index-value*>**—Aggregate by source and destination prefix.
- **source-prefix <*source-prefix-value* | *source-as-value* | *input-snmp-interface-index-value*>**—Aggregate by source prefix.

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

limit *limit-value*—(Optional) Limit the display output to this number of flows. The default is no limit.

name *service-name*—(Optional) Display information about the aggregated flows for a particular service name.

order (bytes | packets)—(Optional) Display the flow with the ordering of the highest number, either by byte count or by packet count.

Additional Information

For information about aggregation configuration options, see the *Junos OS Services Interfaces Configuration Guide*.

Required Privilege Level

view

List of Sample Output

show services accounting aggregation protocol-port detail on page 1283
show services accounting aggregation source-destination-prefix on page 1283

show services accounting aggregation source-destination- prefix order packet detail on page 1283
show services accounting aggregation source-destination- prefix extensive limit on page 1284
show services accounting aggregation source-destination-prefix name terse on page 1284

Output Fields

Table 240 on page 1282 lists the output fields for the **show services accounting aggregation** command. Output fields are listed in the approximate order in which they appear.

Table 240: 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 240: 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.

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                 prefix    interface     interface        count       count
           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-prefix order packet detail

```
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            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 accounting aggregation source-destination-prefix extensive limit

```
user@host> show service accounting aggregation source-destination-prefix name t2 extensive
limit 3
Service Accounting interface: mo-2/0/0, Local interface index: 542
Service name: t2

  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 accounting aggregation source-destination-prefix name terse

```
user@host> show service accounting aggregation source-destination-prefix name T3 terse
Service Accounting interface: rsp0, Local interface index: 171
Service name: T3
Interface state: Accounting
Source              Destination    Input         Output          Flow      Packet
            Byte
prefix                    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

Syntax

show services accounting aggregation template
<template-name *template-name*>

Release Information

Command introduced in Junos OS Release 8.3.

Description

Display information for flow aggregation version 9 templates.

Options

<template-name *template-name*>—(Optional) Display information for the specified template only.

Required Privilege Level

view

List of Sample Output

show services accounting aggregation template on page 1285

Output Fields

Table 241 on page 1285 lists the output fields for the **show services accounting aggregation template** command. Output fields are listed in the approximate order in which they appear.

Table 241: show services accounting aggregation template Output Fields

Field Name	Field Description
MPLS Label 1	Position of first MPLS label.
MPLS Label 2	Position of second MPLS label.
MPLS Label 3	Position of third MPLS label.
MPLS Top Level Address	Outer top label FEC IP address.
Packet Count	Number of packets sent.

show services accounting aggregation template

```
user@host> show services accounting aggregation template template-name mpls
MPLS label 1: 299808, MPLS label 2: 0, MPLS label 3: 0
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

Syntax show services accounting errors
<name (* | all | *service-name*)>

Release Information Command introduced before Junos OS Release 7.4.

Description Display active flow error statistics.

Options none—Display error statistics for all services accounting instances.

name (* | all | *service-name*)—(Optional) Display active flow error statistics. Use a wildcard character, specify all services, or provide a specific service name.

Required Privilege Level view

List of Sample Output **show services accounting errors (Monitoring PIC interface) on page 1287**
show services accounting errors (Service PIC interface) on page 1287

Output Fields Table 242 on page 1286 lists the output fields for the **show services accounting errors** command. Output fields are listed in the approximate order in which they appear.

Table 242: show services accounting errors Output Fields

Field	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.
Error Information	
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.
Memory allocation failures	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 242: show services accounting errors Output Fields *(continued)*

Field	Field Description
Memory free failures	Number of flow record memory free failures.
Memory free list failures	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.
Memory overload	Whether the memory has been overloaded. The response can be **Yes** or **No**.
PPS overload	Whether the PIC is receiving more packets per second than the configured threshold. The response can be **Yes** or **No**.
BPS overload	Whether the PIC is receiving more bits per second than the configured threshold. The response can be **Yes** or **No**.

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
```

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

Syntax

show services accounting flow
<name (* | all | *service-name*)>

Release Information

Command introduced before Junos OS Release 7.4.
Junos OS Release 10.0 added the capability to display output from multiple sampling instances.

Description

Display active flow statistics.

Options

none—Display active flow statistics for all service instances.

name (* | all | *service-name*)—(Optional) Display services accounting active flow statistics. Use a wildcard character, specify all services, or provide a specific service name.

Required Privilege Level

view

List of Sample Output

show services accounting flow (flow aggregation v5/v8 configuration) on page 1289
show services accounting flow (flow aggregation v9 configuration) on page 1289
show services accounting flow name on page 1289
show services accounting flow name all on page 1289
show services accounting flow (multiple sampling instances) on page 1290

Output Fields

Table 243 on page 1288 lists the output fields for the **show services accounting flow** command. Output fields are listed in the approximate order in which they appear.

Table 243: 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 243: 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.

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

Syntax

show services accounting flow-detail
<detail | extensive | terse>
<*filters*>
<limit *limit-value*>
<name (* | all | *service-name*)>
<order (bytes | packets)>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display information about the flows being processed by the accounting service.

Options

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

filters—(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:

- **destination-as**—Display flow records filtered by destination autonomous system information.
- **destination-port**—Display flow records filtered by destination port information.
- **destination-prefix**—Display flow records filtered by destination prefix information.
- **input-snmp-interface-index**—Display flow records filtered by SNMP input interface index information.
- **output-snmp-interface-index**—Display flow records filtered by SNMP output interface index information.
- **proto**—Display flow records filtered by protocol type.
- **source-as**—Display flow records filtered by source autonomous system information.
- **source-port**—Display flow records filtered by source port information.
- **source-prefix**—Display flow records filtered by source prefix information.
- **tos**—Display flow records filtered by type of service classification.

limit *limit-value*—(Optional) Limit the display output to the specified number of flows. The default is no limit.

name (* | all | *service-name*)—(Optional) Display information about the flows being processed. Use a wildcard character, specify all services, or provide a specific services name.

order (bytes | packets)—(Optional) Display the flow with the ordering of the highest number, either by byte count or by packet count.

Additional Information

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 1293
show services accounting flow-detail limit on page 1294
show services accounting flow-detail name extensive on page 1294
show services accounting flow-detail limit order bytes on page 1294
show services accounting flow-detail source-port on page 1295

Output Fields Table 244 on page 1292 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 244: show services accounting flow-detail Output Fields

Field Name	Field Description	Output Level
Service Accounting interface	Name of the service accounting interface.	All levels
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]** hierarchy level.	All levels
Local interface index	Index counter of the local interface.	All levels
TOS	Type-of-service value from the IP header.	**extensive**
Input SNMP interface index	SNMP index of the interface on which the packet came in.	**extensive**
Output SNMP interface index	SNMP index of the interface on which the packet went out.	**extensive**
Source-AS	Source AS number.	**extensive**
Destination-AS	Destination AS number.	**extensive**
Protocol	Name of the protocol used for the packet flow from the corresponding source address.	All levels
Input interface	Interface on which the packets were received.	All levels
Output interface	Interface on which the packets were transmitted.	All levels
TCP flags	Number of TCP header flags detected in the flow.	**extensive**
Source address	Address where the flow originated.	All levels
Source port	Name of the source port.	All levels

Table 244: 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 ***hh:mm:ss***.	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

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          Source                  Source   Output
           interface      address                   port   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          Destination      Packet        Byte  Time since last
address                     port       count       count   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       Byte count for
last active timeout    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)
           Input          Source                   Source   Output
Protocol   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 source-port

```
user@host> show services accounting flow-detail name cf-2 detail source-port 1173
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

Syntax show services accounting memory

Release Information Command introduced before Junos OS Release 7.4.

Description Display memory and flow record statistics.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show services accounting memory (Monitoring PIC interface) on page 1296**
show services accounting memory (Service PIC interface) on page 1297

Output Fields Table 245 on page 1296 lists the output fields for the **show services accounting memory** command. Output fields are listed in the approximate order in which they appear.

Table 245: show services accounting memory Output Fields

Output Field	Output Field Description
Service Accounting interface	Name of the service accounting interface.
Memory Utilization	
Local interface index	Index counter of the local interface.
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 amount of memory currently used (in bytes).
Total memory free	Total amount of memory currently free (in bytes).

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
```

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

Syntax

show services accounting packet-size-distribution
<name (* | all | *service-name*)>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display a packet size distribution histogram.

Options

none—Display a packet size distribution histogram of all accounting services.

name (* | all | *service-name*)—(Optional) Display a packet size distribution histogram. Use a wildcard character, specify all services, or provide a specific services name.

Required Privilege Level

view

List of Sample Output

show services accounting packet-size-distribution name on page 1298

Output Fields

Table 246 on page 1298 lists the output fields for the **show services accounting packet-size-distribution** command. Output fields are listed in the approximate order in which they appear.

Table 246: 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.

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

Syntax show services accounting status
<name (* | all | *service-name*)>

Release Information Command introduced before Junos OS Release 7.4.

Description Display available Physical Interface Cards (PICs) for accounting services.

Options none—Display available PICs for all accounting services.

name (* | all | *service-name*)—(Optional) Display available PICs. Use a wildcard character, specify all services, or provide a specific services name.

Required Privilege Level view

List of Sample Output **show services accounting status name (Monitoring PIC interface) on page 1300**
show services accounting status name (Service PIC interface) on page 1300

Output Fields Table 247 on page 1299 lists the output fields for the **show services accounting status** command. Output fields are listed in the approximate order in which they appear.

Table 247: show services accounting status Output Fields

Field	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.
Interface state	Accounting state of the passive monitoring interface. • **Accounting**—PIC is actively accounting. • **Disabled**—PIC has been disabled from the CLI. • **Not accounting**—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. • **Unknown**
Group index	Integer that represents the monitoring group of which the PIC is a member. **Group index** is a mapping from the group name to an index. It is not related to the number of monitoring groups.
Export interval (in seconds)	Configured export interval for cflowd records, in seconds.
Export format	Configured export format (only cflowd version 5 is supported).

Table 247: 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.

show services accounting status name (Monitoring PIC interface)

```
user@host> show services accounting status name count1
Service Accounting interface: mo-2/0/0, Local interface index: 468
Service name: count1
Interface state: Accounting
  Group index: 0
  Export interval (in seconds): 60, Export format: cflowd v8
  Protocol: IPv4, Engine type: 55, Engine ID: 5
```

show services accounting status name (Service PIC interface)

```
user@host> show services accounting status name
Service Accounting interface: sp-0/1/0
Interface state: Accounting
  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

Syntax
show services accounting usage
<name *service-name*>

Release Information
Command introduced before Junos OS Release 7.4.

Description
Display the CPU usage of PIC used for active flow monitoring.

Options
none—Display CPU usage for all service names.

name *service-name*—(Optional) Display CPU usage for the specified service name.

Additional Information
When no route record has been downloaded from the PIC, this command reports no flows, even though packets are being sampled.

Required Privilege Level
view

List of Sample Output
show services accounting usage (Monitoring PIC interface) on page 1302
show services accounting usage (Service PIC interface) on page 1302

Output Fields
Table 248 on page 1301 lists the output fields for the **show services accounting usage** command. Output fields are listed in the approximate order in which they appear.

Table 248: 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.

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%
```

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

Syntax

show services dynamic-flow-capture content-destination capture-group *group-name* destination-identifier *identifier*
<terse>

Release Information

Command introduced in Junos OS Release 7.4.

Description

(M320 routers and T Series routers only) Display information about the content destination that receives packets from the dynamic flow capture (DFC) interface.

Options

capture-group *group-name*—Capture-group identifier.

destination-identifier *identifier*—Content destination identifier.

terse—(Optional) Display summary information.

Required Privilege Level

view

List of Sample Output

show services dynamic-flow-capture content-destination on page 1304

Output Fields

Table 249 on page 1303 lists the output fields for the **show services dynamic-flow-capture content-destination** command. Output fields are listed in the approximate order in which they appear.

Table 249: show services dynamic-flow-capture content-destination Output Fields

Output Field	Output Field Description	Level of Output
Capture group	Name of the capture group.	to be provided
Content destination	Name of the content destination.	to be provided
Criteria	Number of criteria specified.	to be provided
Bandwidth	Bandwidth used by the matched traffic.	to be provided
Matched packets	Number of matched packets sent to the content destination.	to be provided
Matched bytes	Number of matched bytes sent to the content destination.	to be provided
Congestion notifications	Number of notification messages sent.	to be provided

show services dynamic-flow-capture content-destination

```
user@host> show services dynamic-flow-capture content-destination capture-group g1
destination-identifier cd1 terse
  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

Syntax

show services dynamic-flow-capture control-source capture-group *group-name*
control-source *identifier*
<detail | terse>

Release Information

Command introduced in Junos OS Release 7.4.

Description

(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.

Options

capture-group *group-name*—Capture group identifier.

control-source *identifier*—Control source identifier.

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

Required Privilege Level

view

List of Sample Output

show services dynamic-flow-capture control-source on page 1306
show services dynamic-flow-capture control-source detail on page 1306

Output Fields

Table 250 on page 1305 lists the output fields for the **show services dynamic-flow-capture control-source** scommand. Output fields are listed in the approximate order in which they appear.

Table 250: 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 **Add**, **Delete**, **List**, **Refresh**, and **No-op** control protocol requests.
Failed	Number of **Add**, **Delete**, **List**, **Refresh**, and **No-op** failed control protocol requests.
Add request rate	Rate of add requests.

Table 250: 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: **Restart**, **Rollover**, **Timeout**, **Congestion**, **Congestion delete**, and **Dups** (duplicates) dropped.
Criteria deleted	Total number of criteria deleted and the number of deleted criteria by category: **Timeout idle**, **Timeout total**, **Packets**, and **Bytes**.
Sequence number	Sequence number.

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

Syntax show services dynamic-flow-capture statistics capture-group *group-name*

Release Information Command introduced in Junos OS Release 7.4.

Description (M320 routers and T Series routers only) Display statistics information about the capture group specified for dynamic flow capture.

Options capture-group *group-name*—Capture group identifier.

Required Privilege Level view

List of Sample Output **show services dynamic-flow-capture statistics on page 1308**

Output Fields Table 251 on page 1307 lists the output fields for the **show services dynamic-flow-capture statistics** command. Output fields are listed in the approximate order in which they appear.

Table 251: show services dynamic-flow-capture statistics Output Fields

Output Field	Output Field Description
Input	Incoming dynamic flow capture packet statistics: • **Control protocol packets**—Number of control protocol packets received. • **Captured data packets**—Number of data packets captured. • **Control IRI packets**—Number of control IRI packets received.
Control protocol drops	Control protocol packets dropped for the following reasons: • **Not IP packets**—Dropped packets were not IP packets. • **Not UDP packets**—Dropped packets were not User Datagram Protocol (UDP) packets. • **Invalid destination address**—Dropped packets had invalid destination addresses. • **No memory**—Packets dropped because of insufficient memory. • **Unauthorized control source**—Packets dropped because the control source was not authenticated. • **Bad request**—Packets dropped because the request was invalid. • **Unknown control source**—Packets dropped because the control source was not known. • **Not DTCP**—Dropped packets did not adhere to the control protocol format. • **Bad command line**—Packets dropped because of a version mismatch. • **Bandwidth exceeded**—Packets dropped because the bandwidth was exceeded. • **Drop rate due to exceeded bandwidth**—Rate of traffic dropped because the bandwidth was exceeded. • **Other**—Packets dropped for other reasons or undetermined causes.

Table 251: show services dynamic-flow-capture statistics Output Fields *(continued)*

Output Field	Output Field Description
Input drops	Incoming dynamic flow capture packets dropped for the following reasons: • **Unknown packets**—Packets dropped because the packet type was not recognized. • **Captured data not IPv4**—Packets dropped because they were not IPv4 packets. • **Captured data too small**—Packets dropped because they were smaller than the size reported in their headers. • **Captured data drops**—Data packets dropped because of undetermined causes. • **Captured data not matched**—Packets dropped because they did not match filter criteria. • **Bandwidth exceeded**—Packets dropped because the bandwidth was exceeded. • **Drop rate due to exceeded bandwidth**—Rate of traffic dropped because the bandwidth was exceeded.
Output	Outgoing dynamic flow capture packet statistics: • **Control protocol packets**—Number of control protocol packets sent. • **Captured data packets**—Number of captured data packets sent.
Output drops	Outgoing packets dropped: • **Control protocol drops**—Number of control protocol packets dropped. • **Captured data drops**—Number of captured data packets dropped.
Flow Statistics	DFC flow statistics: • **Active flow cache entries** • **Active flow cache usage percentage** • **Flow cache entries allocated** • **Number of control sources** • **Number of content destinations** • **Number of criteria** • **Maximum criteria matching one flow** • **Cached flows purged for memory** • **Maximum filters matching one packet**

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

Syntax show services flow-collector file interface (all | cp-*fpc/pic/port*)
<detail | extensive | terse>

Release Information Command introduced before Junos OS Release 7.4.

Description (M40e, M160, and M320 routers and T Series routers only) Display information about flow collector files.

Options 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.

Additional Information No entries are displayed for files that have been successfully transferred.

Required Privilege Level view

List of Sample Output **show services flow-collector file interface extensive on page 1311**

Output Fields Table 252 on page 1310 lists the output fields for the **show services flow-collector file interface** command. Output fields are listed in the approximate order in which they appear.

Table 252: show services flow-collector file interface Output Fields

Output Field	Output Field Description	Level of Output
Filename	Name of the file created on the flow collector interface.	All levels
Flows	Total number of collector flows for which records are present in the file.	none specified

Throughput	Throughput statistics:
	• **Flow records**—Number of flow records in the file.
	  • **per second**—Average number of flow records per second.
	  • **peak per second**—Peak number of flow records per second.
	• **Uncompressed bytes**—Total file size before compression.
	  • **per second**—Average number of uncompressed bytes per second.
	  • **peak per second**—Peak number of uncompressed bytes per second.
	• **Compressed bytes**—Total file size after compression.
	  • **per second**—Average number of compressed bytes per second.
	  • **peak per second**—Peak number of compressed bytes per second.
		extensive

Table 252: show services flow-collector file interface Output Fields *(continued)*

Output Field	Output Field Description	Level of Output

Status	File statistics:
	• **Compressed blocks**—(**extensive** 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.
	• **Block count**—(**extensive** output only) Total number of data blocks in the file.
	• **State**—Processing state of the file.
	  • **Active**—The flow collector interface is writing to the file.
	  • **Export 1**—File export is in progress to the primary server.
	  • **Export 2**—File export is in progress to the secondary server.
	  • **Wait**—File is pending export.
	  • **Transfer attempts 0.**—Number of attempts made to transfer the file. If the file is successfully transferred in the first attempt, this field is 0.
		All levels

show services flow-collector file interface extensive

```
user@host> show services flow-collector file interface cp-3/2/0 extensive
Filename: cFlowd-py69Ni69-0-20031112_014301-so_3_0_0_0.bcp.bi.gz
  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

Syntax

show services flow-collector input interface (all | cp-*fpc/pic/port*)
<detail | extensive | terse>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M40e, M160, and M320 routers and T Series routers only) Display the number of packets received by collector interfaces from monitoring interfaces.

Options

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.

Required Privilege Level

view

List of Sample Output

show services flow-collector input interface on page 1312
show services flow-collector input interface all on page 1312

Output Fields

Table 253 on page 1312 lists the output fields for the **show services flow-collector input interface** command. Output fields are listed in the approximate order in which they appear.

Table 253: show services flow-collector input interface Output Fields

Output Field	Output Field Description
Interface	Name of the monitoring interface.
Packets	Number of packets traveling from the monitoring interface to the flow collector interface.
Bytes	Number of bytes traveling from the monitoring interface to the flow collector interface.

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

Syntax

show services flow-collector interface (all | cp-*fpc/pic/port*)
<detail | extensive | terse>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M40e, M160, and M320 routers and T Series routers only) Display overall statistics for the flow collector application.

Options

all | cp-*fpc/pic/port*—Display statistics for flow collector applications on all interfaces or for the specified interface.

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

Required Privilege Level

view

List of Sample Output

show services flow-collector interface all detail on page 1316
show services flow-collector interface all extensive on page 1317
show services flow-collector interface all terse on page 1319
show services flow-collector interface extensive on page 1319

Output Fields

Table 254 on page 1314 lists the output fields for the **show services flow-collector interface** command. Output fields are listed in the approximate order in which they appear.

Table 254: 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 254: show services flow-collector interface Output Fields *(continued)*

Output Field	Output Field Description	Level of Output

Input	Incoming flow collector packet statistics:
	• **Packets**—Number of packets received on the unit.
	  • **per second**—Average number of packets per second.
	  • **peak per second**—Peak number of packets per second.
	• **Bytes**—Number of bytes received on the unit.
	  • **per second**—Average number of bytes per second.
	  • **peak per second**—Peak number of bytes per second.
	• **Flow records processed**—Number of records in the flow collector packets that were processed by the flow-collector interface.
	  • **per second**—Average number of flow records processed per second.
	  • **peak per second**—Peak number of flow records per second.
		detail extensive

Allocation	Data block statistics:
	• **Blocks allocated**—Total number of data blocks (containing flow records) allocated to the files created on this PIC.
	  • **per second**—Average number of blocks allocated per second.
	  • **peak per second**—Peak number of blocks allocated per second.
	• **Blocks freed**—Total number of data blocks freed.
	  • per second—Average number of blocks freed per second.
	  • peak per second—Peak number of blocks freed per second.
	• **Blocks unavailable**—Total number of data block requests denied, typically because of a memory shortage.
	  • per second—Average number of blocks unavailable per second.
	  • peak per second—Peak number of blocks unavailable per second.
		extensive

Files	File statistics, incremented since the PIC last booted: • **Files created**—Total number of files created on this PIC. • **Files exported**— Number of files successfully created and exported. • **Files destroyed**—(**extensive** output only) Number of files successfully exported and files dropped by the flow collection interface.	**detail extensive**

Throughput	Throughput statistics:
	• **Uncompressed bytes**—Total uncompressed data size for all files created on this PIC.
	  • **per second**—Average number of uncompressed bytes per second.
	  • **peak per second**—Peak number of uncompressed bytes per second.
	• **Compressed bytes**—Total compressed data size for all files created on this PIC.
	  • **per second**—Average number of compressed bytes per second.
	  • **peak per second**—Peak number of compressed bytes per second.
		detail extensive

Table 254: show services flow-collector interface Output Fields *(continued)*

Output Field	Output Field Description	Level of Output
Packet drops	Number of packets dropped for the following causes: • **No memory**—Packets dropped because of insufficient memory. • **Not IP**—Packets dropped because they are not IP packets. • **Not IPv4**—Packets dropped because they are not IP version 4 packets. • **Too small**—Packets dropped because each packet was smaller than the size reported in its header. • **Fragments**—Packets dropped because of fragmentation. Fragments are not reassembled. • **ICMP**—Packets dropped because they are not ICMP packets. • **TCP**—Packets dropped because they are not TCP packets. • **Unknown**—Packets dropped because of undetermined causes. • **Not Junos flow**—Packets dropped because they are not interpreted by the Junos OS. The Junos OS interprets only IPv4, UDP cflowd version 5 packets.	**extensive**
File transfer	File transfer statistics: • **FTP bytes**—Total number of bytes transferred to the FTP server, including those dropped during transfer. • **FTP files**—Total number of FTP transfers attempted by the server. • **FTP failure**—Total number of FTP failures encountered by the server.	**detail extensive**
Flow collector interface	Physical interface acting as a flow collector.	**detail**

Export channel	Export channel **0** is unit 0. Export channel **1** is unit 1. Flow receive channel is unit 2. Server status statistics are the following:
	• **Current server Primary** or **Secondary**—Current FTP server being used. Value is
	• **Primary server state**—State of the server:
	  ◦ **OK**—Server is operating without problems.
	  ◦ **FTP error**—Server encountered an FTP protocol error while sending files.
	  ◦ **Network error**—Flow-collector interface has errors when contacting the primary FTP server.
	  ◦ **Unknown**—First file transfer has not been sent to the primary server.
	• **Secondary server state**—State of the server:
	  ◦ **OK**—Server is operating without errors.
	  ◦ **FTP error**—Server encountered an FTP protocol error while sending files.
	  ◦ **Network error**—Flow-collector interface has errors when contacting the secondary FTP server.
	  ◦ **Unknown**—First file transfer has not been sent to the secondary server.
	• **Not configured**—Secondary server is not configured.
		detail extensive

show services flow-collector interface all detail

```
user@host> show services 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 flow-collector interface all extensive

```
user@host> show services 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  Compressed     FTP bytes FTP files
                                    Bytes       Bytes
     4384   6659616    131070     13742307     3786177       3786247         1

Flow collector interface: cp-6/3/0
Interface state: Collecting flows
  Packets     Bytes     Flows Uncompressed  Compressed     FTP bytes FTP files
                                    Bytes       Bytes
        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
```

CHAPTER 22

Intrusion Detection Service Operational Mode Commands

Table 255 on page 1321 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 255: IDS Operational Mode Commands

Task	Command
Clear (set to zero) IDS events and event information.	**clear services ids**
Clear the IDS events for a particular address that might be under attack.	**clear services ids destination-table**
Clear the IDS attack source and destination address pair table.	**clear services ids pair-table**
Clear all IDS events for addresses that are suspected attackers.	**clear services ids source-table**
Display IDS event information.	**show services ids**

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 (**rsp*number***) 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

Syntax

clear services ids
<interface *interface-name*>
<service-set *service-set-name*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Clear intrusion detection service (IDS) events.

