



JUNOS® Software

System Basics and Services Command Reference

Release 10.0

Juniper Networks, Inc.

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About This Guide

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

- JUNOS Documentation and Release Notes on page xxiii
- Objectives on page xxiii
- Audience on page xxiv
- Supported Platforms on page xxv
- Using the Indexes on page xxv
- Documentation Conventions on page xxv
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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 Software 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 JUNOS Software 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 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 Software commands that you use to monitor and troubleshoot basic system operations and services on the router.

For additional commands, see these references:

- *JUNOS Routing Protocols and Policies Command Reference*
- *JUNOS Interfaces Command Reference*



NOTE: For additional information about JUNOS Software—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 CLI User Guide*—Describes how to use the JUNOS command-line interface (CLI) to configure, monitor, and manage Juniper Networks routers.
- *JUNOS Software Installation and Upgrade Guide*—Provides a description of JUNOS Software components and packaging, and includes detailed information about how to initially configure, reinstall, and upgrade the JUNOS system software.
- *JUNOS 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 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 Class of Service Configuration Guide*—Includes configuration statements and guidelines for class of service (CoS) features.
- *JUNOS Network Interfaces Configuration Guide*—Includes configuration statements and guidelines for bit error rate test (BERT) parameters and Automatic Protection Switching (APS).
- *JUNOS 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 Software 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 <code>configure</code> 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
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces important new terms. Identifies book names. Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>JUNOS System Basics Configuration Guide</i> RFC 1997, <i>BGP Communities Attribute</i>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# set system domain-name <i>domain-name</i>
Plain text like this	Represents names of configuration statements, commands, files, and directories; IP addresses; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level. The console port is labeled CONSOLE.
< > (angle brackets)	Enclose optional keywords or variables.	stub <default-metric <i>metric</i> >;

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]
Indentation 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 .

Documentation Feedback

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

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

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNAS support

contract, or are covered under warranty, and need postsales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the JTAC User Guide located at <http://www.juniper.net/customers/support/downloads/710059.pdf> .
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/> .
- JTAC Hours of Operation —The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

Self-Help Online Tools and Resources

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

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <https://www.juniper.net/alerts/>
- Join and participate in the Juniper Networks Community Forum: <http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

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

Opening a Case with JTAC

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

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/> .
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, visit us at <http://www.juniper.net/support/requesting-support.html>

Part 1

Monitoring and Testing Tools

- Connectivity Operational Mode Commands on page 3
- Interface Diagnostics Operational Mode Commands on page 27
- RADIUS Diagnostics Operational Mode Commands on page 47
- Real-Time Performance Monitoring Operational Mode Commands on page 55
- Real-Time Router Monitoring Operational Mode Commands on page 71

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 Release 7.4.
 Command introduced in JUNOS 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 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-5/3/0 vci 0.128  
53 byte oam cell received on (vpi=0 vci=128): seq=1  
53 byte oam cell received on (vpi=0 vci=128): 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 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*)>
 <size *bytes*>
 <source *source-address*>
 <sweep>
 <v1>

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

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.

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

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 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*)>
 <size *bytes*>
 <source *source-address*>
 <sweep>

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

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.

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 14
ping mpls l2vpn instance detail on page 14

Output Fields When you enter this command, you are provided feedback on the status of your request. An exclamation point (!) indicates that an echo reply was received. A period (.) indicates that an echo reply was not received within the timeout period. An x indicates that an echo reply was received with an error code 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 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 Release 7.4.
 Command introduced in JUNOS Release 9.0 for EX Series switches.
 The **size** and **sweep** options were introduced in JUNOS 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 16
ping mpls l3vpn detail 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 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 Release 7.4.
 Command introduced in JUNOS Release 9.0 for EX Series switches.
 The **size** and **sweep** options were introduced in JUNOS Release 9.6.
 The **instance** option was introduced in JUNOS 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 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 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. 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 Release 7.4.
 Command introduced in JUNOS Release 9.0 for EX Series switches.
 The **size** and **sweep** options were introduced in JUNOS Release 9.6.
 The **instance** option was introduced in JUNOS 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 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 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>
 <egress *egress-address*>
 <exp *forwarding-class*>
 <logical-system (all | *logical-system-name*)>
 <multipoint>
 <size *bytes*>
 <source *source-address*>
 <standby *standby-path-name*>
 <sweep>

Release Information Command introduced before JUNOS Release 7.4.
 Command introduced in JUNOS Release 9.0 for EX Series switches.
 The **egress** and **multipoint** options were introduced in JUNOS Release 9.2.
 The **size** and **sweep** options were introduced in JUNOS Release 9.6.

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.

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.

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.

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).

You can configure the ping interval for the **ping mpls rsvp** command by specifying a new time in seconds using the **lsp-ping-interval** statement at the **[edit protocols mpls oam]** hierarchy level. For more information, see the *JUNOS 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 rsvp (Echo Reply Received) on page 22
 ping mpls rsvp (Echo Reply with Error Code) on page 23
 ping mpls rsvp detail on page 23
 ping mpls rsvp multipoint egress detail count on page 23
 ping mpls rsvp multipoint detail count on page 23
 ping mpls rsvp destination detail count size on page 23
 ping mpls rsvp destination detail sweep size on page 24

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
size 4500

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 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-ppvnp-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 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 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 27 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
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

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

Task	Command
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 <i>ds-fpc/pic/port</i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Start a bit error rate test (BERT) on a DS0 interface.
Options	<i>ds-fpc/pic/port</i> —DS0 interface name.
Additional Information	Before starting a BERT, you must disable the interface. To do so, include the <code>disable</code> statement at the <code>[edit interfaces <i>interface-name</i>]</code> 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 29
Output Fields	To display the results of the BERT, use the <code>show interfaces extensive</code> 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 <i>ds-fpc/pic/port</i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Stop a bit error rate test (BERT) on a DS0 interface.
Options	<i>ds-fpc/pic/port</i> —DS0 interface name.
Required Privilege Level	view
List of Sample Output	test interface ds0-bert-stop on page 30
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 <i>interface-name</i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Start a bit error rate test (BERT) on an E1 interface.
Options	<i>interface-name</i> —Interface name: <i>e1-fpc/pic/port</i> or <i>ce1-fpc/pic/port <:channel></i>
Additional Information	Before starting a BERT, you must disable the interface. To do this, include the <code>disable</code> statement at the <code>[edit interfaces <i>interface-name</i>]</code> 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 31
Output Fields	To display the results of the BERT, use the <code>show interfaces extensive</code> 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 <i>interface-name</i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Stop a bit error rate test (BERT) on an E1 interface.
Options	<i>interface-name</i> —Interface name: <i>e1-fpc/pic/port</i> or <i>ce1-fpc/pic/port <:channel></i> .
Required Privilege Level	view
List of Sample Output	test interface e1-bert-stop on page 32
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 <i>e3-fpc/pic/port</i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Start a bit error rate test (BERT) on an E3 interface.
Options	<i>e3-fpc/pic/port</i> —E3 interface name.
Additional Information	Before starting a BERT, you must disable the interface. To do so, include the <code>disable</code> statement at the <code>[edit interfaces <i>interface-name</i>]</code> 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 33
Output Fields	To display the results of the BERT, use the <code>show interfaces extensive</code> 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 <i>e3-fpc/pic/port</i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Stop a bit error rate test (BERT) on an E3 interface.
Options	<i>e3-fpc/pic/port</i> —E3 interface name.
Required Privilege Level	view
List of Sample Output	test interface e3-bert-stop on page 34
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 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 35

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 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 36

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 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 37

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 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 38

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 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 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 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 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 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 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 <i>interface-name</i>
Release Information	Command introduced in JUNOS Release 7.6. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Restarts auto-negotiation on a Fast Ethernet or Gigabit Ethernet interface.
Options	<i>interface-name</i> —Interface name: <i>fe-fpc/pic/port</i> or <i>ge-fpc/pic/port</i> .
Required Privilege Level	view
List of Sample Output	test interface restart-auto-negotiation on page 41
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 <i>interface-name</i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Start a bit error rate test (BERT) on a T1 interface.
Options	<i>interface-name</i> —Interface name: <i>t1-fpc/pic/port</i> or <i>ct1-fpc/pic/port <:channel></i> .
Additional Information	Before starting a BERT, you must disable the interface. To do so, include the disable statement at the [edit interfaces <i>interface-name</i>] 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 42
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 <i>interface-name</i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Stop a bit error rate test (BERT) on a T1 interface.
Options	<i>interface-name</i> —Interface name: <i>t1-interface-name fpc/pic/port</i> or <i>ct1-fpc/pic/port <:channel></i>
Required Privilege Level	view
List of Sample Output	test interface t1-bert-stop on page 43
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 <i>interface-name</i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Start a bit error rate test (BERT) on a T3 interface.
Options	<i>interface-name</i> —Interface name: <i>t3-fpc/pic/port</i> or <i>ct3-fpc/pic/port <:channel></i> .
Additional Information	Before starting a BERT, you must disable the interface. To do this, include the disable statement at the [edit interfaces <i>interface-name</i>] 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 44
Output Fields	To display the results of the BERT, use the show interfaces extensive command.
test interface t3-bert-start	<pre>user@host> test interface t3-bert-start t3-1/0/0</pre>

test interface t3-bert-stop

Syntax	test interface t3-bert-stop <i>interface-name</i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Stop a bit error rate test (BERT) on a T3 interface.
Options	<i>interface-name</i> —Interface name: <i>t3-fpc/pic/port</i> or <i>ct3-fpc/pic/port <:channel></i> .
Required Privilege Level	view
List of Sample Output	test interface t3-bert-stop on page 45
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 47 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 <i>profile-name</i> user <i>username</i> password <i>password</i> <detail>
Release Information	Command introduced in JUNOS 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	<p>detail—(Optional) Show the RADIUS attributes returned by the server.</p> <p>profile-name—Access profile name configured.</p> <p>password—Password for the username.</p> <p>username—User name to be authenticated to the RADIUS server.</p>
Required Privilege Level	view
List of Sample Output	<p>test access profile on page 49</p> <p>test access profile detail on page 49</p>
Output Fields	Table 6 on page 48 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.
Secret	The shared secret used for authentication with the RADIUS server.

Table 6: test access profile Output Fields (continued)

Field Name	Field Description
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
      IP Address    UDP    Source    Retry
      Attempts      Port    Address    Timeout Count Secret      Status
1.1.1.1            1812   10.10.10.10  2        1    TEST      Timeout
2
1.2.3.4            1812   Default     1        2    TEST      Timeout
3
192.168.10.10     1812   Default     3        3    TEST      Accepted
1

```

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

```

user@host> test access profile alpha user TEST password TEST detail
user@host> test access profile alpha user TEST password TEST detail
Test Radius Profile Access Detailed
  Profile Name      : alpha
  Client Username   : TEST
  Client Password   : TEST
  Num Servers       : 5
    Radius Server List
      IP Address      : 1.2.3.4
      UDP Port        : 1812
      Source Address   : 192.168.10.10
      Timeout         : 2
      Retry Count      : 1
      Secret          : TEST

```

```
Status      : Timeout
Attempts    : 2
```

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

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

Attribute List

Name	Length	Value
Class	52	SBR2CLÍ½%¿ð0%¿
Acct-Interim-Interval	4	5
Callback-Id	12	123-456-789
Callback-Number	13	555-555-1212
Class	15	Class information
Filter-Id	4	999
Filter-Id	6	12345
Framed-Compression	4	0
Framed-IP-Address	4	1:2:3:4
Framed-IP-Netmask	4	255:255:255:255
Framed-IPv6-Route	15	1:2:3:4:5:6:7:8
Framed-MTU	4	1024
Framed-Pool	9	pool sbr
Framed-Protocol	4	1
Framed-Route	8	iproute
Framed-Routing	4	0
Vendor-Specific	11	583
Idle-Timeout	4	3
Vendor-Specific	10	a4c
Vendor-Specific	14	a4c
Login-IP-Host	4	10:1:1:1
Login-LAT-Group	10	lat group
Login-LAT-Node	9	lat node
Login-LAT-Port	9	lat port
Login-LAT-Service	12	lat service
Login-Service	4	0
Login-TCP-Port	4	1812
Vendor-Specific	10	137
Vendor-Specific	38	137
Vendor-Specific	10	137
Vendor-Specific	9	137
Vendor-Specific	16	137
Vendor-Specific	10	137
Vendor-Specific	10	137
Vendor-Specific	10	137
Vendor-Specific	9	137
Vendor-Specific	10	137

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

test access radius-server

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

Release Information Command introduced in JUNOS 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 (1 through 65535).

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

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

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

Required Privilege Level view

List of Sample Output test access radius-server user password secret on page 53

Output Fields Table 7 on page 52 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 same as the RADIUS server or alternately, an IP address specified for authentication.
Server timeout	The RADIUS server timeout period.
Sever retry count	The number of authentication attempts allowed by the RADIUS server.
Secret	The shared secret used for authentication with the RADIUS server.

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

Field Name	Field Description
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 55 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot real-time performance monitoring (RPM). Commands are listed in alphabetical order.

Table 8: RPM Operational Mode Commands

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



NOTE: For information about how to configure RPM, see the *JUNOS 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 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 Release 7.4. Command introduced in JUNOS 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 57
Output Fields	Table 9 on page 57 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      user@host> show services rpm active-servers
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 <i>owner</i> > <since <i>time</i> > <test <i>name</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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	<p>none—Display the results of the last 50 probes for all RPM instances.</p> <p>brief detail—(Optional) Display the specified level of output.</p> <p>owner <i>owner</i>—(Optional) Display information for the specified probe owner.</p> <p>since <i>time</i>—(Optional) Display information from the specified time. Specify time as <i>yyy-mm-dd.hh:mm:ss</i>.</p> <p>test <i>name</i>—(Optional) Display information for the specified test.</p>
Required Privilege Level	view
List of Sample Output	<p>show services rpm history-results on page 59</p> <p>show services rpm history-results detail on page 60</p>
Output Fields	Table 10 on page 58 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	<p>Result of a particular probe performed by a remote host. The following information is contained in the results:</p> <ul style="list-style-type: none"> ■ 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	<p>Increment of measurement. Possible values are round-trip time delay and, for the probe type icmp-pin-timestamp, the egress and ingress delay:</p> <ul style="list-style-type: none"> ■ 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      user@host> show services rpm history-results detail
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 <i>owner</i> > <test <i>name</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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 <i>owner</i> —(Optional) Display information for the specified probe owner. test <i>name</i> —(Optional) Display information for the specified test.
Required Privilege Level	view
List of Sample Output	show services rpm probe-results on page 64 show services rpm probe-results (BGP Neighbor Discovery) on page 66
Output Fields	Table 11 on page 61 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- <i>n</i> , where <i>n</i> is a cumulative number.
Target address	Destination address used for the probes.
Source address	Source address used for the probes.
Probe type	Reflects the protocol configured on the receiving probe server. The following protocol types can be configured: http-get, http-metadata-get, icmp-ping, icmp-ping-timestamp, tcp-ping, udp-ping, and 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	<p>(BGP neighbor discovery) Name of the configured (if any) routing instance, logical system name, or both, in which the probe is configured:</p> <ul style="list-style-type: none"> ■ 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	<p>Raw measurement of a particular probe sample done by a remote host. This data is provided separately from the calculated results. The following information is contained in the raw measurement:</p> <ul style="list-style-type: none"> ■ 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.

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

Field Name	Field Description
Results over current test	<p>Probes are grouped into tests, and the statistics are calculated for each test. If a test contains 10 probes, the average, minimum, and maximum results are calculated from the results of those 10 probes. If the command is issued while the test is in progress, the statistics use information from the completed probes.</p> <ul style="list-style-type: none"> ■ 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 <code>icmp-ping-timestamp</code>, the egress delay and ingress delay. <p>For each measurement type, the following individual calculated results are provided:</p> <ul style="list-style-type: none"> ■ 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.
Results over last test	<p>Results for the most recently completed test. If the command is issued while the first test is in progress, this information is not displayed</p> <ul style="list-style-type: none"> ■ 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 <code>icmp-ping-timestamp</code>, the egress delay and ingress delay. <p>For each measurement type, the following individual calculated results are provided:</p> <ul style="list-style-type: none"> ■ 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.

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

Field Name	Field Description
Results over all tests	<p>Displays statistics made for all the probes, independently of the grouping into tests, as well as statistics for the current test.</p> <ul style="list-style-type: none"> ■ 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 <code>icmp-ping-timestamp</code> and <code>udp-ping-timestamp</code>, the egress delay and ingress delay. <p>For each measurement type, the following individual calculated results are provided:</p> <ul style="list-style-type: none"> ■ 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 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 connections are displayed, unless you specify a connection ID when you issue the command.
Options	<i>connection-id</i> —(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 67
Output Fields	Table 12 on page 67 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 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 69
Output Fields	Table 13 on page 69 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 71 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.	tracroute
Monitor the route to a network system.	tracroute monitor
Monitor the route to a remote host for an MPLS LSP signaled by LDP.	tracroute mpls ldp

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

Task	Command
Monitor the route to a remote host for an MPLS LSP signaled by RSVP.	<code>traceroute mpls rsvp</code>



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

For information about how to configure IP multicast parameters, see the *JUNOS 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 Release 9.5.

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



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

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

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

Frame delay variation—The difference, in microseconds, between consecutive frame delay values. 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 **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.

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

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

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.

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.

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.

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 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 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 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 Network Interfaces Configuration Guide*.

Required Privilege Level trace and maintenance

List of Sample Output monitor ethernet delay-measurement one-way on page 76
 monitor ethernet delay-measurement two-way on page 76
 monitor ethernet delay-measurement two-way (Invalid DMR Frames Received) on page 76

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 75 lists the run-time output fields for the monitor ethernet delay-measurement one-way command.
- Table 16 on page 75 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 ethernet 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 ethernet delay-measurement two-way Output Fields

Output Field Name	Output Field Description
Two-way Ethernet frame delay measurement request to	Unicast MAC address of the remote peer MEP.
Interface	Name of the Ethernet physical, logical, or trunk interface to which the local MEP is attached.
DMR received from	Unicast MAC address of the remote MEP that transmitted this DMR frame in response to a DMM frame.
Delay	Two-way delay, in microseconds, for the initiator-transmitted DMM frame.
Delay variation	Difference, in microseconds, between the current and previous delay values. This is also known as <i>jitter</i> .

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

Output Field Name	Output Field Description
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 Release 7.4. Command introduced in JUNOS 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 <i>JUNOS Interfaces Command Reference</i> . To control the output of the monitor interface interface-name command while it is running, use the keys listed in Table 17 on page 78. 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 79. 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 80
 monitor interface (Logical) on page 81
 monitor interface traffic on page 81
 monitor interface traffic detail on page 81

Output Fields Table 19 on page 79 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. <ul style="list-style-type: none"> ■ 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
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

Table 19: monitor interface Output Fields (continued)

Field Name	Field Description	Level of Output
Statistics	For an explanation of the interface statistics, see the description of the <code>show interfaces extensive</code> command for a particular interface type in the <i>JUNOS Interfaces Command Reference</i> .	All levels
Description	With the <code>traffic</code> option, displays the interface description configured at the <code>[edit interfaces interface-name]</code> hierarchy level.	detail