Options

none—Clear all IDS events for all adaptive services interfaces for all service sets, and clear and reset IDS.

interface *interface-name*—(Optional) On M Series and T Series routers, the ***interface-name*** can be **sp-*fpc/pic/port*** or **rsp*number*.** On the J Series , the ***interface-name*** is **sp-*pim*/0/*port***.

service-set *service-set-name*—(Optional) Clear all IDS events for a particular service set.

Required Privilege Level

view

List of Sample Output

clear services ids on page 1322

Output Fields

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

clear services ids

```
user@host> clear services ids
```

clear services ids destination-table

Syntax

clear services ids destination-table
<destination-prefix *destination-prefix-name*>
<interface *interface-name*>
<service-set *service-set-name*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Clear the intrusion detection service (IDS) events for a particular address that might be under attack.

Options

none—Clear the attack destination address table.

destination-prefix *destination-prefix-name*—(Optional) Clear the attack destination table for a particular destination prefix.

interface *interface-name*—(Optional) Clear the attack destination table for a particular interface. On M Series and T Series routers, the ***interface-name*** can be **sp-*fpc/pic/port*** or **rsp*number***. On the J Series routers, the ***interface-name*** is **sp-*pim/0/port***.

service-set *service-set-name*—(Optional) Clear the attack destination table for a particular service set.

Required Privilege Level

view

List of Sample Output

clear services ids destination-table on page 1323

Output Fields

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

clear services ids destination-table

```
user@host> clear services ids destination-table
```

clear services ids pair-table

Syntax

clear services ids pair-table
<destination-prefix *destination-prefix-name*>
<interface *interface-name*>
<service-set *service-set-name*>
<source-prefix *source-prefix-name*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Clear the intrusion detection service (IDS) attack source and destination address pair table.

Options

none—Clear the attack source and destination address pair table.

destination-prefix *destination-prefix-name*—(Optional) Clear the attack source and destination address pair table for a particular destination prefix.

interface *interface-name*—(Optional) Clear the attack destination table for a particular interface. On M Series and T Series routers, the ***interface-name*** can be **sp-*fpc/pic/port*** or **rsp*number***. On the J Series routers, the ***interface-name*** is **sp-*pim*/0/*port***.

service-set *service-set-name*—Optional) Clear the attack source and destination address pair table for a particular service set.

source-prefix *source-prefix-name*—(Optional) Clear the attack source and destination address pair table for a particular source prefix.

Required Privilege Level

view

List of Sample Output

clear services ids pair-table on page 1324

Output Fields

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

clear services ids pair-table

`user@host>` **clear services ids pair-table**

clear services ids source-table

Syntax

clear services ids source-table
<interface *interface-name*>
<service-set *service-set-name*>
<source-prefix *source-prefix-name*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Clear all intrusion detection service (IDS) events for addresses that are suspected attackers.

Options

none—Clear the attack source address table.

interface *interface-name*—(Optional) On M Series and T Series routers, the ***interface-name*** can be **sp-*fpc/pic/port*** or **rsp*number***. On the J Series routers, the ***interface-name*** is **sp-*pim*/0/*port*.**

service-set *service-set-name*—(Optional) Clear the attack source address table for a particular service set.

source-prefix source-prefix-name—(Optional) Clear the attack source address table for a particular source prefix.

Required Privilege Level

view

List of Sample Output

clear services ids source-table on page 1325

Output Fields

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

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 **rsp*number***. On J Series routers, the ***interface-name*** is **sp-*pim*/0/*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 1330
show services ids destination-table extensive on page 1330
show services ids destination-table extensive order anomalies on page 1330
show services ids pair-table extensive on page 1331
show services ids pair-table extensive limit on page 1331
show services ids source-table extensive on page 1332
show services ids source-table extensive limit on page 1332

Output Fields Table 256 on page 1327 lists the output fields for the **show services ids** command. Output fields are listed in the approximate order in which they appear.

Table 256: show services ids Output Fields

Field Name	Field Description	Output Level
Interface	Name of an adaptive services interface.	All levels
Service set	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
Sorting order	Primary mode to display information: **Anomalies**, **Bytes**, **Flows**, or **Packets**.	All levels
Source address	Name of the source address.	All levels
Dest address	Name of the destination address.	All levels
Time	Total time the information has been in the table.	All levels
Flags	**Flags** can be **Forced**, **F** (terse output only), **SYNcookie**, **S** (terse output only), **Forced+SYNcookie**, and **F+S** (terse output only). The **SYNcookie** flag is visible only in the destination table.	All levels
Application	Configured application, such as **FTP** or **Telnet**.	All levels
Bytes	Total number of bytes sent from the source to the destination address, in thousands (**k**) or millions (**m**).	All levels
Packets	Total number of packets sent from the source to the destination address, in thousands (**k**) or millions (**m**).	All levels
Flows	Total number of flows of packets sent from the source to the destination address, in thousands (**k**) or millions (**m**).	All levels

Table 256: show services ids Output Fields *(continued)*

Field Name	Field Description	Output Level
Anomalies	Total number of packets in the anomaly table, in thousands (**k**) or millions (**m**).	All levels
Anomaly description	One or more of the following types of anomalies. For more information, see the detailed descriptions in the stateful firewall section of the *Junos OS System Log Messages Reference*. • **First packet of TCP session not SYN** • **ICMP echo request dropped, because sequence number duplicated** • **ICMP echo reply dropped. No matching sequence number** • **ICMP echo request dropped. Too many echo requests without echo reply** • **ICMP header length check failed** • **ICMP packet length greater than 64K** • **IP fragment assembly timeout** • **IP fragment length error** • **IP fragment overlap** • **IP packet length greater than 64K** • **IP packet too short** • **IP packet with broadcast destination address** • **IP packet with checksum error** • **IP packet with incorrect length** • **IP packet with TTL equal to 0**	**extensive**

Table 256: show services ids Output Fields *(continued)*

Field Name	Field Description	Output Level
Anomaly description (continued)	• IP packet with version other than 4 • Land attack (IP src address = dest address) • No matching SFW rule; attempting to create discard flow • Number of open sessions exceeds IDS limit; packet dropped • Packet rate exceeds IDS limit; packet dropped • Session creation rate exceeds IDS limit; packet dropped • SFW application message too long • SFW discard packet contains non-configured IP option types • SFW drop packet because of discard flow • SFW dropped TCP watch packet • SFW rules request FTP active mode data packets to be accepted; attempting to create forward flow • SFW rules request FTP passive mode data packets to be accepted; attempting to create forward flow • SFW rules request packet to be accepted; attempting to create forward or watch flow • SFW rules request packet to be discarded; attempting to create discard flow • SFW rules request packet to be rejected; attempting to create reject flow • SFW discard flow requires packet to be dropped • SFW SYN defense • Smurf attack (ping to IP broadcast address) • TCP FIN/RST or SYN/(URG|FIN|RST) flags set • TCP header length check failed • TCP port scan (port not in LISTEN state) • TCP seq number zero and FIN/PSH/RST flags set • TCP seq number zero and no flags set • TCP source or destination port zero • TCP SYN flood attack • UDP header length check failed • UDP port scan (port not in LISTEN state) • UDP source or destination port zero	**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 256: 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 **show ids services** command was executed.	All levels

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                                       Count   Rate(eps) Elapsed
    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                                        Count   Rate(eps) Elapsed
    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                                        Count   Rate(eps) Elapsed
    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                                        Count   Rate(eps) Elapsed
    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
```

CHAPTER 23

IP Security Operational Mode Commands

Table 257 on page 1335 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.

- Adaptive Services Interfaces:
  - J Series routers—**sp-*pim*/0/*slot***.
  - M Series and T Series routers—**sp-*fpc/pic/port***. IPsec is also supported on the redundant adaptive services interface (**rsp*number***).
- Encryption Interfaces (M Series and T Series routers only) **es-*fpc/pic/port***.

Table 257: IPsec Services Operational Mode Commands

Task	Command
Adaptive Services Interface	
Delete certificate authority (CA) digital certificates from the router.	**clear security pki ca-certificate**
Delete manually generated local digital certificate requests from the router.	**clear security pki certificate-request**
Delete all CRLs from the router.	**clear security pki crl**
Delete local digital certificates, certificate requests, and the corresponding public/private key pairs from the router.	**clear security pki local-certificate**
Delete local and remote certificates from the IPsec configuration memory cache.	**clear services ipsec-vpn certificates**
Clear IPsec statistics.	**clear services ipsec-vpn ipsec statistics**
Clear either Internet Key Exchange (IKE) or IPsec VPN security associations.	**clear services ipsec-vpn ike security-associations** **clear services ipsec-vpn ipsec security-associations**

Table 257: IPsec Services Operational Mode Commands *(continued)*

Task	Command
Request a digital certificate from a CA online by using the Simple Certificate Enrollment Protocol (SCEP).	**request security pki ca-certificate enroll**
Manually load a CA digital certificate from a specified location.	**request security pki ca-certificate load**
Manually install a CRL on the router.	**request security pki crl load**
Manually generate a local digital certificate request in the Public-Key Cryptography Standards #10 (PKCS-10) format.	**request security pki generate-certificate-request**
Generate a Public Key Infrastructure (PKI) public and private key pair for a local digital certificate.	**request security pki generate-key-pair**
Request a CA to enroll and install a local digital certificate online by using the SCEP.	**request security pki local-certificate enroll**
Manually load a local digital certificate from a specified location.	**request security pki local-certificate load**
Switch between the primary and backup IPsec VPN tunnels.	**request services ipsec-vpn ipsec switch tunnel**
Display information about certificate authority (CA) digital certificates installed in the router.	**show security pki ca-certificate**
Display information about manually generated local digital certificate requests that are stored in the router.	**show security pki certificate-request**
Display information about the local digital certificates and the corresponding public keys installed in the router.	**show security pki local-certificate**
Display local and remote certificates installed in the IPsec configuration memory cache that are used for the IKE negotiation.	**show services ipsec-vpn certificates**
Display IKE VPN security associations for service sets.	**show services ipsec-vpn ike security-associations**
Display IPsec VPN security associations for service sets.	**show services ipsec-vpn ipsec security-associations**
Display IPsec VPN statistics for service sets.	**show services ipsec-vpn ipsec statistics**
Encryption Interface	
Clear Internet Key Exchange (IKE) security associations.	**clear ike security-associations**

Table 257: IPsec Services Operational Mode Commands *(continued)*

Task	Command
Clear IPsec security associations.	**clear ipsec security-associations**
Switch between primary and backup interfaces and tunnels.	**request ipsec switch**
Obtain a public key certificate from a certification authority.	**request security certificate (signed)** **request security certificate (unsigned)**
Generate a public and private key pair.	**request security key-pair**
Add a certificate provided by the Juniper Networks certificate authority.	**request system certificate add**
Display IKE security association information.	**show ike security-associations**
Display the IPsec certificate database.	**show ipsec certificates**
Display primary and backup interface and tunnel information.	**show ipsec redundancy**
Display IPsec security association information.	**show ipsec security-associations**
Display installed certificates signed by the Juniper Networks certificate authority.	**show system certificate**

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

Syntax

clear ike security-associations
<destination-ip-address>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(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.

Options

none—Clear all IKE security associations.

destination-ip-address—(Optional) Clear the IKE security association at the specified destination address.

Required Privilege Level

view

Related Documentation

- **show ike security-associations on page 1364**

List of Sample Output

clear ike security-associations on page 1338

Output Fields

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

clear ike security-associations

`user@host>` **clear ike security-associations**

clear ipsec security-associations

Syntax

clear ipsec security-associations
<sa-name>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(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.

Options

none—Clear all IPsec security associations.

sa-name—(Optional) Clear the specified security association.

Required Privilege Level

view

Related Documentation

- **show ipsec security-associations on page 1373**

List of Sample Output

clear ipsec security-associations on page 1339

Output Fields

See the **show ipsec security-associations** for an explanation of output fields.

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

Syntax clear security pki ca-certificate (all | ca-profile *ca-profile-name*)

Release Information Command introduced in Junos OS Release 7.5.

Description (Adaptive services interfaces only) Delete certificate authority (CA) digital certificates from the router.

Options all—Delete all CA digital certificates from the router.

ca-profile *ca-profile-name*—Delete the specified CA profile.

Required Privilege Level clear

Related Documentation

- **request security pki ca-certificate enroll on page 1352**
- **request security pki ca-certificate load on page 1353**
- **show security pki ca-certificate on page 1376**

List of Sample Output **clear security pki ca-certificate all on page 1341**

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

clear security pki ca-certificate all

```
user@host> clear security pki ca-certificate all
```

clear security pki certificate-request

Syntax clear security pki certificate-request (all | certificate-id *certificate-id-name*)

Release Information Command introduced in Junos OS Release 7.5.

Description (Adaptive services interfaces only) Delete manually generated local digital certificate requests from the router.

Options all—Delete all local digital certificate requests from the router.

certificate-id *certificate-id-name*—Delete the specified local digital certificate and corresponding public/private key pair.

Required Privilege Level clear

Related Documentation

- **show security pki certificate-request on page 1380**

List of Sample Output **clear security pki certificate-request all on page 1342**

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

clear security pki certificate-request all

```
user@host> clear security pki certificate-request all
```


clear security pki crl

Syntax clear security pki crl (all | ca-profile *ca-profile-name*)

Release Information Command introduced in Junos 8.1

Description (Adaptive services interfaces only) Delete certificate revocation lists (CRLs) from the router.

Options all—Delete all CRLs from the router.

ca-profile *ca-profile-name*—Delete CRLs associated with the specified CA profile.

Required Privilege Level clear

List of Sample Output **clear security pki crl ca-profile all on page 1343**

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

clear security pki crl ca-profile all

```
user@host> clear security pki crl ca-profile all
```

clear security pki local-certificate

Syntax clear security pki local-certificate (all | certificate-id *certificate-id-name*)

Release Information Command introduced in Junos OS Release 7.5.

Description (Adaptive services interfaces only) Delete local digital certificates, certificate requests, and the corresponding public/private key pairs from the router.

Options

all—Delete all local digital certificates, certificate requests, and the corresponding public/private key pairs from the router.

certificate-id *certificate-id-name*—Delete the specified local digital certificate and corresponding public/private key pair.

Required Privilege Level clear

Related Documentation

- **request security pki local-certificate enroll on page 1358**
- **show security pki local-certificate on page 1384**

List of Sample Output **clear security pki local-certificate all on page 1344**

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

clear security pki local-certificate all

```
user@host> clear security pki local-certificate all
```


clear services ipsec-vpn certificates

Syntax

clear services ipsec-vpn certificates (all | service-set *service-set*)
<certificate-cache-entry *number*>

Release Information

Command introduced in Junos OS Release 7.5.

Description

(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.

Options

all—Delete digital certificates for all service sets.

service-set *service-set*—Delete digital certificates for the specified service set.

certificate-cache-entry *number*—(Optional) Delete digital certificates matching a specified cache entry number. To view the certificate cache entry numbers, issue the **show services ipsec-vpn certificates** command.

Required Privilege Level

clear

Related Documentation

- **show services ipsec-vpn certificates on page 1388**

List of Sample Output

clear services ipsec-vpn certificates all on page 1345

Output Fields

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

clear services ipsec-vpn certificates all

```
user@host> clear services ipsec-vpn certificates all
```

clear services ipsec-vpn ike security-associations

Syntax

clear services ipsec-vpn ike security-associations
<*peer-address-name*>
<service-set *service-set-name*>

Release Information

Command introduced before Junos OS Release 7.4.
service-set option added in Junos OS Release 8.5.

Description

(Adaptive services interfaces only) Clear Internet Key Exchange (IKE) security associations.

Options

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.

Required Privilege Level

view

Related Documentation

- **show services ipsec-vpn ike security-associations on page 1391**

Output Fields

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

clear services ipsec-vpn ike security-associations

```
user@host> clear services ipsec-vpn ike security-associations
```

clear services ipsec-vpn ipsec statistics

Syntax

clear services ipsec-vpn ipsec statistics
<remote-gateway *address*>
<service-set *service-set-name*>

Release Information

Command introduced in Junos OS Release 8.1.

Description

(Adaptive services interface only) Clear IP Security (IPsec) statistics.

Options

remote-gateway *address*—(Optional) Clear statistics for the specified remote system.

service-set *service-set-name*—(Optional) Clear statistics for the specified service set.

Required Privilege Level

view

Related Documentation

- **show services ipsec-vpn ipsec statistics on page 1398**

List of Sample Output

clear services ipsec-vpn ipsec statistics on page 1347

Output Fields

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

clear services ipsec-vpn ipsec statistics

```
user@host> clear services ipsec-vpn ipsec statistics
```

clear services ipsec-vpn ipsec security-associations

Syntax

clear services ipsec-vpn security-associations
<*peer-address-name*>
<remote-gateway *remote-gateway-address*>
<*service-set-name*>
<tunnel-index *tunnel-index-number*>

Release Information

Command introduced before Junos OS Release 7.4.
remote-gateway, ***service-set-name***, and **tunnel-index** options added in Junos OS Release 8.4.

Description

(Adaptive services interfaces only) Clear IP Security (IPsec) security associations. You can combine the options for greater specificity.

Options

peer-address-name—(Optional) Clear only the security association specified by the peer address.

remote-gateway *remote-gateway-address*—(Optional) Clear only the security association specified by the remote gateway address.

service-set-name—(Optional) Clear only the security association specified by the service-set name.

tunnel-index *tunnel-index-number*—(Optional) Clear only the security association specified by the tunnel index number.

Required Privilege Level

view

Related Documentation

- **show services ipsec-vpn ipsec security-associations on page 1395**

Output Fields

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

clear services ipsec-vpn ipsec security-associations

```
user@host> clear services ipsec-vpn ipsec security-associations
```

request security certificate (signed)

Syntax

request security certificate enroll filename *filename* subject *subject* alternative-subject *alternative-subject* certification-authority *certification-authority* encoding (binary | pem) key-file *key-file* domain-name *domain-name*

Release Information

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

Description

(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 **/var/etc/ikecert** directory.

Options

filename *filename*—File that stores the certificate.

subject *subject*—Distinguished name (**dn**), which consists of a set of components—for example, an organization (**o**), an organization unit (**ou**), a country (**c**), and a locality (**l**).

alternative-subject *alternative-subject*—Tunnel source address.

certification-authority *certification-authority*—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 *key-file*—File containing a local private key.

domain-name *domain-name*—Fully qualified domain name.

Required Privilege Level

maintenance

List of Sample Output

request security certificate (signed) on page 1349

Output Fields

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

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)

Syntax

request security certificate enroll filename *filename* ca-file *ca-file* ca-name *ca-name* encoding (binary | perm) url *url*

Release Information

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

Description

(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 **/var/etc/ikecert** directory.

Options

filename *filename*—File that stores the public key certificate.

ca-file *ca-file*—Name of the certificate authority profile in the configuration.

ca-name *ca-name*—Name of the certificate authority.

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 value is **binary**.

url *url*—Certificate authority URL.

Required Privilege Level

maintenance

List of Sample Output

request security certificate (unsigned) on page 1350

Output Fields

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

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

Syntax

request security key-pair *filename*
<size *key-size*>
<type (rsa | dsa)>

Release Information

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

Description

(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.

Options

filename—Name of a file in which to store the key pair.

size *key-size*—(Optional) Key size, in bits. The key size can be **512**, **1024**, or **2048**. The default value is **1024**.

type—(Optional) Algorithm used to encrypt the key:

- **rsa**—RSA algorithm. This is the default.
- **dsa**—Digital signature algorithm with Secure Hash Algorithm (SHA).

Required Privilege Level

maintenance

List of Sample Output

request security key-pair on page 1351

Output Fields

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

request security key-pair

`user@host>` **request security key-pair security-key-file**

request security pki ca-certificate enroll

Syntax request security pki ca-certificate enroll ca-profile *ca-profile-name*

Release Information Command introduced in Junos OS Release 7.5.

Description (Adaptive services interfaces only) Request a digital certificate from a certificate authority (CA) online by using the Simple Certificate Enrollment Protocol (SCEP).

Options ca-profile *ca-profile-name*—CA profile name.

Required Privilege Level maintenance

Related Documentation

- **clear security pki ca-certificate on page 1341**
- **show security pki ca-certificate on page 1376**

List of Sample Output **request security pki ca-certificate enroll on page 1352**

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

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

Syntax request security pki ca-certificate load ca-profile *ca-profile-name* filename *path/filename*

Release Information Command introduced in Junos OS Release 7.5.

Description (Adaptive services interfaces only) Manually load a certificate authority (CA) digital certificate from a specified location.

Options ca-profile *ca-profile-name*—Load the specified CA profile.

filename *path/filename*—Directory location and filename of the CA digital certificate.

Required Privilege Level maintenance

Related Documentation

- **clear security pki ca-certificate on page 1341**
- **show security pki ca-certificate on page 1376**

List of Sample Output **request security pki ca-certificate load on page 1353**

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

request security pki ca-certificate load

```
user@host> request security pki ca-certificate load ca-profile ca-private filename pki-file
```

request security pki crl load

Syntax request security pki crl load ca-profile *ca-profile-name* filename *path/filename*

Release Information Command introduced in Junos OS Release 8.1.

Description (Adaptive services interfaces only) Manually install a certificate revocation list (CRL) on the router from a specified location.

Options ca-profile *ca-profile-name* —Load the specified certificate authority (CA) profile.

filename *path/filename* —Directory location and filename of the CRL.

Required Privilege Level maintenance

List of Sample Output **request security pki crl load on page 1354**

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

request security pki crl load

`user@host>` **request security pki crl load ca-profile ca-private filename pki-file**

request security pki generate-certificate-request

Syntax

request security pki generate-certificate-request certificate-id *certificate-id-name*
domain-name *domain-name* subject *subject-distinguished-name*
<filename (*path* | terminal)>
<ip-address *ip-address*>
<validity-end-time *end-time*>
<validity-start-time *start-time*>

Release Information

Command introduced in Junos OS Release 7.5.

Description

(Adaptive services interfaces only) Manually generate a local digital certificate request in the Public-Key Cryptography Standards #10 (PKCS-10) format.

Options

certificate-id *certificate-id-name*—Name of the local digital certificate and the public/private key pair.

domain-name *domain-name*—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.

subject *subject-distinguished-name*—Distinguished name format that contains the common name, department, company name, state, and country:

- **CN**—Common name
- **OU**—Organizational unit name
- **O**—Organization name
- **ST**—State
- **C**—Country

filename (*path* | terminal)—(Optional) Location where the local digital certificate request should be placed or the login terminal.

ip-address *ip-address*—(Optional) IP address of the router.

validity-end-time *end-time*—(Optional) End time that the digital certificate is valid, in the format ***YYYY-MM-DD.hh:mm:ss***. If you do not specify an end time value, the end time is assigned by the default CA policy.

- ***YYYY***—Year (for example, **2005**)
- ***MM***—Month (**01** through **12**)
- ***DD***—Day (**01** through **31**)
- ***hh***—Hours (**00** through **23**)
- ***mm***—Minutes (**00** through **59**)
- ***ss***—Seconds (**00** through **59**)

validity-start-time *start-time*—(Optional) Start time that the digital certificate is valid, in the format ***YYYY-MM-DD.hh:mm:ss***. If you do not specify the start time value, the current time is used.

- *YYYY*—Year (for example, **2005**)
- *MM*—Month (**01** through **12**)
- *DD*—Day (**01** through **31**)
- *hh*—Hours (**00** through **23**)
- *mm*—Minutes (**00** through **59**)
- *ss*—Seconds (**00** through **59**)

Required Privilege Level

maintenance

Related Documentation

- **clear security pki certificate-request on page 1342**
- **show security pki certificate-request on page 1380**

List of Sample Output

request security pki generate-certificate-request on page 1356

Output Fields

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

request security pki generate-certificate-request

```
user@host> request security pki generate-certificate-request certificate-id local-entrust2
domain-name router2.juniper.net filename entrust-req2 subject cn=router2.juniper.net

Generated certificate request
-----BEGIN CERTIFICATE REQUEST-----
MIIBoTCCAQoCAQAwGjEYMBYGA1UEAxMPdHAxLmp1bmlwZXIubmV0MIGfMA0GCSqG
SIb3DQEBAQUAA4GNADCBiQKBgQCiUFklQws1Ud+AqN5DDxRs2kVyKEhh9qoVFnz+
Hz4c9vsy3B8ElwTJlkmIt2cB3yifB6zePd+6WYpf57Crwre7YqPkiXM31F6z3YjX
H+1BPNbCxNWYvyrnSyVYDbFj8oOXyqog8ACDfVL2JBWrPNBYy7imq/K9soDBbAs6
5hZqqwIDAQABoEcwRQYJKoZIhvcNAQkOMTgwNjAOBgNVHQ8BAf8EBAMCB4AwJAYD
VR0RAQH/BBowGIIWdHAxLmVuZ2xhYi5qdW5pcGVyLm5ldDANBgkqhkiG9w0BAQQF
AAOBgQBc2rq1v5SOQXH7LCb/FdqAL8ZM6GoaN5d6cGwq4bB6a7UQFgtoH4O6gQ3G
3iHOZfz4xMIBpJYuGd1dkqgvcDoH3AgTsLkfn7Wi3x5H2qeQVs9bvL4P5nvEZLND
EIMUHwteolZCiZ7OfO9Fer9cXWHSQs1UtXtgPqQJy2xIeImLgw==
-----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

Syntax

request security pki generate-key-pair certificate-id *certificate-id-name*
<size (512 | 1024 | 2048)>

Release Information

Command introduced in Junos OS Release 7.5.