```

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

Interface: so-0/0/0, Enabled, Link is Up
Encapsulation: PPP, Keepalives, Speed: 0C48
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 (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:
  Input bytes:                0                Current delta [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 <i>lsp-name</i>																
Release Information	Command introduced before JUNOS Release 7.4.																
Description	Display the real-time status of the specified RSVP label-switched path (LSP).																
Options	<i>lsp-name</i> —Name of the LSP.																
Additional Information	<p>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.</p> <p>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 <code>monitor label-switched-path</code> command while it is running, use the keys listed in Table 20 on page 83. The keys are not case-sensitive.</p>																
<p>Table 20: Output Control Keys for the monitor label-switched-path Command</p> <table> <tr> <th>Key</th><th>Action</th></tr> <tr> <td>c</td><td>Clears the screen and refreshes the display for this LSP.</td></tr> <tr> <td>f</td><td>Freezes the display, preventing new information from being displayed.</td></tr> <tr> <td>l</td><td>Monitors a different LSP. After you type l, you can type the new LSP name.</td></tr> <tr> <td>n</td><td>Displays information about the next LSP (whose name is alphabetically higher than the current LSP name) configured on the router.</td></tr> <tr> <td>p</td><td>Goes to the previous LSP (whose name is alphabetically lower than the current LSP name) configured on the router.</td></tr> <tr> <td>q or Esc</td><td>Quits the command and returns to the command prompt.</td></tr> <tr> <td>t</td><td>Thaws, or restarts, the data display for this LSP.</td></tr> </table>		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.
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 84																
Output Fields	Table 21 on page 84 describes the output fields for the <code>monitor label-switched-path</code> 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: <ul style="list-style-type: none"> ■ <i>hostname</i>—Name of the router. ■ <i>Seconds</i>—Time elapsed since this display was started. ■ <i>Time</i>—Current local time.
(2)	<i>Delay</i> —Length of the time delay, in milliseconds, required to obtain the information in the monitor display. The first number shows the current sampling delay. The second number shows the shortest delay recorded to date. The third number shows the worst delay recorded to date. This delay can vary substantially depending on the system load.
(3)	Displays the following: <ul style="list-style-type: none"> ■ <i>To</i>—Destination address of the LSP. ■ <i>From</i>—Originating address of the LSP. ■ <i>State</i>—Current state of the LSP: Up or Down.
(4)	Displays the following: <ul style="list-style-type: none"> ■ <i>LSPName</i>—Name of the LSP. ■ <i>Type</i>—Type of LSP: Ingress, Egress, or Transit.
(5)	Displays the following: <ul style="list-style-type: none"> ■ <i>Label in</i>—Incoming label of the LSP. ■ <i>Label out</i>—Outgoing label of the LSP.
(6)	<i>Port number</i> —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)	<i>Record route</i> —All intermediate and egress router addresses for this LSP.
(9/10/11)	Displays traffic statistics: <ul style="list-style-type: none"> ■ <i>Output packets</i>—Number of packets that have traversed this LSP, and the change (delta) in the number since the last sample, typically 1 second ago. ■ <i>Output bytes</i>—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 83.

```

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=']'

```

monitor list

Syntax	monitor list
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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 <i>protocol</i>] hierarchy levels.
Required Privilege Level	trace
Related Topics	<ul style="list-style-type: none"> ■ monitor start ■ monitor stop
List of Sample Output	monitor list on page 86
Output Fields	Table 22 on page 86 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	<code>monitor start filename</code>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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	<i>filename</i> —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 <code>syslog</code> statement at the <code>[edit system]</code> hierarchy level and the <code>options</code> statement at the <code>[edit routing-options]</code> hierarchy level. The trace files generated by the routing protocol process are configured with <code>traceoptions</code> statements at the <code>[edit routing-options]</code> , <code>[edit interfaces]</code> , and <code>[edit protocols protocol]</code> hierarchy levels.
Required Privilege Level	trace
Related Topics	<ul style="list-style-type: none"> ■ <code>monitor list</code> ■ <code>monitor stop</code>
List of Sample Output	<code>monitor start</code> on page 87
Output Fields	Table 23 on page 87 describes the output fields for the <code>monitor start</code> command. Output fields are listed in the approximate order in which they appear.

Table 23: monitor start Output Fields

Field Name	Field Description
<code>***filename***</code>	Name of the file from which entries are being displayed. This line is displayed initially and when the command switches between log files.
<i>Date and time</i>	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	<code>monitor stop <i>filename</i></code>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Stop displaying the system log or trace file.
Options	<i>filename</i> —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 <code>syslog</code> statement at the <code>[edit system]</code> hierarchy level and the <code>options</code> statement at the <code>[edit routing-options]</code> hierarchy level. The trace files generated by the routing protocol process are those configured with <code>traceoptions</code> statements at the <code>[edit routing-options]</code> , <code>[edit interfaces]</code> , and <code>[edit protocols <i>protocol</i>]</code> hierarchy levels.
Required Privilege Level	trace
Related Topics	<ul style="list-style-type: none">■ <code>monitor list</code>■ <code>monitor start</code>
List of Sample Output	<code>monitor stop</code> on page 88
Output Fields	This command produces no output.
monitor stop	<code>user@host> monitor stop</code>

monitor traffic

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

Release Information Command introduced before JUNOS Release 7.4.
 Command introduced in JUNOS 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 90.

Table 24: Match Conditions for the monitor traffic Command

Match Type	Condition	Description
Entity	<code>host {address hostname}</code>	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.
	<code>net address</code>	Matches packets with source or destination addresses containing the specified network address.
	<code>net addressmask mask</code>	Matches packets containing the specified network address and subnet mask.
	<code>port [port-number port-name]</code>	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).

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

Match Type	Condition	Description
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 <i>value</i>	Matches packets shorter than or equal to the specified value, in bytes.
	greater <i>value</i>	Matches packets longer than or equal to the specified value, in bytes.
Protocol	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 <i>protocol</i> [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 92.

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.
&&	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 93.



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 90.
- 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 93
 monitor traffic detail count on page 94
 monitor traffic extensive (Absolute Sequence) on page 94
 monitor traffic extensive (Relative Sequence) on page 94
 monitor traffic extensive count on page 94
 monitor traffic interface on page 94
 monitor traffic matching on page 94
 monitor traffic (TX Matrix Plus Router) on page 95

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	<pre> 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) </pre>
monitor traffic extensive (Absolute Sequence)	<pre> 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) ... </pre>
monitor traffic extensive (Relative Sequence)	<pre> 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) ... </pre>
monitor traffic extensive count	<pre> user@host> monitor traffic extensive count 5 no-domain-names no-resolve listening on fxp0 13:18:17.406933 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 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) </pre>
monitor traffic interface	<pre> 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 ... </pre>
monitor traffic matching	<pre> 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. </pre>

```

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	<code>mtrace source</code> <code><routing-instance routing-instance-name></code>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Display trace information about an IP multicast path.
Options	<code>source</code> —Source hostname or address. <code>routing-instance routing-instance-name</code> —(Optional) Trace a particular routing instance.
Additional Information	The <code>mtrace</code> command for multicast traffic is similar to the <code>traceroute</code> command used for unicast traffic. Unlike <code>traceroute</code> , <code>mtrace</code> traces traffic backwards, from the receiver to the source.
Required Privilege Level	view
List of Sample Output	<code>mtrace source</code> on page 97
Output Fields	Table 27 on page 96 describes the output fields for the <code>mtrace</code> 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.
<i>number-of-hops</i>	Number of hops from the source to the named router or switch.
<i>router-name</i>	Name of the router or switch for this hop.
<i>address</i>	Address of the router or switch for this hop.
<i>protocol</i>	Protocol used (for example, PIM).
Round trip time	Average round-trip time, in milliseconds (ms).
total ttl of	Time-to-live (TTL) threshold.

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

mtrace from-source

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

Release Information Command introduced before JUNOS Release 7.4.
 Command introduced in JUNOS 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, JUNOS 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 100

Output Fields Table 28 on page 99 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.
<i>number-of-hops</i>	Number of hops from the source to the named router or switch.
<i>router-name</i>	Name of the router or switch for this hop.
<i>address</i>	Address of the router or switch for this hop.
<i>protocol</i>	Protocol used (for example, PIM).
Round trip time	Average round-trip time, in milliseconds (ms).
total ttl of	Time-to-live (TTL) threshold.
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.
Receiver	IP address receiving the multicast.

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

Field Name	Field Description
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 Release 7.4. Command introduced in JUNOS 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 102
Output Fields	Table 29 on page 101 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 Release 7.4.
 Command introduced in JUNOS Release 9.0 for EX Series switches.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Required Privilege Level view

List of Sample Output mtrace to-gateway on page 104

Output Fields Table 30 on page 104 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.
<i>number-of-hops</i>	Number of hops from the source to the named router or switch.
<i>router-name</i>	Name of the router or switch for this hop.
<i>address</i>	Address of the router or switch for this hop.
<i>protocol</i>	Protocol used (for example, PIM).
Round trip time	Average round-trip time, in milliseconds (ms).
total ttl of	Time-to-live (TTL) threshold.

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

```
Mtrace from 192.1.1.73 to 192.1.1.2 via group 225.1.1.1
Querying full reverse path... * *
 0 routerA.lab.mycompany.net (192.1.1.2)
-1 routerA.lab.mycompany.net (192.1.1.2) PIM thresh^ 1
-2 routerB.lab.mycompany.net (192.1.2.2) PIM thresh^ 1
```

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

traceroute

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

Release Information Command introduced before JUNOS Release 7.4.
 Command introduced in JUNOS Release 9.0 for EX Series switches.
 The `mpls` option was introduced in JUNOS 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-signalled or RSVP-signalled 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 107
 traceroute as-number-lookup host on page 108
 traceroute noresolve on page 108
 traceroute (Between CE Routers, Layer 3 VPN) on page 108
 traceroute (Through an MPLS LSP) on page 108

Output Fields Table 31 on page 107 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.
<i>number-of-hops</i>	Number of hops from the source to the named router or switch.
<i>router-name</i>	Name of the router or switch for this hop.
<i>address</i>	Address of the router or switch for this hop.
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 user@host> traceroute as-number-lookup 10.100.1.1
as-number-lookup host 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 user@host> traceroute vpn09
Routers, Layer 3 VPN) 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 user@host> traceroute mpls1
(Through an MPLS LSP) 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 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 110

Output Fields Table 32 on page 109 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 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. The range of values is **1** through **125**. 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 113
traceroute mpls ldp detail on page 113

Output Fields Table 33 on page 112 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 <code>traceroute mpls ldp fec</code> 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.	non 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>

Release Information Command introduced in JUNOS 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 115
 traceroute mpls rsvp detail on page 116

Output Fields Table 34 on page 114 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 <i>lsp-name</i> 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 user@host> traceroute mpls rsvp lsp-chicago-atlanta detail
detail Probe options: retries 3, exp 7

```

```

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

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

```

Part 2

System Management

- Accounting Operational Mode Commands on page 119
- Chassis Operational Mode Commands on page 141
- Command-Line Interface Operational Mode Commands on page 455
- File Management Operational Mode Commands on page 475
- Packet Forwarding Engine Operational Mode Commands on page 497
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Chapter 6

Accounting Operational Mode Commands

Table 35 on page 119 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: LLDP Operational Mode Commands

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

clear lldp neighbor

Syntax	clear lldp neighbor <interface <i>interface-name</i> >
Release Information	Command introduced in JUNOS 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 <i>interface-name</i> —(Optional) Clear the LLDP neighbors on the specified interface.
Required Privilege Level	clear
Related Topics	■ clear lldp statistics
List of Sample Output	clear lldp statistics on page 120
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 lldp neighbor <interface <i>interface-name</i> >
Release Information	Command introduced in JUNOS 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 <i>interface-name</i> —(Optional) Clear LLDP statistics on the specified interface.
Required Privilege Level	clear
Related Topics	■ clear lldp neighbor
List of Sample Output	clear lldp neighbor on page 121
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 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 123 show lldp detail on page 123
Output Fields	Table 36 on page 122 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 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 125
Output Fields	Table 37 on page 124 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      user@host> show lldp local-information
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 <i>interface-name</i> >
Release Information	Command introduced in JUNOS Release 9.6.
Description	On MX Series routers, display information about LLDP neighbors.
Options	interface <i>interface-name</i> —(Optional) Display the neighbor information about a particular physical interface.
Required Privilege Level	view
Related Topics	■ clear lldp neighbor
List of Sample Output	show lldp neighbors on page 128 show lldp neighbors interface ge-0/0/4 on page 128
Output Fields	Table 38 on page 126 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).
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).

Table 38: show lldp neighbors Output Fields (continued)

Field Name	Field Description
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**
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 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 130
Output Fields	Table 39 on page 129 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 user@host> show lldp remote-global-statistics  
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 <i>interface-name</i> >
Release Information	Command introduced in JUNOS Release 9.6.
Description	On MX Series routers, display information about Link Layer Discovery Protocol (LLDP) statistics.
Options	interface <i>interface-name</i> —(Optional) Display the statistics about a particular physical interface.
Required Privilege Level	view
Related Topics	■ clear lldp statistics
List of Sample Output	show lldp statistics on page 132 show lldp statistics interface ge-0/1/1 on page 132
Output Fields	Table 40 on page 131 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   user@host> show lldp statistics interface ge-0/1/1
interface ge-0/1/1 Interface Received Transmitted Unknown-TLVs With-Errors Discarded
-----
ge-0/1/1  544      540          0           0           0

```

show accounting profile

Syntax	show accounting profile <i>profile-name</i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Display accounting profile information.
Options	<i>profile-name</i> —Name of the accounting profile.
Required Privilege Level	view
List of Sample Output	show accounting profile (Interface) on page 134 show accounting profile (Filter) on page 135 show accounting profile (Destination Class) on page 135 show accounting profile (Routing Engine) on page 136
Output Fields	Table 41 on page 133 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.
<i>file information</i>	Information about the accounting profile log, including: <ul style="list-style-type: none"> ■ 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 <code>/var/log</code> 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	<p>Names of sampled statistics. This list varies depending on the configuration:</p> <ul style="list-style-type: none"> ■ 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-yyyyymmdd—(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      user@host> show accounting profile if_prof
(Interface)                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      user@host> show accounting profile repl
(Routing Engine)           Profile repl
                               Sampling interval: 1 minute(s), Profile Usage Count: 1
                               File accounting_profile_stats: maximum size 1048576, maximum number 5, bytes
                               written 901
                               Transfer Interval: 15 minute(s), Next Scheduled Transfer: 2001-06-17-18:00:46
                               Column Labels:
                               profile-layout
                               epoch-timestamp
                               hostname
                               date-yyyyymmdd
                               timeofday-hhmmss
                               uptime
                               cpu1min
                               cpu5min
                               cpu15min

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

```

show accounting records

Syntax	show accounting records <i>profile-name</i> <since <i>time</i> > <utc_timestamp>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Display accounting records for the specified accounting profile.
Options	<p><i>profile-name</i>—Name of the accounting profile.</p> <p>since <i>time</i>—(Optional) Display accounting statistics since the specified time (YYYY-MM-DD-HH:MM:SS)</p> <p>utc_timestamp—(Optional) Display the timestamp in Coordinated Universal Time (UTC) format.</p>
Required Privilege Level	view
List of Sample Output	<p>show accounting records on page 138</p> <p>show accounting records utc-timestamp on page 139</p> <p>show accounting records (Since Time) on page 139</p> <p>show accounting records (Filter Profile) on page 139</p> <p>show accounting records (Destination Class Profile) on page 139</p> <p>show accounting records (Routing Engine Profile) on page 139</p>
Output Fields	Table 42 on page 137 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.
Input Packets	(For interface profiles) Input packets.
Output Packets	(For interface profiles) Output packets.

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

Field Name	Field Description
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 repl
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 141 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.	<code>clear chassis display message</code>
(T Series, M120, M320, and MX Series routers only) Change Control Board (CB) status information.	<code>request chassis cb</code>
(M7i and M10i routers only) Control the operation of the Compact Forwarding Engine Board (CFEB).	<code>request chassis cfeb</code>
(TX Matrix Plus routers only) Control the operation of the Connector Interface Panel (CIP).	<code>request chassis cip</code>
(M120 and MX Series routers only) Control the operation of the specified fabric plane.	<code>request chassis fabric plane</code>
(M120 router only) Control the operation of the specified Forwarding Engine Board (FEB).	<code>request chassis feb</code>
(M20, M40, M40e, M120 M160, M320, and MX Series routers, and T Series routers only) Control the operation of the Flexible PIC Concentrator (FPC).	<code>request chassis fpc</code>
(M40e, M120, M160, M320, and MX Series routers, and T Series routers only) Resynchronize the Front Panel Module (FPM) craft interface status	<code>request chassis fpm resync</code>
(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.	<code>request chassis lcc</code>
(M40e and M160 routers only) Control the operation of the Miscellaneous Control Subsystem (MCS).	<code>request chassis mcs</code>
(M40e and M160 routers only) Control the operation of the Packet Forwarding Engine Clock Generator (PCG).	<code>request chassis pcg</code>

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

Task	CLI Command
Control the operation of a PIC.	<code>request chassis pic</code>
(M120 routers only) Control the operation of a FEB in a redundancy group.	<code>request chassis redundancy feb slot</code>
For routers with multiple Routing Engines, control which Routing Engine is the master.	<code>request chassis routing-engine master</code>
(T Series routers only) Control the operation of the specified SONET Clock Generator (SCG).	<code>request chassis scg</code>
(M40e and M160 routers only) Control which Switching and Forwarding Module (SFM) is master.	<code>request chassis sfm master switch</code>
(M40e and M160 routers only) Control the operation of the specified SFM.	<code>request chassis sfm</code>
(M320 routers and T Series routers only) Control the operation of the specified Switch Interface Board (SIB).	<code>request chassis sib</code>
(T Series routers only) Restart the specified Switch Processor Mezzanine Board (SPMB) on the CB.	<code>request chassis spmb restart</code>
(M320 routers only) Change the external clock source used for chassis synchronization.	<code>request chassis synchronization switch</code>
Send a message to the router's craft interface.	<code>set chassis display message</code>
Display chassis alarm status.	<code>show chassis alarms</code>
(M7i and M10i routers only) Change and display CFEB status information.	<code>show chassis cfeb</code>
(TX Matrix Plus routers only) Display environmental information about the CIP.	<code>show chassis cip</code>
View information that is currently displayed on the craft interface.	<code>show chassis craft-interface</code>
Display environmental information about the router chassis, including the temperature and information about the fans, power supplies, and Routing Engine.	<code>show chassis environment</code>
(T Series, M120, M320, and MX Series routers only) Display CB environmental information.	<code>show chassis environment cb</code>
(M20, M40, M40e, M120, M160, M320, and MX Series routers, and T Series routers only) Display FPC environmental status information.	<code>show chassis environment fpc</code>
(M20, M40, M40e, M120, M160, M320, and MX Series routers, and T Series routers only) Change and display FPM status information.	<code>show chassis environment fpm</code>

Table 43: Chassis Operational Mode Commands (continued)

Task	CLI Command
(M40e and M160 routers only) Display MCS environmental status information.	<code>show chassis environment mcs</code>
Display generic environmental information.	<code>show chassis environment</code>
(M40e and M160 routers only) Display PCG environmental status information.	<code>show chassis environment pcg</code>
(M40e, M120, M160, M320, and MX Series routers, and T Series routers only) Display Power Entry Module (PEM) environmental status information.	<code>show chassis environment pem</code>
Display Routing Engine environmental status information.	<code>show chassis environment routing-engine</code>
(T Series routers only) Display SCG environmental information.	<code>show chassis environment scg</code>
(M40e and M160 routers only) Display SFM environmental information.	<code>show chassis environment sfm</code>
(M320 routers and T Series router only) Display SIB environmental information.	<code>show chassis environment sib</code>
(M10i, M40e, M120, M160, M320, and MX Series routers, and T Series routers only) Display information about the ports on the CB Ethernet switch.	<code>show chassis ethernet-switch</code>
(MX Series routers only) Display information about the fan and fan trays.	<code>show chassis fan</code>
(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.	<code>show chassis fabric feb</code>
(TX Matrix Plus routers only) Display chassis fabric errors for FPCs and SIBs.	<code>show chassis fabric errors</code>
(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.	<code>show chassis fabric fpcs</code>
(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.	<code>show chassis fabric map</code>
(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)	<code>show chassis fabric plane</code>
(M120, MX Series, T1600, and TX Matrix Plus router only) Display the CB location of each plane.	<code>show chassis fabric plane-location</code>

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

Task	CLI Command
(T Series routers only) Display the state of the electrical and optical switch fabric links: <ul style="list-style-type: none"> ■ 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. 	<code>show chassis fabric sibs</code>
(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.	<code>show chassis fabric topology</code>
(M5, M10, and M120 routers only). Display FEB status information.	<code>show chassis feb</code>
Display the version levels of the firmware running on the SCB, SFM, SSB, FEB, and FPCs.	<code>show chassis firmware</code>
(J Series Services Routers only) Display status of the forwarding process (fwdd).	<code>show chassis forwarding</code>
(M20, M40, M40e, M160, and M320 routers, MX Series routers and T Series routers only) Display FPC status information.	<code>show chassis fpc</code>
(M120 router only) Display the FPC and FEB mapping and their respective states.	<code>show chassis fpc-feb-connectivity</code>
Display hardware inventory.	<code>show chassis hardware</code>
Display the status of the most recent unified in-service software upgrade (ISSU).	<code>show chassis in-service-upgrade</code>
(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.	<code>show chassis lccs</code>
Display chassis location information.	<code>show chassis location</code>
Display MAC address information.	<code>show chassis mac-addresses</code>
Display the network services mode.	<code>show chassis network services</code>
Display PIC status information.	<code>show chassis pic</code>
(J Series routers only) Display PIM power ratings.	<code>show chassis power-ratings</code>
(MX Series Ethernet Services routers only) Display power limits and usage.	<code>show chassis power</code>
(MX Series Ethernet Services routers only) Show power-on sequence for the chassis DPCs.	<code>show chassis power sequence</code>

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

Task	CLI Command
(Root System Domain [RSD] only) Display information about Protected System Domains (PSDs).	<code>show chassis psd</code>
(M120 routers only) Display status information about configured FEB redundancy groups.	<code>show chassis redundancy feb</code>
Display the information about one or more Routing Engines.	<code>show chassis routing-engine</code>
(M40 router only) Display System Control Board (SCB) status information.	<code>show chassis scb</code>
(M40e and M160 routers only) Change and display SFM status information.	<code>show chassis sfm</code>
(M320 routers and T Series routers only) Display SIB status information.	<code>show chassis sibs</code>
(T Series routers only) Display SPMB status information.	<code>show chassis spmb</code>
(T Series routers only) Display SPMB Switch Interface Board (SIB) status information.	<code>show chassis spmb sibs</code>
(M320 routers only) Display information about the external clock source currently used for chassis synchronization.	<code>show chassis synchronization</code>
Display chassis temperature threshold settings, in degrees Celsius.	<code>show chassis temperature-thresholds</code>



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 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 <fcc number scc>
Syntax (TX Matrix Plus Router)	clear chassis display message <fcc number sfc number>
Release Information	Command introduced in JUNOS Release 7.5. sfc option for the TX Matrix Plus routers introduced in JUNOS Release 9.6.
Description	(M40e, M160, and M320, and T Series routers only) Clear or stop a text message on the craft interface display, which is on the front of the router. The craft interface alternates the display of text messages with standard craft interface messages, switching between messages every 2 seconds. By default, the text message is displayed for 5 minutes. The craft interface display has four 20-character lines.
Options	<p>fcc 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 <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Clear or stop a text message on the craft interface on the TX Matrix router (or switch-card chassis).</p> <p>sfc 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 <i>number</i> with 0.</p>
Required Privilege Level	clear
Related Topics	<ul style="list-style-type: none"> ■ set chassis display message ■ show chassis craft-interface
List of Sample Output	clear chassis display message on page 146
Output Fields	See show chassis craft-interface for an explanation of output fields.
clear chassis display message	<p>The following example displays and then clears the text message on the craft interface display:</p> <pre> 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 ----- </pre>

```

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 <i>slot-number</i>
Syntax (TX Matrix Router)	request chassis cb (offline online) <slot <i>slot-number</i> lcc <i>number</i> slot <i>cb-slot-number</i> scc <i>number</i> slot <i>cb-slot-number</i> >
Syntax (TX Matrix Plus Router)	request chassis cb (offline online) <slot <i>slot-number</i> lcc <i>number</i> slot <i>cb-slot-number</i> sfc <i>number</i> slot <i>cb-slot-number</i> >
Release Information	Command introduced before JUNOS Release 7.4. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	(M120, M320, and MX Series routers and T Series routers only) Control the operation of the Control Board (CB).
Options	<p>offline—Take the CB offline.</p> <p>online—Bring the CB online.</p> <p>slot <i>slot-number</i>—CB slot number:</p> <ul style="list-style-type: none"> ■ (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 <i>lcc number</i> option (the recommended method), replace <i>cb-slot-number</i> with a value from 0 through 7. Otherwise, replace <i>slot-number</i> with a value from 0 through 31. <p>Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 router by using the <i>lcc number</i> option (the recommended method), replace <i>cb-slot-number</i> with a value from 0 through 3. Otherwise, replace <i>slot-number</i> with a value from 0 through 31.</p> <p>For example, the following commands have the same result:</p> <pre> user@host> request chassis cb lcc 1 slot 1 offline user@host> request chassis cb slot 9 offline </pre> <ul style="list-style-type: none"> ■ M320 router—Replace <i>slot-number</i> with a value from 0 through 10. ■ MX480/MX240 routers—Replace <i>slot-number</i> with a value from 0 through 1. ■ MX960 router—Replace <i>slot-number</i> with a value from 0 through 2. <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Change the CB status for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
Required Privilege Level	maintenance
List of Sample Output	request chassis cb on page 149
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 cfep

Syntax	request chassis cfep (offline online restart)
Release Information	Command introduced before JUNOS 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 Topics	■ show chassis cfep
List of Sample Output	request chassis cfep on page 150
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request chassis cfep	user@host> request chassis cfep offline CFEB Offlined

request chassis cip

Syntax	request chassis cip (offline online) slot <i>slot-number</i>
Release Information	Command introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	(TX Matrix Plus routers only) Control the operation of the Connector Interface Panel (CIP).
Options	<p>offline—Take the CIP offline.</p> <p>online—Bring the CIP online.</p> <p>slot <i>slot-number</i>—CIP slot number. Replace <i>slot-number</i> with a value ranging from 0 through 1.</p>
Required Privilege Level	maintenance
List of Sample Output	<p>request chassis cip offline slot (TX Matrix Plus Router) on page 151</p> <p>request chassis cip offline slot (TX Matrix Plus Router) on page 151</p>
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)	<pre>user@host > request chassis cip offline slot 0 CIP 0 offline done</pre>
request chassis cip offline slot (TX Matrix Plus Router)	<pre>user@host > request chassis cip online slot 0 CIP 0 online done</pre>

request chassis fabric plane

Syntax	<code>request chassis fabric plane <i>plane-number</i> (offline online)</code>
Release Information	Command introduced in JUNOS Release 8.0.
Description	(M120 and MX Series routers only) Control the operation of the specified fabric plane.
Options	<p>offline—Take the fabric plane offline. Use the <code>request chassis fabric plane <i>plane-number</i> offline</code> command to clear a FAULT state on a fabric plane. To bring the fabric plane back online, use the <code>request chassis fabric plane <i>plane-number</i> online</code> command.</p> <p>online—Bring the fabric plane online.</p> <p>plane <i>plane-number</i>—Fabric plane slot number. For the M120 router, replace <i>plane-number</i> with a value from 0 through 3. For the MX480 and MX240 routers, replace <i>plane-number</i> with a value from 0 through 7. For the MX960 router, replace <i>plane-number</i> with a value from 0 through 5.</p>
Required Privilege Level	maintenance
List of Sample Output	<p><code>request chassis fabric plane 0 online</code> on page 152</p> <p><code>request chassis fabric plane 0 offline</code> on page 152</p>
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request chassis fabric plane 0 online	<pre>user@host> request chassis fabric plane 0 online</pre> <p>Online initiated, use “show chassis fabric plane” to verify</p>
request chassis fabric plane 0 offline	<pre>user@host> request chassis fabric plane 0 offline</pre> <p>Offline initiated, use “show chassis fabric plane” to verify</p>

request chassis feb

Syntax	<code>request chassis feb (offline online restart) slot <i>slot-number</i></code>
Release Information	Command introduced in JUNOS Release 8.0.
Description	(M120 router only) Control the operation of the specified Forwarding Engine Board (FEB).
Options	<p><code>offline</code>—Take the specified FEB offline.</p> <p><code>online</code>—Bring the specified FEB online.</p> <p><code>restart</code>—Restart the specified FEB.</p> <p><code>slot <i>slot-number</i></code>—FEB slot number. Replace <i>slot-number</i> with a value from 0 through 5.</p>
Required Privilege Level	maintenance
List of Sample Output	<p><code>request chassis feb offline slot 0</code> on page 153</p> <p><code>request chassis feb online slot 0</code> on page 153</p> <p><code>request chassis feb restart slot 0</code> on page 153</p>
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request chassis feb offline slot 0	<pre>user@host> request chassis feb offline slot 0</pre> <p>Offline initiated, use "show chassis feb" to verify</p>
request chassis feb online slot 0	<pre>user@host> request chassis feb online slot 0</pre> <p>Online initiated, use "show chassis feb" to verify</p>
request chassis feb restart slot 0	<pre>user@host> request chassis feb restart slot 0</pre> <p>Restart initiated, use "show chassis feb" to verify</p>

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* <fcc *number*>

Release Information Command introduced before JUNOS Release 7.4.

Description (M20, M40, M40e, M120, M160, M320, MX Series, and T Series routers only) Control the operation of the Flexible PIC Concentrator (FPC).

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.
- MX480 router—0 through 5. On the MX480 router, slot-number corresponds to the Dense Port Concentrator (DPC) slot number.
- MX960 router—0 through 11. On the MX960 router, slot-number corresponds to the Dense Port Concentrator (DPC) 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 *fcc 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 *fcc 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 fcc 1 slot 1 offline
user@host> request chassis fpc slot 9 offline
```

- Other routers—0 through 7.

fcc 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 Topics ■ show chassis fpc

List of Sample Output request chassis fpc on page 155

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 <i>number</i> scc)
Syntax (TX Matrix Plus Router)	request chassis fpm resync (lcc <i>number</i> sfc <i>number</i>)
Release Information	Command introduced before JUNOS Release 7.4. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	(M40e, M120, M160, M320, MX Series, and T Series routers only) Resynchronize the craft interface status.
Options	<p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, resynchronize the craft interface status on a specified T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, resynchronize the craft interface status on a specified T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) Resynchronize the craft interface status on the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) Resynchronize the craft interface status on the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
Required Privilege Level	maintenance
List of Sample Output	request chassis fpm resync on page 156
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request chassis fpm resync	<pre>user@host> request chassis fpm resync Front Panel resynced</pre>

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 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 Topics ■ [show chassis lccs](#)

List of Sample Output [request chassis lcc on page 157](#)

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	<code>request chassis mcs (offline online restart) slot <i>slot-number</i></code>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(M40e and M160 routers only) Control the operation of the Miscellaneous Control Subsystem (MCS).
Options	<p><code>offline</code>—Take the MCS offline.</p> <p><code>online</code>—Bring the MCS online.</p> <p><code>restart</code>—Restart the MCS.</p> <p><code>slot <i>slot-number</i></code>—MCS slot number. Replace <i>slot-number</i> with 0 or 1.</p>
Required Privilege Level	maintenance
List of Sample Output	request chassis mcs on page 158
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request chassis mcs	<pre>user@host> request chassis mcs online slot 0 MCS 0 appears to be online already</pre>

request chassis pcg

Syntax	<code>request chassis pcg (offline online) slot <i>slot-number</i></code>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(M40e and M160 routers) Control the operation of the Packet Forwarding Engine (PFE) clock generator (PCG).
Options	<p><code>offline</code>—Take the PCG offline.</p> <p><code>online</code>—Bring the PCG online.</p> <p><code>slot <i>slot-number</i></code>—PCG slot number. Replace <i>slot-number</i> with 0 or 1.</p>
Required Privilege Level	maintenance
List of Sample Output	request chassis pcg on page 159
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request chassis pcg	<pre>user@host> request chassis pcg online slot 0 PCG 1 appears to be already online</pre>

request chassis pic

Syntax	<code>request chassis pic (offline online) fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i></code>
Syntax (TX Matrix and TX Matrix Plus Router)	<code>request chassis pic (offline online) fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i> <fcc <i>number</i>></code>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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.

Options	<p><code>offline</code>—Take the PIC offline.</p> <p><code>online</code>—Bring the PIC online.</p> <p><code>fpc-slot <i>slot-number</i></code>—Flexible PIC Concentrator (FPC) slot number. Replace <i>slot-number</i> with a value appropriate for your router or switch:</p> <ul style="list-style-type: none"> ■ EX Series switches: <ul style="list-style-type: none"> ■ 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 <code>fcc <i>number</i></code> option (the recommended method), replace <i>slot-number</i> with a value from 0 through 7. Otherwise, replace <i>slot-number</i> with a value from 0 through 31.
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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 Topics

- show chassis hardware
- show chassis pic

List of Sample Output request chassis pic on page 161

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 redundancy feb slot

Syntax	<code>request chassis redundancy feb slot <i>slot-number</i> (switch-to-backup revert-from-backup)</code>
Release Information	Command introduced in JUNOS Release 8.2.
Description	(M120 routers only) Control the operation of the specified Forwarding Engine Board (FEB) in a redundancy group.
Options	<p><i>slot-number</i>—FEB slot number. Replace <i>slot-number</i> with a value from 0 through 5.</p> <p><i>switch-to-backup</i>—Initiate a switchover from the specified active FEB to the backup FEB for the redundancy group.</p> <p><i>revert-from-backup</i>—Initiate a revert to the specified FEB following a switchover to the backup FEB for a redundancy group.</p>
Required Privilege Level	maintenance
List of Sample Output	<p><code>request chassis redundancy feb slot 2 switch-to-backup</code> on page 162</p> <p><code>request chassis redundancy feb slot 3 revert-to-backup</code> on page 162</p>
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	<pre>user@host> request chassis redundancy feb slot 2 switch-to-backup Switch initiated, use "show chassis redundancy febs" to verify</pre>
request chassis redundancy feb slot 3 revert-to-backup	<pre>user@host> request chassis redundancy feb slot 3 revert-to-backup Revert initiated, use "show chassis redundancy febs" to verify</pre>

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 <i>number</i> scc all-chassis) <force> <no-confirm>
Syntax (TX Matrix Plus Router)	request chassis routing-engine master (acquire release switch) (lcc <i>number</i> sfc all-chassis all-lcc) <force> <no-confirm>
Release Information	Command introduced before JUNOS Release 7.4. all-chassis option added in JUNOS Release 8.0. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
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 Software 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 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 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 Topics ■ show chassis routing-engine

List of Sample Output request chassis routing-engine master acquire on page 165
request chassis routing-engine master switch on page 165

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 <i>slot-number</i>
Syntax (TX Matrix and TX Matrix Plus Routers)	request chassis scg lcc <i>number</i> (offline online) slot <i>slot-number</i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(T Series routers only) Control the operation of the specified SONET Clock Generator (SCG).
Options	<p><i>lcc number</i>—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix Plus router, change the SCG status on a specified T640 router (or line-card chassis [LCC]) that is connected to the TX Matrix router. On a TX Matrix Plus router, change the SCG status on a specified T1600 router (or LCC) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p><i>offline</i>—Take the SCG offline. When you change the SCG status to offline, the unit is not powered down.</p> <p><i>online</i>—Bring the SCG online.</p> <p><i>slot slot-number</i>—SCG slot number. Replace <i>slot-number</i> with 0 or 1.</p>
Required Privilege Level	maintenance
Related Topics	■ show chassis environment scg
List of Sample Output	request chassis scg on page 166
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request chassis scg	<pre>user@host> request chassis scg online slot 0</pre> <p>Online initiated, use "show chassis environment scg" to verify</p>

request chassis sfm

Syntax	<code>request chassis sfm (offline online restart) slot <i>slot-number</i></code>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(M40e and M160 routers only) Control the operation of the specified Switching and Forwarding Module (SFM).
Options	<p><code>offline</code>—Take the SFM offline.</p> <p><code>online</code>—Bring the SFM online.</p> <p><code>restart</code>—Restart the SFM.</p> <p><code>slot <i>slot-number</i></code>—SFM slot number. Replace <i>slot-number</i> with a value from 0 through 3.</p>
Required Privilege Level	maintenance
Related Topics	■ show chassis sfm
List of Sample Output	<p>request chassis sfm (M40e) on page 167</p> <p>request chassis sfm (M160) on page 167</p>
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request chassis sfm (M40e)	<pre>user@host> request chassis sfm slot 1 restart M40e router: error: SFM 0 is transitioning to online state.</pre>
request chassis sfm (M160)	<pre>user@host> request chassis sfm slot 1 restart M160 router: Restart initiated, use "show chassis sfm" to verify</pre>

request chassis sfm master switch

Syntax	request chassis sfm master switch <no-confirm>
Release Information	Command introduced before JUNOS 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	<p>By default, the SFM in slot 0 (SFM0) is the master and the SFM in slot 1 (SFM1) is the backup. If you use this command to change the master, and then restart the chassis software for any reason, the master reverts to the default setting. To change the default master SFM, include the sfm statement at the [edit chassis redundancy] hierarchy level in the configuration. For more information, see the <i>JUNOS System Basics Configuration Guide</i>.</p> <p>All installed SFMs are always working together to forward packets. If an SFM fails, the other SFMs take over and traffic continues to flow uninterrupted.</p>
Required Privilege Level	maintenance
Related Topics	■ show chassis sfm
List of Sample Output	request chassis sfm master switch on page 168 request chassis sfm master switch no-confirm on page 168
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request chassis sfm master switch	<pre>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</pre>
request chassis sfm master switch no-confirm	<pre>user@host> request chassis sfm master switch no-confirm Switch initiated, use "show chassis sfm" to verify</pre>

request chassis sib

Syntax	request chassis sib (offline online) slot <i>slot-number</i>
Syntax (TX Matrix Router)	request chassis sib (lcc <i>number</i> scc) (offline online) slot <i>slot-number</i> (start-receiver <i>number</i> stop-receiver <i>number</i>)
Syntax (TX Matrix Plus Router)	request chassis sib (all-lcc f13 <i>slot-number</i> f2s <i>sib-slot/sib-f2s-slot-number</i> lcc <i>number</i> (offline online) slot <i>slot-number</i>)
Release Information	Command introduced before JUNOS Release 7.4. f13 and f2s options for the TX Matrix Plus router introduced in JUNOS Release 9.6.
Description	(M320 routers and T Series routers only) Control the operation of the specified Switch Interface Board (SIB).
Options	<p>all-lcc—(TX Matrix Plus routers only) Control the operation of the SIB on all T1600 routers connected to the TX Matrix Plus router.</p> <p>f13 <i>slot-number</i>—Control the operation of F13 SIBs. Replace <i>slot-number</i> with a value 0, 1, 3, 4, 6, 7, 8, 9, 11, or 12.</p> <p>f2s <i>sib-slot/sib-f2s-slot-number</i>—(TX Matrix Plus routers only) (Optional) Control the operation of the SIB F2s. Replace <i>sib-slot</i> with a value from 0 through 4, followed by a <i>sib-f2s-slot-number</i> value 0, 2, 4 or 6.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, the T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, the T1600 router (or line-card chassis) and TX Matrix Plus that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix router only) TX Matrix router (or switch-card chassis) on a routing matrix.</p> <p>offline—Take the SIB offline.</p> <p>online—Bring the SIB online.</p> <p>slot <i>slot-number</i>—SIB slot number. For the T320 router, replace <i>slot-number</i> with a value from 0 through 2. For the T640 router, TX Matrix router, and T1600 router in a routing matrix, replace <i>slot-number</i> with a value from 0 through 4.</p> <p>start-receiver <i>number</i>—(TX Matrix routers only) Start the SIB optical receiver. Replace <i>number</i> with a value from 0 through 3.</p> <p>stop-receiver <i>number</i>—(TX Matrix routers only) Stop the SIB optical receiver. Replace <i>number</i> with a value from 0 through 3.</p>
Required Privilege Level	maintenance