Description

(Adaptive services interfaces only) Generate a Public Key Infrastructure (PKI) public and private key pair for a local digital certificate.

Options

certificate-id *certificate-id-name*—Name of the local digital certificate and the public/private key pair.

size—(Optional) Key pair size. The key pair size can be **512**, **1024**, or **2048** bits.

Required Privilege Level

maintenance

List of Sample Output

request security pki generate-key-pair on page 1357

Output Fields

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

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

Syntax

request security pki local-certificate enroll ca-profile *ca-profile-name*
certificate-id *certificate-id-name* challenge-password *password* domain-name
domain-name subject *subject-distinguished-name*
<ip-address *ip-address*>
<validity-end-time *end-time*>
<validity-start-time *start-time*>

Release Information

Command introduced in Junos OS Release 7.5.

Description

(Adaptive services interfaces only) Request that a CA enroll and install a local digital certificate online by using the Simple Certificate Enrollment Protocol (SCEP).

Options

ca-profile *ca-profile-name*—CA profile name.

certificate-id *certificate-id-name* —Name of the local digital certificate and the public/private key pair.

challenge-password *password*—Password set by the administrator and normally obtained from the SCEP enrollment web page of the CA. The password is 16 characters in length.

domain-name *domain-name*—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.

subject *subject-distinguished-name* —Distinguished name format that contains the common name, department, company name, state, and country:

- **CN**—Common name
- **OU**—Organizational unit name
- **O**—Organization name
- **ST**—State
- **C**—Country

ip-address *ip-address*—(Optional) IP address of the router.

validity-end-time *end-time*—(Optional) Endpoint in time when the digital certificate becomes invalid. You must configure the time in the following format: ***YYYY-MO-DD.HH:MN:SS***. If you do not specify an end time value, the end time is assigned by the default CA policy.

- ***YYYY***—Year (for example, **2005**)
- ***MO***—Month (**01** through **12**)
- ***DD***—Day (**01** through **31**)
- ***HH***—Hours (**00** through **23**)

- *MN*—Minutes (**00** through **59**)
- *SS*—Seconds (**00** through **59**)

validity-start-time *start-time*—(Optional) Start time that the digital certificate is valid, in the following format: YYYY-MO-DD.HH:MN:SS. If you do not specify the start time value, the current time is used.

- *YYYY*—Year (for example, **2005**)
- *MO*—Month (**01** through **12**)
- *DD*—Day (**01** through **31**)
- *HH*—Hours (**00** through **23**)
- *MN*—Minutes (**00** through **59**)
- *SS*—Seconds (**00** through **59**)

Additional Information

Specifying a **validity-end-time** and a **validity-start-time** is optional. However, you cannot configure only an end time or a start time. You must configure both an end time and a start time if you do not want to use the default values.

Required Privilege Level

maintenance

Related Documentation

- **show security pki local-certificate on page 1384**

List of Sample Output

request security pki local-certificate enroll on page 1359

Output Fields

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

request security pki local-certificate enroll

```
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 key management process (kmd) log file at /var/log/kmd. 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 load

Syntax request security pki local-certificate load certificate-id *certificate-id-name* filename *path*

Release Information Command introduced in Junos OS Release 7.5.

Description (Adaptive services interfaces only) Manually load a local digital certificate from a specified location.

Options certificate-id *certificate-id-name*—Name of the public/private key pair mapped to the local digital certificate.

filename *path/filename*—Directory location and filename of the local digital certificate provided by the CA.

Required Privilege Level maintenance

List of Sample Output **request security pki local-certificate load on page 1360**

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

request security pki local-certificate load

```
user@host> request security pki local-certificate load filename /tmp/router2-cert certificate-id
local-entrust2
Local certificate local-entrust2 loaded successfully
```


request ipsec switch

Syntax request ipsec switch (interface <es-*fpc/pic/port*> | security-associations <*sa-name*>)

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

Description (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.

Options interface <es-*fpc/pic/port*>—Switch to the backup encryption interface.

security-associations <*sa-name*>—Switch to the backup tunnel.

Required Privilege Level view

Related Documentation

- **show ipsec redundancy on page 1371**

List of Sample Output **request ipsec switch on page 1361**

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

request ipsec switch

```
user@host> request ipsec switch security-associations sa-private
```

request services ipsec-vpn ipsec switch tunnel

Syntax

request services ipsec-vpn ipsec switch tunnel local-gateway *address* remote-gateway *address*
<routing-instance *instance-name*>

Release Information

Command introduced before Junos OS Release 7.4.
routing-instance option added in Release 8.1.

Description

(Adaptive services interface only) Manually switch between primary and backup IP Security (IPsec) tunnels.

Options

local-gateway *address*—Gateway address of the local system.

remote-gateway *address*—Gateway address of the remote system.

routing-instance *instance-name*—(Optional) VRF instance associated with local gateway address.

Required Privilege Level

view

Related Documentation

- **show services ipsec-vpn ipsec security-associations on page 1395**

List of Sample Output

request services ipsec-vpn ipsec switch tunnel on page 1362

Output Fields

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

request services ipsec-vpn ipsec switch tunnel

```
user@host> request services ipsec-vpn ipsec switch tunnel local-gateway 10.1.1.1 remote gateway
10.100.10.1
```

request system certificate add

Syntax request system certificate add (*filename* | terminal)

Release Information Command introduced before Junos OS Release 7.4.

Description (Encryption interface on M Series and T Series routers only) Add a certificate provided by the Juniper Networks certificate authority (CA).

Options *filename*—Filename (URL, local, or remote).

terminal—Use login terminal.

Required Privilege Level maintenance

List of Sample Output **request system certificate add on page 1363**

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

request system certificate add

```
user@host> request system certificate add terminal
```

show ike security-associations

Syntax

show ike security-associations
<brief | detail>
<*peer-address*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(Encryption interface on M Series and T Series routers only) Display information about Internet Key Exchange (IKE) security associations.

Options

none—Display standard information about all IKE security associations.

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

peer-address—(Optional) Display IKE security associations for the specified peer address.

Required Privilege Level

view

Related Documentation

- **clear ike security-associations on page 1338**

List of Sample Output

show ike security-associations on page 1367
show ike security-associations detail on page 1367

Output Fields

Table 258 on page 1364 lists the output fields for the **show ike security-associations** command. Output fields are listed in the approximate order in which they appear.

Table 258: show ike security-associations Output Fields

Field Name	Field Description	Level of Output
IKE peer	Remote end of the IKE negotiation.	**detail**
Role	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.	**detail**
Remote Address	Responder's address.	none specified
State	State of the IKE security association: • **Matured**—The IKE security association is established. • **Not matured**—The IKE security association is in the process of negotiation.	none specified
Initiator cookie	When the IKE negotiation is triggered, a random number is sent to the remote node.	All levels

Table 258: show ike security-associations Output Fields *(continued)*

Field Name	Field Description	Level of Output
Responder cookie	The remote node generates its own random number and sends it back to the initiator as a verification that the packets were received. 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).	All levels
Exchange type	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: • **Main**—The exchange is done with six messages. **Main** encrypts the payload, protecting the identity of the neighbor. • **Aggressive**—The exchange is done with three messages. **Aggressive** does not encrypt the payload, leaving the identity of the neighbor unprotected.	All Levels
Authentication method	Type of authentication determines which payloads are exchanged and when they are exchanged. The Junos OS supports only **pre-shared keys**.	**detail**
Local	Prefix and port number of the local end.	**detail**
Remote	Prefix and port number of the remote end.	**detail**
Lifetime	Number of seconds remaining until the IKE security association expires.	**detail**
Algorithms	Header for the IKE algorithms output. • **Authentication**—Type of authentication algorithm used:**md5** or **sha1**. • **Encryption**—Type of encryption algorithm used: **des-cbc**, **3des-cbc**, or **None**. • **Pseudo random function**—Function that generates highly unpredictable random numbers:**hmac-md5** or**hmac-sha1**.	**detail**
Traffic statistics	Number of bytes and packets received and transmitted on the IKE security association. • **Input bytes, Output bytes**—Number of bytes received and transmitted on the IKE security association. • **Input packets, Output packets**—Number of packets received and transmitted on the IKE security association.	**detail**

Table 258: show ike security-associations Output Fields *(continued)*

Field Name	Field Description	Level of Output
Flags	Notification to the key management process of the status of the IKE negotiation: • **caller notification sent**—Caller program notified about the completion of the IKE negotiation. • **waiting for done**—Negotiation is done. The library is waiting for the remote end retransmission timers to expire. • **waiting for remove**—Negotiation has failed. The library is waiting for the remote end retransmission timers to expire before removing this negotiation. • **waiting for policy manager**—Negotiation is waiting for a response from the policy manager.	**detail**
IPsec security associates	Number of IPsec security associations created and deleted with this IKE security association.	**detail**

Phase 2 negotiations in progress	Number of phase 2 IKE negotiations in progress and status information:
	• **Negotiation type**—Type of phase 2 negotiation. The Junos OS currently supports **quick mode**.
	• **Message ID**—Unique identifier for a phase 2 negotiation.
	• **Local identity**—Identity of the local phase 2 negotiation. The format is *id-type-name* (*proto-name*:*port-number*,[0..*id-data-len*] = *iddata-presentation*)
	• **Remote identity**—Identity of the remote phase 2 negotiation. The format is *id-type-name* (*proto-name*:*port-number*,[0..*id-data-len*] = *iddata-presentation*)
	• **Flags**—Notification to the key management process of the status of the IKE negotiation:
	  • **caller notification sent**—Caller program notified about the completion of the IKE negotiation.
	  • **waiting for done**—Negotiation is done. The library is waiting for the remote end retransmission timers to expire.
	  • **waiting for remove**—Negotiation has failed. The library is waiting for the remote end retransmission timers to expire before removing this negotiation.
	  • **waiting for policy manager**—Negotiation is waiting for a response from the policy manager.
		detail

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

Syntax

show ipsec certificates
<brief | detail>
<crl *crl-name* | *serial-number*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(Encryption interface on M Series and T Series routers only) Display information about the IPsec certificate database.

Options

none—Display standard information about all of the entries in the IPsec certificate database.

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

crl *crl-name* | *serial-number*—(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.

Required Privilege Level

view

Related Documentation

- **clear ipsec security-associations on page 1339**

List of Sample Output

show ipsec certificates detail on page 1369

Output Fields

Table 259 on page 1368 lists the output fields for the **show ipsec certificates** command. Output fields are listed in the approximate order in which they appear.

Table 259: show ipsec certificates Output Fields

Field Name	Field Description	Level of Output
Database	Display information about the IPsec certificate database. • **Total entries**—Number of database entries, including entries that are not trusted or that are in the process of being deleted. • **Active entries**—Number of database entries, excluding entries that are marked as deleted. • **Locked entries**—Number of statically configured database entries that cannot expire, such as CA certificates that are root or trusted.	All levels
Subject	Distinguished name for the certificate for **C**, **O**, **CN**, as described in RFC 3280, *Internet x.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile.*	All levels
ID	Identification number of the database entry. **ID** is generated by the internal certificate database.	All levels

Table 259: 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. • **Trusted**—Passed validity checks. • **Not trusted**—Failed validity checks. • **Root**—Entry is locked and may have been learned through IKE or a locally configured CA certificate. • **Non-root**—Entry is not locked. • **Crl-issuer**—Entity issues CRLs. • **Non-crl-issuer**—Entity does not issue CRLs.	**detail**
Validity period starts	Start time that the certificate is valid, in the format ***yyyy mon dd***, ***hh***:***mm***:***ss*** **GMT**.	**detail**
Validity period ends	End time that the certificate is valid, in the format ***yyyy mon dd***, ***hh***:***mm***:***ss*** **GMT**.	**detail**
Alternative name information	Auxiliary identity for the certificate: ***dns-name***, ***email-address***, ***ip-address***, or ***uri*** (uniform resource identifier).	**detail**
Issuer	Information about the entity that has signed and issued the CRL as described in RFC 2459, *Internet X.509 Public Key Infrastructure Certificate and CRL Profile*.	**detail**

show ipsec certificates detail

```
user@host> show ipsec certificates 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

Syntax show ipsec redundancy (interface <es-*fpc/pic/port*> | security association <*sa-name*>)

Release Information Command introduced before Junos OS Release 7.4.

Description (Encryption interface on M Series and T Series routers only) Display information about IPsec redundancy.

Options interface <es-*fpc/pic/port*>—Display information about all encryption interfaces, or optionally, about a particular encryption interface.

security association <*sa-name*>—Display information about all remote tunnels, or optionally, about a particular remote tunnel.

Required Privilege Level view

Related Documentation

- **request ipsec switch on page 1361**

List of Sample Output **show ipsec redundancy interface on page 1372**
show ipsec redundancy security-associations on page 1372

Output Fields Table 260 on page 1371 lists the output fields for the **show ipsec redundancy** command. Output fields are listed in the approximate order in which they appear.

Table 260: show ipsec redundancy Output Fields

Field Name	Field Description
Failure counter	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.
Primary interface '	Name of the interface configured to be the primary interface.
Backup interface	Name of the interface configured to be the backup interface.
State	State of the primary or backup interface can be **Active**, **Offline**, or **Standby**. Both ES PICs are initialized to **Offline**. For primary and remote peers, **State** can be **Active** or **Standby**. Both peers are in a state of **Standby** by default (there is not yet a connection between the two peers).
Security association	Name of the security association.
Local IP	Local IP address.
Primary remote IP	IP address of the configured primary remote peer.
Backup remote IP	IP address of the configured backup remote peer.

show ipsec redundancy interface

```
user@host> show ipsec redundancy interface
    Failure counter: 0
    Primary interface: es-1/3/0, State: Active
    Backup interface : es-1/1/0, State: Standby
```

show ipsec redundancy security-associations

```
user@host> 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
```

show ipsec security-associations

Syntax

show ipsec security-associations
<brief | detail>
<sa-name>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(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.

Options

none—Display standard information about all IPsec security associations.

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

sa-name—(Optional) Display the specified IPsec security association.

Required Privilege Level

view

List of Sample Output

show ipsec security-associations sa-name on page 1375
show ipsec security-associations sa-name detail on page 1375

Output Fields

Table 261 on page 1373 lists the output fields for the **show ipsec security-associations** command. Output fields are listed in the approximate order in which they appear.

Table 261: show ipsec security-associations Output Fields

Field Name	Field Description	Level of Output
Security association	Name of the security association.	All levels
Interface family	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: • **Up**—The security association is referenced in the interface family and the interface family is up. • **Down**—The security association is referenced in the interface family and the interface family is down. • **No reference**—The security association is not referenced in the interface family.	All levels
Local gateway	Gateway address of the local system.	All levels
Remote gateway	Gateway address of the remote system.	All levels
Local identity	Prefix and port number of the local end	All levels
Remote identity	Prefix and port number of the remote end.	All levels
Direction	Direction of the security association: **inbound** or **outbound**.	All levels
SPI	Value of the security parameter index.	All levels

Table 261: show ipsec security-associations Output Fields *(continued)*

Field Name	Field Description	Level of Output
AUX-SPI	Value of the auxiliary security parameter index. • When the value is **AH** or **ESP**, **AUX-SPI** is always **0**. • When the value is**AH+ESP**, **AUX-SPI** is always a positive integer.	All levels
State	Status of the security association: • **Installed**—The security association is installed in the security association database. (For transport mode security associations, the value of **State** must always be **Installed**.) • **Not installed**—The security association is not installed in the security association database.	**detail**
Mode	Mode of the security association: • **transport**—Protects single host-to-host protections. • **tunnel**—Protects connections between security gateways.	All levels
Type	Type of security association:. • **manual**—Security parameters require no negotiation. They are static, and are configured by the user. • **dynamic**—Security parameters are negotiated by the IKE protocol. Dynamic security associations are not supported in transport mode.	All levels
Protocol	Protocol supported: • **transport** mode—Supports Encapsulation Security Protocol (**ESP**) or Authentication Header (**AH**). • **tunnel** mode—Supports **ESP** or **AH+ESP**.	All levels
Authentication	Type of authentication used: **hmac-md5-96**, **hmac-sha1-96**, or **None**.	**detail**
Encryption	Type of encryption used: **des-cbc**, **3des-csc**, or **None**.	**detail**
Soft lifetime **Hard lifetime**	(**dynamic** 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 **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 allows the key management system to negotiate a new SA before the hard lifetime expires. • **Expires in** *seconds* **seconds**—Number of seconds left until the security association expires. • **Expires in** *kilobytes* **kilobytes**—Number of kilobytes left until the security association expires.	**detail**
Anti-replay service	State of the service that prevents packets from being replayed: **Enabled** or **Disabled**.	**detail**

Table 261: 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: **32** or **64**. The antireplay window size protects the receiver against replay attacks by rejecting old or duplicate packets. If the replay window size is **0**, the antireplay service is **disabled**.	**detail**

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

Syntax

show security pki ca-certificate
<brief | detail>
<ca-profile *ca-profile-name*>

Release Information

Command introduced in Junos OS Release 7.5.

Description

(Adaptive services interfaces only) Display information about certificate authority (CA) digital certificates installed in the router.

Options

none—(Same as brief) Display information about all CA digital certificates.

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

ca-profile *ca-profile-name*—(Optional) Display information about only the specified CA profile.

Required Privilege Level

view

List of Sample Output

show security pki ca-certificate on page 1377
show security pki ca-certificate detail on page 1378

Output Fields

Table 262 on page 1376 lists the output fields for the **show security pki ca-certificate** command. Output fields are listed in the approximate order in which they appear.

Table 262: show security pki ca-certificate Output Fields

Field Name	Field Description	Level of Output
Certificate identifier	Name of the digital certificate.	All levels
Certificate version	Revision number of the digital certificate.	**detail**
Serial number	Unique serial number of the digital certificate.	**detail**
Issued by	Authority that issued the digital certificate.	**none brief**
Issued to	Device that was issued the digital certificate.	**none brief**
Issuer	Authority that issued the digital certificate, including details of the authority organized using the distinguished name format. Possible subfields are: • **Common name**—Name of the authority. • **Organization**—Organization of origin. • **Organizational unit**—Department within an organization. • **State**—State of origin. • **Country**—Country of origin.	**detail**

Table 262: show security pki ca-certificate Output Fields *(continued)*

Field Name	Field Description	Level of Output
Subject	Details of the digital certificate holder organized using the distinguished name format. Possible subfields are: • **Common name**—Name of the requestor. • **Organization**—Organization of origin. • **Organizational unit**—Department within an organization. • **State**—State of origin. • **Country**—Country of origin.	**detail**
Validity	Time period when the digital certificate is valid. Values are: • **Not before**—Start time when the digital certificate becomes valid. • **Not after**—End time when the digital certificate becomes invalid.	All levels
Public key algorithm	Encryption algorithm used with the private key, such as **rsaEncryption(1024 bits)**.	All levels
Signature algorithm	Encryption algorithm that the CA used to sign the digital certificate, such as **sha1WithRSAEncryption**.	**detail**
Fingerprint	Secure Hash Algorithm (SHA1) and Message Digest 5 (MD5) hashes used to identify the digital certificate.	**detail**
Distribution CRL	Distinguished name information and the URL for the certificate revocation list (CRL) server.	**detail**
Use for key	Use of the public key, such as **Certificate signing**, **CRL signing**, **Digital signature**, or **Key encipherment**.	**detail**

show security pki ca-certificate

```
user@host> show security pki 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
    Not after: 2008 Oct 19th, 00:25:59 GMT
  Public key algorithm: rsaEncryption(1024 bits)
```

show security pki ca-certificate detail

```
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
Use for key: Digital signature
```

show security pki certificate-request

Syntax

show security pki certificate-request
<brief | detail>
<certificate-id *certificate-id-name*>

Release Information

Command introduced in Junos OS Release 7.5.

Description

(Adaptive services interfaces only) Display information about manually generated local digital certificate requests that are stored in the router.

Options

none—(same as brief) Display information about all local digital certificate requests.

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

certificate-id *certificate-id-name*—(Optional) Display information about only the specified local digital certificate request

Required Privilege Level

view

Related Documentation

- **clear security pki certificate-request on page 1342**

List of Sample Output

show security pki certificate-request on page 1381
show security pki certificate-request detail on page 1381

Output Fields

Table 263 on page 1380 lists the output fields for the **show security pki certificate-request** command. Output fields are listed in the approximate order in which they appear.

Table 263: show security pki certificate-request Output Fields

Field Name	Field Description	Level of Output
Certificate identifier	Name of the digital certificate.	All levels
Certificate version	Revision number of the digital certificate.	**detail**
Issued to	Device that was issued the digital certificate.	**none brief**
Subject	Details of the digital certificate holder organized using the distinguished name format. Possible subfields are: • **Common name**—Name of the authority. • **Organization**—Organization of origin. • **Organizational unit**—Department within an organization. • **State**—State of origin. • **Country**—Country of origin.	**detail**
Alternate subject	Domain name or IP address of the device related to the digital certificate.	**detail**

Table 263: 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: • **Not before**—Time when the digital certificate becomes valid. • **Not after**—End time when the digital certificate becomes invalid.	All levels
Public key algorithm	Encryption algorithm used with the private key, such as **rsaEncryption(1024 bits)**.	All levels
Public key verification status	Public key verification status: **Failed** or **Passed**. The **detail** 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.	**detail**
Use for key	Use of the public key, such as **Certificate signing**, **CRL signing**, **Digital signature**, or **Key encipherment**.	**detail**

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 crl

Syntax

show security pki crl
<brief | detail>
<ca-profile *ca-profile-name*>

Release Information

Command introduced in Junos OS Release 8.1.

Description

(Adaptive services interfaces only) Display information about the certificate revocation lists (CRLs) that are stored in the router.

Options

none—(same as brief) Display information about all CRLs.

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

ca-profile *ca-profile-name*—(Optional) Display CRL information about only the specified CA profile.

Required Privilege Level

view

Related Documentation

- **clear security pki crl on page 1343**
- **show security pki crl on page 1382**

List of Sample Output

show security pki crl on page 1383
show security pki crl detail on page 1383

Output Fields

Table 264 on page 1382 shows the output fields for the **show security pki crl** command. Output fields are listed in the approximate order in which they appear.

Table 264: show security pki crl 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	Details of the digital certificate holder organized using the distinguished name format. Possible subfields are: • **Common name**—Name of the authority. • **Organization**—Organization of origin. • **Organizational unit**—Department within an organization. • **State**—State of origin. • **Country**—Country of origin.	**detail**

Table 264: show security pki crl Output Fields *(continued)*

Field Name	Field Description	Level of Output
Effective date	Date and time the certificate revocation list becomes valid.	All levels
Next update	Date and time the router will download the latest version of the certificate revocation list.	All levels
Revocation List	List of digital certificates that have been revoked before their expiration date. Values are: • **Serial number**—Unique serial number of the digital certificate • **Revocation date**—Date and time that the digital certificate was revoked.	**detail**

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 detail

```
CA profile: entrust
 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

Syntax

show security pki local-certificate
<brief | detail>
<certificate-id *certificate-id-name*>

Release Information

Command introduced in Junos OS Release 7.5.

Description

(Adaptive services interfaces only) Display information about the local digital certificates and the corresponding public keys installed in the router.

Options

none—(same as brief) Display information about all local digital certificates and corresponding public keys.

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

certificate-id *certificate-id-name*—(Optional) Display information about only the specified the local digital certificate and corresponding public keys.

Required Privilege Level

view

Related Documentation

- **clear security pki local-certificate on page 1344**

List of Sample Output

show security pki local-certificate on page 1385
show security pki local-certificate detail on page 1387

Output Fields

Table 265 on page 1384 lists the output fields for the **show security pki local-certificate** command. Output fields are listed in the approximate order in which they appear.

Table 265: show security pki local-certificate Output Fields

Field Name	Field Description	Level of Output
Certificate identifier	Name of the digital certificate.	All levels
Certificate version	Revision number of the digital certificate.	**detail**
Serial number	Unique serial number of the digital certificate.	**detail**
Issued by	Authority that issued the digital certificate.	none **brief**
Issued to	Device that was issued the digital certificate.	none **brief**

Table 265: show security pki local-certificate Output Fields *(continued)*

Field Name	Field Description	Level of Output
Issuer	Authority that issued the digital certificate, including details of the authority organized using the distinguished name format. Possible subfields are: • **Common name**—Name of the authority. • **Organization**—Organization of origin. • **Organizational unit**—Department within an organization. • **State**—State of origin. • **Country**—Country of origin.	**detail**
Subject	Details of the digital certificate holder organized using the distinguished name format. Possible subfields are: • **Common name**—Name of the authority. • **Organization**—Organization of origin. • **Organizational unit**—Department within an organization. • **State**—State of origin. • **Country**—Country of origin.	**detail**
Alternate subject	Domain name or IP address of the device related to the digital certificate.	**detail**
Validity	Time period when the digital certificate is valid. Values are: • **Not before**—Start time when the digital certificate becomes valid. • **Not after**—End time when the digital certificate becomes invalid.	All levels
Public key algorithm	Encryption algorithm used with the private key, such as **rsaEncryption (1024 bits)**.	All levels
Public key verification status	Public key verification status: **Failed** or **Passed**. The **detail** output also provides the verification hash.	All levels
Signature algorithm	Encryption algorithm that the CA used to sign the digital certificate, such as **sha1WithRSAEncryption**.	**detail**
Fingerprint	Secure Hash Algorithm (SHA1) and Message Digest 5 (MD5) hashes used to identify the digital certificate.	**detail**
Distribution CRL	Distinguished name information and URL for the certificate revocation list (CRL) server.	**detail**
Use for key	Use of the public key, such as **Certificate signing**, **CRL signing**, **Digital signature**, or **Key encipherment**.	**detail**

show security pki local-certificate

```
user@host> show security pki 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

Syntax

show services ipsec-vpn certificates
<brief | detail>
<service-set *service-set*>

Release Information

Command introduced in Junos OS Release 7.5.