Related Topics ■ [show chassis sibs](#)

List of Sample Output [request chassis sib on page 170](#)

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 spmb restart

Syntax	request chassis spmb restart slot <i>slot-number</i>
Syntax (TX Matrix Router)	request chassis spmb restart (<i>lcc number</i> <i>scc</i>) slot <i>slot-number</i>
Syntax (TX Matrix Plus Router)	request chassis spmb restart (<i>lcc number</i> <i>sfc number</i>) slot <i>slot-number</i>
Release Information	Command introduced before JUNOS Release 7.4. sfc option for the TX Matrix Plus router introduced in JUNOS Release 9.6.
Description	Restart the specified Switch Processor Mezzanine Board (SPMB) on the Control Board (CB).
Options	<p><i>lcc number</i>—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, the T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, the T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p><i>scc</i>—(TX Matrix routers only) TX Matrix router (or switch-card chassis) in the routing matrix.</p> <p><i>sfc</i>—(TX Matrix Plus routers only) TX Matrix Plus router (or switch-fabric chassis) in the routing matrix.</p> <p>slot <i>slot-number</i>—CB slot number. Replace <i>slot-number</i> with 0 or 1.</p>
Required Privilege Level	maintenance
Related Topics	<ul style="list-style-type: none"> ■ show chassis spmb ■ show chassis spmb sibs
List of Sample Output	request chassis spmb restart on page 171
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 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	<p>By default, the SSB in slot 0 (SSB0) is the master and the SSB in slot 1 (SSB1) is the backup. If you use this command to change the master, and then restart the chassis software for any reason, the master reverts to the default setting. To change the default master SSB, include the ssb statement at the [edit chassis redundancy] hierarchy level in the configuration. For more information, see the <i>JUNOS System Basics Configuration Guide</i>.</p> <p>The configurations on the two SSBs do not have to be the same, and they are not automatically synchronized. If you configure both SSBs as masters, when the chassis software restarts for any reason, the SSB in slot 0 becomes the master and the one in slot 1 becomes the backup.</p> <p>The switchover from the primary SSB to the backup SSB is immediate. The SSB takes several seconds to reinitialize the Flexible PIC Concentrators (FPCs) and restart the PICs. The interior gateway protocol (IGP) and BGP convergence times depend on the specific network environment.</p>
Required Privilege Level	maintenance
Related Topics	■ show chassis ssb
List of Sample Output	request chassis ssb master switch on page 172 request chassis ssb master switch no-confirm on page 172
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request chassis ssb master switch	<pre>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</pre>
request chassis ssb master switch no-confirm	<pre>user@host> request chassis ssb master switch no-confirm Switch initiated, use "show chassis ssb" to verify</pre>

request chassis synchronization switch

Syntax	request chassis synchronization switch (external-a external-b)
Release Information	Command introduced in JUNOS Release 7.6. Command introduced in JUNOS Release 8.3 for M40e routers. Command introduced in JUNOS Release 9.3 for M120 routers.
Description	(M320, M40e, and M120 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 Topics	■ show chassis synchronization
List of Sample Output	request chassis synchronization switch external-a on page 173
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 " <i>message</i> " <permanent>
Syntax (TX Matrix Router)	set chassis display message " <i>message</i> " (<i>lcc number</i> <i>scc</i>) <permanent>
Syntax (TX Matrix Plus Router)	set chassis display message " <i>message</i> " (<i>fpc-slot slot-number</i> <i>lcc number</i> <i>sfc number</i>) <permanent>
Release Information	Command introduced before JUNOS Release 7.4. sfc option for TX Matrix Plus router introduced in JUNOS release 9.6.
Description	Display or stop a text message on the craft interface display, which is on the front of the router. The craft interface alternates the display of text messages with standard craft interface messages, switching between messages every 2 seconds. By default, the text message is displayed for 5 minutes. The craft interface display has four 20-character lines.
Options	<p>"<i>message</i>"—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.</p> <p>fpc-slot <i>slot-number</i>—(TX Matrix Plus routers only) Display the text message on the craft interface for a specific Flexible PIC Concentrator (FPC). Replace <i>slot-number</i> with a value from 0 through 31.</p> <p><i>lcc number</i> —(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 <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) Display the text message on the craft interface display of the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) Display the text message on the craft interface display of the TX Matrix Plus router (or switch-fabric chassis).</p> <p>permanent—(Optional) Display a text message on the craft interface display permanently.</p>
Required Privilege Level	clear
Related Topics	<ul style="list-style-type: none"> ■ clear chassis display message ■ show chassis craft-interface

List of Sample Output `set chassis display message` (Creating) on page 175
 `set chassis display message` (Deleting) on page 175

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 <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis alarms <lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option for the TX Matrix Plus router introduced in JUNOS Release 9.6.
Description	Display information about the conditions that have been configured to trigger alarms.
Options	<p>none—Display information about the conditions that have been configured to trigger alarms.</p> <p><i>lcc number</i> — (TX Matrix and TX Matrix Plus routers only) (Optional) On the TX Matrix router, show information about a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On the TX Matrix Plus router, show information about a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix router only) (Optional) Show information about the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus router only) (Optional) Show information about the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
Additional Information	<p>You cannot clear the alarms for chassis components. Instead, you must remedy the cause of the alarm. When a chassis alarm is lit, it indicates that you are running the router or switch in a manner that we do not recommend.</p> <p>On 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.</p>
Required Privilege Level	view
List of Sample Output	<p>show chassis alarms (Alarms Active) on page 177</p> <p>show chassis alarms (No Alarms Active) on page 177</p> <p>show chassis alarms (Alarms Active on a TX Matrix Router) on page 177</p> <p>show chassis alarms (Backup Routing Engine) on page 177</p> <p>show chassis alarms (Alarms Active on a TX Matrix Plus Router) on page 178</p>
Output Fields	Table 44 on page 177 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 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 Topics	■ request chassis cfeb
List of Sample Output	show chassis cfeb (M7i) on page 180 show chassis cfeb (M10i) on page 180
Output Fields	Table 45 on page 179 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: <ul style="list-style-type: none"> ■ 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.
Start time	Time when the Routing Engine detected that the CFEB was running.

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

Field Name	Field Description
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 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 Topics	■ request chassis cip
Output Fields	Table 46 on page 181 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: <ul style="list-style-type: none"> ■ 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. <p>NOTE: The current configuration of the routing matrix based on a TX Matrix Plus router supports only one SFC.</p> <ul style="list-style-type: none"> ■ Port numbers 0 to 15 on Ethernet switch 1 can be used to connect up to 16 LCCs. <p>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.</p>
Type	Type of CIP: <ul style="list-style-type: none"> ■ XE—Ethernet switch 0 ports used for connections to the SFC control plane or other devices such as JCS1200. ■ GE—Ethernet switch 1 ports used for connections to the LCC control plane.
Connected-to	Show control plane connection to a specific LCC or SFC.
Link	State of the connection to an LCC control plane, SFC control plane, or other devices: Up or Down.
Speed	Ethernet link speed.
Duplex	Type of Ethernet link: Full or Half Duplex.
Auto-neg	Status of auto-negotiation 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 <fcc number scc>
Syntax (TX Matrix Plus Router)	show chassis craft-interface <fcc number sfc number>
Release Information	Command introduced before JUNOS Release 7.4. sfc option for the TX Matrix Plus router introduced in JUNOS 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	<p>none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, show messages that are currently displayed on the craft interface on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, show messages that are currently displayed on the craft interface on the TX Matrix Plus router and its attached T1600 routers.</p> <p>fcc 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 <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix router only) (Optional) Show messages that are currently displayed on the craft interface for the TX Matrix router (or switch-card chassis).</p> <p>sfc 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 <i>number</i> with 0.</p>
Required Privilege Level	view
Related Topics	<ul style="list-style-type: none"> ■ clear chassis display message ■ set chassis display message
List of Sample Output	<p>show chassis craft-interface (M20) on page 184</p> <p>show chassis craft-interface (M40) on page 185</p> <p>show chassis craft-interface (M120) on page 185</p> <p>show chassis craft-interface (M160) on page 186</p> <p>show chassis craft-interface (TX Matrix Routing Matrix) on page 186</p> <p>show chassis craft-interface (TX Matrix Plus Routing Matrix) on page 188</p>

Output Fields Table 47 on page 184 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: <ul style="list-style-type: none"> ■ <i>router-name</i>—Name of the router. ■ Up—How long the router has been operational, in days, hours, minutes, and seconds. ■ <i>message</i>—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      user@host> show chassis craft-interface
craft-interface (M20) 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 <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis environment <lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display environmental information about the router or switch chassis, including the temperature and information about the fans, power supplies, and Routing Engine.
Options	<p>none—Display environmental information about the router or switch chassis. On a TX Matrix router, display environmental information about the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the TX Matrix Plus router and its attached T1600 routers.</p> <p><i>lcc number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display chassis environmental information for a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display chassis environmental information for a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display chassis environmental information about the TX Matrix router (or switch-card chassis).</p> <p><i>sfc number</i>—(TX Matrix Plus routers only) (Optional) Display chassis environmental information about the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p> <p>For information about the remaining options, see the Related Topics.</p>
Required Privilege Level	view
Related Topics	<ul style="list-style-type: none"> ■ show chassis environment cb ■ show chassis environment cip ■ show chassis environment fpc ■ show chassis environment fpm ■ show chassis environment mcs ■ show chassis environment pcg

- show chassis environment pem
- show chassis environment routing-engine

List of Sample Output

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Output Fields Table 48 on page 192 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: <ul style="list-style-type: none"> ■ (M5, M10, M20, and M40 routers only) Information about each power supply. Status can be OK, Testing (during initial power-on), Failed, or Absent. ■ (M7i, M10i, M40e, M120, M160, M320, and T Series routers 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 Centigrade (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.
Misc	Information about other components of the chassis: <ul style="list-style-type: none"> ■ On some routers, this field indicates the status of one or more additional components. ■ On the M160 router, Misc includes CIP (Connector Interface Panel). OK indicates 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) 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) user@host> show chassis environment
Class Item Status Measurement
Temp Routing Engine OK 41 degrees C / 105 degrees F
Fan Fan 0 OK
Fan Fan 1 OK

```

```

show chassis environment (M5) user@host> show chassis environment
Class Item Status Measurement
Power Power Supply A OK
Power Power Supply B Absent
Temp FPC 0 OK 30 degrees C / 86 degrees F
FEB OK 33 degrees C / 91 degrees F
PS Intake OK 27 degrees C / 80 degrees F
PS Exhaust OK 27 degrees C / 80 degrees F
Routing Engine OK 34 degrees C / 93 degrees F
Fans Left Fan 1 OK Spinning at normal speed
Left Fan 2 OK Spinning at normal speed
Left Fan 3 OK Spinning at normal speed
Left Fan 4 OK Spinning at normal speed
Misc Craft Interface OK

```

```

show chassis environment (M7i) user@host> show chassis environment
Class Item Status Measurement
Power Power Supply 0 OK
Power Power Supply 1 Absent
Temp Intake OK 22 degrees C / 71 degrees F
FPC 0 OK 23 degrees C / 73 degrees F
Power Supplies OK 23 degrees C / 73 degrees F
CFEB Intake OK 24 degrees C / 75 degrees F
CFEB Exhaust OK 29 degrees C / 84 degrees F
Routing Engine OK 26 degrees C / 78 degrees F
Fans Fan 1 OK Spinning at normal speed
Fan 2 OK Spinning at normal speed
Fan 3 OK Spinning at normal speed
Fan 4 OK Spinning at normal speed

```

```

show chassis environment (M10) user@host> show chassis environment
Class Item Status Measurement
Power Power Supply A OK
Power Power Supply B Failed
Temp FPC 0 OK 36 degrees C / 96 degrees F
FPC 1 OK 35 degrees C / 95 degrees F
FEB OK 34 degrees C / 93 degrees F
PS Intake OK 31 degrees C / 87 degrees F
PS Exhaust OK 34 degrees C / 93 degrees F
Routing Engine OK 35 degrees C / 95 degrees F
Fans Left Fan 1 OK Spinning at normal speed
Left Fan 2 OK Spinning at normal speed
Left Fan 3 OK Spinning at normal speed
Left Fan 4 OK Spinning at normal speed
Misc Craft Interface OK

```

```

show chassis environment (M10i) 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) 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) 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) 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) 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)**

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)**

```
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)**

```
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) 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)**

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) 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)**

```
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	
Fans	FPC 6 Top	Testing	
	FPC 6 Bottom	Testing	
	FPM GBUS	OK	23 degrees C / 73 degrees F
	FPM Display	Absent	
	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
Misc	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
	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
Fans	FPM GBUS	OK	30 degrees C / 86 degrees F
	FPM Display	OK	34 degrees C / 93 degrees F
	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)

user@host> show chassis environment

```

Class Item              Status      Measurement
Temp PEM 0              OK         27 degrees C / 80 degrees F
      PEM 1              Absent
      SCG 0              OK         31 degrees C / 87 degrees F
      SCG 1              OK         35 degrees C / 95 degrees F
      Routing Engine 0    OK         30 degrees C / 86 degrees F
      Routing Engine 1    OK         30 degrees C / 86 degrees F
      CB 0                OK         31 degrees C / 87 degrees F
      CB 1                OK         31 degrees C / 87 degrees F
      SIB 0               OK         41 degrees C / 105 degrees F
      SIB 0 (B)           OK         34 degrees C / 93 degrees F
      SIB 1               OK         0 degrees C / 32 degrees F
      SIB 1 (B)           OK         0 degrees C / 32 degrees F
      SIB 2               OK         0 degrees C / 32 degrees F
      SIB 2 (B)           OK         0 degrees C / 32 degrees F
      SIB 3               OK         0 degrees C / 32 degrees F
      SIB 3 (B)           OK         0 degrees C / 32 degrees F
      SIB 4               OK         0 degrees C / 32 degrees F
      SIB 4 (B)           OK         0 degrees C / 32 degrees F
      FPC 0 Top           OK         49 degrees C / 120 degrees F
      FPC 0 Bottom        OK         50 degrees C / 122 degrees F
      FPC 1 Top           OK         48 degrees C / 118 degrees F
      FPC 1 Bottom        OK         49 degrees C / 120 degrees F
      FPM GBUS            OK         27 degrees C / 80 degrees F
      FPM Display         OK         30 degrees C / 86 degrees F
Fans  Top Left Front fan  OK         Spinning at normal speed
      Top Left Middle fan OK         Spinning at normal speed

```

Top Left Rear fan	OK	Spinning at normal speed
Top Right Front fan	OK	Spinning at normal speed
Top Right Middle fan	OK	Spinning at normal speed
Top Right Rear fan	OK	Spinning at normal speed
Bottom Left Front fan	OK	Spinning at normal speed
Bottom Left Middle fan	OK	Spinning at normal speed
Bottom Left Rear fan	OK	Spinning at normal speed
Bottom Right Front fan	OK	Spinning at normal speed
Bottom Right Middle fan	OK	Spinning at normal speed
Bottom Right Rear fan	OK	Spinning at normal speed
Rear Tray Top fan	OK	Spinning at normal speed
Rear Tray Second fan	OK	Spinning at normal speed
Rear Tray Third fan	OK	Spinning at normal speed
Rear Tray Fourth fan	OK	Spinning at normal speed
Rear Tray Fifth fan	OK	Spinning at normal speed
Rear Tray Sixth fan	OK	Spinning at normal speed
Rear Tray Seventh fan	OK	Spinning at normal speed
Rear Tray Bottom fan	OK	Spinning at normal speed
Misc CIP	OK	
SPMB 0	OK	
SPMB 1	OK	

show chassis environment (TX Matrix Plus Router)

user@host> **show chassis environment**
sfc0-re0:

Class	Item	Status	Measurement
Temp	PEM 0	OK	28 degrees C / 82 degrees F
	PEM 1	Absent	
	Routing Engine 0	OK	27 degrees C / 80 degrees F
	Routing Engine 1	OK	29 degrees C / 84 degrees F
	CB 0 Intake	OK	26 degrees C / 78 degrees F
	CB 0 Exhaust A	OK	25 degrees C / 77 degrees F
	CB 0 Exhaust B	OK	25 degrees C / 77 degrees F
	CB 1 Intake	OK	26 degrees C / 78 degrees F
	CB 1 Exhaust A	OK	26 degrees C / 78 degrees F
	CB 1 Exhaust B	OK	26 degrees C / 78 degrees F
	SIB F13 0	OK	47 degrees C / 116 degrees F
	SIB F13 0 (B)	OK	48 degrees C / 118 degrees F
	SIB F13 1	OK	38 degrees C / 100 degrees F
	SIB F13 1 (B)	OK	37 degrees C / 98 degrees F
	SIB F2S 0/0	OK	27 degrees C / 80 degrees F
	SIB F2S 0/2	OK	28 degrees C / 82 degrees F
	SIB F2S 0/4	OK	27 degrees C / 80 degrees F
	SIB F2S 0/6	OK	28 degrees C / 82 degrees F
	SIB F2S 1/0	OK	26 degrees C / 78 degrees F
	SIB F2S 1/2	OK	26 degrees C / 78 degrees F
	SIB F2S 1/4	OK	26 degrees C / 78 degrees F
	SIB F2S 1/6	OK	26 degrees C / 78 degrees F
	SIB F2S 2/0	OK	25 degrees C / 77 degrees F
	SIB F2S 2/2	OK	25 degrees C / 77 degrees F
	SIB F2S 2/4	OK	23 degrees C / 73 degrees F
	CIP 0 Intake	OK	23 degrees C / 73 degrees F
	CIP 0 Exhaust A	OK	24 degrees C / 75 degrees F
	CIP 0 Exhaust B	OK	24 degrees C / 75 degrees F
	CIP 1 Intake	OK	24 degrees C / 75 degrees F
	CIP 1 Exhaust A	OK	25 degrees C / 77 degrees F
	CIP 1 Exhaust B	OK	25 degrees C / 77 degrees F
Fans	Fan Tray 0 Fan 1	OK	Spinning at normal speed
	Fan Tray 0 Fan 2	OK	Spinning at normal speed
	Fan Tray 0 Fan 3	OK	Spinning at normal speed
	Fan Tray 0 Fan 4	OK	Spinning at normal speed

Fan Tray 0 Fan 5	OK	Spinning at normal speed
Fan Tray 0 Fan 6	OK	Spinning at normal speed
Fan Tray 1 Fan 1	OK	Spinning at normal speed
Fan Tray 1 Fan 2	OK	Spinning at normal speed
Fan Tray 1 Fan 3	OK	Spinning at normal speed
Fan Tray 1 Fan 4	OK	Spinning at normal speed
Fan Tray 1 Fan 5	OK	Spinning at normal speed
Fan Tray 1 Fan 6	OK	Spinning at normal speed
Fan Tray 2 Fan 1	OK	Spinning at normal speed
Fan Tray 2 Fan 2	OK	Spinning at normal speed
Fan Tray 2 Fan 3	OK	Spinning at normal speed
Fan Tray 2 Fan 4	OK	Spinning at normal speed
Fan Tray 2 Fan 5	OK	Spinning at normal speed
Fan Tray 2 Fan 6	OK	Spinning at normal speed
Fan Tray 2 Fan 7	OK	Spinning at normal speed
Fan Tray 2 Fan 8	OK	Spinning at normal speed
Fan Tray 2 Fan 9	OK	Spinning at normal speed
Fan Tray 3 Fan 1	OK	Spinning at normal speed
Fan Tray 3 Fan 2	OK	Spinning at normal speed
Fan Tray 3 Fan 3	OK	Spinning at normal speed
Fan Tray 3 Fan 4	OK	Spinning at normal speed
Fan Tray 3 Fan 5	OK	Spinning at normal speed
Fan Tray 3 Fan 6	OK	Spinning at normal speed
Fan Tray 3 Fan 7	OK	Spinning at normal speed
Fan Tray 3 Fan 8	OK	Spinning at normal speed
Fan Tray 3 Fan 9	OK	Spinning at normal speed
Fan Tray 4 Fan 1	OK	Spinning at normal speed
Fan Tray 4 Fan 2	OK	Spinning at normal speed
Fan Tray 4 Fan 3	OK	Spinning at normal speed
Fan Tray 4 Fan 4	OK	Spinning at normal speed
Fan Tray 4 Fan 5	OK	Spinning at normal speed
Fan Tray 4 Fan 6	OK	Spinning at normal speed
Fan Tray 4 Fan 7	OK	Spinning at normal speed
Fan Tray 4 Fan 8	OK	Spinning at normal speed
Fan Tray 4 Fan 9	OK	Spinning at normal speed
Fan Tray 5 Fan 1	OK	Spinning at normal speed
Fan Tray 5 Fan 2	OK	Spinning at normal speed
Fan Tray 5 Fan 3	OK	Spinning at normal speed
Fan Tray 5 Fan 4	OK	Spinning at normal speed
Fan Tray 5 Fan 5	OK	Spinning at normal speed
Fan Tray 5 Fan 6	OK	Spinning at normal speed
Fan Tray 5 Fan 7	OK	Spinning at normal speed
Fan Tray 5 Fan 8	OK	Spinning at normal speed
Fan Tray 5 Fan 9	OK	Spinning at normal speed
Misc SPMB 0	OK	
SPMB 1	OK	

1cc0-re0:

Class	Item	Status	Measurement
Temp	PEM 0	OK	27 degrees C / 80 degrees F
	PEM 1	Absent	
	SCG 0	OK	31 degrees C / 87 degrees F
	SCG 1	OK	35 degrees C / 95 degrees F
	Routing Engine 0	OK	30 degrees C / 86 degrees F
	Routing Engine 1	OK	30 degrees C / 86 degrees F
	CB 0	OK	31 degrees C / 87 degrees F
	CB 1	OK	31 degrees C / 87 degrees F
	SIB 0	OK	41 degrees C / 105 degrees F
	SIB 0 (B)	OK	34 degrees C / 93 degrees F
	SIB 1	OK	0 degrees C / 32 degrees F

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

show chassis environment 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. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	(M120, M320, MX Series, and T Series routers only) Display environmental information about the Control Boards (CBs).
Options	<p>none—Display environmental information about all CBs. For a TX Matrix router, display environmental information about all CBs on the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display environmental information about all CBs on the TX Matrix Plus router and its attached T1600 routers.</p> <p>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 <i>number</i> with a value from 0 through 3.</p> <p>scc —(TX Matrix router only) (Optional) Display environmental information about the CBs in the TX Matrix router (or switch-card chassis).</p> <p>sfc number—(TX Matrix Plus router only) (Optional) Display environmental information about the CBs in the TX Matrix Plus router (or switch-fabric chassis).</p> <p>slot—(Optional) Display environmental information about the specified CB. Replace <i>slot</i> with 0 or 1.</p>
Required Privilege Level	view
List of Sample Output	<p>show chassis environment cb (M120) on page 208</p> <p>show chassis environment cb (M320) on page 208</p> <p>show chassis environment cb (MX240) on page 209</p> <p>show chassis environment cb (MX480) on page 209</p> <p>show chassis environment cb (MX960) on page 210</p> <p>show chassis environment cb (TX Matrix Router) on page 210</p> <p>show chassis environment cb (TX Matrix Plus Router) on page 211</p>

Output Fields Table 49 on page 208 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. <ul style="list-style-type: none"> ■ Online—CB is online and running. ■ Offline—CB is powered down.
Temperature	Temperature of the air flowing past the CB.
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.
FPGA Revision	Revision level of the field-programmable gate array (FPGA).

```

show chassis environment cb (M120) 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) 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 user@host> show chassis environment cb
environment cb CB 0 status:
(MX240)      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 user@host> show chassis environment cb
environment cb CB 0 status:
(MX480)      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)

```

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

```

```
1cc3-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 cip

Syntax (TX Matrix Plus Router)	show chassis environment cip <slot-number>
Release Information	Command introduced in JUNOS 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 <i>slot</i> with a value from 0 through 1.
Required Privilege Level	view
Output Fields	Table 50 on page 215 lists the output fields for the <code>show chassis environment cip</code> 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: <ul style="list-style-type: none"> ■ 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 Centigrade (C) and Farenheit (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 <fcc number> <slot>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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	<p>none—Display environmental information about all FPCs. On a TX Matrix router, display environmental information about all FPCs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all FPCs on the TX Matrix Plus router and its attached T1600 routers.</p> <p>fcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the FPC in a T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the FPC in a T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>slot—(Optional) Display environmental information about an individual FPC:</p> <ul style="list-style-type: none"> ■ (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 fcc number option (the recommended method), replace <i>slot</i> with a value from 0 through 7. Similarly, on a TX Matrix Plus router, if you specify the number of the T1600 router by using only the fcc number option (the recommended method), replace <i>slot</i> with a value from 0 through 7. Otherwise, replace <i>slot</i> with a value from 0 through 31. For example, the following commands have the same result: <pre> user@host> show chassis environment fpc 1 fcc 1 user@host> show chassis environment fpc 9 </pre> ■ M120 router—Replace <i>slot</i> with a value from 0 through 5. ■ MX240 router—Replace <i>slot</i> with a value from 0 through 2. ■ MX480 router—Replace <i>slot</i> with a value from 0 through 5. ■ MX960 router—Replace <i>slot</i> with a value from 0 through 11. ■ Other routers—Replace <i>slot</i> 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) on page 219
 show chassis environment fpc (M160) on page 220
 show chassis environment fpc (M320) on page 220
 show chassis environment fpc (MX240) on page 221
 show chassis environment fpc (MX480) on page 222
 show chassis environment fpc (MX960) on page 222
 show chassis environment fpc (T Series Core Routers) on page 223
 show chassis environment fpc lcc (TX Matrix Router) on page 224
 show chassis environment fpc lcc (TX Matrix Plus Router) on page 225

Output Fields Table 51 on page 218 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: <ul style="list-style-type: none"> ■ Unknown— FPC is not detected by the router. ■ Empty—No FPC is present. ■ Present—FPC is detected by the chassis daemon but is either not supported by the current version of JUNOS or FPC is coming up but not yet online. ■ Ready— FPC is in intermediate or transition state. ■ Announce online— Intermediate state where 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.
Temperature MMBO	(T640 router only) Temperature of the air flowing past the type 3 FPC.

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

Field Name	Field Description
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) 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) 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) 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)**

```

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)**

```

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)**

```

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 Release 7.4. sfc option introduced for the TX Matrix Plus router in JUNOS 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	<p>none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display environmental information about the front panel modules (craft interfaces) on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the front panel modules (craft interfaces) on the TX Matrix Plus router and its attached T1600 routers.</p> <p>lcc 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 <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix router only) (Optional) Display environmental information about the front panel module (craft interface) on the TX Matrix router (or switch-card chassis).</p> <p>sfc 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).</p>
Required Privilege Level	view
List of Sample Output	show chassis environment fpm (M40e and M160) on page 228 show chassis environment fpm (M320) on page 228 show chassis environment fpm (MX240) on page 229 show chassis environment fpm (MX480) on page 229 show chassis environment fpm (T Series) on page 229 show chassis environment fpm lcc (TX Matrix Router) on page 229 show chassis environment fpm scc (TX Matrix Router) on page 229 show chassis environment fpm sfc (TX Matrix Plus Router) on page 229
Output Fields	Table 52 on page 228 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: <ul style="list-style-type: none"> ■ Online—FPM is online and running. ■ Offline—FPM is powered down.
FPM CMB Voltage	(M40e and M160 routers only) Information about the voltage supplied to the FPM chassis management bus (CMB) device. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM GBUS Voltage	(M320 and T Series routers only) Information about the voltage supplied to the FPM generic bus (GBUS) device. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM 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)**

```
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)**

```
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)      user@host> show chassis environment fpm
FPM status:
  State                               Online
  I2CS Revision                       41

show chassis environment fpm (MX480)      user@host> show chassis environment fpm
FPM status:
  State                               Online
  I2CS Revision                       41

show chassis environment fpm (T Series)   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 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) on page 232 show chassis environment mcs (M160) on page 232
Output Fields	Table 53 on page 231 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: <ul style="list-style-type: none"> ■ 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      user@host> show chassis environment mcs
environment mcs   MCS 0 status:
(M40e)            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      user@host> show chassis environment mcs
environment mcs   MCS 0 status:
(M160)            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 Release 7.4.
Description	(M40e and M160 routers only) Display environmental information about the Packet Forwarding Engine clock generators (PCGs).
Options	<p>none—Display environmental information about both PCGs.</p> <p>slot —(Optional) Display environmental information about an individual PCG. Replace <i>slot</i> with 0 or 1.</p>
Required Privilege Level	view
List of Sample Output	<p>show chassis environment pcg (M40e) on page 234</p> <p>show chassis environment pcg (M160) on page 234</p>
Output Fields	Table 54 on page 233 lists the output fields for the <code>show chassis environment pcg</code> 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	<p>Status of PCG:</p> <ul style="list-style-type: none"> ■ Present—PCG is detected by the chassis process but is either not supported by the current version of JUNOS Software 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      user@host> show chassis environment pcg
environment pcg (M40e)
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      user@host> show chassis environment pcg
environment pcg   environment pcg
(M160)              (M160)
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 Release 7.4.
Description	(M40e, M120, M160, M320, MX Series, and T Series routers only) Display Power Entry Module (PEM) environmental status information.
Options	<p>none—Display environmental information about both PEMs. For the TX Matrix router, display environmental information about the PEMs, the TX Matrix router, and its attached T640 routers. For the TX Matrix Plus router, display environmental information about the PEMs, the TX Matrix Plus router, and its attached T1600 routers.</p> <p>lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the PEM in a specified T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display environmental information about the PEM in a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display environmental information about the PEM in the TX Matrix router (or switch-card chassis).</p> <p>sfc—(TX Matrix Plus routers only) (Optional) Display environmental information about the PEM in the TX Matrix Plus router (or switch-fabric chassis).</p> <p>slot —(Optional) Display environmental information about an individual PEM. Replace <i>slot</i> with 0 or 1.</p>
Required Privilege Level	view
List of Sample Output	show chassis environment pem (M40e) on page 236 show chassis environment pem (M120) on page 236 show chassis environment pem (M160) on page 237 show chassis environment pem (M320) on page 237 show chassis environment pem (MX240) on page 237 show chassis environment pem (MX480) on page 237 show chassis environment pem (MX960) on page 238 show chassis environment pem (T320) on page 238 show chassis environment pem (T640) on page 238

show chassis environment pem lcc (TX Matrix Routing Matrix) on page 238
 show chassis environment pem scc (TX Matrix Routing Matrix) on page 238
 show chassis environment pem sfc (TX Matrix Plus Routing Matrix) on page 239
 show chassis environment pem lcc (TX Matrix Plus Routing Matrix) on page 239

Output Fields Table 55 on page 236 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 <i>slot</i> status	Number of the PEM slot.
State	Status of the PEM.
Temperature	Temperature of the air flowing past the PEM.
AC Input	Status of the AC input for the specified component
AC Output	Status of the AC output for the specified component.
DC input	Status of the DC input for the specified component.
DC output	Status of the DC output for the specified component.
Load	(Not available on M40e or M160 routers) Information about the load on supply, in percentage of rated current being used.
Voltage	(M120, M160, M320, T640, T1600, TX Matrix, and TX Matrix Plus routers only) Information about voltage supplied to the PEM.
Current	(T640, T1600, TX Matrix, and TX Matrix Plus routers only) Information about the PEM current.
Power	(T640, T1600, TX Matrix, and TX Matrix Plus routers only) Information about the PEM power.
SCG/CB/SIB	(T640, T1600, TX Matrix, and TX Matrix Plus routers only) SONET Clock Generator/Control Board/Switch Interface Board.

```

show chassis      user@host> show chassis environment pem
environment pem  PEM 0 status:
(M40e)           State                Online
                   Temperature          OK
                   AC input             OK
                   DC output            OK
  
```

```

show chassis      user@host> show chassis environment pem
environment pem  PEM 0 status:
(M120)           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)**

```

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)**

```

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)**

```

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)**

```

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)

```

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)

```

user@host> show chassis environment pem
PEM 0 status:
  State           Online
  Temperature      OK
  DC input:        OK

```

show chassis environment pem (T640)

```

user@host> show chassis environment pem
PEM 0 status:
  State           Online
  Temperature      22 degrees C / 71 degrees F
  DC 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 Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display Routing Engine environmental status information.
Options	<p>none—Display environmental information about all Routing Engines. For a TX Matrix router, display environmental information about all Routing Engines on the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display environmental information about all Routing Engines on the TX Matrix Plus router and its attached T1600 routers.</p> <p>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 <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix router only) (Optional) Display environmental information about the Routing Engine in the TX Matrix router (or switch-card chassis).</p> <p>sfc—(TX Matrix Plus router only) (Optional) Display environmental information about the Routing Engine in the TX Matrix Plus router (or switch-fabric chassis).</p> <p>slot—(Optional) Display environmental information about an individual Routing Engine. On M10i, M20, M40e, M120, M160, M320, MX Series, and T Series routers, replace <i>slot</i> with 0 or 1. On M5, M7i, M10, and M40 routers and on the J Series router, replace <i>slot</i> with 0. On EX3200 switches and EX4200 standalone switches, replace <i>slot</i> with 0. On EX4200 switches in a Virtual Chassis configuration and on EX8208 and EX8216 switches, replace <i>slot</i> with 0 or 1.</p>
Required Privilege Level	view
List of Sample Output	<p>show chassis environment routing-engine (Nonredundant) on page 241</p> <p>show chassis environment routing-engine (Redundant) on page 241</p> <p>show chassis environment routing-engine (TX Matrix Plus Router) on page 241</p>

Output Fields Table 56 on page 241 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: <ul style="list-style-type: none"> ■ 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 Release 7.4.
Description	Display SONET Clock Generator (SCG) environmental information.
Options	<p>none—(TX Matrix and TX Matrix Plus routers only) Display environmental information about all SCGs. On a TX Matrix router, display environmental information about all SCGs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all SCGs on the TX Matrix Plus router and its attached T1600 routers.</p> <p>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 <i>number</i> with a value from 0 through 3.</p> <p>slot—(Optional) Display environmental information about the SCG. Replace <i>slot</i> with 0 or 1.</p>
Required Privilege Level	view
List of Sample Output	show chassis environment scg (T Series) on page 243 show chassis environment scg lcc (TX Matrix Router) on page 243 show chassis environment scg lcc (TX Matrix Plus Router) on page 244 show chassis environment scg (TX Matrix Plus Router) on page 244
Output Fields	Table 57 on page 242 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 <i>slot</i> status	Number of the SCG slot: 0 or 1.
State	Status of the SCG: <ul style="list-style-type: none"> ■ Online—SCG is online and running. ■ Offline—SCG is powered down. <p>If two SCGs are installed and online, one is functioning as the master, and the other is the standby.</p>

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

Field Name	Field Description
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)**