Description

(Adaptive services interfaces only) Display local and remote certificates installed in the IPsec configuration memory cache that are used for the IKE negotiation.

Options

none—(same as brief) Display information about local and remote certificates associated with all service sets.

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

service-set *service-set*—(Optional) Display information about local and remote certificates associated with only the specified service set.

Required Privilege Level

view

List of Sample Output

show security ipsec-vpn certificates on page 1389
show security ipsec-vpn certificates detail on page 1390

Output Fields

Table 266 on page 1388 lists the output fields for the **show services ipsec-vpn certificates** command. Output fields are listed in the approximate order in which they appear.

Table 266: show services ipsec-vpn certificates Output Fields

Field Name	Field Description	Level of Output
Service set	Name of the IPsec service set.	All levels
Total entries	Number of certificate cache entries.	All levels
Certificate cache entry	Identification number of the certificate cache entry.	All levels
Flags	Information about the digital certificate, including whether the certificate is a root certificate and trusted.	none **brief**
Issued to	Device that was issued the digital certificate.	none **brief**
Issued by	Authority that issued the digital certificate.	none **brief**
Certificate version	Revision number of the digital certificate.	**detail**
Serial number	Unique serial number of the digital certificate.	**detail**
Alternate subject	Domain name or IP address of the device related to the digital certificate.	All levels

Table 266: 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: • **Not before**—Start time when the digital certificate becomes valid. • **Not after**—End time when the digital certificate becomes invalid.	none **brief**
Public key algorithm	Specifies the encryption algorithm used with the private key, such as **rsaEncryption (1024 bits)**.	**detail**
Signature algorithm	Encryption algorithm that the CA used to sign the digital certificate, such as **sha1WithRSAEncryption**.	**detail**
Fingerprint	Secure Hash Algorithm (SHA1) and Message Digest 5 (MD5) hashes used to identify the digital certificate.	**detail**
Distribution CRL	Distinguished name information and the URL for the certificate revocation list (CRL) server.	**detail**
Use for key	Use of the public key, such as **Certificate signing**, **CRL signing**, **Digital signature**, or **Key encipherment**.	**detail**

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

Syntax

show services ipsec-vpn ike security-associations
<brief | detail>
<peer-address>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(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.

Options

none—(same as brief) Display standard information for all IPsec security associations.

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

peer-address—(Optional) Display information about a particular security association address.

Required Privilege Level

view

List of Sample Output

show services ipsec-vpn ike security-associations on page 1393
show services ipsec-vpn ike security-associations detail on page 1393

Output Fields

Table 267 on page 1391 lists the output fields for the **show services ipsec-vpn ike security-associations** command. Output fields are listed in the approximate order in which they appear.

Table 267: show services ipsec-vpn ike security-associations Output Fields

Field Name	Field Description	Level of Output
IKE peer	Remote end of the IKE negotiation.	**detail**
Role	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.	**detail**
Remote Address	Responder's address.	none specified
State	State of the IKE security association: • **Matured**—IKE security association is established. • **Not matured**—The IKE security association is in the process of negotiation.	none specified
Initiator cookie	When the IKE negotiation is triggered, a random number is sent to the remote node.	All levels

Table 267: show services ipsec-vpn ike security-associations Output Fields *(continued)*

Field Name	Field Description	Level of Output
Responder cookie	The remote node generates its own random number and sends it back to the initiator as a verification that the packets were received. 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).	All levels
Exchange type	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: • **Main**—The exchange is done with six messages. **Main** encrypts the payload, protecting the identity of the neighbor. • **Aggressive**—The exchange is done with three messages. **Aggressive** does not encrypt the payload, leaving the identity of the neighbor unprotected.	All levels
Authentication method	Type of authentication determines which payloads are exchanged and when they are exchanged. The Junos OS supports only **pre-shared keys**.	**detail**
Local	Prefix and port number of the local end.	**detail**
Remote	Prefix and port number of the remote end.	**detail**
Lifetime	Number of seconds remaining until the IKE security association expires.	**detail**
Algorithms	Header for the IKE algorithms output. • **Authentication**—(**detail** output only) Type of authentication algorithm used: **md5** or **sha1** • **Encryption**—(**detail** output only) Type of encryption algorithm used: **des-cbc**, **3des-cbc**, or **None**. • **Pseudo random function**—Function that generates highly unpredictable random numbers: **hmac-md5** or **hmac-sha1**.	**detail**
Traffic statistics	Number of bytes and packets received and transmitted on the IKE security association. • **Input bytes, Output bytes**—Number of bytes received and transmitted on the IKE security association. • **Input packets, Output packets**—Number of packets received and transmitted on the IKE security association.	**detail**

Table 267: show services ipsec-vpn ike security-associations Output Fields *(continued)*

Field Name	Field Description	Level of Output
Flags	Notification to the key management process of the status of the IKE negotiation: • **caller notification sent**—Caller program notified about the completion of the IKE negotiation. • **waiting for done**—Negotiation is done. The library is waiting for the remote end retransmission timers to expire. • **waiting for remove**—Negotiation has failed. The library is waiting for the remote end retransmission timers to expire before removing this negotiation. • **waiting for policy manager**—Negotiation is waiting for a response from the policy manager.	**detail**
IPsec security associates	Number of IPsec security associations created and deleted with this IKE security association.	**detail**

Phase 2 negotiations in progress	Number of phase 2 IKE negotiations in progress and status information:
	• Negotiation type—Type of phase 2 negotiation. The Junos OS currently supports **quick mode**.
	• Message ID—Unique identifier for a phase 2 negotiation.
	• Local identity—Identity of the local phase 2 negotiation. The format is ***id-type-name*** (***proto-name***:***port-number***,[0..***id-data-len***] = ***iddata-presentation***).
	• Remote identity—Identity of the remote phase 2 negotiation. The format is ***id-type-name*** (***proto-name***:***port-number***,[0..***id-data-len***] = ***iddata-presentation***)
	• Flags—Notification to the key management process of the status of the IKE negotiation:
	  • **caller notification sent**—Caller program notified about the completion of the IKE negotiation.
	  • **waiting for done**—Negotiation is done. The library is waiting for the remote end retransmission timers to expire.
	  • **waiting for remove**—Negotiation has failed. The library is waiting for the remote end retransmission timers to expire before removing this negotiation.
	  • **waiting for policy manager**—Negotiation is waiting for a response from the policy manager.
		detail

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

Syntax

show services ipsec-vpn ipsec security-associations
<brief | detail | extensive>
<service-set *service-set-name*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(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.

Options

none—Display standard information about IPsec security associations for all service sets.

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

service-set *service-set-name*—(Optional) Display information about a particular service set.

Required Privilege Level

view

List of Sample Output

show services ipsec-vpn ipsec security associations extensive on page 1397

Output Fields

Table 268 on page 1395 lists the output fields for the **show services ipsec-vpn ipsec security-associations** command. Output fields are listed in the approximate order in which they appear.

Table 268: show services ipsec-vpn ipsec security-associations Output Fields

Field Name	Field Description	Level of Output
Service set	Name of the service set for which the IPsec security associations are defined. If appropriate, includes the outside service interface VRF name.	All levels
Rule	Name of the rule set applied to the security association.	**detail extensive**
Term	Name of the IPsec term applied to the security association.	**detail extensive**
Tunnel index	Numeric identifier of the specific IPsec tunnel for the security association.	**detail extensive**
Local gateway	Gateway address of the local system.	All levels
Remote gateway	Gateway address of the remote system.	All levels
IPsec inside interface	Name of the logical interface hosting the IPsec tunnels.	All levels
Local identity	Prefix and port number of the local end	All levels
Remote identity	Prefix and port number of the remote end.	All levels

Table 268: show services ipsec-vpn ipsec security-associations Output Fields *(continued)*

Field Name	Field Description	Level of Output
Primary remote gateway	IP address of the configured primary remote peer.	All levels
Backup remote gateway	IP address of the configured backup remote peer.	All levels
State	State of the primary or backup interface: **Active**, **Offline**, or **Standby**. Both ES PICs are initialized to **Offline**. For primary and backup peers, **State** can be **Active** or **Standby**. If both peers are in a state of **Standby**, no connection exists yet between the two peers.	All levels
Failover counter	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
Direction	Direction of the security association: **inbound** or **outbound**.	All levels
SPI	Value of the security parameter index.	All levels
AUX-SPI	Value of the auxiliary security parameter index. • When the value of **Protocol** is **AH** or **ESP**, **AUX-SPI** is always **0**. • When the value of **Protocol** is **AH+ESP**, **AUX-SPI** is always a positive integer.	All levels
Mode	Mode of the security association: • **transport**—Protects single host-to-host protections. • **tunnel**—Protects connections between security gateways.	**detail extensive**
Type	Type of security association: • **manual**—Security parameters require no negotiation. They are static, and are configured by the user. • **dynamic**—Security parameters are negotiated by the IKE protocol. Dynamic security associations are not supported in transport mode.	**detail extensive**
State	Status of the security association: • **Installed**—The security association is installed in the security association database. (For transport mode security associations, the value of State must always be Installed) • **Not installed**—The security association is not installed in the security association database.	**detail extensive**
Protocol	Protocol supported: • **transport** mode supports Encapsulation Security Protocol (**ESP**) or Authentication Header (**AH**). • **tunnel** mode supports **ESP** or **AH+ESP**.	All levels
Authentication	Type of authentication used: **hmac-md5-96**, **hmac-sha1-96**, or **none**.	**detail extensive**

Table 268: show services ipsec-vpn ipsec security-associations Output Fields *(continued)*

Field Name	Field Description	Level of Output
Encryption	Type of encryption algorithm used: can be **aes-cbc (128 bits)**, **aes-cbc (192 bits)**, **aes-cbc (256 bits)**, **des-cbc**, **3des-cbc**, or **None**.	**detail**
Soft lifetime **Hard lifetime**	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. • **Expires in** *seconds* **seconds**—Number of seconds left until the security association expires. • **Expires in** *kilobytes* **kilobytes**—Number of kilobytes left until the security association expires.	**detail extensive**
Anti-replay service	State of the service that prevents packets from being replayed: **Enabled** or **Disabled**.	**detail extensive**
Replay window size	Configured size, in packets, of the antireplay service window: **32** or **64**. The antireplay window size protects the receiver against replay attacks by rejecting old or duplicate packets. If the replay window size is **0**, antireplay service is disabled.	**detail**

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

Syntax

show services ipsec-vpn ipsec statistics
<brief | detail>
<remote-gw *remote-peer-address*>
<service-set *service-set-name*>

Release Information

Command introduced before Junos OS Release 7.4.
New fields added in Junos OS Release 10.0.

Description

(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.

Options

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.

Required Privilege Level

view

List of Sample Output

show services ipsec-vpn ipsec statistics detail on page 1400
show services ipsec-vpn ipsec statistics remote-gw on page 1400

Output Fields

Table 269 on page 1398 lists the output fields for the **show services ipsec-vpn ipsec statistics** command. Output fields are listed in the approximate order in which they appear.

Table 269: 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 269: show services ipsec-vpn ipsec statistics Output Fields *(continued)*

Field Name	Field Description	Level of Output
ESP statistics	Encapsulation Security Payload (ESP) statistics: • **Encrypted bytes**—Total number of bytes encrypted by the local system across the IPsec tunnel. • **Decrypted bytes**—Total number of bytes decrypted by the local system across the IPsec tunnel. • **Encrypted packets**—Total number of packets encrypted by the local system across the IPsec tunnel. • **Decrypted packets**—Total number of packets decrypted by the local system across the IPsec tunnel	All levels
AH Statistics	Authentication Header statistics: • **Input bytes**—Total number of bytes received by the local system across the IPsec tunnel. • **Output bytes**—Total number of bytes transmitted by the local system across the IPsec tunnel. • **Input packets**—Total number of packets received by the local system across the IPsec tunnel. • **Output packets**—Total number of packets transmitted by the local system across the IPsec tunnel.	All levels
Errors	• **AH authentication failures**—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. • **ESP authentication failures**—Number of Encapsulation Security Payload (ESP) failures. An ESP failure occurs when there is an authentication mismatch in ESP packets. • **ESP Decryption failures**—Number of ESP decryption failures. • **Bad headers**—Number of invalid headers detected. • **Bad trailers**—Number of invalid trailers detected. • **Replay before window drops**—Number of replay errors. A replay error is generated when a duplicate packet is received within the replay window. • **Replayed pkts**—Number of packets replayed. • **IP integrity errors**—Number of IP integrity errors. • **Exceeds tunnel MTU**—Number of times the tunnel maximum transmission unit (MTU) value was exceeded. • **Rule lookup failures**—Number of rule lookup failures. • **No SA errors**—Number of errors resulting from a missing security association (SA). • **Flow errors**—Number of flow errors. • **Misc errors**—Number of miscellaneous errors.	All levels

show services ipsec-vpn ipsec statistics detail

```
user@host> show services ipsec-vpn ipsec statistics
PIC: sp-0/2/0, Service set: ss0

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 ipsec-vpn ipsec statistics remote-gw

```
user@host> show services ipsec-vpn ipsec statistics remote-gw 22.22.2.1
PIC: sp-3/1/0, Service set: service-set-2
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

Syntax

show system certificate
<certificate-id>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(Encryption interface on M Series and T Series routers only) Display installed certificates signed by the Juniper Networks certificate authority.

Options

none—Display all installed certificates signed by the Juniper Networks certificate authority.

certificate-id—(Optional) Display the details of a particular certificate.

Required Privilege Level

maintenance

List of Sample Output

show system certificate on page 1401

Output Fields

Table 270 on page 1401 lists the output fields for the **show system certificate** command. Output fields are listed in the approximate order in which they appear.

Table 270: show system certificate Output Fields

Field Name	Field Description
Certificate identifier	A unique identifier associated with a certificate. The certificate identifier is the common name of the subject.
Issuer **Subject**	Information about the certificate issuer and the distinguished name (**DN**) of the issuer, respectively: • **Organization**—Name of the owner's organization. • **Organizational unit**—Name of the owner's department. • **Country**—Two-character country code in which the owner's system is located. • **State**—State in the USA in which the owner is using the certificate. • **Locality**—City in which the owner's system is located. • **Common name**—Name of the owner of the certificate. • **E-mail address**—E-mail address of the owner of the certificate.
Validity	When a certificate is valid.
Signature algorithm	Encryption algorithm applied to the installed certificate.
Public key algorithm	Encryption algorithm applied to the public key.

show system certificate

```
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
```

CHAPTER 24

Layer 2 Tunneling Protocol Operational Mode Commands

Table 271 on page 1403 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 271: L2TP Services Operational Mode Commands

Task	Command
Clear L2TP destinations.	**clear services l2tp destination**
Clear L2TP multilink bundles.	**clear services l2tp multilink**
Clear L2TP sessions.	**clear services l2tp session**
Clear statistics for L2TP sessions.	**clear services l2tp session statistics**
Clear L2TP tunnels.	**clear services l2tp tunnel**
Clear statistics for L2TP tunnels.	**clear services l2tp tunnel statistics**
Display information about L2TP tunnel destinations.	**show services l2tp destination**
Display L2TP multilink bundles.	**show services l2tp multilink**
Display RADIUS server and statistics information.	**show services l2tp radius**
Display active L2TP sessions.	**show services l2tp session**
Display L2TP summary information.	**show services l2tp summary**
Display active L2TP tunnels.	**show services l2tp tunnel**
Display active L2TP users.	**show services l2tp user**

NOTE: L2TP services are supported on the adaptive services (sp-*fpc/pic/port)* interface on M7i and M10i routers.

NOTE: For information about how to configure L2TP services, see the *Junos OS Services Interfaces Configuration Guide*.

clear services l2tp destination

Syntax clear services l2tp destination all

Release Information Command introduced in Junos OS Release 10.4.

Description 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.

Required Privilege Level clear

Related Documentation

- **show services l2tp destination on page 1413**

List of Sample Output **clear services l2tp destination all on page 1405**

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

clear services l2tp destination all

```
user@host> clear services l2tp destination all

  Destination 2 closed
```

clear services l2tp multilink

Syntax clear services l2tp multilink (all <statistics> | bundle-id *number* <statistics> | statistics (all | bundle-id *number*))

Release Information Command introduced before Junos OS Release 7.4.

Description (M10i and M7i routers only) Close Layer 2 Tunneling Protocol (L2TP) multilink sessions or clear session statistics.

Options

all <statistics>—Close all L2TP multilink sessions or clear statistics for all L2TP multilink sessions.

bundle-id *number* <statistics>—L2TP multilink bundle ID. The value is an internally generated number from 1 to 65535. Close the specified L2TP multilink session, or using the **statistics** keyword with this option, clear statistics for the specified session.

statistics (all | bundle-id *number*)—Clear all session statistics or clear statistics for the specified multilink bundle ID.

Required Privilege Level view

Related Documentation

- **show services l2tp multilink on page 1415**

List of Sample Output **clear services l2tp multilink statistics all on page 1406**

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

clear services l2tp multilink statistics all

```
user@host> clear services l2tp multilink statistics all
  Multilink 1 statistics cleared
```


clear services l2tp session

Syntax

clear services l2tp session (all | interface sp-*fpc/pic/port* | local-gateway *gateway-address* | local-gateway-name *gateway-name* | 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.) Clear Layer 2 Tunneling Protocol (L2TP) sessions.

Options

all—Close all L2TP sessions.

interface sp-*fpc/pic/port*—Clear only the L2TP sessions using the specified adaptive services interface. This option is not available for L2TP LAC on MX Series routers.

local-gateway *gateway-address*—Clear only the L2TP sessions associated with the specified local gateway address.

local-gateway-name *gateway-name*—Clear only the L2TP sessions associated with the specified local gateway name.

local-session-id *session-id* —Clear only the L2TP sessions with this identifier for the local endpoint of the L2TP session.

local-tunnel-id *tunnel-id*—Clear only the L2TP sessions associated with the specified local tunnel identifier.

peer-gateway *gateway-address*—Clear only the L2TP sessions associated with the peer gateway with the specified address.

peer-gateway-name *gateway-name*—Clear only the L2TP sessions associated with the peer gateway with the specified name.

tunnel-group *group-name*—Clear only the L2TP sessions associated with the specified tunnel group. This option is not available for L2TP LAC on MX Series routers.

user *username* —Clear only the L2TP sessions for the specified username. This option is not available for L2TP LAC on MX Series routers.

Required Privilege Level

clear

Related Documentation

- **clear services l2tp session statistics on page 1409**
- **show services l2tp session on page 1422**

List of Sample Output

clear services l2tp session on page 1408

Output Fields

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

clear services l2tp session

```
user@host> clear services l2tp session 31694

  Session 31694 closed
```

clear services l2tp session statistics

Syntax

clear services l2tp session statistics (all | 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.) Clear statistics for Layer 2 Tunneling Protocol (L2TP) sessions.

Options

all—Clear statistics for all L2TP sessions.

interface sp-*fpc/pic/port*—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.

local-gateway *gateway-address*—Clear statistics for only the L2TP sessions associated with the local gateway with the specified address.

local-gateway-name *gateway-name*—Clear statistics for only the L2TP sessions associated with the local gateway with the specified name.

local-session-id *session-id* —Clear statistics for only the L2TP sessions with this identifier for the local endpoint of the L2TP session.

local-tunnel-id *tunnel-id*—Clear statistics for only the L2TP sessions associated with the specified local tunnel identifier.

peer-gateway *gateway-address*—Clear statistics for only the L2TP sessions associated with the peer gateway with the specified address.

peer-gateway-name *gateway-name*—Clear statistics for only the L2TP sessions associated with the peer gateway with the specified name.

tunnel-group *group-name*—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.

user *username* <statistics>—Clear statistics for only the L2TP sessions for the specified username. This option is not available for L2TP LAC on MX Series routers.

Required Privilege Level

view

Related Documentation

- **clear services l2tp session on page 1407**
- **show services l2tp session on page 1422**

List of Sample Output

clear services l2tp session statistics all on page 1410

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

clear services l2tp session statistics all

```
user@host> clear services l2tp session statistics all
  Session 26497 statistics cleared
```

clear services l2tp tunnel

Syntax

clear services l2tp tunnel (all | interface sp-*fpc/pic/port* | local-gateway *gateway-address* | local-gateway-name *gateway-name* | local-tunnel-id *tunnel-id* | peer-gateway *gateway-address* | peer-gateway-name *gateway-name* | tunnel-group *group-name*)

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.) Clear Layer 2 Tunneling Protocol (L2TP) tunnels.

Options

all—Clear all L2TP tunnels.

interface sp-*fpc/pic/port*—Clear only the L2TP tunnels using the specified adaptive services interface. This option is not available for L2TP LAC on MX Series routers.

local-gateway *gateway-address*—Clear only the L2TP tunnels associated with the local gateway with the specified address.

local-gateway-name *gateway-name*—Clear only the L2TP tunnels associated with the local gateway with the specified name.

local-tunnel-id *tunnel-id*—Clear only the L2TP tunnels that have the specified local tunnel identifier.

peer-gateway *gateway-address*—Clear only the L2TP tunnels associated with the peer gateway with the specified address.

peer-gateway-name *gateway-name*—Clear only the L2TP tunnels associated with the peer gateway with the specified name.

tunnel-group *group-name*—Clear only the L2TP tunnels in the specified tunnel group. This option is not available for L2TP LAC on MX Series routers.

Required Privilege Level

view

Related Documentation

- **clear services l2tp tunnel statistics on page 1412**
- **show services l2tp tunnel on page 1430**

List of Sample Output

clear services l2tp tunnel on page 1411

Output Fields

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

clear services l2tp tunnel

```
user@host> clear services l2tp tunnel 17185

  Tunnel 17185 closed
```

clear services l2tp tunnel statistics

Syntax

clear services l2tp tunnel statistics (all | interface sp-*fpc/pic/port* | local-gateway *gateway-address* | local-gateway-name *gateway-name* | local-tunnel-id *tunnel-id* | peer-gateway *gateway-address* | peer-gateway-name *gateway-name* | tunnel-group *group-name*)

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.) Clear statistics for Layer 2 Tunneling Protocol (L2TP) tunnels.

Options

all—Clear statistics for all L2TP tunnels.

interface sp-*fpc/pic/port*—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.

local-gateway *gateway-address*—Clear statistics for only the L2TP tunnels associated with the local gateway with the specified address.

local-gateway-name *gateway-name*—Clear statistics for only the L2TP tunnels associated with the local gateway with the specified name.

local-tunnel-id *tunnel-id*—Clear statistics for only the L2TP tunnels that have the specified local tunnel identifier.

peer-gateway *gateway-address*—Clear statistics for only the L2TP tunnels associated with the peer gateway with the specified address.

peer-gateway-name *gateway-name*—Clear statistics for only the L2TP tunnels associated with the peer gateway with the specified name.

tunnel-group *group-name*—Clear statistics for only the L2TP tunnels in the specified tunnel group. This option is not available for L2TP LAC on MX Series routers.

Required Privilege Level

clear

Related Documentation

- **clear services l2tp tunnel on page 1411**
- **show services l2tp tunnel on page 1430**

List of Sample Output

clear services l2tp tunnel statistics all on page 1412

Output Fields

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

clear services l2tp tunnel statistics all

```
user@host> clear services l2tp tunnel statistics all
  Tunnel  9933 statistics cleared
```

show services l2tp destination

Syntax

show services l2tp destination
<brief | detail | extensive>
<local-gateway *gateway-address*>
<peer-gateway *gateway-address*>

Release Information

Command introduced in Junos OS Release 10.4.

Description

Display information about L2TP tunnel destinations. This statement is available only for LAC on MX Series routers.

Options

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

Required Privilege Level

view

List of Sample Output

show services l2tp destination on page 1414
show services l2tp destination detail on page 1414
show services l2tp destination extensive on page 1414

Output Fields

Table 272 on page 1413 lists the output fields for the **show services l2tp destination** command. Output fields are listed in the approximate order in which they appear.

Table 272: show services l2tp destination Output Fields

Field Name	Field Description
Local Name	Name of this destination.
Transport	Medium used for tunneling. Only **ipUdp** is supported.
Router instance	Routing instance in which the tunnel is configured.
Local address	IP address of the local gateway (LAC).
peer address	IP address of the remote peer (LNS).
Connections	Number of tunnel and session connections for the destination.
Tunnels	Number of tunnel connections for the destination in the following categories: • total • active • failed
Sessions	Number of session connections for the destination in the following categories: • total • active • failed

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

Syntax

show services l2tp multilink
<brief | detail | extensive | statistics>
<bundle-id *number*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M10i and M7i routers only) Display L2TP output organized by multilink bundle.