```

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 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 <i>slot</i> with a value from 0 through 3.
Required Privilege Level	view
List of Sample Output	show chassis environment sfm (M40e) on page 247 show chassis environment sfm (M160) on page 247
Output Fields	Table 58 on page 246 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 <i>slot</i> 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: <ul style="list-style-type: none"> ■ Online—SFM is online and running. ■ Offline—SFM is powered down. <p>If two SFMs are installed and online, one is functioning as the master, and the other is marked as the Standby.</p>
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) 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) 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 <fcc number scc> <slot>
Syntax (TX Matrix Plus Router)	show chassis environment sib <fcc number sfc number> <slot> <f13 sib-slot> <f2s sib-slot/sib-f2s-slot-number>
Release Information	Command introduced before JUNOS Release 7.4. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	(M320, T Series routers, TX Matrix and TX Matrix Plus only) Display Switch Interface Boards (SIB) environmental information.
Options	<p>none—(TX Matrix and TX Matrix Plus routers only) Display environmental information about all SIBs. On a TX Matrix router, display environmental information about all SIBs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all SIBs on the TX Matrix Plus router and its attached T1600 routers.</p> <p>f13 sib-slot—(TX Matrix Plus routers only) (Optional) Display SIB F13 environmental information only. Replace <i>sib-slot</i> with one of the following values: 0, 1, 3, 4, 6, 7, 8, 9, 11, or 12.</p> <p>f2s sib-slot/sib-f2s-slot-number—(TX Matrix Plus routers only) (Optional) Display SIB F2s environmental information only. Replace <i>sib-slot</i> with a value from 0 through 4, followed by a <i>sib-f2s-slot-number</i> value of 0, 2, 4 or 6.</p> <p>fcc 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 <i>number</i> with a value from 0 through 4.</p> <p>scc—(TX Matrix routers only) (Optional) Display environmental information about the SIB in the TX Matrix router (or switch-card chassis).</p> <p>sfc—(TX Matrix Plus routers only) (Optional) Display environmental information about the SIB in the TX Matrix Plus router (or switch-fabric chassis).</p> <p>slot—(Optional) Display environmental information about the specified SIB. For the M320 router, replace <i>slot</i> with a value from 0 through 3. For the T640 and T1600 routers, replace <i>slot</i> with a value from 0 through 4. On a TX Matrix and TX Matrix</p>

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) on page 250
 show chassis environment sib 1 (T640) on page 251
 show chassis environment sib scc (TX Matrix Router) on page 251
 show chassis environment sib (TX Matrix Plus Router) on page 252
 show chassis environment sib sfc (TX Matrix Plus Router) on page 262
 show chassis environment sib f13 (TX Matrix Plus Router) on page 267
 show chassis environment sib f2s (TX Matrix Plus Router) on page 268

Output Fields Table 59 on page 250 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	<p>SIB slot number:</p> <ul style="list-style-type: none"> ■ 0 through 3 on an M320 router. ■ 0 or 2 on a T320 router. ■ 0 through 4 on a T640 or T1600 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	<p>Status of the SIB:</p> <ul style="list-style-type: none"> ■ Online—SIB is online and running. ■ Offline—SIB is powered down. ■ Spare (T640 router only)—SIB is redundant and will move to active state if one of the working SIBs fails. <p>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.</p>
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      user@host> show chassis environment sib
environment sib (M320)
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)**

```

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      user@host> show chassis environment sib
environment sib   sfc0-re0:
(TX Matrix Plus Router)

```

```

-----
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 (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 Release 7.4. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	(M10i, M40e, M120, M160, M320, MX Series, and T Series routers only) Display information about the ports on the Control Board (CB) Ethernet switch.
Options	<p>none—Display information about each connected port on the Ethernet switch. On a TX Matrix router, display information about each connected port on the Ethernet switch on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display information about each connected port on the Ethernet switch on the TX Matrix Plus router and its attached T1600 routers.</p> <p>errors—(Optional) Display the numbers and types of errors accumulated on all ports of the Ethernet switch.</p> <p>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 <i>port</i> with a value from 0 through 15. On the TX Matrix Plus router, replace <i>port</i> with a value from 0 through 27.</p> <p>errors switch number—(TX Matrix Plus routers only) (Optional) Display the numbers and types of errors accumulated on the specified switch. Replace <i>number</i> with a value from 0 through 2.</p> <p>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 <i>number</i> with a value from 0 through 3.</p> <p>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).</p>

sfc number—(TX Matrix Plus router only) (Optional) Display information about the ports on the CB's Ethernet switch on the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

statistics—(Optional) Display traffic statistics for each connected port on the Ethernet switch.

statistics port—(Optional) Display traffic statistics for the specified port on the Ethernet switch. On the TX Matrix router, replace *port* with a value from 0 through 25. On the TX Matrix Plus router, replace *port* with a value from 0 through 27.

statistics switch number—(TX Matrix Plus routers only) (Optional) Display traffic statistics for the specified Ethernet switch number. Replace *number* with a value from 0 through 2.

Required Privilege Level view

List of Sample Output show chassis ethernet-switch on page 271
 show chassis ethernet-switch (TX Matrix Router) on page 272
 show chassis ethernet-switch errors on page 273
 show chassis ethernet-switch statistics on page 274
 show chassis ethernet-switch errors (TX Matrix Plus Router) on page 275
 show chassis ethernet-switch sfc errors (TX Matrix Plus Router) on page 275
 show chassis ethernet-switch statistics (TX Matrix Plus Router) on page 276

Output Fields Table 60 on page 270 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	Information about the link between each port on the CB's Ethernet switch and one of the following devices:
or	<ul style="list-style-type: none"> ■ FPC0 (Flexible PIC Concentrator 0) through FPC7 ■ Local controller
Link is good on FE port n connected to device	<ul style="list-style-type: none"> ■ Other RE (on a system with two Routing Engines) ■ SPMB (Switch Processor Mezzanine Board) ■ (TX Matrix router only) LCC0 (line-card chassis 0) through LCC3
Speed is	Speed at which the Ethernet link is running: 10 Mb or 100 Mb. When the device is Other RE on the TX Matrix router, the speed is 1000 Mb.
Duplex is	Duplex type of the Ethernet link: full or half.
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 <i>JUNOS System Basics Configuration Guide</i>).
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)	

Table 60: show chassis ethernet-switch Output Fields (continued)

Field Name	Field Description
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.
RX Symbol Errors	Number of symbols received that the router did not correctly decode.

```

show chassis      user@host> show chassis ethernet-switch
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

```

**show chassis
ethernet-switch (TX
Matrix Router)**

```

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

```

```

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 Xtns     0
TX Frame excessive deferl   0
TX Oversize Packets         0
TX Jabbers                  0
TX FCS Error Counter        0
TX Fragment Counter         0
TX Byte Counter             329291449
RX Packets 64 Octets        5640175
RX Packets 65-127 Octets    79875
RX Packets 128-255 Octets   6338
RX Packets 256-511 Octets   165
RX Packets 512-1023 Octets  4317
RX Packets 1024-1518 Octets 10
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets                   5730880
RX Multicast Packets        4
RX Broadcast Packets        1735007
RX FCS Errors               0
RX Align Errors             0
RX Fragments                0
RX Symbol errors            0
RX Unsupported opcodes      0
RX Out of Range Length      0
RX False Carrier Errors     0
RX Undersize Packets        0
RX Oversize Packets         0
RX Jabbers                  0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter       0
RX Control Frame Counter    0
RX Pause Frame Counter      0

```

```

RX Byte Counter          371282850
Statistics for port 18 connected to device SPMB:
TX Packets 64 Octets      2990326
TX Packets 65-127 Octets  8572
TX Packets 128-255 Octets 4
TX Packets 256-511 Octets 49
TX Packets 512-1023 Octets 0
TX Packets 1024-1518 Octets 10793
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets                 3009744
TX Multicast Packets      20
TX Broadcast Packets      2458322
TX Single Collision frames 0
TX Mult. Collision frames 0
TX Late Collisions        0
TX Excessive Collisions   0
TX Collision frames       0
TX PAUSEMAC Ctrl Frames   0
TX MAC ctrl frames       0
TX Frame deferred Xmsns   0
TX Frame excessive deferl 0
TX Oversize Packets       0
TX Jabbers                0
TX FCS Error Counter      0
TX Fragment Counter       0
TX Byte Counter           203712524
RX Packets 64 Octets      873454
RX Packets 65-127 Octets  8886
RX Packets 128-255 Octets 44
RX Packets 256-511 Octets 21862
RX Packets 512-1023 Octets 2
RX Packets 1024-1518 Octets 49912
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets                 954160
RX Multicast Packets      0
RX Broadcast Packets      402369
RX FCS Errors             0
RX Align Errors           0
RX Fragments              0
RX Symbol errors          0
RX Unsupported opcodes    0
RX Out of Range Length    0
RX False Carrier Errors   0
RX Undersize Packets      0
RX Oversize Packets       0
RX Jabbers                0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter     0
RX Control Frame Counter  0
RX Pause Frame Counter    0
RX Byte Counter           137941752
...

```

show chassis fan

Syntax	show chassis fan
Release Information	Command introduced in JUNOS 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 chassis fan on page 281
Output Fields	Table 61 on page 281 lists the output fields for the show chassis fabric fpcs command. Output fields are listed in the approximate order in which they appear.

Table 61: show chassis fabric errors Output Fields

Field Name	Field Description
Item	Fan item identifier.
Status	Status of the fan: <ul style="list-style-type: none"> ■ OK-Fan is running properly and within the normal range. ■ Check-Fan is in Check state because of some fault or alarm condition.
RPM	Fan speed in revolutions per minute (RPM).
Measurement	Fan speed status based on different chassis cooling requirements: <ul style="list-style-type: none"> ■ Spinning at high speed ■ Spinning at intermediate-speed ■ Spinning at 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 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 283
Output Fields	Table 62 on page 283 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 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 285
`show chassis fabric errors` (F2S SIB errors on a TX Matrix Plus Router) on page 285
`show chassis fabric errors` (SIB errors specific to an LCC connected to a TX Matrix Plus Router) on page 285
`show chassis fabric errors` (FPC errors specific to an LCC connected to a TX Matrix Plus Router) on page 286

Output Fields Table 63 on page 285 lists the output fields for the `show chassis fabric fpcs` command. Output fields are listed in the approximate order in which they appear.

Table 63: show chassis fabric 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 CL0S 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 <fcc number>
Release Information	Command introduced before JUNOS 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	<p>none—Display the switch fabric link state. On a TX Matrix router, display the switching fabric link states for the FPCs in all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display the switching fabric link states for the FPCs in all T1600 routers connected to the TX Matrix Plus router.</p> <p>fcc 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 <i>number</i> with a value from 0 through 3.</p>
Required Privilege Level	view
List of Sample Output	<p>show chassis fabric fpcs (M320 Router) on page 288</p> <p>show chassis fabric fpcs (MX240 Router) on page 288</p> <p>show chassis fabric fpcs (MX480 Router) on page 288</p> <p>show chassis fabric fpcs (MX960 Router) on page 289</p> <p>show chassis fabric fpcs (T320 Router) on page 290</p> <p>show chassis fabric fpcs (T640 Router) on page 291</p> <p>show chassis fabric fpcs (TX Matrix Router) on page 291</p> <p>show chassis fabric fpc (TX Matrix Plus Router) on page 292</p> <p>show chassis fabric fpcs fcc (TX Matrix Plus Router) on page 295</p>
Output Fields	Table 64 on page 287 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	<p>Switching fabric link state for each FPC:</p> <ul style="list-style-type: none"> ■ Unused—FPC is not present. ■ Links ok—Link between the SIB and FPC is active. ■ Link error—Link between the SIB and FPC is not operational. ■ Plane enabled—Fabric plane is operational and running.

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 1
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
    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 2
...
```

show chassis fabric fpcs
(MX480 Router)

```
user@host> show chassis fabric fpcs
Fabric management FPC state
FPC 1
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
```

```

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
(MX960 Router)

```

user@host> show chassis fabric fpcs
Fabric management FPC state
FPC 5
PFE #0
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Unused
Plane 3: Unused
Plane 4: Unused
Plane 5: Unused
PFE #1
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Unused
Plane 3: Unused
Plane 4: Unused
Plane 5: Unused
PFE #2
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Unused
Plane 3: Unused
Plane 4: Unused
Plane 5: Unused
PFE #3
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Unused
Plane 3: Unused
Plane 4: Unused

```

```

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

```

show chassis fabric fpcs
(T320 Router)

```

user@host> show chassis fabric fpcs
Fabric management FPC state:
FPC #0
  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 #1
    SIB #0 Links ok
    SIB #1 Plane enabled
    SIB #2 Plane enabled
    SIB #3 Plane enabled
    SIB #4 Plane enabled
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 #0 Links ok
    SIB #1 Plane enabled
    SIB #2 Plane enabled
    SIB #3 Plane enabled
    SIB #4 Plane enabled
...

FPC #7
  PFE #1
    SIB #0 Links ok

```

```

SIB #1 Plane enabled
SIB #2 Plane enabled
SIB #3 Plane enabled
SIB #4 Plane enabled

```

**show chassis fabric fpcs
(T640 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 #2
```

```
PFE #0
```

```

SIB #0 Links ok
SIB #1 Plane enabled
SIB #2 Plane enabled
SIB #3 Plane enabled
SIB #4 Plane enabled

```

```
PFE #1
```

```

SIB #0 Links ok
SIB #1 Plane enabled
SIB #2 Plane enabled
SIB #3 Plane enabled
SIB #4 Plane enabled

```

```
...
```

**show chassis fabric fpcs
(TX Matrix Router)**

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

```
lcc0-re0:
```

```
-----
Fabric management FPC state:
```

```
FPC #1
```

```
PFE #1
```

```
SIB #4 Links ok
```

```
FPC #2
```

```
PFE #0
```

```
SIB #4 Links ok
```

```
PFE #1
```

```
SIB #4 Links ok
```

```
FPC #3
```

```
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
```

```
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 fpc
(TX Matrix Plus Router)

```
user@host> show chassis fabric fpcs
lcc0-re1:
```

```
-----
Fabric management FPC state:
```

```
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

```

```
lcc1-re1:
```

```
-----
Fabric management FPC state:
```

```
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

```

```
lcc2-re1:
```

```
-----
Fabric management FPC state:
```

```
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
        PFE #1
            SIB #0 Links ok
            SIB #1 Links ok
            SIB #2 Links ok
            SIB #3 Links ok
            SIB #4 Links ok

```

```
lcc3-re1:
```

```
-----
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 #1
    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 #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 #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 Release 8.0.
Description	(M120 and MX Series routers 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, 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.
Options	<p>none—Display the switching fabric map state for the M120 or MX Series router.</p> <p>plane <i>plane-number</i>—(Optional) Display the state of the fabric link for the specified plane number. On the M120 router, replace <i>plane-number</i> with a value from 0 through 3. On the MX240 and MX480 routers, replace <i>plane-number</i> with a value from 0 through 7. On the MX960 router, replace <i>plane-number</i> with a value from 0 through 5.</p>
Required Privilege Level	view
List of Sample Output	<p>show chassis fabric map (M120) on page 298</p> <p>show chassis fabric map (MX Series) on page 298</p>
Output Fields	Table 65 on page 297 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.
state	<p>State of the fabric link:</p> <ul style="list-style-type: none"> ■ 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/DCP is up and running. ■ DOWN—Link between SIB and FPC/DCP is powered down. ■ FAULT—SIB is in alarmed state where the SIB's plane is not operational for the following reasons: <ul style="list-style-type: none"> ■ On-board F-chip is not operational. ■ Fiber optic connector faults. ■ FPC connector faults. ■ SIB mid-plane connector faults.

```

show chassis fabric map      user@host> show chassis fabric map
(M120)                       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      user@host> show chassis fabric map
(MX Series)                  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 plane

Syntax	show chassis fabric plane
Syntax (TX Matrix Plus Router)	show chassis fabric plane <detail extensive terse> <lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced in JUNOS Release 8.0. detail, extensive, lcc, sfc, and terse options introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	(TX Matrix Plus, T1600, M120, and MX Series routers 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). This command can be used on the master Routing Engine only.
Options	<p>detail—(TX Matrix Plus and T1600 routers in a routing matrix only) (Optional) Display detailed output for the fabric management plane. Shows Switch Interface Board (SIB) states for the TXP-F13 SIB and TXP-F2S SIB.</p> <p>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.</p> <p>lcc <i>number</i>—(TX Matrix Plus router only) (Optional) T1600 router (LCC) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>sfc <i>number</i>—(TX Matrix Plus router only) (Optional) Show information about the TX Matrix Plus router (SFC). Replace <i>number</i> with 0.</p> <p>terse—(TX Matrix Plus router only) (Optional) Display terse output for the fabric management plane.</p>
Required Privilege Level	view
List of Sample Output	<p>show chassis fabric plane (M120) on page 307</p> <p>show chassis fabric plane (MX240) on page 307</p> <p>show chassis fabric plane (MX480) on page 309</p> <p>show chassis fabric plane (MX960) on page 310</p> <p>show chassis fabric plane (TX Matrix Plus Router) on page 311</p> <p>show chassis fabric plane detail (TX Matrix Plus Router) on page 311</p> <p>show chassis fabric plane extensive (TX Matrix Plus Router) on page 312</p> <p>show chassis fabric plane terse (TX Matrix Plus Router) on page 314</p> <p>show chassis fabric plane lcc (TX Matrix Plus Router) on page 314</p>

show chassis fabric plane sfc (TX Matrix Plus Router) on page 315
 show chassis fabric plane (T1600 router) on page 315
 show chassis fabric plane extensive (T1600 router) on page 315
 show chassis fabric plane detail (T1600 router) on page 317

Output Fields Table 66 on page 303 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 only) Number of the plane.	none
Plane state	(MX Series and M120 routers only) State of each plane: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ On-board fabric ASIC is not operational. ■ Fiber optic connector faults. ■ FPC connector faults. ■ SIB mid-plane connector faults. 	none
FEB	(M120 routers only) FEB number and state of links to each FEB: <ul style="list-style-type: none"> ■ 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	<p>(TX Matrix Plus and T1600 routers in a routing matrix only)—State of the fabric plane:</p> <ul style="list-style-type: none"> ■ Online: Fabric plane is operational and running and links on the SIB are operational. ■ 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ On-board fabric ASIC is not operational. ■ Fiber optic connector faults. ■ FPC connector faults. ■ SIB mid-plane connector faults. ■ Link errors have exceeded the threshold. 	none
Uptime	<p>(TX Matrix Plus and T1600 routers in a routing matrix only)—Time the fabric plane has been up and running.</p>	none
Fabric Management Plane State Output Fields for the show chassis fabric plane extensive command on a TX Matrix Plus router		
PLANE <i>number</i>	<p>State of the fabric plane:</p> <ul style="list-style-type: none"> ■ Online: Fabric plane is operational and running and links on the SIB are operational. ■ 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ On-board fabric ASIC is not operational. ■ Fiber optic connector faults. ■ FPC connector faults. ■ SIB mid-plane connector faults. ■ Link errors have exceeded the threshold. 	extensive

Table 66: show chassis fabric plane Output Fields (continued)

Field Name	Field Description	Level of output
SIB F13/F2S <i>slot-number</i>	<p>State of the TXP-F13 SIB or TXP-F2S SIB:</p> <ul style="list-style-type: none"> ■ 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 fail to pass traffic. ■ Empty—No SIB is present. ■ Fault—SIB is in alarmed state due to the following reasons and the cause of the error must be resolved: <ul style="list-style-type: none"> ■ On-board fabric ASIC is not operational. ■ Fiber optic connector faults. ■ FPC connector faults. ■ SIB mid-plane connector faults. ■ Link errors have exceeded the threshold ■ Check—SIB is in alarmed state where the SIB is partially operational due to link or destination errors. Only a SIB that is Online or Spare can transition to the Check state. <p>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.</p>	extensive
SIB F13 <i>slot-number</i> <i>Odd/Even</i>	<p>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.</p>	extensive
LCC <i>number</i> , SIB <i>slot-number</i>	<p>State of the SIB on the LCC that is connected to the Even or Odd port on the TXP-F13 SIB faceplate:</p> <ul style="list-style-type: none"> ■ 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 <i>number</i> Port <i>number</i>	<p>State of the SG chip ports on the LCC:</p> <ul style="list-style-type: none"> ■ Links ok—Link is active. ■ Link error—Link is not operational. ■ Unused—Port is not in use. 	extensive
SIB F2S <i>slot-number</i>	<p>State of the intra-chassis links between the TXP-F2S and TXP-F13 SIB.</p>	extensive

Table 66: show chassis fabric plane Output Fields (continued)

Field Name	Field Description	Level of output
Fabric Management SIB State Output Fields for the show chassis fabric plane extensive command on a TX Matrix Plus router		
SIB slot-number	<p>State of the SIBs on the T1600 router (LCC) in the routing matrix:</p> <ul style="list-style-type: none"> ■ 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 TX Matrix Plus router (SFC) is still offline. <p>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.</p> <ul style="list-style-type: none"> ■ 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. <p>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.</p> <p>SFC Error—If an F13 SIB on the TX Matrix Plus router (SFC) transitions to the Fault state (for instance, due to link errors), and then if an LCC SIB (connected to the F13 SIB) comes online, the LCC SIB transitions to the SFC Error state. This state indicates that the F13 SIB to which the LCC SIB is connected has errors.</p> <p>NOTE: The Connected, Disconnected, and SFC Error states are only applicable to the SIBs on an LCC.</p> <ul style="list-style-type: none"> ■ 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 fail 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: <ul style="list-style-type: none"> ■ On-board fabric ASIC is not operational. ■ Fiber optic connector faults. ■ FPC connector faults. ■ SIB mid-plane connector faults. ■ Link errors have exceeded the threshold ■ Check—SIB is in alarmed state where the SIB is partially operational due to link or destination errors. Only a SIB that is Online or Spare can transition to the Check state. <p>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.</p>	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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ Links ok—Link is active. ■ Link error—Link is not operational. ■ Unused—Port is not in use. 	extensive

show chassis fabric plane (M120)

```

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)

```

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)

```

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)**

```
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, 18 minutes, 21 seconds
2	Online	1 hour, 18 minutes, 20 seconds
3	Online	1 hour, 18 minutes, 15 seconds
4	Online	1 hour, 18 minutes, 7 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-location

Syntax	show chassis fabric plane-location
Release Information	Command introduced in JUNOS Release 8.0.
Description	(M120 and MX Series routers and TX Matrix Plus router 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.
Options	This command has no options.
Required Privilege Level	view
List of Sample Output	show chassis fabric plane-location (M120) on page 318 show chassis fabric plane-location (MX240 and MX480) on page 318 show chassis fabric plane-location (MX960) on page 319 show chassis fabric plane-location (TX Matrix Plus Router) on page 319
Output Fields	Table 67 on page 318 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 <i>n</i>	Plane number.
Control Board <i>n</i>	Control board number.
SFC ABS-SIB-F13	(TX Matrix Plus routers only) Switch Interface Board (SIB) slot number on the F13 SIB.
SFC ABS-SIB-F2S	(TX Matrix Plus routers only) SIB slot number on the F2S.
LCC ST-SIB-L	(TX Matrix Plus routers only) Line-card chassis (LCC) SIB slot number.

show chassis fabric plane-location (M120)

```
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)

```
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)**

```

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 sibs

Syntax	show chassis fabric sibs <fcc number scc>
Release Information	Command introduced before JUNOS Release 7.4.
Description	<p>(T Series routers only) Display the state of the electrical and optical switch fabric links:</p> <ul style="list-style-type: none"> 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	<p>none—Display the switching fabric link state for the TX SIBs in the TX Matrix router and for the T640 SIBs in all the T640 routers connected to a TX Matrix router.</p> <p>fcc <i>number</i>—(Optional) Display the switching fabric link state for the T640 SIBs in a specified T640 router (or line-card chassis) connected to a TX Matrix router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(Optional) Display the switching fabric link state for the TX SIBs on the TX Matrix router (or switch-card chassis).</p>
Required Privilege Level	view
List of Sample Output	<p>show chassis fabric sibs on page 321</p> <p>show chassis fabric sibs fcc on page 322</p> <p>show chassis fabric sibs scc on page 322</p>
Output Fields	Table 68 on page 320 lists the output fields for the <code>show chassis fabric sibs</code> 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	<p>Switching fabric link state for each FPC:</p> <ul style="list-style-type: none"> Unused—FPC is not present. Links ok—Link between the SIB and FPC is active. Link error—Link between the SIB and FPC is not operational.
Plane state	<p>State of the TX SIB or T640 SIB:</p> <ul style="list-style-type: none"> S_ACTIVE — Links on SIB are operational and the fabric plane (SIB) is operational and running. S_SPARE—Links on SIB are operational and the fabric plane (SIB) is redundant and can be operational if any of the fabric planes in S_ACTIVE state encounters an error.

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

scc-re0:

Fabric management SIB state:

SIB #0

plane state: S_ACTIVE

LCC #0 : Unused

LCC #2 : Unused

SIB #1

plane state: S_ACTIVE

LCC #0 : Unused

LCC #2 : Unused

SIB #2

plane state: S_SPARE

LCC #0 : Links ok

LCC #2 : Links ok

SIB #3

plane state: S_ACTIVE

LCC #0 : Unused

LCC #2 : Unused

SIB #4

plane state: S_ACTIVE

LCC #0 : Links ok

LCC #2 : Links ok

lcc0-re0:

Fabric management SIB state:

SIB #2

plane state: S_SPARE

FPC #0

PFE #1 : Links ok

FPC #6

PFE #1 : Links ok

SCC : Links ok

SIB #4

plane state: S_ACTIVE

FPC #0

PFE #1 : Links ok

FPC #6

PFE #1 : Links ok

SCC : Links ok

lcc2-re0:

Fabric management SIB state:

SIB #2

plane state: S_SPARE

FPC #0

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

SCC : Links ok

SIB #4

plane state: S_ACTIVE

FPC #0

```

        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
SCC      : Links ok

```

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

```

-----
Fabric management SIB state:
SIB #2
    plane state: S_SPARE
    FPC #0
        PFE #1 : Links ok
    FPC #6
        PFE #1 : Links ok
    SCC      : Links ok
SIB #4
    plane state: S_ACTIVE
    FPC #0
        PFE #1 : Links ok
    FPC #6
        PFE #1 : Links ok
    SCC      : Links ok

```

show chassis fabric sibs scc user@host> **show chassis fabric sibs scc**
scc-re0:

```

-----
Fabric management SIB state:
SIB #0
    plane state: S_ACTIVE
    LCC #0      : Unused
    LCC #2      : Unused
SIB #1
    plane state: S_ACTIVE
    LCC #0      : Unused
    LCC #2      : Unused
SIB #2
    plane state: S_SPARE
    LCC #0      : Links ok
    LCC #2      : Links ok
SIB #3
    plane state: S_ACTIVE
    LCC #0      : Unused
    LCC #2      : Unused
SIB #4
    plane state: S_ACTIVE
    LCC #0      : Links ok
    LCC #2      : Links ok

```

show chassis fabric summary

Syntax	show chassis fabric summary
Release Information	Command introduced in JUNOS Release 8.4.
Description	(MX Series routers 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) on page 323 show chassis fabric summary (MX480) on page 323 show chassis fabric summary (MX960) on page 324
Output Fields	Table 69 on page 323 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: <ul style="list-style-type: none"> ■ Online—Switch Interface Board (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.
Uptime	Elapsed time the plane has been online.

show chassis fabric summary (MX240)

```
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      Online 23 hours, 26 minutes, 54 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)

```
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	Spare	8 hours, 45 minutes, 28 seconds

**show chassis fabric
summary (MX960)**

```
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	Online	16 hours, 41 minutes, 46 seconds
4	Spare	16 hours, 41 minutes, 46 seconds
5	Spare	16 hours, 41 minutes, 45 seconds

show chassis fabric topology

Syntax	show chassis fabric topology <fcc number scc> <sib-slot-number>
Syntax (TX Matrix Router)	show chassis fabric topology <fcc number scc> <sib-slot-number>
Syntax (TX Matrix Plus Router)	show chassis fabric topology <fcc number sfc number> <sib-slot-number>
Release Information	Command introduced before JUNOS Release 7.4. sfc option introduced for the TX Matrix Plus router in JUNOS 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	<p>none—Display the fabric topology state for the TX Matrix router and for all the T640 routers connected to it.</p> <p>fcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the fabric topology state for a specified T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display the fabric topology state for a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display the fabric topology state for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display the fabric topology for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p> <p>sib-slot-number—(Optional) Display the fabric topology state for a specified SIB slot. Replace <i>sib-slot-number</i> with a value from 0 through 4. On a TX Matrix Plus router, replace <i>sib-slot-number</i> with a value from 0 through 15.</p>
Required Privilege Level	view
List of Sample Output	<p>show chassis fabric topology scc on page 326</p> <p>show chassis fabric topology fcc on page 328</p> <p>show chassis fabric topology sfc (TX Matrix Plus Router) on page 329</p> <p>show chassis fabric topology fcc on page 330</p>
Output Fields	Table 70 on page 326 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	<p>State of the fabric link:</p> <ul style="list-style-type: none"> ■ RESET—Link between SIB and FPC/DPC is powered down on purpose. This is done in all non-dual Packet Forwarding Engine 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: <ul style="list-style-type: none"> ■ On-board F-chip is not operational. ■ Fiber optic connector faults. ■ FPC connector faults. ■ SIB mid-plane connector faults.

show chassis fabric topology scc

```
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
LCC1_SIB-L0_F0,15->SIB-S0_F1,09 UP
LCC2_SIB-L0_F0,15->SIB-S0_F1,10 RESET
LCC3_SIB-L0_F0,15->SIB-S0_F1,11 RESET
LCC0_SIB-L0_F0,14->SIB-S0_F1,12 UP
LCC1_SIB-L0_F0,14->SIB-S0_F1,13 UP
LCC2_SIB-L0_F0,14->SIB-S0_F1,14 RESET
UP
LCC3_SIB-L0_F0,14->SIB-S0_F1,15 RESET
UP
SIB0_F2 (F2 ):
LCC3_SIB-L0_F0,13->SIB-S0_F2,00 RESET
LCC2_SIB-L0_F0,13->SIB-S0_F2,01 RESET
UP
LCC1_SIB-L0_F0,13->SIB-S0_F2,02 UP
LCC0_SIB-L0_F0,13->SIB-S0_F2,03 UP
LCC3_SIB-L0_F0,12->SIB-S0_F2,04 RESET
UP
LCC2_SIB-L0_F0,12->SIB-S0_F2,05 RESET
LCC1_SIB-L0_F0,12->SIB-S0_F2,06 UP
LCC0_SIB-L0_F0,12->SIB-S0_F2,07 UP
LCC3_SIB-L0_F0,09->SIB-S0_F2,08 RESET
UP
LCC2_SIB-L0_F0,09->SIB-S0_F2,09 RESET
UP
LCC1_SIB-L0_F0,09->SIB-S0_F2,10 UP
LCC0_SIB-L0_F0,09->SIB-S0_F2,11 UP
LCC3_SIB-L0_F0,08->SIB-S0_F2,12 RESET
UP
LCC2_SIB-L0_F0,08->SIB-S0_F2,13 RESET
UP
LCC1_SIB-L0_F0,08->SIB-S0_F2,14 UP
LCC0_SIB-L0_F0,08->SIB-S0_F2,15 UP
SIB0_F3 (F2 ):
LCC3_SIB-L0_F0,05->SIB-S0_F3,00 RESET
UP
LCC2_SIB-L0_F0,05->SIB-S0_F3,01 RESET
UP
LCC1_SIB-L0_F0,05->SIB-S0_F3,02 UP
LCC0_SIB-L0_F0,05->SIB-S0_F3,03 UP
LCC3_SIB-L0_F0,04->SIB-S0_F3,04 RESET
UP
LCC2_SIB-L0_F0,04->SIB-S0_F3,05 RESET
UP
LCC1_SIB-L0_F0,04->SIB-S0_F3,06 UP
LCC0_SIB-L0_F0,04->SIB-S0_F3,07 UP
LCC3_SIB-L0_F0,01->SIB-S0_F3,08 RESET
UP
LCC2_SIB-L0_F0,01->SIB-S0_F3,09 RESET
UP
LCC1_SIB-L0_F0,01->SIB-S0_F3,10 UP
LCC0_SIB-L0_F0,01->SIB-S0_F3,11 UP
LCC3_SIB-L0_F0,00->SIB-S0_F3,12 RESET
UP
LCC2_SIB-L0_F0,00->SIB-S0_F3,13 RESET
UP
LCC1_SIB-L0_F0,00->SIB-S0_F3,14 UP
LCC0_SIB-L0_F0,00->SIB-S0_F3,15 UP
Sib #1 :
-----
SIB1_F0 (F2 ):
SIB-S0_F1,08->LCC0_SIB-L0_F1,12 UP
SIB-S0_F1,09->LCC1_SIB-L0_F1,04 UP
SIB-S0_F1,10->LCC2_SIB-L0_F1,04 UP
SIB-S0_F1,11->LCC3_SIB-L0_F1,12 UP
SIB-S0_F1,12->LCC0_SIB-L0_F1,13 UP
SIB-S0_F1,13->LCC1_SIB-L0_F1,05 UP
SIB-S0_F1,14->LCC2_SIB-L0_F1,05
SIB-S0_F1,15->LCC3_SIB-L0_F1,13
SIB-S0_F2,00->LCC3_SIB-L0_F1,14 UP
SIB-S0_F2,01->LCC2_SIB-L0_F1,06
SIB-S0_F2,02->LCC1_SIB-L0_F1,06 UP
SIB-S0_F2,03->LCC0_SIB-L0_F1,14 UP
SIB-S0_F2,04->LCC3_SIB-L0_F1,15
SIB-S0_F2,05->LCC2_SIB-L0_F1,07 UP
SIB-S0_F2,06->LCC1_SIB-L0_F1,07 UP
SIB-S0_F2,07->LCC0_SIB-L0_F1,15 UP
SIB-S0_F2,08->LCC3_SIB-L0_F1,10
SIB-S0_F2,09->LCC2_SIB-L0_F1,02
SIB-S0_F2,10->LCC1_SIB-L0_F1,02 UP
SIB-S0_F2,11->LCC0_SIB-L0_F1,10 UP
SIB-S0_F2,12->LCC3_SIB-L0_F1,11
SIB-S0_F2,13->LCC2_SIB-L0_F1,03
SIB-S0_F2,14->LCC1_SIB-L0_F1,03 UP
SIB-S0_F2,15->LCC0_SIB-L0_F1,11 UP
SIB-S0_F3,00->LCC3_SIB-L0_F1,06
SIB-S0_F3,01->LCC2_SIB-L0_F1,14
SIB-S0_F3,02->LCC1_SIB-L0_F1,14 UP
SIB-S0_F3,03->LCC0_SIB-L0_F1,06 UP
SIB-S0_F3,04->LCC3_SIB-L0_F1,07
SIB-S0_F3,05->LCC2_SIB-L0_F1,15
SIB-S0_F3,06->LCC1_SIB-L0_F1,15 UP
SIB-S0_F3,07->LCC0_SIB-L0_F1,07 UP
SIB-S0_F3,08->LCC3_SIB-L0_F1,02
SIB-S0_F3,09->LCC2_SIB-L0_F1,10
SIB-S0_F3,10->LCC1_SIB-L0_F1,10 UP
SIB-S0_F3,11->LCC0_SIB-L0_F1,02 UP
SIB-S0_F3,12->LCC3_SIB-L0_F1,03
SIB-S0_F3,13->LCC2_SIB-L0_F1,11
SIB-S0_F3,14->LCC1_SIB-L0_F1,11 UP
SIB-S0_F3,15->LCC0_SIB-L0_F1,03 UP

```

```

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 sfc (TX Matrix
Plus Router)**

```

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

```

```

SIB:0
=====

```

Out-Links:

=====

```

SFC0_F13_SIB_36      -> LCC00_ST_SIB_L00      Status

```

```

=====
SF_3_00_FB_D(04,11) -> FPC0_T_SG(0,0,0)_FB_D(04,11)    OK
SF_3_00_FB_D(04,10) -> FPC0_T_SG(0,0,1)_FB_D(04,10)    OK
SF_3_00_FB_D(04,09) -> FPC0_T_SG(0,0,2)_FB_D(04,09)    OK
SF_3_00_FB_D(04,08) -> FPC0_T_SG(0,0,3)_FB_D(04,08)    OK
SF_3_00_FB_D(04,07) -> FPC0_T_SG(0,0,4)_FB_D(04,07)    OK
SF_3_00_FB_D(04,06) -> FPC0_T_SG(0,0,5)_FB_D(04,06)    OK
SF_3_00_FB_D(04,05) -> FPC0_T_SG(0,0,6)_FB_D(04,05)    OK
SF_3_00_FB_D(04,04) -> FPC0_T_SG(0,0,7)_FB_D(04,04)    OK
SF_3_01_FB_B(16,11) -> FPC4_T_SG(2,0,0)_FB_B(16,11)    OK
SF_3_01_FB_B(16,10) -> FPC4_T_SG(2,0,1)_FB_B(16,10)    OK
SF_3_01_FB_B(16,09) -> FPC4_T_SG(2,0,2)_FB_B(16,09)    OK
SF_3_01_FB_B(16,08) -> FPC4_T_SG(2,0,3)_FB_B(16,08)    OK
SF_3_01_FB_B(16,07) -> FPC4_T_SG(2,0,4)_FB_B(16,07)    OK
SF_3_01_FB_B(16,06) -> FPC4_T_SG(2,0,5)_FB_B(16,06)    OK
SF_3_01_FB_B(16,05) -> FPC4_T_SG(2,0,6)_FB_B(16,05)    OK
SF_3_01_FB_B(16,04) -> FPC4_T_SG(2,0,7)_FB_B(16,04)    OK
SF_3_02_FB_D(05,08) -> FPC1_T_SG(0,2,0)_FB_D(05,08)    OK
SF_3_02_FB_D(05,07) -> FPC1_T_SG(0,2,1)_FB_D(05,07)    OK
SF_3_02_FB_D(05,06) -> FPC1_T_SG(0,2,2)_FB_D(05,06)    OK
SF_3_02_FB_D(05,05) -> FPC1_T_SG(0,2,3)_FB_D(05,05)    OK
SF_3_02_FB_D(05,03) -> FPC1_T_SG(0,2,4)_FB_D(05,03)    OK
SF_3_02_FB_D(05,02) -> FPC1_T_SG(0,2,5)_FB_D(05,02)    OK
SF_3_02_FB_D(05,01) -> FPC1_T_SG(0,2,6)_FB_D(05,01)    OK
SF_3_02_FB_D(05,00) -> FPC1_T_SG(0,2,7)_FB_D(05,00)    OK
SF_3_03_FB_B(17,08) -> FPC5_T_SG(2,2,0)_FB_B(17,08)    OK
SF_3_03_FB_B(17,07) -> FPC5_T_SG(2,2,1)_FB_B(17,07)    OK
SF_3_03_FB_B(17,06) -> FPC5_T_SG(2,2,2)_FB_B(17,06)    OK
SF_3_03_FB_B(17,05) -> FPC5_T_SG(2,2,3)_FB_B(17,05)    OK
...
In-Links:
=====
LCC00_ST_SIB_L00          -> SFC0_F13_SIB_36          Status
=====
FPC0_T_SG(0,0,0)_FB_D(01,11) -> SF_1_00_FB_D(01,11)    OK
FPC0_T_SG(0,0,1)_FB_D(01,10) -> SF_1_00_FB_D(01,10)    OK
FPC0_T_SG(0,0,2)_FB_D(01,09) -> SF_1_00_FB_D(01,09)    OK
FPC0_T_SG(0,0,3)_FB_D(01,08) -> SF_1_00_FB_D(01,08)    OK
FPC0_T_SG(0,0,4)_FB_D(01,07) -> SF_1_00_FB_D(01,07)    OK
FPC0_T_SG(0,0,5)_FB_D(01,06) -> SF_1_00_FB_D(01,06)    OK
FPC0_T_SG(0,0,6)_FB_D(01,05) -> SF_1_00_FB_D(01,05)    OK
FPC0_T_SG(0,0,7)_FB_D(01,04) -> SF_1_00_FB_D(01,04)    OK
FPC4_T_SG(2,0,0)_FB_B(13,11) -> SF_1_01_FB_B(13,11)    OK
FPC4_T_SG(2,0,1)_FB_B(13,10) -> SF_1_01_FB_B(13,10)    OK
FPC4_T_SG(2,0,2)_FB_B(13,09) -> SF_1_01_FB_B(13,09)    OK
FPC4_T_SG(2,0,3)_FB_B(13,08) -> SF_1_01_FB_B(13,08)    OK
FPC4_T_SG(2,0,4)_FB_B(13,07) -> SF_1_01_FB_B(13,07)    OK
FPC4_T_SG(2,0,5)_FB_B(13,06) -> SF_1_01_FB_B(13,06)    OK
FPC4_T_SG(2,0,6)_FB_B(13,05) -> SF_1_01_FB_B(13,05)    OK
FPC4_T_SG(2,0,7)_FB_B(13,04) -> SF_1_01_FB_B(13,04)    OK
FPC1_T_SG(0,2,0)_FB_D(02,08) -> SF_1_02_FB_D(02,08)    OK
FPC1_T_SG(0,2,1)_FB_D(02,07) -> SF_1_02_FB_D(02,07)    OK
FPC1_T_SG(0,2,2)_FB_D(02,06) -> SF_1_02_FB_D(02,06)    OK
FPC1_T_SG(0,2,3)_FB_D(02,05) -> SF_1_02_FB_D(02,05)    OK
...