Options

none—Same as brief.

brief | detail | extensive | statistics—(Optional) Display the specified level of output. Use the **statistics** option to display packets and bytes that have been encapsulated in the Multilink Protocol. Nonmultilink packets received on member sessions are not counted here.

bundle-id *number*—(Optional) Display L2TP multilink bundle information for only the specified bundle.

Required Privilege Level

view

Related Documentation

- **clear services l2tp multilink on page 1406**

List of Sample Output

show services l2tp multilink extensive on page 1417

Output Fields

Table 273 on page 1415 lists the output fields for the **show services l2tp multilink** command. Output fields are listed in the approximate order in which they appear.

Table 273: 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 273: show services l2tp multilink Output Fields *(continued)*

Field Name	Field Description
State	Status of the L2TP session: • **Established**—The session is operating. • **closed**—The session is being closed. • **destroyed**—The session is being destroyed. • **clean-up**—The session is being cleaned up. • **lns-ic-accept-new**—A new session is being accepted. • **lns-ic-idle**—The session has been created and is idle. • **lns-ic-reject-new**—The new session is being rejected. • **lns-ic-wait-connect**—The session is waiting for the peer's incoming call connected (ICCN) message.
Username	Name of the user logged in to the session.
Mode	Mode of the interface representing the multilink bundle: **dedicated** or **shared**.
Local IP	IP address of the local endpoint of the Point-to-Point Protocol (PPP) session.
Remote IP	IP address of the remote endpoint of the PPP session.
Local name	Name of the LNS instance in which the session was created.
Remote name	Name of the LAC from which the session was created.
Local MRU	Maximum receive unit (MRU) setting of the local device, in bytes.
Remote MRU	MRU setting of the remote device, in bytes.
Statistics since	Date and time when collection of the following statistics began: • **Control Tx**—Amount of control information transmitted, in packets and bytes. • **Control Rx**—Amount of control information received, in packets and bytes. • **Data Tx**—Amount of data transmitted, in packets and bytes. • **Data Rx**—Amount of data received, in packets and bytes. • **Errors Tx**—Number of errors transmitted, in packets. • **Errors Rx**—Number of errors received, in packets.

show services l2tp multilink extensive

```
user@host> show services l2tp 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

Syntax

show services l2tp radius
<accounting (servers | statistics)>
<authentication (servers | statistics)>
<servers>
<statistics>

Release Information

Command introduced in Junos OS Release 9.0.

Description

(M7i, M10i, and M120 routers only) Display RADIUS servers and statistics information for the RADIUS servers configured on the router.

Options

You must include one of the following keywords to provide a valid completion for the command:

accounting (servers | statistics)—(Optional) Display RADIUS servers or statistical accounting information only.

authentication (servers | statistics)—(Optional) Display RADIUS servers or statistical authentication information only.

servers—(Optional) Display RADIUS authentication and accounting server information only.

statistics—(Optional) Display RADIUS authentication and accounting statistics information only.

Required Privilege Level

view

List of Sample Output

show services l2tp radius servers on page 1419
show services l2tp radius statistics on page 1420

Output Fields

Table 274 on page 1418 lists the output fields for the **show services l2tp radius** command. Output fields are listed in the approximate order in which they appear.

Table 274: show services l2tp radius Output Fields

Field Name	Field Description
IP Address	IP address of the server.
State	(**servers** 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	(**servers** keyword only) Number of times the RADIUS client resends a packet if no ACK is received.
Timeout	(**servers** keyword only) Length of time the client waits for an ACK before retransmission.
Pending Requests	(**servers** keyword only) Number of client pending authentication or accounting requests.

Table 274: show services l2tp radius Output Fields *(continued)*

Field Name	Field Description
Maximum Sessions	(**servers** 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	(**servers** keyword only) Interval to wait before retrying a server after it fails to send a response to an authentication or accounting request.
Secret Type	(**servers** keyword only) Secret type configured on the RADIUS server.
Profile	(**servers** keyword only) Name of profile configured for the RADIUS server.
Access requests	(**statistics** keyword only) Number of access requests sent to the server.
Rollover requests	(**statistics** keyword only) Number of requests coming into the server as a result of the previous server timing out.
Retransmissions	(**statistics** keyword only) Number of retransmissions.
Access accepts	(**statistics** keyword only) Number of access accept messages received from the server.
Access rejects	(**statistics** keyword only) Number of access reject messages received from the server.
Access challenges	(**statistics** keyword only) Number of access challenges received from the server.
Malformed responses	(**statistics** 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	(**statistics** 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	(**statistics** keyword only) Number of requests waiting for a response.
Request timeouts	(**statistics** keyword only) Number of requests that timed out.
Unknown responses	(**statistics** keyword only) Number of unknown responses. The RADIUS response type in the header is invalid or unsupported.
Packets dropped	(**statistics** 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.

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

                           UDP  Retry         Pending  Maximum  Dead   Secret
    IP Address     State   Port Count Timeout Requests Sessions Time   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 1407**

List of Sample Output
show services l2tp session (LNS) on page 1425
show services l2tp session (LAC) on page 1425
show services l2tp session detail (LAC) on page 1425
show services l2tp session extensive (LAC) on page 1426
show services l2tp session extensive (LNS) on page 1426

Output Fields Table 275 on page 1423 lists the output fields for the **show services l2tp session** command. Output fields are listed in the approximate order in which they appear.

Table 275: show services l2tp session Output Fields

Field Name	Field Description	Level of Output
Interface	(LNS only) Name of an adaptive services interface.	All levels
Tunnel group	(LNS only) Name of a tunnel group.	All levels
Tunnel local ID	Identifier of the local endpoint of the tunnel, as assigned by the L2TP network server (LNS).	All levels
Session local ID	Identifier of the local endpoint of the L2TP session, as assigned by the LNS.	All levels
Session remote ID	Identifier of the remote endpoint of the L2TP session, as assigned by the L2TP access concentrator (LAC).	All levels
State	State of the L2TP session: • **Established**—The session is operating. This is the only state supported for the LAC. • **closed**—The session is being closed. • **destroyed**—The session is being destroyed. • **clean-up**—The session is being cleaned up. • **lns-ic-accept-new**—A new session is being accepted. • **lns-ic-idle**—The session has been created and is idle. • **lns-ic-reject-new**—The new session is being rejected. • **lns-ic-wait-connect**—The session is waiting for the peer's incoming call connected (ICCN) message.	All levels
Bundle ID	(LNS only) Bundle identifier. Indicates the session is part of a multilink bundle. Sessions that have a blank **Bundle** 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 **show services l2tp multilink extensive** command.	All levels

Table 275: show services l2tp session Output Fields *(continued)*

Field Name	Field Description	Level of Output
Mode	(LNS) Mode of the interface representing the session: **shared** or **exclusive**. (LAC) Mode of the interface representing the session: **shared** or **dedicated**. Only **dedicated** is currently supported for the LAC.	**extensive**
Local IP	IP address of local endpoint of the Point-to-Point Protocol (PPP) session.	**extensive**
Remote IP	IP address of remote endpoint of the PPP session.	**extensive**
Username	(LNS only) Name of the user logged in to the session.	All levels
Assigned IP address	(LNS only) IP address assigned to remote client.	**extensive**
Local name	For LNS, name of the LNS instance in which the session was created. For LAC, name of the LAC.	**extensive**
Remote name	For LNS, name of the LAC from which the session was created. For LAC, name of the LAC instance.	**extensive**
Local MRU	(LNS only) Maximum receive unit (MRU) setting of the local device, in bytes.	**extensive**
Remote MRU	(LNS only) MRU setting of the remote device, in bytes.	**extensive**
Tx speed	Transmit speed of the physical PPP link, in bps.	**extensive**
Rx speed	Receive speed of the physical PPP link, in bps.	**extensive**
Bearer type	Type of bearer enabled: • **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). • **1**—Digital access requested. • **2**—Analog access requested. • **4**—Asynchronous Transfer Mode (ATM) bearer support.	**extensive**
Framing type	Type of framing enabled: • **1**—Synchronous framing • **2**—Asynchronous framing	**extensive**
LCP renegotiation	(LNS only) Whether Link Control Protocol (LCP) renegotiation is configured: **On** or **Off**.	**extensive**
Authentication	Type of authentication algorithm used: Challenge Handshake Authentication Protocol (CHAP) or Password Authentication Protocol (PAP).	**extensive**
Interface ID	(LNS only) Identifier used to look up the logical interface for this session.	**extensive**
Interface unit	Logical interface for this session.	All levels

Table 275: 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 (**On** or **Off**).	**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: • **Control Tx**—Amount of control information transmitted, in packets and bytes. • **Control Rx**—Amount of control information received, in packets and bytes. • **Data Tx**—Amount of data transmitted, in packets and bytes. • **Data Rx**—Amount of data received, in packets and bytes. • **Errors Tx**—Number of errors transmitted, in packets. • **Errors Rx**—Number of errors received, in packets.	**extensive**

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              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

Syntax

show services l2tp summary
<interface sp-*fpc/pic/port*>

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 Layer 2 Tunneling Protocol (L2TP) summary information.

Options

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.

Required Privilege Level

view

List of Sample Output

show services l2tp summary (LAC) on page 1429
show services l2tp summary (LNS) on page 1429

Output Fields

Table 276 on page 1428 lists the output fields for the **show services l2tp summary** command. Output fields are listed in the approximate order in which they appear.

Table 276: 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 **enabled** when a secret is configured in the tunnel profile or on the RADIUS server in the Tunnel-Password attribute [69]. The state is **disabled** 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 276: show services l2tp summary Output Fields *(continued)*

Field Name	Field Description
Tunnels	Number of tunnels established on the router.
Sessions	Number of sessions established on the router.
Control	Amount of control information transmitted and received, in packets and bytes.
Data	Amount of data transmitted and received, in packets and bytes.
Errors	Number of errors.

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

Syntax

show services l2tp tunnel
<brief | detail | extensive | statistics>
<interface sp-*fpc/pic/port*>
<local-gateway *gateway-address*>
<local-gateway-name *gateway-name*>
<local-tunnel-id *tunnel-id*>
<peer-gateway *gateway-address*>
<peer-gateway-name *gateway-name*>
<tunnel-group *group-name*>

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 Layer 2 Tunneling Protocol (L2TP) tunnels.

Options

none—Display standard information about all active L2TP tunnels.

brief | detail | extensive | statistics—(Default) Display the specified level of output. Use the statistics option to display L2TP tunnel statistics.

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.

local-gateway *gateway-address*—(Optional) Display L2TP tunnel information for only the specified local gateway address.

local-gateway-name *gateway-name*—(Optional) Display L2TP tunnel information for only the specified local gateway name.

local-tunnel-id *tunnel-id*—(Optional) Display L2TP tunnel information for only the specified local tunnel identifier.

peer-gateway *gateway-address*—(Optional) Display L2TP tunnel information for only the specified peer gateway address.

peer-gateway-name *gateway-name*—(Optional) Display L2TP tunnel information for only the specified peer gateway name.

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.

Required Privilege Level

view

List of Sample Output

show services l2tp tunnel (LAC) on page 1432
show services l2tp tunnel detail (LAC) on page 1432
show services l2tp tunnel extensive (LAC) on page 1432
show services l2tp tunnel extensive (LNS) on page 1432

Output Fields Table 277 on page 1431 lists the output fields for the **show services l2tp tunnel** command. Output fields are listed in the approximate order in which they appear.

Table 277: show services l2tp tunnel Output Fields

Field Name	Field Description
Interface	(LNS only) Name of an adaptive services interface.
Tunnel group	(LNS only) Name of a tunnel group.
Local ID	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.
Remote ID	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.
Remote IP	IP address of the peer endpoint of the tunnel.
Sessions	Number of L2TP sessions established through the tunnel.
State	State of the L2TP tunnel: • **cc_responder_accept_new**—The tunnel has received and accepted the start control connection request (SCCRQ). • **cc_responder_reject_new**—The tunnel has received and rejected the SCCRQ. • **cc_responder_idle**—The tunnel has just been created. • **cc_responder_wait_ctl_conn**—The tunnel has sent the start control connection response (SCCRP) and is waiting for the start control connection connected (SCCCN) message. • **clean-up**—The tunnel is being cleaned up. • **closed**—The tunnel is being closed. • **destroyed**—The tunnel is being destroyed. • **Established**—The tunnel is operating. This is the only state supported for the LAC. • **Terminate**—The tunnel is terminating. • **Unknown**—The tunnel is not connected to the router.
Local IP	IP address of the local endpoint of the tunnel.
Local name	Name used for local tunnel endpoint during tunnel negotiation.
Remote name	Name used for remote tunnel endpoint during tunnel negotiation.
Max sessions	Maximum number of sessions that can be established on this tunnel.
Window size	Number of control messages that can be sent without receipt of an acknowledgment.
Hello interval	Interval between the transmission of hello messages, in seconds.

Table 277: show services l2tp tunnel Output Fields *(continued)*

Field Name	Field Description
Create time	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 **Unknown** and the **Create time** value resets.
Up time	Amount of time elapsed since the tunnel became active, in hours, minutes, and seconds.
Idle time	Amount of time elapsed since the tunnel became idle, in hours, minutes, and seconds.
Statistics since	Date and time when collection of the following statistics began: • **Control Tx**—Amount of control information transmitted, in packets and bytes. • **Control Rx**—Amount of control information received, in packets and bytes. • **Data Tx**—Amount of data transmitted, in packets and bytes. • **Data Rx**—Amount of data received, in packets and bytes. • **Errors Tx**—Number of errors transmitted, in packets. • **Errors Rx**—Number of errors received, in packets.

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

Syntax

show services l2tp user
<brief | detail | extensive | statistics>
<user *username*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

(M10i and M7i routers only) Display a list of active Layer 2 Tunneling Protocol (L2TP) users.

Options

none—Display all active L2TP users.

brief | detail | extensive | statistics—(Optional) Display the specified level of output. Use the **statistics** option to display L2TP user statistics.

user *username*—(Optional) Display L2TP user information for only the specified username.

Required Privilege Level

view

List of Sample Output

show services l2tp user extensive on page 1436

Output Fields

Table 278 on page 1434 lists the output fields for the **show services l2tp user** command. Output fields are listed in the approximate order in which they appear.

Table 278: show services l2tp user Output Fields

Field Name	Field Description
Interface	Name of an adaptive services interface.
Tunnel group	Name of a tunnel group.
Tunnel local ID	Local identifier of the tunnel, as assigned by the L2TP network server (LNS).
Session local ID	Local identifier of the session, as assigned by the L2TP network server (LNS).
Session remote ID	Remote identifier of the session, as assigned by the L2TP access concentrator (LAC).
State	State of the L2TP session: • **Established**—The session is operating. • **closed**—The session is being closed. • **destroyed**—The session is being destroyed. • **clean-up**—The session is being cleaned up. • **lns-ic-accept-new**—A new session is being accepted. • **lns-ic-idle**—The session has been created and is idle. • **lns-ic-reject-new**—The new session is being rejected. • **lns-ic-wait-connect**—The session is waiting for the peer's incoming call connected (ICCN) message.

Table 278: show services l2tp user Output Fields *(continued)*

Field Name	Field Description
Mode	Mode of the interface representing the session: **shared** or **exclusive**.
Local IP	IP address of the local endpoint of the tunnel.
Remote IP	IP address of the peer endpoint of the tunnel.
Username	Name of the user logged in to the session.
Assigned IP address	IP address assigned to remote client.
Local name	Name of the local device.
Remote name	Name of the remote device.
Local MRU	Maximum receive unit (MRU) setting of the local device, in bytes.
Remote MRU	MRU setting of the remote device, in bytes.
Tx speed	Transmit speed of the tunnel session, in bps.
Rx speed	Receive speed of the tunnel session, in bps.
Bearer type	Type of bearer enabled: • **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) • **1**—Digital access requested • **2**—Analog access requested • **4**—Asynchronous Transfer Mode (ATM) bearer support
Framing type	Type of framing enabled: • **1**—Synchronous framing • **2**—Asynchronous framing
LCP renegotiation	Whether Link Control Protocol (LCP) renegotiation is configured: **On** or **Off**.
Authentication	Type of authentication algorithm used: Challenge Handshake Authentication Protocol (CHAP) or Password Authentication Protocol (PAP).
Interface ID	Name of the logical unit.
Interface unit	Logical unit number.
Call serial number	Unique serial number assigned to the call.
Create time	Date and time when the call was created.

Table 278: show services l2tp user Output Fields *(continued)*

Field Name	Field Description
Up time	Amount of time elapsed since the call became active, in hours, minutes, and seconds.
Idle time	Amount of time elapsed since the call became idle, in hours, minutes, and seconds.
Statistics sine	Date and time when collection of the following statistics began: • **Control Tx**—Amount of control information transmitted, in packets and bytes. • **Control Rx**—Amount of control information received, in packets and bytes. • **Data Tx**—Amount of data transmitted, in packets and bytes. • **Data Rx**—Amount of data received, in packets and bytes. • **Errors Tx**—Number of errors transmitted, in packets. • **Errors Rx**—Number of errors received, in packets.

show services l2tp user extensive

```
user@host> show services l2tp user 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
```

CHAPTER 25

Link Services Operational Mode Commands

Table 279 on page 1439 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot Link Services IQ (LSQ) PICs.

Table 279: Link Services Operational Mode Commands

Task	Command
Display information about Link Services IQ (LSQ) PIC CPU usage.	**show services link-services cpu-usage**

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

Syntax

show services link-services cpu-usage
<brief | detail>
<interface *interface-name*>

Release Information

Command introduced in Junos OS Release 8.4.

Description

Display information about Link Services IQ (LSQ) CPU usage (M Series and T Series routers only).

Options

none—Display standard information about CPU usage for all LSQ interfaces.

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

interface *interface-name*—(Optional) Display information about the specified LSQ interface.

Required Privilege Level

view

List of Sample Output

show services link-services cpu-usage brief (AS PIC) on page 1442
show services link-services cpu-usage brief (MultiServices PIC) on page 1442
show services link-services cpu-usage detail (AS PIC) on page 1442
show services link-services cpu-usage detail (MultiServices PIC) on page 1442

Output Fields

Table 280 on page 1440 lists the output fields for the **show services link-services cpu-usage** command. Output fields are listed in the approximate order in which they appear.

Table 280: show services link-services cpu-usage Output Fields

Field Name	Field Description	Level of Output
Role	CPU functional category.	**brief**
1 Second Average	Percentage of usage during 1-second duration.	All levels
5 Second Average	Percentage of usage during 5-second duration.	All levels
QoS	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
Sequencer	Assigns sequence numbers to outgoing MLPPP fragments and interleaves link fragmentation and interleaving (LFI) traffic.	All levels
Load Balancer	Distributes load across different fragmenter CPUs.	All levels
Fragmenter	Main LSQ CPU; fragments IP packets into MLPPP fragments and also reassembles MLPPP fragments into IP packets.	All levels
Total	Sum of all CPU functions.	**brief**

Table 280: show services link-services cpu-usage Output Fields *(continued)*

Field Name	Field Description	Level of Output
Idle	Counts idle cycles when the CPU does not have any work.	**detail**
Timer	Takes care of periodic events driven by a timer, such as timeouts.	**detail**
System	System housekeeping thread.	**detail**
Input (QoS)	Acquires and queues incoming IP frames from hardware interfaces.	**detail**
Output (QoS)	Sends scheduled frames to the next processing CPU.	**detail**
Output Frags (QoS)	Sends outstanding frames to the fragmenter CPU.	**detail**
Bypass (QoS)	Sends outstanding frames for LFI.	**detail**
Free frame (QoS)	Frees dropped frames.	**detail**
CPU*number*	Identifier number of specific CPU.	**detail**
Drop (Fragmenter)	Drops frames that have been marked by the QoS CPU.	**detail**
Frag (Fragmenter)	Fragments IP frames into MLPPP fragments.	**detail**
Reass (Fragmenter)	Reassembles MLPPP fragments into IP frames.	**detail**
Freeback (Fragmenter)	Handles freeback of credits from other CPUs (MultiServices PICs only).	**detail**
Input LFI (Sequencer)	Receives LFI traffic from QoS CPU and transmits it with strict priority over MLPPP.	**detail**
Input Frag (Sequencer)	Receives MLPPP fragments from fragmenter CPUs, assigns sequence numbers, and appends MLPPP headers.	**detail**
Output Frag (Sequencer)	Load-balances and transmits fragments across links.	**detail**
Retry (Sequencer)	Retries transmission if hardware was busy in the previous attempt.	**detail**
Input Alloc (Load Balancer)	Acquires frames from hardware interfaces and validates them.	**detail**
Input (Load Balancer)	Performs error and sanity checks and check frames for PortMapping.	**detail**
Output (Load Balancer)	Sends frame to next processing CPU.	**detail**

Table 280: show services link-services cpu-usage Output Fields *(continued)*

Field Name	Field Description	Level of Output
Freeback (Load Balancer)	Handles freeback of credits from other CPUs.	**detail**

show services link-services cpu-usage brief (AS PIC)

```
user@host> show services link-services cpu-usage interface lsq-0/0/0 brief
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 link-services cpu-usage brief (MultiServices PIC)

```
user@host> show services link-services cpu-usage interface lsq-0/0/0 brief
  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 link-services cpu-usage detail (AS PIC)

```
user@host> show services link-services cpu-usage interface lsq-0/0/0 detail

  QoS               Idle   Timer  System  Input Output Output Bypass  Free
                                                     Frags          frame

  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
                                                                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
                                     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 link-services

```
user@host> show services link-services cpu-usage interface lsq-0/0/0 detail
  QoS               Idle   Timer  System  Input Output Output Bypass  Free
                                                      Frags         frame
```

cpu-usage detail (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%    0.0%
5 sec ave       99.9%    0.1%    0.0%    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%    0.0%
5 sec ave       99.9%    0.1%    0.0%    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%    0.0%
5 sec ave      100.0%     0.0%   0.0%    0.0%    0.0%    0.0%
```

CHAPTER 26

Mobile IP Operational Mode Commands

Table 281 on page 1445 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot Mobile IP services.

Table 281: Mobile IP Operational Mode Commands

Task	Command
Clear information about Mobile IP bindings.	**clear mobile-ip binding**
Display information about Mobile IP home agent bindings	**show mobile-ip home-agent bindings**
Display general information about Mobile IP home agent.	**show mobile-ip home-agent overview**
Display information about traffic specific to Mobile IP home agents.	**show mobile-ip home-agent traffic**
Display information about Mobile IP home agent virtual networks.	**show mobile-ip home-agent virtual-network**
Display information about the WiMAX Forum Network Architecture release.	**show mobile-ip wimax release**

NOTE: For information about how to configure Mobile IP services, see the *Junos OS Subscriber Access Configuration Guide*.

clear mobile-ip binding

Syntax **clear mobile-ip binding** (all | ip-address *ip-address* | nai *nai-string*)
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

Release Information Command introduced in Junos OS Release 9.3.

Description Clear the Mobile IP binding.

Options all—Clear all Mobile IP bindings.

ip-address *ip-address*—Clear the Mobile IP bindings for the specified IP home address (HoA).

nai *nai-string*—Clear the Mobile IP bindings for the specified network access identifier.

logical-system *logical-system-name*—(Optional) Clear the Mobile IP bindings for the specified logical system.

routing-instance *routing-instance-name*—(Optional) Clear the Mobile IP bindings for the specified routing instance.

Required Privilege Level clear

List of Sample Output **clear mobile-ip binding on page 1446**

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

clear mobile-ip binding

```
user@host> clear mobile-ip binding all
```


show mobile-ip home-agent bindings

Syntax

show mobile-ip home-agent bindings
<ip-address *ip-address* | nai *nai-string* | summary>
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

Release Information

Command introduced in Junos OS Release 9.3.

Description

Display information about Mobile IP home agent bindings.

Options

ip-address *ip-address*—(Optional) Display information for the specified Mobile IP home address.

logical-system *logical-system-name*—(Optional) Display information for the specified logical system.

nai *nai-string*—(Optional) Display information for the specified Mobile IP network access identifier.

routing-instance *routing-instance-name*—(Optional) Display information for the specified routing instance.

summary—(Optional) Display only summary (total bindings) information.

Required Privilege Level

view

List of Sample Output

show mobile-ip home-agent bindings on page 1448
show mobile-ip home-agent bindings ip-address on page 1448
show mobile-ip home-agent bindings nai on page 1448
show mobile-ip home-agent bindings summary on page 1449

Output Fields

Table 282 on page 1447 lists the output fields for the **show mobile-ip home-agent bindings** command. Output fields are listed in the approximate order in which they appear.

Table 282: 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 282: show mobile-ip home-agent bindings Output Fields *(continued)*

Field Name	Field Description
Tunnel Type	Type of tunnel requested by the mobile node.
Tunnel ID	Tunnel ID the mobile node is using.
Tunnel Source	Tunnel source address the mobile node is using.
Tunnel Destination	Tunnel destination address the mobile node is using.
Identification	Identification value received from the mobile node.
Revocation Support	Whether registration revocation is supported for this binding.
Notify MN	Whether mobile node notification has been negotiated.
Total Bindings	Total number of Mobile IP home agent bindings.

show mobile-ip home-agent bindings

```
user@host> show mobile-ip 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 home-agent bindings ip-address

```
user@host> show mobile-ip home-agent bindings ip-address 10.1.1.3
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 home-agent bindings nai

```
user@host> show mobile-ip home-agent bindings nai abcde@def.com
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

Syntax

show mobile-ip home-agent overview
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

Release Information

Command introduced in Junos OS Release 9.3.

Description

Display overview information for Mobile IP home agent.

Options

logical-system *logical-system-name*—(Optional) Display information for the specified logical system.

routing-instance *routing-instance-name*—(Optional) Display information for the specified routing instance.

Required Privilege Level

view

List of Sample Output

show mobile-ip home-agent overview on page 1450

Output Fields

Table 283 on page 1450 lists the output fields for the **show mobile-ip home-agent overview** command. Output fields are listed in the approximate order in which they appear.

Table 283: 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.

show mobile-ip home-agent overview

```
user@host> show mobile-ip 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

Syntax

show mobile-ip home-agent traffic
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

Release Information

Command introduced in Junos OS Release 9.3.

Description

Display information about Mobile IP home agent protocol statistics.

Options

logical-system *logical-system-name*—(Optional) Display information for the specified logical system.

routing-instance *routing-instance-name*—(Optional) Display information for the specified routing instance.

Required Privilege Level

view

List of Sample Output

show mobile-ip home-agent traffic on page 1452

Output Fields

Table 284 on page 1451 lists the output fields for the **show mobile-ip home-agent traffic** command. Output fields are listed in the approximate order in which they appear.

Table 284: 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 284: show mobile-ip home-agent traffic Output Fields *(continued)*

Field Name	Field Description
Registration Errors Too many Bindings	Total number of registration requests denied by the home agent for having too many bindings.
Registration Errors Unknown HA	Total number of registration requests denied by the home agent for having an unknown home agent.
Registration Errors ID mismatch	Total number of registration requests denied by the home agent for having a mismatched ID.
Registration Errors Authentication failed MN	Total number of registration requests denied by the home agent because the mobile node failed authentication.
Registration Errors Authentication failed FA	Total number of registration requests denied by the home agent because the foreign agent failed authentication.

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

Syntax

show mobile-ip home-agent virtual-network
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

Release Information

Command introduced in Junos OS Release 9.3.

Description

Display information about Mobile IP home agent virtual networks.

Options

logical-system *logical-system-name*—(Optional) Display information for the specified logical system.

routing-instance *routing-instance-name*—(Optional) Display information for the specified routing instance.

Required Privilege Level

view

List of Sample Output

show mobile-ip home-agent virtual-network on page 1454

Output Fields

Table 285 on page 1453 lists the output fields for the **show mobile-ip home-agent virtual-network** command. Output fields are listed in the approximate order in which they appear.

Table 285: 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.

show mobile-ip home-agent virtual-network

```
user@host> show mobile-ip home-agent virtual-network
Home Agent Address    : 55.55.55.55
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

Syntax

show mobile-ip wimax release
<logical-system *logical-system-name*>
<routing-instance *routing-instance-name*>

Release Information

Command introduced in Junos OS Release 9.5.

Description

Display the WiMAX Forum Network Architecture release that is supported by the current Mobile IP implementation.

Options

logical-system *logical-system-name*—(Optional) Display information for the specified logical system.

routing-instance *routing-instance-name*—(Optional) Display information for the specified routing instance.

Required Privilege Level

view

List of Sample Output

show mobile-ip wimax release on page 1455

Output Fields

Table 286 on page 1455 lists the output fields for the **show mobile-ip wimax release** command. Output fields are listed in the approximate order in which they appear.

Table 286: show mobile-ip wimax release Output Fields

Field Name	Field Description
Release	WiMAX Forum Network Architecture release number.
Version	WiMAX Forum Network Architecture version number.

show mobile-ip wimax release

```
user@host> show mobile-ip wimax release
Release 1, Version 1.2
```

CHAPTER 27

Network Address Translation Operational Mode Commands

Table 287 on page 1457 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot Network Address Translation (NAT) services.

Table 287: NAT Operational Mode Commands

Task	Command
Display information about NAT address and port mappings.	**show services nat mapping**
Display information about NAT pools.	**show services nat pool**

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 (rsp*number*) 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

Syntax

show services nat mapping
<brief | detail>
<pool-name>

Release Information

Command introduced in Junos OS Release 10.1.

Description

Display information about Network Address Translation (NAT) address and port mappings.

Options

none—Display standard information about all NAT pools.

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

pool-name—(Optional) Display information about the specified NAT pool.

Required Privilege Level

view

List of Sample Output

show services nat mapping brief on page 1458
show services nat mapping detail on page 1459
show services nat mapping pool-name on page 1459

Output Fields

Table 288 on page 1458 lists the output fields for the **show services nat mapping** command. Output fields are listed in the approximate order in which they appear.

Table 288: show services nat mapping Output Fields

Field Name	Field Description	Level of Output
Interface	Name of a service interface.	All levels
Service set	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
NAT pool	Name of the NAT pool.	All levels
Address Mapping	Mapping performed by NAT to conceal the network address.	All levels
No. of Port Mappings	Number of port mappings.	All levels
Port mapping	Port mapping performed by NAT.	**detail**
Flow Count	Number of flows.	**detail**

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 pool

Syntax

show services nat pool
<brief | detail>
<pool-name>
pgcp <ports-per-session | remotely-controlled>

Release Information

Command introduced before Junos OS Release 7.4.
pgcp option added in Junos OS Release 8.5.

Description

Display information about Network Address Translation (NAT) pools.

Options

none—Display standard information about all NAT pools.

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

pool-name—(Optional) Display information about the specified NAT pool.

pgcp—(Optional) Display information about a NAT pool that is exclusive to the BGF.

ports-per-session—(Optional) Display the number of ports allocated per session from the NAT pool.

remotely-controlled—(Optional) Display if the NAT pool is explicitly specified by the gateway controller.

Required Privilege Level

view

List of Sample Output

show services nat pool brief on page 1461
show services nat pool detail on page 1461

Output Fields

Table 289 on page 1460 lists the output fields for the **show services nat pool** command. Output fields are listed in the approximate order in which they appear.

Table 289: show services nat pool Output Fields

Field Name	Field Description	Level of Output
Interface	Name of an adaptive services interface.	All levels
Service set	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
NAT pool	Name of the Network Address Translation pool.	All levels
Type or **Translation type**	Address translation type: **dynamic** or **static**.	All levels
Address or **Address range**	IPv4 address range of the pool.	All levels

Table 289: show services nat pool Output Fields *(continued)*

Field Name	Field Description	Level of Output
Port or **Port range**	Port range of the pool. Applicable only for dynamic NAT pools. Not displayed for static NAT pools.	All levels
Ports used' or **Ports in use**	Number of ports allocated in this pool with this name. Applicable only for dynamic NAT pools. Not displayed for static NAT pools.	All levels
Out of port errors	Number of port allocation errors. Applicable only for dynamic NAT pools. Not displayed for static NAT pools.	**detail**
Max ports used	Maximum number of ports used. Applicable only for dynamic NAT pools. Not displayed for static NAT pools.	**detail**
Addresses in use	Number of addresses in use for dynamic source address NAT pools.	**detail**

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
```

CHAPTER 28

PGCP Operational Mode Commands for the BGF Feature

Table 290 on page 1463 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 290: PGCP Services Operational Mode Commands

Task	Command
Clear gates on a virtual BGF.	**clear services pgcp gates**
Clear statistical information.	**clear services pgcp statistics**
Display information about the configuration for a virtual BGF.	**show services pgcp active-configuration**
Display in-depth information about a particular gate on a virtual BGF.	**show services pgcp gate**
Display summary information about all gates on a virtual BGF.	**show services pgcp gates**
Display information about H.248 root terminations.	**show services pgcp root-termination**
Display information about BGF statistics.	**show services pgcp statistics**
Display information about conversations.	**show services pgcp conversations**
Display information about flows.	**show services pgcp flows**
Display summary information about terminations.	**show services pgcp terminations**

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

Syntax **clear services pgcp gates gateway *gateway-name***

Release Information Command introduced in Junos OS Release 8.5.

Description 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 **set services-state out-of-service-graceful** statement at the [**edit services pgcp gateway <*gateway-name*>**] hierarchy.

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).

Options gates—Clear gate information.

gateway *gateway-name*—Clear statistics associated with this virtual BGF.

Required Privilege Level view

List of Sample Output **clear services pgcp gates on page 1465**

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

clear services pgcp gates

```
user@host> clear services pgcp gates
```

clear services pgcp statistics

Syntax **clear services pgcp statistics gateway** ***gateway-name***

Release Information Command introduced in Junos OS Release 9.3.
gateway option added in Junos OS Release 9.5.

Description Clear statistics for a virtual border gateway function (BGF).

Options *gateway-name*—Name of the virtual BGF for which you want to clear statistics.

Required Privilege Level view

List of Sample Output **clear services pgcp statistics on page 1466**

Output Fields When you enter this command, you receive either command prompt (indicating success) or an error message.

clear services pgcp statistics

```
user@host> clear services pgcp statistics gateway gateway-name
```


show services pgcp active-configuration

Syntax

show services pgcp active-configuration gateway ***gateway-name*** <backup> | <master>

Release Information

Command introduced in Junos OS Release 8.4.
gateway option introduced in Junos OS Release 9.5.
backup option introduced in Junos OS Release 9.6.
master option introduced in Junos OS Release 9.6.

Description

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.

Options

gateway ***gateway-name***—Display information about the active configuration associated with this virtual border gateway function (BGF).

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 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 **master** or **backup** options, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

show services pgcp active-configuration (controller: border signaling gateway) on page 1471
show services pgcp active-configuration (controller: external) on page 1473

Output Fields

Table 291 on page 1467 lists the output fields for the **show services pgcp active-configuration** command. Output fields are listed in the approximate order in which they appear.

Table 291: show services pgcp active-configuration Output Fields

Field Name	Field Description
BGF virtual interface configuration	Information about the virtual interface configuration. • **Virtual interface name**—Nme of the virtual interface. • **Routing Instance name**—Name of the routing instance associated with the virtual interface. • **Status**—Service status of the virtual interface: **In-Service**, **In-Service (Graceful Shutdown)**, **Out-of-Service**, **Out-of-Service (Physical Interface)**. • **Interface name**—Name of the service interface for the virtual interface.

Table 291: show services pgcp active-configuration Output Fields *(continued)*

Field Name	Field Description

Virtual BGF configuration	Information about the active virtual BGF configuration.
	• **Name**—Name of the virtual BGF.
	• **IP address**—IP address of the virtual BGF.
	• **Routing Instance**—Name of the routing instance associated with the virtual BGF.
	• **Port**—Port of the virtual BGF.
	• **Platform**–Service interface for the BGF.
	• **Status**—Service state of the virtual BGF:
	  ◦ **In-Service (Disconnected)**—The virtual BGF is configured to be in service; however, it is disconnected from the gateway controller.
	  ◦ **In-Service (Registering)**—The virtual BGF is in the process of registering with the gateway controller.
	  ◦ **In-Service (Registered)**—The virtual BGF has completed registration with the gateway controller.
	  ◦ **In-Service (Graceful Shutdown)**—The virtual BGF is in draining mode because of a graceful shutdown.
	  ◦ **In-Service (Shutdown)**—The virtual BGF is shut down because of a forced shutdown.
	  ◦ **Out-Of-Service**—The virtual BGF is not connected to the gateway controller.
	• **Active gateway controller**—Gateway controller that is currently controlling this virtual BGF. NULL means that there is no active gateway controller.
	• **Replication socket**
	  ◦ **Connected (Ready)**—The replication is ready and a switchover can be processed.
	  ◦ **Connected (Syncing)**—The replication is synchronizing. Performing a switchover is not safe.
	  ◦ **Connected (Error)**—An error occurred in the previous switchover.
	  ◦ **Disconnected**—The backup Routing Engine is down. There is no route to the backup Routing Engine.
	• **Synchronization state**—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.
	  ◦ **Idle**—The pgcpd process and the data PIC media flow are in synch.
	  ◦ **Initializing**—The pgcpd process is reading the current status of the data PIC to determine required synchonization.
	  ◦ **synchronizing**—The pgcpd process is synchronizing it's internal state with the data PIC.
	NOTE: BGF service is not affected when synchronizing. Gates can be created, modified, and deleted normally.
	• **Cleanup timeout [secs]**—Time to wait before the virtual BGF removes gates following a disconnection from the gateway controller.
	• **Maximum concurrent calls**—Maximum number of concurrent calls allowed on the BGF.
	• **Gate inactivity delay**—Time to wait before packet inactivity detection begins on a gate for which there is no latching event.
	• **Gate inactivity duration**—Time during which the virtual BGF monitors gates for packet inactivity.

Table 291: show services pgcp active-configuration Output Fields *(continued)*

Field Name	Field Description
H248 timers configuration	Information about the H.248 timers configuration. • **Max waiting delay (MWD)**—Maximum time the virtual BGF waits before contacting a new gateway controller when the connection to the controlling gateway controller is lost. • **Max retransmission delay (T-MAX)**—Maximum delay time allowed a transaction resulting from retransmissions. • **Initial average ack delay (I-AAD)**—Average network propagation delay time. • **Maximum net propogation delay (M-NPD)**—Maximum network propagation delay time.
H248 options configuration	Information about the H.248 options configuration. • **Wildcard response service-change**—Whether or not the virtual BGF issues service change notifications as wildcard notifications. • **Event history**—Whether or not the virtual BGF has enabled its history of all event notifications to be accessed by the gateway controller.
H248 diffserv configuration	Information about the H.248 DiffServ configuration. • **DSCP**—DSCP value set in the DiffServ configuration. If there is no configured value, the default value is shown.
Notification Behavior	Information about the regulation of media inactivity notifications sent to the gateway controller. • **Notification Regulation**—Either the percentage of notification to be suppressed, expressed as a number from 0 through 100, or the value **once**, meaning that only the first of a series of media inactivity notifications is sent to the gateway controller.
Application data inactivity detection	Information about the reporting of media inactivity events. • **IP flow stop detection**—Default method for reporting media inactivity.
Event timestamp Notification	Information about the availability of event timestamp information. • **Requested timestamp**—Whether or not the virtual BGF has enabled timestamp information for events to be viewed by the gateway controller.
H248 segmentation	Information about the H.248 segmentation configuration. • **MG segmentation timer**—The time within which the gateway controller waits to receive outstanding message segments from the virtual BGF after it receives the SegmentationCompleteToken message. • **MG maximum PDU size**—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. • **MGC segmentation timer**—The time within which the virtual BGF waits to receive outstanding message segments from the gateway controller after it receives the SegmentationCompleteToken message. • **MGC maximum PDU size**—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. • **minimum**—Minimum value accepted from the gateway controller. • **maximum**—Maximum value accepted from the gateway controller. • **default**—Default value that is used when the gateway controller does not set a value.

Table 291: show services pgcp active-configuration Output Fields *(continued)*

Field Name	Field Description
H248 base root	Information about the H.248 base root configuration. • **Normal MG execution time**—The interval within which the gateway controller waits for a response to transactions from the virtual BGF (exclusive of network delay). • **MG Provisional response timer**—The time within which the gateway controller waits for a pending response from the virtual BGF if a transaction cannot be completed. • **MG Originated pending limit**—The number of transaction pending messages that the gateway controller can receive from the virtual BGF. • **Normal MGC execution time**—The interval within which the virtual BGF waits for a response to a transaction from the gateway controller (exclusive of network delay). • **MGC Provisional response timer**—The time within which the virtual BGF waits for a pending response from the gateway controller if a transaction cannot be completed. • **MGC Originated pending limit**—The number of transaction pending messages that the virtual BGF can receive from the gateway controller. • **minimum**—Minimum value accepted from the gateway controller. • **maximum**—Maximum value accepted from the gateway controller. • **default**—Default value that is used when the gateway controller does not set a value.
Inactivity Timer	Information about inactivity timer configuration. • **Default**—Whether the inactivity timer is on or off by default. • **Maximum inactivity time default**—Default value for the inactivity timer. This value is used if the gateway controller does not send an inactivity timer value. • **minimum**—Minimum value accepted from the gateway controller. • **maximum**—Maximum value accepted from the gateway controller. • **default**—Default value that is used when the gateway controller does not set a value.
Fast update filters	Information about the fast update filter (FUF) configuration. • **Maximum terms**—Maximum number of FUF terms that can be installed for the virtual BGF. • **Maximum term percentage**—Maximum percentage of gates with FUF filters relative to all gates currently installed for the virtual BGF.
Overload control configuration	Information about the overload control configuration. • **Queue limit percentage**—Maximum percentage of the work queue for H.248 transactions that can be used before overload messages are generated. • **Reject new calls threshold**—Maximum percentage of the work queue for H.248 transactions that can be used before all new, non-emergency calls are rejected. • **Reject all transactions threshold**—Maximum percentage of the work queue for H.248 transactions that can be used before all non-emergency transactions are rejected.
Gateway controller configuration	Information about the gateway controller configuration. • **Controller name**—Name of the gateway controller. • **Controller IP address**—For an external contoller, the IP address of the gateway controller. When the controller is a BSG instance, this field contains **internal**. • **Controller port**—Listening port of the gateway controller to which the virtual BGF sends messages.

Table 291: show services pgcp active-configuration Output Fields *(continued)*

Field Name	Field Description
BGF rule configuration	Information about the rule configuration. • **Rule name**—Name of the rule set. • **Virtual BGF**—Name of the virtual BGF that processes the rule set.
BGF service set configuration	Information about the service set configuration. • **Service set name**—Name of the service set. • **Service set id**—Numeric identifier of the service set. • **Rule name**—Name of the rule set configured for the service set.
BGF MultiServices PIC status	Information about the services PICs' status. • **Name**—Name of the services interface. • **Status**—Status of the services interface: **Connected**.
Firewall	Information about firewall filter status for the virtual BGF. • **Status**—Status of the firewall associated with the virtual BGF: **Connected** or **Unsupported Platform**. • **Number of terms**—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. • **Number of filters**—Number of firewall filters used in the virtual BGF.

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

Syntax

show services pgcp gate gateway-name ***gateway-name*** **gate-id** ***gate-id***
< brief | extensive | session-mirroring | statistics>
<master | backup>

Release Information

Command introduced in Junos OS Release 9.5.
statistics option introduced in Junos OS Release 9.1.
session-mirroring option introduced in Junos OS Release 9.2.
gateway option introduced in Junos OS Release 9.5.
master option introduced in Junos OS Release 9.6
backup option introduced in Junos OS Release 9.6

Description

Display in-depth information about a Packet Gateway Control Protocol (PGCP) gate.

Options

gateway ***gateway-name***—(Optional) Display information about gates associated with this virtual border gateway function (BGF).

gate-id ***gate-id***—(Optional) Display information about a particular gate.

brief—(Optional) Display brief output.

extensive—(Optional) Display extensive output.

session-mirroring—(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 **set system login class** ***class-name*** **permissions pgcp-session-mirroring** command grants this permission.

statistics—(Optional) Display statistics for gates.

master—(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.

backup—(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 **master** or **backup** options, the **master** option is the default.

Required Privilege Level

view
pgcp-session-mirroring—To view session mirroring fields.

Related Documentation

- **show services pgcp gates on page 1484**

List of Sample Output

Output Fields Table 292 on page 1477 lists the output fields for the **show services pgcp gate** command. Output fields are listed in the approximate order in which they appear.

Table 292: show services pgcp gate Output Fields

Field Name	Field Description	Output Level
Gate information	Information about the gate.	brief, extensive
Direction	Direction of the gate.	brief, extensive
State	State of the gate: • **active** • **disabled** • **closed**	brief, extensive
remote source address	IP address of the remote source of the gate.	brief, extensive
remote source port	Port of the remote source of the gate.	brief, extensive
remote dest address	IP address of the remote destination of the gate.	brief, extensive
remote dest port	Port of the remote destination of the gate.	brief, extensive
local source address	IP address of the local source of the gate.	brief, extensive
local source port	Port of the local source of the gate.	brief, extensive
local dest address	IP address of the local destination of the gate.	brief, extensive
local dest port	Port of the local destination of the gate.	brief, extensive
transport	Transport protocol.	brief, extensive
gate version	Numeric identifier for the version of the gate.	brief, extensive
latch	Latch status: • **latch** • **none**	brief, extensive
yellow action	Action to take in this state.	brief, extensive
red action	Action to take in this state.	brief, extensive
notifications	Number of notifications.	brief, extensive
User Data	Numeric identifier for the user data.	brief, extensive

Table 292: show services pgcp gate Output Fields *(continued)*

Field Name	Field Description	Output Level
Transport	H.248 media descriptor field: • **udp** • **tcp** • **rtp** • **avp**	extensive
RTCP	Additional (shadow) gate allocated for the Real-Time Control Protocol (RTCP): auto or off.	extensive
Latch	State of the latch action on the gate: • **none** • **latch** • **relatch**	extensive
DSCP	DiffServ code point (DSCP) marking value for the gate.	extensive
Policing	Status of policing on the gate: • **On** • **Off**	extensive
Fast update filter	Status of the fast update filter: • **On** • **Off**	extensive
Gate Statistics	Statistics for the specific gate.	statistics
Output Packets	Number of output packets from the PIC.	statistics
Input Packets	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
Dropped Packets	Number of packets that the Packet Forwarding Engine and the PIC dropped because they did not conform to rate limits.	statistics
Lost RTP Packets	Number of RTP packets that have been lost on this gate.	statistics
Fractional lost RTP Packets	The fraction of RTP data packets that the remote side lost. The fraction is expressed as a percentage value.	statistics
RTCP Statistics	RTCP statistics for packets sent and received.	statistics
RTCP Sender Statistics	RTCP statistics for the sending endpoint.	statistics
SSRC	Synchronization source ID for the sending endpoint.	statistics

Table 292: show services pgcp gate Output Fields *(continued)*

Field Name	Field Description	Output Level
Sender Octets	Number of octets sent.	statistics
Sender Packets	Number of packets sent.	statistics
Invalid Packets	Number of invalid packets.	statistics
RTCP Receiver Statistics	Statistics for the endpoint receiving the RTCP packets.	statistics
SSRC	Synchronization source ID for the receiving endpoint.	statistics
Lost packets	The number of RTP data packets that the remote side lost in the current transmission.	statistics
Lost fraction	The fraction (percentage) of RTP data packets that the remote side lost in the current transmission.	statistics
Jitter	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
Received RTCP-XR Statistics:	Statistics on RTCP packets sent and received.	statistics
Packet loss concealment	Method of packet loss concealment: • **U**—Unspecified • **E**—Enhanced • **D**—Disabled • **S**—Standard	statistics
Loss Rate	The fraction of RTP data packets from the source lost since the beginning of reception.	statistics
Discard Rate	The fraction of RTP data packets from the source that have been discarded since the beginning of reception.	statistics
Round Trip Delay	The most recent round-trip time between interfaces, in milliseconds.	statistics
End System Delay	The most recently estimated end system delay, expressed in milliseconds.	statistics
Signal Level	The voice signal relative level shown as the ratio of the signal level to dBm0.	statistics
Noise Level	The ratio of the silent period background noise level to dBm0.	statistics

Table 292: show services pgcp gate Output Fields *(continued)*

Field Name	Field Description	Output Level
RERL	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
R Factor	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
Ext. R Factor	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
MOS-LQ	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
MOS-CQ	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
Received RTCP Burst Metrics Statistics	This section provides statistics for burst metrics received from the far end of the RTCP session.	statistics
Minimum Gap Threshold	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
Burst Density	The fraction of RTP data packets within burst periods since the beginning of reception that were either lost or discarded.	statistics
Burst Duration	The mean duration of the burst periods that have occurred since the beginning of reception, in milliseconds.	statistics
Gap Loss Density	The fraction of RTP data packets within inter-burst gaps since the beginning of reception that were either lost or discarded.	statistics

Table 292: show services pgcp gate Output Fields *(continued)*

Field Name	Field Description	Output Level
Gap Duration	The mean duration of the gap periods that have occurred since the beginning of reception, in milliseconds.	statistics
Gate Measured Rate	Current gate throughput measured in bytes per second.	statistics
Rate-Limiting Statistics	Counter showing data traffic statistics based on the TRTC (two-rate-three-colors) policer.	statistics
FUF statistics	The number of dropped packets when the Fast Update Filter was enabled on the gate.	statistics
Drop count	The number of packets dropped by the data PIC.	statistics
Session mirroring status	Status of session mirroring: • **On** • **Off**	session mirroring
Session mirroring correlation number	Indicates whether the data mirrors are encrypted.	session mirroring
Session mirroring target ID list	One or more targets of the mirrored packets.	session mirroring
Session mirroring direction	Direction of session mirroring: • **Egress** • **Ingress**	session mirroring

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, ffffff80]
Session mirroring direction: Egress
```

show services pgcp gates

Syntax

show services pgcp gates gateway *gateway-name*
<brief | extensive | count>
<destination-routing-instance *vrf*>
<source-routing-instance *vrf*>
<backup | master>

Release Information

Command introduced in Junos OS Release 8.4.
brief | extensive | count options introduced in Junos OS Release 8.5.
gateway option introduced in Junos OS Release 9.1
destination-routing-instance option introduced in Junos OS Release 9.3.
source-routing-instance option introduced in Junos OS Release 9.3.
gateway option was revised in Junos OS Release 9.5.
master option introduced in Junos OS Release 9.6
backup option introduced in Junos OS Release 9.6

Description

Display information about gates.

Options

brief—(Optional) Display brief output.

extensive—(Optional) Display extensive output.

count—(Optional) Display the number of gates currently installed.

destination-routing-instance—(Optional) Display information for a particular destination VPN routing and forwarding instance (VRF).

source-routing-instance—(Optional) Display information for a particular source VPN routing and forwarding instance (VRF).

gateway-name—Name of the virtual BGF for which you want to display gate information.

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, 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 **master** or **backup** options, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

show services pgcp gates on page 1487
show services pgcp gates gateway count on page 1487
show services pgcp gates gateway extensive on page 1488

Output Fields Table 293 on page 1485 lists the output fields for the **show services pgcp gates** command. Output fields are listed in the approximate order in which they appear.

Table 293: show services pgcp gates Output Fields

Field Name	Field Description	Level of Output
Virtual BGF configuration	Information about the virtual BGF configuration. • **Name**—Name of the virtual BGF. • **IP address**—IP address of the virtual BGF. • **Port**—Port of the virtual BGF. • **Status**—Service state of the virtual BGF.	All levels

Table 293: show services pgcp gates Output Fields *(continued)*

Field Name	Field Description	Level of Output

Gate information	Information about gates that are currently installed.
	• **Gate id**—Numeric identifier of the gate.
	• **Direction**—Direction of the gate.
	  ◦ A is the termination that was created first.
	  ◦ B is the termination that was created second.
	• **Gate state**—State of the gate: **Active**, **Disabled**, or **Closed**.
	• **Action**—(**extensive** level only) Action applied to the gate: **forward**, **add**, or **drop**.
	• **VRF**—(**extensive** level only) If you have VPN aggregation configured, shows the source (ingress) VRF and the destination (egress) VRF.
	• **Remote source address**—(**extensive** level only) IPv4 or IPv6 address of the remote source.
	• **Remote source port**—(**extensive** level only) Remote source port.
	• **Remote destination address**—(**extensive** level only) IPv4 or IPv6 address of the remote destination.
	• **Remote destination port**—(**extensive** level only) Remote destination port.
	• **Local source address**—(**extensive** level only) IPv4 or IPv6 address of the local source.
	• **Local source port**—(**extensive** level only) Local source port.
	• **Local destination address**—(**extensive** level only) IPv4 or IPv6 address of the local destination.
	• **Local destination address** —(**extensive** level only) Local destination port.
	• **Transport**—(**extensive** level only) H.248 media descriptor field: **udp**, **tcp**, or **rtp avp**.
	• **RTCP**—(**extensive** level only) Additional (shadow) gate allocated for the Real-Time Control Protocol (RTCP): **auto** or **off**.
	• **Latch**—(**extensive** level only) State of the latch action on the gate: **none**, **latch**, or **relatch**.
	• **DSCP**—(**extensive** level only) DiffServ code point (DSCP) marking value for the gate.
	• **Policing**—(**extensive** level only) Status of policing on the gate: **On** or **Off**.
	• **Gate SDR**—(**extensive** level only) Current sustained data rate enforced on the gate.
	• **Gate PDR**—(**extensive** level only) Current peak data rate enforced on the gate.
	• **Gate MBS**—(**extensive** level only) Current maximum burst size enforced on the gate.
	• **RTCP SDR**—(**extensive** level only) Current sustained data rate enforced on RTCP gates.
	• **RTCP PDR**—(**extensive** level only) Current peak data rate enforced on RTCP gates.
		All levels (unless otherwise specified)

Table 293: show services pgcp gates Output Fields *(continued)*

Field Name	Field Description	Level of Output
	• **RTCP MBS**—(**extensive** level only) Current maximum burst size enforced on RTCP gates. • **Fast update filter**—(**extensive** level only) Status of the fast update filter: **On** or **Off**. • **Service set id**—Numeric identifier of the service set. • **Media card**—Name of the services interface. • **Media handler**—Name of the service set. • **termination-id-string**—Name of the termination.	
Virtual BGF	(**count** keyword only) Name of the virtual BGF.	none specified
Gate count	(**count** keyword only) Number of gates currently installed on the virtual BGF.	none specified

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/rlmvi2/1

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/rlmvi0/2

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/rlmvi2/3

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/rlmvi0/4
```

show services pgcp gates gateway count

```
user@host> show services pgcp gates gateway bgf-1 count
Virtual BGF                                        Gate count
bgf-1                                                       4
```

show services pgcp gates gateway extensive

```
user@host> show services pgcp gates gateway bgf-1 extensive

Virtual BGF configuration:

  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

Syntax **show services pgcp root-termination gateway** ***gateway-name***
<backup | master>

Release Information Command introduced in Junos OS Release 8.5.
gateway option introduced in Junos OS Release 9.5.
master option introduced in Junos OS Release 9.6
backup option introduced in Junos OS Release 9.6

Description Display information about the H.248 root termination.

NOTE: This command is not applicable when the gateway controller for the BGF is a BSG.

Options **gateway** ***gateway-name***—Display information about root terminations in H.248 transactions associated with this virtual BGF.

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 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 **master** or **backup** options, the **master** option is the default.

Required Privilege Level view

List of Sample Output **show services pgcp root-termination on page 1490**

Output Fields Table 294 on page 1490 lists the output fields for the **show services pgcp root-termination** command. Output fields are listed in the approximate order in which they appear.

Table 294: show services pgcp root-termination Output Fields

Field Name	Field Description
Root termination information	Information about the root terminations in H.248 transactions.

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/MGCORIGINATEDPENDINGLIMIT = 15,
                     ROOT/MGCPROVISIONALRESPONSETIMERVALUE = 2000,
                     ROOT/MGORIGINATEDPENDINGLIMIT = 15,
                     ROOT/MGPROVISIONALRESPONSETIMERVALUE = 2000,
                     ROOT/NORMALMGCEXECUTIONTIME = 1000,
                     ROOT/NORMALMGEXECUTIONTIME = 1000,
                     SEG/MGCMAXPDUSIZE = 500,
                     SEG/MGCSEGMENTATIONTIMERVALUE = 6000,
                     SEG/MGMAXPDUSIZE = 500,
                     SEG/MGSEGMENTATIONTIMERVALUE = 6000 }
},
```

show services pgcp statistics

Syntax

show services pgcp statistics gateway *gateway-name*
<brief | extensive>
<backup | master>

Release Information

Command introduced in Junos OS Release 8.4.
brief | extensive option introduced in Junos OS Release 9.3.
gateway option introduced in Junos OS Release 9.5.
master option introduced in Junos OS Release 9.6.
backup option introduced in Junos OS Release 9.6.

Description

Display information about statistics associated with the virtual border gateway function (BGF).

Options

gateway *gateway-name*—Display information about statistics associated with this virtual BGF.

brief | extensive—(Optional) Display the specified level of output. The default level is brief.

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, 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 **master** or **backup** options, the **master** option is the default.

Required Privilege Level

view

List of Sample Output

show services pgcp statistics on page 1496
show services pgcp statistics extensive on page 1496

Output Fields

Table 295 on page 1493 lists the output fields for the **show services pgcp statistics** command. Output fields are listed in the approximate order in which they appear.

Table 295: show services pgcp statistics Output Fields

Field Name	Field Description	Level of Output

Virtual BGF configuration	Information about the virtual BGF configuration.
	• **Name**—Name of the virtual BGF.
	• **Platform**–The service interface for the BGF.
	• **IP address**—IP address of the virtual BGF.
	• **Routing Instance**—Name of the routing instance associated with the virtual BGF.
	• **Port**—Port of the virtual BGF.
	• **Status**—Status of the virtual BGF: **In-Service**, **Out-of-Service**,
	• **Active gateway controller**—Gateway controller that is currently controlling this virtual BGF. NULL means that there is no active gateway controller.
	• **Replication socket**
	  • **Connected (Ready)**—The replication is ready and a switchover can be processed.
	  • **Connected (Syncing)**—The replication is synchronizing. Performing a switchover is not safe.
	  • **Connected (Error)**—An error occurred in the previous switchover.
	  • **Disconnected**—The backup Routing Engine is down. There is no route to the backup Routing Engine.
	• **Synchronization state**—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.
	  • **Idle**—The pgcpd process and the data PIC media flow are in synch.
	  • **Initializing**—The pgcpd process is reading the current status of the data PIC to determine required synchonization.
	  • **synchronizing**—The pgcpd process is synchronizing its internal state with the data PIC.
	NOTE: BGF service is not affected when synchronizing. Gates can be created, modified, and deleted normally.
	• **Up time**—The time, in hours, minutes, and seconds, since the pgcpd process started.
	NOTE: 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 **clear services pgcp statistics** command.
	• **Load status**—Describes the current load on the system.
	  • **Normal**—The system is not overloaded.
	  • **Overloaded**—The system is sending overload messages to the gateway controller.
	  • **Overloaded (rejecting new calls)**—The system is overloaded and is rejecting all attempts to create new gates.
		all

Usage Counters	Information about usage of contexts and emergency contexts. • Contexts—The number of active contexts out of the total number of contexts. • Emergency contexts—The number of active contexts that are emergency contexts.	

Table 295: show services pgcp statistics Output Fields *(continued)*

Field Name	Field Description	Level of Output

H.248 statistics	Information about H.248 statistics.
	• **Messages received**—Number of H.248 messages received.
	• **Messages sent**—Number of H.248 messages sent.
	• **Protocol errors**—Number of errors detected for this virtual BGF, including:
	  ◦ Syntax errors detected in received messages.
	  ◦ Outgoing transactions that have failed for protocol reasons.
		all

Received Commands	Information about command requests received by the virtual BGF. The following information is shown for each possible command. • Total—Total number of commands received, including commands with wildcard termination IDs. • Wildcards—Number of commands received that contain wildcard termination IDs. • Success—Number of success replies sent by the virtual BGF. • Error—Number of error replies sent by the virtual BGF. Commands are not counted in the following cases: • The command was not executed because of a previous error. • The command was not fully executed because of its own syntax error, which made it impossible to obtain the command type itself.	all
Sent Commands	Information about command requests sent by the virtual BGF. The following information is shown for each possible command. • Total—Total number of commands sent, including commands with wildcard termination IDs. • Wildcards—Number of commands sent that contain wildcard termination IDs. • Success—Number of success replies received by the virtual BGF. • Error—Number of error replies received by the virtual BGF. Commands are not counted in the following cases: • The command was not executed because of a previous error. • The command was not fully executed because of its own syntax error, which made it impossible to obtain the command type itself.	none brief
ROOT SVC	Information about ServiceChange requests sent by the virtual BGF on the root termination. • Total—Total number of commands sent, including commands with wildcard termination IDs. • Wildcards—Number of commands sent that contain wildcard termination IDs. • Success—Number of success replies received by the virtual BGF. • Error—Number of error replies received by the virtual BGF. Commands are not counted in the following cases: • The command was not executed because of a previous error. • The command was not fully executed because of its own syntax error, which made it impossible to obtain the command type itself.	extensive

Table 295: show services pgcp statistics Output Fields *(continued)*

Field Name	Field Description	Level of Output
Termination SVC	Information about ServiceChange requests sent by the virtual BGF on the IP termination. • Total—Total number of commands sent, including commands with wildcard termination IDs. • Wildcards—Number of commands sent that contain wildcard termination IDs. • Success—Number of success replies received by the virtual BGF. • Error—Number of error replies received by the virtual BGF. Commands are not counted in the following cases: • The command was not executed because of a previous error. • The command was not fully executed because of its own syntax error, which made it impossible to obtain the command type itself.	extensive
ROOT Notify	Information about notifications sent by the virtual BGF on the root termination. • ocp/mg_overloaded—MG overload notifications. • it/ito—Inactivity timeout notifications. • Total—Total number of notifications sent, including notifications with wildcard termination IDs. • Wildcards—Number of notifications sent that contain wildcard termination IDs. • Success—Number of success replies received by the virtual BGF. • Error—Number of error replies received by the virtual BGF. Commands are not counted in the following cases: • The command was not executed because of a previous error. • The command was not fully executed because of its own syntax error, which made it impossible to obtain the command type itself.	extensive
Termination Notify	Information about notifications sent by the virtual BGF on the IP termination. • adid/ipstop—IP flow stop detection notifications. • nt/qualert—Quality alert notifications. • adr/rtac—Remote source address changed notifications. • hangterm/thb—Termination heartbeat notifications. • Total—Total number of notifications sent, including notifications with wildcard termination IDs. • Wildcards—Number of notifications sent that contain wildcard termination IDs. • Success—Number of success replies received by the virtual BGF. • Error—Number of error replies received by the virtual BGF. Commands are not counted in the following cases: • The command was not executed because of a previous error. • The command was not fully executed because of its own syntax error, which made it impossible to obtain the command type itself.	extensive

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

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 1501**
show services pgcp conversations extensive on page 1501

Output Fields Table 296 on page 1499 lists the output fields for the **show services pgcp conversations** command. Output fields are listed in the approximate order in which they appear.

Table 296: show services pgcp conversations Output Fields

Field Name	Field Description	Level of Output
Interface	Name of a services interface.	All levels
Service set	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 296: show services pgcp conversations Output Fields *(continued)*

Field Name	Field Description	Level of Output
Conversation	Information about a group of related flows. • **ALG Protocol**—Application-level gateway protocol. • **Number of initiators**—Number of flows that initiated a session. • **Number of responders**—Number of flows that responded in a session.	All levels
Flow	Protocol used for this flow.	All levels
Source	Source prefix of the flow, in the format ***source-prefix-port***.	All levels
Destination	Destination prefix of the flow.	All levels
State	Status of the flow: • **Drop**—Drop all packets in the flow without response. • **Forward**—Forward the packet in the flow without looking at it. • **Reject**—Drop all packets in the flow with response. • **Watch**—Inspect packets in the flow.	All levels
Dir	Direction of the flow: input (**I**) or output (**O**).	All levels
Frm Count	Number of frames in the flow.	All levels
Gate id	Numeric identifier of the gate.	All levels
NAT source	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
NAT dest	Original and translated destination IPv4 or IPv6 addresses are displayed if NAT is configured on this particular flow or conversation.	All levels
Byte count	Number of bytes forwarded in the flow.	**extensive**
Flow role	Role of the flow that is under evaluation: **Initiator**, **Master**, **Responder**, or **Unknown**.	**extensive**
Timeout	Lifetime of the flow, in seconds.	**extensive**
Tman Policing	Whether traffic-management policing is **ON** or **OFF**	**extensive**
SDR	Sustained data rate being enforced for the gate.	**extensive**
SDR MBS	Sustained data rate maximum burst size being enforced for the gate.	**extensive**
PDR	Peak data rate being enforced for the gate.	**extensive**
PDR MBS	Peak data rate maximum burst size being enforced for the gate.	**extensive**

show services pgcp conversations

```
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
```

show services pgcp conversations extensive

```
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 fuction (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 **show services pgcp flows on page 1506**
show services pgcp flows extensive on page 1506

Output Fields Table 297 on page 1505 lists the output fields for the **show services pgcp flows** command. Output fields are listed in the approximate order in which they appear.

Table 297: show services pgcp flows Output Fields

Field Name	Field Description	Level of Output
Interface	Name of the services interface.	All levels
Service set	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
Flow	Protocol used for this flow.	All levels
Source	Source prefix of the flow in the format ***source-prefix:port***.	All levels
Dest	Destination prefix of the flow.	All levels
State	Status of the flow: • **Drop**—Drop all packets in the flow without response. • **Forward**—Forward the packet in the flow without looking at it. • **Reject**—Drop all packets in the flow with response. • **Watch**—Inspect packets in the flow.	All levels
Dir	Direction of the flow: input **(I)**, output **(O)**, or unknown **(U)**.	All levels
Frm count	Number of frames in the flow.	All levels
Gate id	Numeric identifier of the gate.	All levels
NAT source	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
NAT dest	Original and translated destination IPv4 or IPv6 addresses are displayed if NAT is configured on this particular flow or conversation.	All levels
VRF	If you have VPN aggregation configured, shows the source (ingress) VRF and the destination (egress) VRF.	**extensive**
Byte count	Number of bytes forwarded in the flow.	**extensive**
Flow role	Role of the flow that is under evaluation: **Initiator**, **Master**, **Responder**, or **Unknown**.	**extensive**
Timeout	Lifetime of the flow, in seconds.	**extensive**
Tman Policing	Whether traffic-management policing is **ON** or **OFF**	**extensive**
SDR	Sustained data rate being enforced for the gate.	**extensive**
SDR MBS	Sustained data rate maximum burst size being enforced for the gate.	**extensive**
PDR	Peak data rate being enforced for the gate.	**extensive**
PDR MBS	Peak data rate maximum burst size being enforced for the gate.	**extensive**

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

Syntax

show services pgcp terminations gateway *gateway-name*
<brief | h248 | count>
<backup | master>
<termination-prefix *prefix*>

Release Information

Command introduced in Junos OS Release 8.4.
brief | h248 | count option introduced in Junos OS Release 8.5.
termination-prefix option introduced in Junos OS Release 8.5.
gateway option revised in Junos OS Release 9.5.
master option introduced in Junos OS Release 9.6
backup option introduced in Junos OS Release 9.6

Description

Display summary information about all Packet Gateway Control Protocol (PGCP) terminations.

Options

gateway *gateway-name*—Display information about terminations associated with this virtual border gateway fuction (BGF).

brief | h248 | count—(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 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 **master** or **backup** options, the **master** option is the default.

termination-prefix *prefix*—(Optional) Display information based on the termination prefix.

Required Privilege Level

view

List of Sample Output

show services pgcp terminations on page 1509
show services pgcp terminations brief on page 1510
show services pgcp terminations count on page 1510
show services pgcp terminations h248 on page 1510
show services pgcp terminations termination-prefix brief on page 1512
show services pgcp terminations termination-prefix h248 on page 1512

Output Fields

Table 298 on page 1509 lists the output fields for the **show services pgcp terminations** command. Output fields are listed in the approximate order in which they appear.

Table 298: show services pgcp terminations Output Fields

Field Name	Field Description	Level of Output
virtual BGF configuration	Information about the virtual BGF configuration. • **Name**—Name of the BGF. • **IP address**—IP address of the BGF. • **Port**—Port of the BGF. • **Status**—Status of the BGF.	All levels except **count**
Termination name	Name of the termination.	none specified and **brief**
State	State of the termination: **In-service** or **Out-of-service**.	none specified and **brief**
Duration	Period of time that termination and gates exist, in milliseconds.	none specified and **brief**
Gate-id	Numeric identifier of the termination.	none specified and **brief**
Direction	• A is the termination that was created first. • B is the termination that was created second.	none specified and **brief**
State	State of the gate: **active**, **disabled**, or **closed**.	none specified and **brief**
Action	Action applied to the gate: **forward**, **add**, or **drop**.	none specified and **brief**
Gateway name	Name of the BGF.	none specified and **brief**
Terminations count	Number of terminations.	**count**
Termination Information	Information about the termination in the form of an H.248 transaction.	**h248**

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 termination-prefix brief

```
user@host> 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 } }

}
```

CHAPTER 29

PTSP Operational Mode Commands

Table 299 on page 1513 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 299: PTSP Operational Mode Commands

Task	Command
Clear the packet-triggered subscriber session and log out the specified subscriber.	**clear services subscriber sessions**
Display bandwidth information about the packet-triggered subscribers.	**show services subscriber bandwidth**
Display information about the active dynamic policies applied to the specific subscribers.	**show services subscriber dynamic-policies**
Display information about the data flows associated with the specific subscriber.	**show services subscriber flows**
Display information about the active packet-triggered subscriber sessions on the router.	**show services subscriber sessions**
Display information about the data traffic statistics for the specified packet-triggered subscriber and for each service rule attached to that subscriber.	**show services subscriber statistics**

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

Syntax **clear services subscriber sessions client-id *client-id***

Release Information Command introduced in Junos OS Release 10.2.

Description Clear the packet-triggered subscriber sessions on the router to log out the subscribers.

Options **client-id *client-id***—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.

Required Privilege Level clear

Related Documentation

- **show services subscriber sessions on page 1522**

List of Sample Output **clear services subscriber sessions on page 1514**

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

clear services subscriber sessions

```
user@host> clear services subscriber sessions client-id 1
Initiated logout request for 1 subscriber session(s)
```

show services subscriber bandwidth

Syntax

show services subscriber bandwidth
<**client-id** *client-id*>
<**interface** *interface-name*> <**top-talkers** *top-talkers*>
<**ip-address** *ip-address*>
<**service-interface** *interface-name*> <**top-talkers** *top-talkers*>

Release Information

Command introduced in Junos OS Release 10.2.

Description

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.

Options

client-id ***client-id***—(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.

interface ***interface-name***—(Optional) Displays bandwidth information for the subscriber with this underlying interface name.

ip-address ***ip-address***—(Optional) Displays bandwidth information for the subscriber with this IPv4 address.

service-interface ***interface-name***—(Optional) Displays bandwidth information for the subscriber with this service interface name.

top-talkers ***number-top-talkers***—(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.

Required Privilege Level

view

List of Sample Output

show services subscriber bandwidth client-id on page 1516

Output Fields

Table 300 on page 1515 lists the output fields for the **show services subscriber bandwidth** command. Output fields are listed in the approximate order in which they appear.

Table 300: 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.

show services subscriber bandwidth client-id

```
user@host> show services subscriber bandwidth client-id 1
client-id   input-bps   output-bps   input-pps    output-pps
1           20          20           1000         1000
```

show services subscriber dynamic-policies

Syntax **show services subscriber dynamic-policies client-id *client-id***

Release Information Command introduced in Junos OS Release 10.2.

Description Display information about the active dynamic policies applied to the specified subscriber.

Options **client-id *client-id***—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.

Required Privilege Level view

List of Sample Output **show services subscriber dynamic-policies client-id on page 1518**

Output Fields Table 301 on page 1517 lists the output fields for the **show services subscriber dynamic-policies** command. Output fields are listed in the approximate order in which they appear.

Table 301: show services subscriber dynamic-policies Output Fields

Field Name	Field Description
Subscriber session	Client identifier.
Policy name	Dynamic policy identifier.
rpr	Rule precedence for the dynamic policy.
d	Direction of the dynamic policy.
Template	Service rule associated with the dynamic policy.
tpr	Term precedence.
ra	Remote address.
rm	Remote address mask.
lpl	Lower boundary for the local port range.
lph	Upper boundary for the local port range.
rpl	Lower boundary for the remote port range.
rph	Upper boundary for the remote port range.
p	Protocol.

Table 301: show services subscriber dynamic-policies Output Fields *(continued)*

Field Name	Field Description
a-f	Action.
a-s	Type of statistics collection and aggregation.
a-fc	Forwarding class.
a-p-I	Policer instance.
a-p-bw	Policer bandwidth.
a-p-mbs	Policer maximum burst size.
a-fu	Unit number for forwarding instance.
anl	Application names.
agl	Application group name.

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

Syntax **show services subscriber flows client-id *client-id***

Release Information Command introduced in Junos OS Release 10.2.

Description Display information about the data flows associated with the specified subscriber.

Options **client-id *client-id***—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.

Required Privilege Level view

List of Sample Output **show services subscriber flows client-id on page 1520**

Output Fields Table 302 on page 1520 lists the output fields for the **show services subscriber flows** command. Output fields are listed in the approximate order in which they appear.

Table 302: show services subscriber flows Output Fields

Field Name	Field Description
Subscriber session	Client identifier.
Number of data flows	Number of data sessions associated with this subscriber.
Data flow high-water-mark	High water mark number of concurrent data sessions for this subscriber. This value is never reset during the login session.
5-tuple	5 tuple information for each flow.
Application-ID	Application ID for each flow.
Policy-name	Service rule name for each flow.
Dir	Direction of each flow.
Packets	Information about counter statistics for each flow.
Bytes	Information about counter statistics for each flow.
Action	Action of the service rule for each flow.

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

show services subscriber sessions
<brief | detail | summary>
<client-id *client-id*>
<interface *interface-name*>
<ip-address *ip-address*>
<routing-instance *routing-instance-name*>
<service-interface *interface-name*>
<user-id *user-id*>

Release Information

Command introduced in Junos OS Release 10.2.

Description

Display information about the active packet-triggered subscriber sessions on the router.

Options

brief | detail | summary—(Optional) Display the specified level of output. The default level is brief.

client-id *client-id*—(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.

interface *interface-name*—(Optional) Displays information about the active packet-triggered subscriber sessions for the subscriber with this underlying interface name.

ip-address *ip-address*—(Optional) Displays information about the active packet-triggered subscriber sessions for the subscriber with this IP address.

routing-instance *routing-instance-name*—(Optional) Displays information about the active packet-triggered subscriber sessions for the subscriber on this routing instance.

service-interface *interface-name*—(Optional) Displays information about the active packet-triggered subscriber sessions for the subscriber with this service interface name.

user-id *user-id*—(Optional) Displays information about the active packet-triggered subscriber sessions with this user ID.

Required Privilege Level

view

Related Documentation

- **clear services subscriber sessions on page 1514**

List of Sample Output

show services subscriber sessions client-id summary on page 1523
show services subscriber sessions client-id on page 1523
show services subscriber sessions client-id detail on page 1523

Output Fields

Table 303 on page 1523 lists the output fields for the **show services subscriber sessions** command. Output fields are listed in the approximate order in which they appear.

Table 303: 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.

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

Syntax **show services subscriber statistics client-id *client-id***

Release Information Command introduced in Junos OS Release 10.2.

Description Display information about the data traffic statistics for the specified packet-triggered subscriber and for each service rule attached to that subscriber.

Options **client-id *client-id***—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.

Required Privilege Level view

List of Sample Output **show services subscriber statistics client-id by rule on page 1524**
show services subscriber statistics client-id by application on page 1524

Output Fields Table 304 on page 1524 lists the output fields for the **show services subscriber statistics** command. Output fields are listed in the approximate order in which they appear.

Table 304: show services subscriber statistics Output Fields

Field Name	Field Description
Aggregation-level	Type of statistics collected — subscriber and service rule or application.
Name/Id	Identifier for Aggregation-level field.
Packets-in	Number of ingress packets.
Packets-out	Number of egress packets.
Bytes-in	Number of ingress bytes.
Bytes-out	Number of egress bytes.

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
```

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
```


CHAPTER 30

Service Sets Operational Mode Commands

Table 305 on page 1525 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot service sets. Commands are listed in alphabetical order.

Table 305: Service Sets Operational Mode Commands

Task	Command
Clear service sets statistics.	**clear services service-sets statistics packet-drops**
Display service sets CPU utilization.	**show services service-sets cpu-usage**
Display services sets memory utilization.	**show services service-sets memory-usage**
Display service sets statistics.	**show services service-sets statistics packet-drops**
Display services sets TCP maximum segment size (MSS) statistics.	**show services service-sets statistics tcp-mss**
Display service sets summary information.	**show services service-sets summary**

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 (rsp*number*) 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

Syntax

clear services service-sets statistics packet-drops
<interface *interface-name*>

Release Information

Command introduced in Junos OS Release 7.4.

Description

Clear dropped-packet statistics for one adaptive services interface or for all adaptive services interfaces.

Options

none—Clear dropped-packet statistics for all configured adaptive services interfaces.

interface *interface-name*—(Optional) Clear dropped-packet statistics for the specified adaptive services interface. On M Series and T Series routers, the ***interface-name*** can be **ms-*fpc/pic/port***, **sp-*fpc/pic/port*** or **rsp*number***. On J Series routers, the ***interface-name*** is **sp-*pim*/0/*port***.

Required Privilege Level

network

Related Documentation

- **show services service-sets statistics packet-drops on page 1532**

List of Sample Output

clear services service-sets statistics packet-drops on page 1527

Output Fields

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

clear services service-sets statistics packet-drops

```
user@host> clear services service-sets statistics packet-drops interface sp-5/0/0
Flow collector interface: cp-5/0/0
Interface state: Collecting flows
Statistics cleared successfully
```

show services service-sets cpu-usage

Syntax

show services service-sets cpu-usage
<interface *interface-name*>
<service-set *service-set-name*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display service set CPU usage as a percentage.

Options

none—Display CPU usage for all adaptive services interfaces and service sets.

interface *interface-name*—(Optional) Display CPU usage for a particular interface. On M Series and T Series routers, the ***interface-name*** parameter can have the value **ms-*fpc/pic/port***, **sp-*fpc/pic/port***, or **rsp*number***. On J Series routers, ***interface-name*** is **sp-*pim*/0/*port***.

service-set *service-set-name*—(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.

Required Privilege Level

view

List of Sample Output

show services service-sets cpu-usage on page 1528

Output Fields

Table 306 on page 1528 lists the output fields for the **show services service-sets cpu-usage** command. Output fields are listed in the approximate order in which they appear.

Table 306: 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: • idp_recommended—Name of the service sets (displays all the service sets attached to the service PICs) • Idle • System • Receive • Transmit
CPU utilization %	Percentage of the CPU resources being used.

show services service-sets cpu-usage

```
user@host> show services 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 **rsp*number***. 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 1531
show services service-sets memory-usage zone on page 1531

Output Fields

Table 307 on page 1530 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 307: 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 307: show services service-sets memory-usage Output Fields *(continued)*

Field Name	Field Description
Memory zone	Memory zone in which the adaptive services interface is currently operating: • **Green**—All new flows are allowed. • **Yellow**—Unused memory is reclaimed. All new flows are allowed. • **Orange**—New flows are only allowed for service sets that are using less than their equal share of memory. • **Red**—No new flows are allowed.

show services service-sets memory-usage

```
user@host> show services service-sets memory-usage
Interface   Service set                                   Bytes Used
sp-1/3/0    blue                                                14817036
```

show services service-sets memory-usage zone

```
user@host> show services service-sets memory-usage zone
Interface   Memory zone
sp-1/3/0    Green
```

show services service-sets statistics packet-drops

Syntax

show services service-sets statistics packet-drops
<interface *interface-name*>

Release Information

Command introduced in Junos OS Release 7.4.

Description

Display the number of dropped packets for service sets exceeding CPU limits or memory limits.

Options

none—Display the number of dropped service sets packets for all adaptive services interfaces.

interface *interface-name*—(Optional) Display the number of dropped service sets packets for a particular interface. On M Series and T Series routers, ***interface-name*** can be **ms-*fpc/pic/port***, **sp-*fpc/pic/port***, or **rsp*number***. On J Series routers, ***interface-name*** is **sp-*pim*/0/*port***.

Required Privilege Level

view

Related Documentation

- **clear services flow-collector statistics on page 1262**

List of Sample Output

show services service-sets statistics packet-drops interface on page 1532

Output Fields

Table 308 on page 1532 lists the output fields for the **show services service-sets packet-drops** command. Output fields are listed in the approximate order in which they appear.

Table 308: 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.

show services service-sets statistics packet-drops interface

```
user@host> show services service-sets statistics packet-drops interface sp-1/0/0
                                                Cpu limit  Memory limit  Flow limit
Interface    Service Set                        Drops      Drops         Drops
sp-1/0/0     sset1                                     0             0           0
```

show services service-sets statistics tcp-mss

Syntax

show services service-sets statistics tcp-mss
<interface *interface-name*>

Release Information

Command introduced in Junos OS Release 9.5.

Description

(M Series and T Series routers only) Display TCP maximum segment size (MSS) statistics for service sets.

Options

none—Display service set TCP MSS information for all adaptive services interfaces.

interface *interface-name*—(Optional) Display TCP MSS statistics for a particular interface. The ***interface-name*** can be **ms-*fpc/pic/port***, **sp-*fpc/pic/port***, or **rsp *number***.

Required Privilege Level

view

List of Sample Output

show services service-sets statistics tcp-mss on page 1533

Output Fields

Table 309 on page 1533 lists the output fields for the **show services service-sets statistics tcp-mss** command. Output fields are listed in the approximate order in which they appear.

Table 309: show services service-sets statistics tcp-mss Output Fields

Field Name	Field Description
Interface	Name of the adaptive services interface.
Service Set	Name of the configured service set.
SYN Received	Number of TCP SYN packets received.
SYN Modified	Number of TCP SYN packets with the MSS value modified to match the MSS value specified in the TCP MSS configuration.

show services service-sets statistics tcp-mss

```
user@host> show services 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

Syntax show services service-sets summary
<interface *interface-name*>

Release Information Command introduced before Junos OS Release 7.4.

Description Display service set summary information.

Options none—Display service set summary information for all adaptive services interfaces.

interface *interface-name*—(Optional) Display service set summary information for a particular interface. On M Series and T Series routers, ***interface-name*** can be **ms-*fpc/pic/port***, **sp-*fpc/pic/port***, or **rsp*number***. On J Series routers, ***interface-name*** is **sp-*pim*/0/*port***.

Required Privilege Level view

List of Sample Output **show services service-sets summary on page 1534**
show services service-sets summary interface on page 1535

Output Fields Table 310 on page 1534 lists the output fields for the **show services service-sets summary** command. Output fields are listed in the approximate order in which they appear.

Table 310: show services service-sets summary Output Fields

Field Name	Field Description
Interface	Name of an adaptive services interface.
Service type	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).
Service sets configured	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.
Bytes used	Bytes used by a particular service, or all services.
Policy bytes used	Policy bytes used by a particular service, or all services.
CPU utilization	Percentage of the CPU resources being used.

show services service-sets summary

```
user@host> show services service-sets summary
             Service sets                                          CPU
Interface    configured            Bytes used    Policy bytes used  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 service-sets summary interface

```
user@host> show services service-sets summary interface sp-1/3/0
Interface: sp-1/3/0
                  Service sets                          CPU
  Service type    configured              Bytes used   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 %
```

CHAPTER 31

Stateful Firewall Operational Mode Commands

Table 311 on page 1537 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot stateful firewall services. Commands are listed in alphabetical order.

Table 311: Stateful Firewall Services Operational Mode Commands

Task	Command
Clear stateful firewall flows.	**clear services stateful-firewall flows**
Clear stateful firewall Session Initiation Protocol (SIP) call information.	**clear services stateful-firewall sip-call**
Clear stateful firewall SIP register information.	**clear services stateful-firewall sip-register**
Clear stateful firewall statistics.	**clear services stateful-firewall statistics**
Display stateful firewall conversation information.	**show services stateful-firewall conversations**
Display stateful firewall flow information.	**show services stateful-firewall flows**
Display stateful firewall SIP call information.	**show services stateful-firewall sip-call**
Display stateful firewall SIP register information.	**show services stateful-firewall sip-register**
Display stateful firewall statistics.	**show services stateful-firewall statistics**
Display statistics information for the application protocol SIP.	**show services stateful-firewall statistics application-protocol sip**

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 (rsp*number*) 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

Syntax

clear services stateful-firewall flows
<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 before Junos OS Release 7.4.

Description

Clear stateful firewall flows.

Options

none—Clear all stateful firewall flows.

destination-port *destination-port*—(Optional) Clear stateful firewall flows for a particular destination port. The range of values is 0 to 65535.

destination-prefix *destination-prefix*—(Optional) Clear stateful firewall flows for a particular destination prefix.

interface *interface-name*—(Optional) Clear stateful firewall flows for a particular interface. On M Series and T Series routers, the ***interface-name*** can be **sp-*fpc/pic/port*** or **rsp*number***. On J Series routers, the ***interface-name*** is **sp-*pim/0/port***.

protocol—(Optional) Clear stateful firewall flows for 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-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) 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 1552**

List of Sample Output

clear services stateful-firewall flows on page 1540

Output Fields

Table 312 on page 1540 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 312: clear services stateful-firewall flows 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.
Conv removed	Number of conversations removed.

clear services stateful-firewall flows

```
user@host> clear services stateful-firewall flows
Interface    Service set                                        Conv removed
sp-0/3/0     svc_set_trust                                               0
sp-0/3/0     svc_set_untrust                                             0
```

clear services stateful-firewall sip-call

Syntax

clear services stateful-firewall sip-call
<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) call information in stateful firewall flows.

Options

none—Clear stateful firewall statistics for all interfaces and all service sets.

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-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 **rsp*number***. 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

Related Documentation

- **show services stateful-firewall sip-call on page 1556**

List of Sample Output

clear services stateful-firewall sip-call on page 1543

Output Fields

Table 313 on page 1543 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 313: 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.

clear services stateful-firewall sip-call

```
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 **rsp*number***. 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 1561**

List of Sample Output **clear services stateful-firewall sip-register on page 1546**

Output Fields Table 314 on page 1546 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 314: 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.

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

Syntax

clear services stateful-firewall statistics
<interface *interface-name*>
<service-set *service-set*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Clear stateful firewall statistics.

Options

none—Clear stateful firewall statistics for all interfaces and all service sets.

interface *interface-name*—(Optional) Clear stateful firewall statistics for the specified interface. On M Series and T Series routers, the ***interface-name*** can be **sp-*fpc/pic/port*** or **rsp*number***. On J Series routers, the ***interface-name*** is **sp-*pim/0/port***.

service-set *service-set*—(Optional) Clear stateful firewall statistics for the specified service set.

Required Privilege Level

view

Related Documentation

- **show services stateful-firewall statistics on page 1565**

List of Sample Output

clear services stateful-firewall statistics on page 1547

Output Fields

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

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 **rsp*number***. 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 1551**
show services stateful-firewall conversations destination-port on page 1551

Output Fields Table 315 on page 1550 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 315: show services stateful-firewall conversations Output Fields

Field Name	Field Description
Interface	Name of an adaptive services interface.
Service set	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.
Conversation	Information about a group of related flows. • **ALG Protocol**—Application-level gateway protocol. • **Number of initiators**—Number of flows that initiated a session. • **Number of responders**—Number of flows that responded in a session.
Flow or Flow Prot	Protocol used for this flow.
Source	Source prefix of the flow, in the format ***source-prefix-port***.
Destination	Destination prefix of the flow.
State	Status of the flow: • **Drop**—Drop all packets in the flow without response. • **Forward**—Forward the packet in the flow without looking at it. • **Reject**—Drop all packets in the flow with response. • **Watch**—Inspect packets in the flow.
Dir	Direction of the flow: input (**I**) or output (**O**).
Source NAT	Original and translated source IPv4 or IPv6 addresses are displayed if Network Address Translation (NAT) is configured on this particular flow or conversation.
Frm Count	Number of frames in the flow.
Destin NAT	Original and translated destination IPv4 or IPv6 addresses are displayed if NAT is configured on this particular flow or conversation.

Table 315: 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: **Yes** or **No**.
TCP window size	Negotiated TCP connection window size, in bytes.
TCP acknowledge	TCP acknowledgment sequence number.
TCP tickle	Whether TCP inquiry mode is on (**enabled** or **disabled**) 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.

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

```
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                                              State    Dir       Frm count
TCP         10.50.10.2:2143  ->     10.50.20.2:21    Watch    O               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.

Description

Display stateful firewall flow table entries.

Options

none—Display standard information about all stateful firewall flows.

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

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 **sp-*fpc/pic/port*** or **rsp*number***. On J Series routers, ***interface-name*** is **sp-*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 1539**

List of Sample Output

show services stateful-firewall flows on page 1554
show services stateful-firewall flows brief on page 1554
show services stateful-firewall flows extensive on page 1554
show services stateful-firewall flows count on page 1554
show services stateful-firewall flows destination port on page 1555
show services stateful-firewall flows source port on page 1555
show services stateful-firewall flows (Twice NAT) on page 1555

Output Fields Table 316 on page 1553 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 316: show services stateful-firewall flows Output Fields

Field Name	Field Description
Interface	Name of the interface.
Service set	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.
Flow Count	Number of flows in a session.
Flow or Flow Prot	Protocol used for this flow.
Source	Source prefix of the flow in the format ***source-prefix:port***. For ICMP flows, port information is not displayed.
Dest	Destination prefix of the flow. For ICMP flows, port information is not displayed.

Table 316: show services stateful-firewall flows Output Fields *(continued)*

Field Name	Field Description
State	Status of the flow: • **Drop**—Drop all packets in the flow without response. • **Forward**—Forward the packet in the flow without looking at it. • **Reject**—Drop all packets in the flow with response. • **Watch**—Inspect packets in the flow.
Dir	Direction of the flow: input **(I)** or output **(O)**.
Frm count	Number of frames in the flow.

show services stateful-firewall flows

```
user@host> show services stateful-firewall flows
Interface: sp-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 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: sp-0/3/0, Service set: ss_nat
Flow                                                    State     Dir       Frm
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    O
   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

sp-1/3/0              green                                                  2
```

show services stateful-firewall flows destination port

```
user@router> show services stateful-firewall flows destination-port 21
Interface: sp-0/3/0, Service set: svc_set_trust
Flow
                                                State    Dir       Frm count
Interface: sp-0/3/0, Service set: svc_set_untrust
Flow                                              State    Dir       Frm count
TCP         10.50.10.2:2143  ->     10.50.20.2:21    Watch    O               0
```

show services stateful-firewall flows source port

```
user@router> show services stateful-firewall flows source-port 2143
Interface: sp-0/3/0, Service set: svc_set_trust
Flow
                                              State    Dir       Frm count
Interface: sp-0/3/0, Service set: svc_set_untrust
Flow                                              State    Dir       Frm count
TCP         10.50.10.2:2143  ->     10.50.20.2:21    Watch    O               0
```

show services stateful-firewall flows (Twice NAT)

```
user@router> show services stateful-firewall flows
Flow                                             State    Dir       Frm count
UDP          40.0.0.8:23439 ->     80.0.0.1:16485   Watch    I             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    O             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 **rsp*number***. 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 1541**

List of Sample Output

show services stateful-firewall sip-call extensive on page 1559

Output Fields

Table 317 on page 1558 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 317: show services stateful-firewall sip-call Output Fields

Field Name	Field Description
Interface	Name of an adaptive services interface.
Service set	Name of a service set.
From	Initiator address.
To	Responder address.
Call ID	SIP call identification string.
Number of initiator flows	Number of **control**, **contact**, or **media** initiator flows.
Number of responder flows	Number of **control**, **contact**, or **media** responder flows.
protocol	Protocol used for this flow.
source-prefix	Source prefix of the flow in the format ***source-prefix* : *port***.
destination-prefix	Destination prefix of the flow.
state	Status of the flow: • **Drop**—Drop all packets in the flow without a response. • **Forward**—Forward the packet in the flow without examining it. • **Reject**—Drop all packets in the flow with a response. • **Unknown**—Unknown status. • **Watch**—Inspect packets in the flow.
direction	Direction of the flow: input (**I**), output (**O**), or unknown (**U**).

Table 317: show services stateful-firewall sip-call Output Fields *(continued)*

Field Name	Field Description
frame-count	Number of frames in the flow.
Byte count	Number of bytes forwarded in the flow.
Flow role	Role of the flow that is under evaluation: **Initiator**, **Master**, **Responder**, or **Unknown**.
Timeout	Lifetime of the flow, in seconds.

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;0011bb65c2a30007777bd0fc-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    O
0
  Byte count: 0
  Flow role: Responder, Timeout: 30
UDP            0.0.0.0:0     ->  10.20.170.111:5060  Watch    O
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  O
622
  Byte count: 124400
  Flow role: Master, Timeout: 30
UDP            0.0.0.0:0     ->  10.20.170.111:18809 Forward  O
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 **rsp*number***. 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 1544**

List of Sample Output

show services stateful-firewall sip-register extensive on page 1563

Output Fields

Table 318 on page 1563 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 318: show services stateful-firewall sip-register Output Fields

Field Name	Field Description
Interface	Name of an adaptive services interface.
Service set	Name of a service set.
SIP Register	Register information header.
Protocol	Protocol used for this flow.
Registered IP	Register IP address.
Port	Register port number.
Expiration timeout	Configured lifetime, in seconds.
Timeout remaining	Lifetime remaining, in seconds.
From	Initiator address.
To	Responder address.
Call ID	SIP call identification string.

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

Syntax

show services stateful-firewall statistics
<application-protocol *protocol*>
<brief | detail | extensive | summary>
<interface *interface-name*>
<service-set *service-set*>

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display stateful firewall statistics.

Options

none—Display standard information about all stateful firewall statistics.

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

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 **rsp*number***. On J Series routers, the ***interface-name*** is **sp-*pim*/0/*port***.

service-set *service-set*—(Optional) Display information about a particular service set.

Required Privilege Level

view

Related Documentation

- **clear services stateful-firewall statistics on page 1547**

List of Sample Output

show services stateful-firewall statistics extensive on page 1568

Output Fields

Table 319 on page 1565 lists the output fields for the **show services stateful-firewall statistics** command. Output fields are listed in the approximate order in which they appear.

Table 319: show services stateful-firewall statistics Output Fields

Field Name	Field Description
Interface	Name of an adaptive services interface.
Service set	Name of a service set.
New flows	Rule match counters for new flows: • **Accept**—New flows accepted. • **Discard**—New flows discarded. • **Reject**—New flows rejected.
Existing flows	Rule match counters for existing flows: • **Accept**—Match existing forward or watch flow. • **Discard**—Match existing discard flow. • **Reject**—Match existing reject flow.

Table 319: show services stateful-firewall statistics Output Fields *(continued)*

Field Name	Field Description
Drops	Drop counters: • **TCP SYN defense**—Packets dropped by SYN defender. • **NAT ports exhausted**—Hide mode. The router has no available Network Address Translation (NAT) ports for a given address or pool.
Errors	Total errors, categorized by protocol: • **IP**—Total IP version 4 errors. • **TCP**—Total Transmission Control Protocol (TCP) errors. • **UDP**—Total User Datagram Protocol (UDP) errors. • **ICMP**—Total Internet Control Message Protocol (ICMP) errors. • **Non-IP**—Total non-IPv4 errors.
IP Errors	IPv4 errors: • **IP packet length inconsistencies**—IP packet length does not match the Layer 2 reported length. • **Minimum IP header length check failures**—Minimum IP header length is 20 bytes. The received packet contains less than 20 bytes. • **Reassembled packet exceeds maximum IP length**—After fragment reassembly, the reassembled IP packet length exceeds 65,535. • **Illegal source address 0**—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**. • **Illegal destination address 0**—Destination address is not a valid address. The address is reserved. • **TTL zero errors**—Received packet had a time-to-live (TTL) value of 0. • **IP protocol number 0 or 255**—IP protocol is 0 or 255. • **Land attack**—IP source address is the same as the destination address. • **Smurf attack**—Echo request is sent to a directed broadcast address. • **Non-IP packets**—Packet did not conform to the IP standard. • **IP option**—Packet dropped because of a nonallowed IP option. • **Non-IPv4 packets**—Packet was not IPv4. (Only IPv4 is supported.) • **Bad checksum**—Packet had an invalid IP checksum. • **Illegal IP fragment length**—Illegal fragment length. All fragments (other than the last fragment) must have a length that is a multiple of 8 bytes. • **IP fragment overlap**—Fragments have overlapping fragment offsets. • **IP fragment reassembly timeout**—Some of the fragments for an IP packet were not received in time, and the reassembly handler dropped partial fragments.

Table 319: show services stateful-firewall statistics Output Fields *(continued)*

Field Name	Field Description
TCP Errors	TCP protocol errors: • **TCP header length inconsistencies**—Minimum TCP header length is 20 bytes, and the IP packet received does not contain at least 20 bytes. • **Source or destination port number is zero**—TCP source or destination port is zero. • **Illegal sequence number, flags combination**—Dropped because of TCP errors, such as an illegal sequence number, which causes an illogical combination of flags to be set. • **SYN attack (multiple SYN messages seen for the same flow)**—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. • **First packet not SYN**—First packets for a connection are not SYN packets. These packets might originate from previous connections or from someone performing an ACK/FIN scan. • **TCP port scan (Handshake, RST seen from server for SYN)**—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). • **Bad SYN cookie response**—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.
UDP Errors	UDP protocol errors: • **IP data length less than minimum UDP header length (8 bytes)**—Minimum UDP header length is 8 bytes. The received IP packets contain less than 8 bytes. • **Source or destination port is zero**—UDP source or destination port is **0**. • **UDP port scan (ICMP error seen for UDP flow)**—ICMP error is received for a UDP flow. This could be a genuine UDP flow, but it is counted as an error.
ICMP Errors	ICMP protocol errors: • **IP data length less than minimum ICMP header length (8 bytes)**—ICMP header length is 8 bytes. This counter is incremented when received IP packets contain less than 8 bytes. • **ICMP error length inconsistencies**—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. • **Ping duplicate sequence number**—Received ping packet has a duplicate sequence number. • **Ping mismatched sequence number**—Received ping packet has a mismatched sequence number.

show services stateful-firewall statistics extensive

```
user@host> show services stateful-firewall statistics extensive
Interface: sp-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
      H323: 0, ICMP: 0, IIOP: 0
      Login: 0, Netbios: 0, Netshow: 0
      Realaudio: 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

Syntax show services stateful-firewall application-protocol sip

Release Information Command introduced in Junos OS Release 7.4.

Description Display stateful firewall Session Initiation Protocol (SIP) statistics.

Options This command has no options.

Required Privilege Level view

List of Sample Output **show services stateful-firewall statistics application-protocol-sip on page 1570**

Output Fields Table 320 on page 1569 lists the output fields for the **show services stateful-firewall statistics application-protocol-sip** command. Output fields are listed in the approximate order in which they appear.

Table 320: 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 320: show services stateful-firewall statistics application-protocol-sip Output Fields *(continued)*

Field Name	Field Description
OPTIONS	Number of new, invalid, and retransmitted requests to query SIP capabilities.
INFO	Number of new, invalid, and retransmitted requests carrying application-level information.
UPDATE	Number of new, invalid, and retransmitted SIP dialogue updates.
REFER	Number of new, invalid, and retransmitted requests to the recipient to contact a third party.
Provisional responses	Number of new, invalid, and retransmitted responses from the user agent server to indicate the progress of a SIP transaction.
OK responses to INVITEs	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.
OK responses to non-INVITES	OK responses to SIP messages other than an Invite message.
Redirection responses	Responses from the user agent server to a user agent client requesting the client to contact a different SIP uniform resource identifier (URI).
Request failure responses	Responses that indicate a definite failure from a particular server. The client must not retry the same request without modification after receiving this response.
Server failure responses	Responses that indicate a server failure.
Global failure responses	Responses that indicate a server has definitive information about a particular user, not just the particular instance indicated in the Request URI.
Invalid responses	Responses that are invalid.
Response (all) retransmits	Retransmissions of all responses.
Parser	Syntax errors, content errors, and unknown methods counted by the message parser.

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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