```

```

show chassis fabric topology lcc 0
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 feb

Syntax	show chassis feb
Release Information	Command introduced before JUNOS 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 (M10i) on page 334 show chassis feb (M120) on page 334 show chassis feb detail (M120) on page 334
Output Fields	Table 71 on page 333 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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 RLD RAM	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 (M10i)  user@host> show chassis feb
                             FEB status:
                             Temperature           37 Centigrade
                             CPU utilization         0 percent
                             Interrupt utilization   0 percent
                             Heap utilization        16 percent
                             Buffer utilization       43 percent
                             DRAM                   64 Mbytes
                             Internet Processor II   Version 1, Foundry IBM, Part number 9
                             Start time             1999-01-24 16:24:42 UTC
                             Uptime                 2 hours, 21 minutes, 28 seconds

show chassis feb (M120)  user@host> show chassis feb
                             Temp  CPU Utilization (%)  Memory  Utilization (%)
                             (C)   Total  Interrupt  DRAM (MB) Heap    Buffer
                             Slot State
0  Online           47      4      0      512      7      60
1  Online           54      3      0      512      7      59
2  Online           50      4      0      512      7      59
3  Online           49      4      0      512      7      59
4  Online           46      3      0      512      7      59
5  Online           35      3      0      512      7      59

show chassis feb detail (M120) user@host> show chassis feb detail
Slot 0 information:
  State                Online
  Intake temperature    48 degrees C / 118 degrees F
  Exhaust A temperature 51 degrees C / 123 degrees F
  Exhaust B temperature 52 degrees C / 125 degrees F
  Total DDR DRAM        512 MB
  Total RLD RAM         32 MB
  Start time:           2006-06-28 15:00:40 PDT
  Uptime:               10 minutes, 21 seconds
Slot 1 information:
  State                Online
  Intake temperature    55 degrees C / 131 degrees F
  Exhaust A temperature 46 degrees C / 114 degrees F
  Exhaust B temperature 45 degrees C / 113 degrees F
  Total DDR DRAM        512 MB
  Total RLD RAM         32 MB
  Start time:           2006-06-28 15:00:33 PDT
  Uptime:               10 minutes, 28 seconds

```

```

Slot 2 information:
  State                               Online
  Intake temperature                  50 degrees C / 122 degrees F
  Exhaust A temperature               47 degrees C / 116 degrees F
  Exhaust B temperature               47 degrees C / 116 degrees F
  Total DDR DRAM                      512 MB
  Total RLDRAM                       32 MB
  Start time:                        2006-06-28 15:00:35 PDT
  Uptime:                             10 minutes, 26 seconds

Slot 3 information:
  State                               Online
  Intake temperature                  49 degrees C / 120 degrees F
  Exhaust A temperature               47 degrees C / 116 degrees F
  Exhaust B temperature               49 degrees C / 120 degrees F
  Total DDR DRAM                      512 MB
  Total RLDRAM                       32 MB
  Start time:                        2006-06-28 15:00:43 PDT
  Uptime:                             10 minutes, 18 seconds

Slot 4 information:
  State                               Online
  Intake temperature                  45 degrees C / 113 degrees F
  Exhaust A temperature               42 degrees C / 107 degrees F
  Exhaust B temperature               42 degrees C / 107 degrees F
  Total DDR DRAM                      512 MB
  Total RLDRAM                       32 MB
  Start time:                        2006-06-28 15:00:29 PDT
  Uptime:                             10 minutes, 32 seconds

Slot 5 information:
  State                               Online
  Intake temperature                  35 degrees C / 95 degrees F
  Exhaust A temperature               33 degrees C / 91 degrees F
  Exhaust B temperature               40 degrees C / 104 degrees F
  Total DDR DRAM                      512 MB
  Total RLDRAM                       32 MB
  Start time:                        2006-06-28 15:00:27 PDT
  Uptime:                             10 minutes, 34 seconds

```

show chassis firmware

Syntax	show chassis firmware
Syntax (TX Matrix Router)	show chassis firmware <fcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis firmware <fcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	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).
Options	<p>none—Display the version levels of the firmware running. For a TX Matrix router, display version levels for the firmware on the TX Matrix router and on all the T640 routers connected to the TX Matrix router. For a TX Matrix Plus router, display version levels for the firmware on the TX Matrix Plus router and on all the T1600 routers connected to the TX Matrix Plus router.</p> <p>fcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display version levels for the firmware on a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display the version levels for the firmware on a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix router only) (Optional) Display version levels for the firmware on the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus router only) (Optional) Display version levels for the firmware on the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
Required Privilege Level	view
List of Sample Output	show chassis firmware (M10) on page 337 show chassis firmware (M20) on page 337 show chassis firmware (M40) on page 337 show chassis firmware (M120) on page 337 show chassis firmware (M160) on page 337 show chassis firmware (MX240) on page 338 show chassis firmware (MX480) on page 338 show chassis firmware (MX960) on page 338 show chassis firmware fcc (TX Matrix Router) on page 338 show chassis firmware scc (TX Matrix Router) on page 338

show chassis firmware (TX Matrix Plus Router) on page 338
 show chassis firmware lcc (TX Matrix Plus Router) on page 340
 show chassis firmware sfc (TX Matrix Plus Router) on page 340

Output Fields Table 72 on page 337 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: ROM or O/S.
Version	Version of firmware running on the chassis part.

```

show chassis firmware (M10) 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) 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) 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) 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) 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)  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)  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)  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 lcc 0 (TX Matrix Router)  user@host> show chassis firmware lcc 0
lcc0-re0:
-----
Part      Type      Version
FPC 1     ROM      Juniper ROM Monitor Version 6.4b18
          O/S      Version 7.0-20040804.0 by builder on 2004-0
FPC 2     ROM      Juniper ROM Monitor Version 6.4b20
          O/S      Version 7.0-20040804.0 by builder on 2004-0
SPMB 0    ROM      Juniper ROM Monitor Version 6.4b18
          O/S      Version 7.0-20040804.0 by builder on 2004-0

show chassis firmware scc (TX Matrix Router)  user@host> show chassis firmware scc
scc-re0:
-----
Part      Type      Version
SPMB 0    ROM      Juniper ROM Monitor Version 6.4b18
          O/S      Version 7.0-20040804.0 by builder on 2004-0

show chassis firmware (TX Matrix Plus Router)  user@host> show chassis firmware
sfc0-re0:
-----
Part      Type      Version
Global FPC 4
Global FPC 6
Global FPC 7
Global FPC 12
Global FPC 14
Global FPC 15
Global FPC 20
Global FPC 21
Global FPC 22
Global FPC 23
Global FPC 24
Global FPC 25

```

```

Global FPC 26
Global FPC 28
Global FPC 29
Global FPC 31
SPMB 0          ROM      Juniper ROM Monitor Version 9.5b1
                  O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 1          ROM      Juniper ROM Monitor Version 9.5b1
                  O/S      Version 9.6-20090507.0 by builder on 2009-0

```

lcc0-re1:

```

-----
Part      Type      Version
FPC 4     ROM      Juniper ROM Monitor Version 9.0b2
           O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 6     ROM      Juniper ROM Monitor Version 9.0b2
           O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 7     ROM      Juniper ROM Monitor Version 9.0b2
           O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 0     ROM      Juniper ROM Monitor Version 9.5b1
           O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 1     ROM      Juniper ROM Monitor Version 9.5b1
           O/S      Version 9.6-20090507.0 by builder on 2009-0

```

lcc1-re1:

```

-----
Part      Type      Version
FPC 4     ROM      Juniper ROM Monitor Version 9.0b2
           O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 6     ROM      Juniper ROM Monitor Version 9.0b2
           O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 7     ROM      Juniper ROM Monitor Version 9.0b2
           O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 0     ROM      Juniper ROM Monitor Version 9.5b1
           O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 1     ROM      Juniper ROM Monitor Version 9.5b1
           O/S      Version 9.6-20090507.0 by builder on 2009-0

```

lcc2-re1:

```

-----
Part      Type      Version
FPC 4     ROM      Juniper ROM Monitor Version 9.0b2
           O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 5     ROM      Juniper ROM Monitor Version 9.0b2
           O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 6     ROM      Juniper ROM Monitor Version 9.0b2
           O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 7     ROM      Juniper ROM Monitor Version 7.5b4
           O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 0     ROM      Juniper ROM Monitor Version 9.5b1
           O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 1     ROM      Juniper ROM Monitor Version 9.5b1
           O/S      Version 9.6-20090507.0 by builder on 2009-0

```

lcc3-re1:

```

-----
Part      Type      Version
FPC 0     ROM      Juniper ROM Monitor Version 9.0b2
           O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 1     ROM      Juniper ROM Monitor Version 9.0b2
           O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 2     ROM      Juniper ROM Monitor Version 9.0b2

```

	O/S	Version 9.6-20090507.0 by builder on 2009-0
FPC 4	ROM	Juniper ROM Monitor Version 7.5b4
	O/S	Version 9.6-20090507.0 by builder on 2009-0
FPC 5	ROM	Juniper ROM Monitor Version 9.0b2
	O/S	Version 9.6-20090507.0 by builder on 2009-0
FPC 7	ROM	Juniper ROM Monitor Version 9.0b2
	O/S	Version 9.6-20090507.0 by builder on 2009-0
SPMB 0	ROM	Juniper ROM Monitor Version 9.5b1
	O/S	Version 9.6-20090507.0 by builder on 2009-0
SPMB 1	ROM	Juniper ROM Monitor Version 9.5b1
	O/S	Version 9.6-20090507.0 by builder on 2009-0

show chassis firmware user@host> **show chassis firmware lcc 0**
lcc (TX Matrix Plus
Router) 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 user@host> **show chassis firmware sfc 0**
sfc (TX Matrix Plus
Router) 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 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 341
Output Fields	Table 73 on page 341 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
FWDD status	<p>Forwarding status:</p> <ul style="list-style-type: none"> ■ State: <ul style="list-style-type: none"> ■ 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 Release 7.4.
 Command introduced in JUNOS 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.
- 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*).

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 Topics ■ request chassis fpc

List of Sample Output

- show chassis fpc (M10) on page 345
- show chassis fpc (M20) on page 345
- show chassis fpc detail (M Series) on page 345
- show chassis fpc (MX240) on page 345
- show chassis fpc (MX480) on page 345
- show chassis fpc (MX960) on page 345
- show chassis fpc detail (MX Series) on page 346
- show chassis fpc (Hardware Not Supported) on page 346
- show chassis fpc detail (Hardware Not Supported) on page 346
- show chassis fpc pic-status on page 347
- show chassis fpc pic-status (M Series) on page 347
- show chassis fpc pic-status (M120) on page 347
- show chassis fpc lcc (TX Matrix Router) on page 347
- show chassis fpc pic-status (TX Matrix Router) on page 348
- show chassis fpc pic-status lcc (TX Matrix Router) on page 348
- show chassis fpc lcc (TX Matrix Router) on page 348
- show chassis fpc pic-status (TX Matrix Router) on page 348
- show chassis fpc pic-status lcc (TX Matrix Router) on page 349

Output Fields Table 74 on page 344 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	<p>Slot number and state. The state can be one of the following conditions:</p> <ul style="list-style-type: none"> ■ Dead—Held in reset because of errors. ■ Diag—Slot is being ignored while the FPC is running diagnostics. ■ Dormant—Held in reset. ■ Empty—No FPC is present. ■ Online—FPC is online and running. ■ Present—FPC is detected by the chassis daemon but 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
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

Table 74: show chassis fpc Output Fields (continued)

Field Name	Field Description	Level of Output
Uptime	How long the Routing Engine has been connected to the FPC and, therefore, how long the FPC has been up and running.	detail
PIC type	(pic-status output only) Type of PIC.	none specified

show chassis fpc (M10) user@host> **show chassis fpc**
FPC status:

Slot	State	Temp (C)
0	Online	27
1	Online	28

show chassis fpc (M20) user@host> **show chassis fpc**
FPC status:

Slot	State	Temp (C)	CPU Utilization (%)	Memory Utilization (%)
			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) 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 (MX240) user@host> **show chassis fpc**

Slot	State	Temp (C)	CPU Utilization (%)	Memory Utilization (%)
			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) user@host> **show chassis fpc**

Slot	State	Temp (C)	CPU Utilization (%)	Memory Utilization (%)
			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) user@host> **show chassis fpc**

Slot	State	Temp (C)	CPU Utilization (%)	Memory Utilization (%)
			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)**

```

user@host> show chassis fpc detail 2
Slot 0 information:
  State                Online
  Temperature          36 degrees C / 96 degrees F
  Total CPU DRAM       1024 MB
  Total RLD RAM        256 MB
  Total DDR DRAM       4096 MB
  Start time:          2009-08-11 21:20:30 PDT
  Uptime:              2 hours, 8 minutes, 50 seconds
  Max Power Consumption 335 Watts

```

**show chassis fpc
(Hardware Not
Supported)**

```

user@host> show chassis fpc
show chassis fpc

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory Utilization (%)	DRAM (MB)	Heap	Buffer
0	Online	-----	CPU less FPC	-----			
1	Present	-----	Hardware Not In Right Slot	-----			
2	Online	0	0	0	0	0	0
3	Present	-----	Hardware Not Supported	-----			
4	Empty						
5	Empty						
6	Online	0	0	0	0	0	0

**show chassis fpc detail
(Hardware Not
Supported)**

```

user@host> show chassis fpc detail
Slot 0 information:
  State                Online
  Total CPU DRAM       ---- CPU less FPC ----
  Start time           2006-07-07 03:21:00 UTC
  Uptime               27 minutes, 51 seconds
Slot 1 information:
  State                Present
  Reason              --- Hardware Not In Right Slot ---
Slot 2 information:
  State                Online
  Total CPU DRAM       32 MB
  Start time           2006-07-07 03:20:59 UTC
  Uptime               27 minutes, 52 seconds
Slot 3 information:
  State                Present
  Reason              --- Hardware Not Supported ---
  Total CPU DRAM       0 MB
Slot 6 information:
  State                Online
  Total CPU DRAM       32 MB
  Start time           2006-07-07 03:21:01 UTC
  Uptime               27 minutes, 50 seconds

```

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

```
Slot 0 Online
  PIC 1    1x OC-12 ATM, MM
  PIC 2    1x OC-12 ATM, MM
  PIC 3    1x OC-12 ATM, MM
Slot 1 Online
  PIC 0    1x OC-48 SONET, SMIR
Slot 2 Online
  PIC 0    1x OC-192 SONET, SMSR
```

show chassis fpc pic-status (M Series) 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) user@host> **show chassis fpc pic-status**

```
Slot 1  Online      M120 CFPC 10GE
  PIC 0  Online     1x 10GE(LAN/WAN) XFP
Slot 3  Online      M120 FPC Type 2 (proto)
  PIC 0  Online     2x G/E IQ, 1000 BASE
  PIC 1  Online     4x OC-3 SONET, SMIR
  PIC 2  Online     2x G/E IQ, 1000 BASE
  PIC 3  Online     8x 1GE(LAN), IQ2
Slot 4  Online      M120 FPC Type 3 (proto)
  PIC 0  Online     10x 1GE(LAN), 1000 BASE
Slot 5  Online      M120 FPC Type 1 (proto)
  PIC 0  Present    1x G/E, 1000 BASE-LX- Not Supported
  PIC 1  Online     1x CHOC3 IQ SONET, SMLR
  PIC 2  Online     4x CHDS3 IQ
  PIC 3  Online     1x G/E SFP, 1000 BASE
```

show chassis fpc lcc (TX Matrix Router) user@host> **show chassis fpc lcc 0**
lcc0-re0:

Slot	State	Temp (C)	CPU Total	Utilization (%) Interrupt	Utilization (%) DRAM (MB)	Memory Heap	Utilization (%) Buffer
0	Empty						
1	Online	27	2	0	256	8	44
2	Online	27	3	0	256	15	44
3	Empty						
4	Empty						
5	Empty						
6	Empty						
7	Empty						

```

show chassis fpc      user@host> show chassis fpc pic-status
pic-status (TX Matrix
Router)              lcc0-re0:
-----
Slot 0  Online      FPC Type 3
  PIC 0  Online      1x OC-192 SM SR1
  PIC 1  Online      1x OC-192 SM SR2
  PIC 2  Online      1x OC-192 SM SR1
  PIC 3  Online      1x Tunnel
Slot 1  Online      FPC Type 2
  PIC 0  Online      1x OC-48 SONET, SMSR
  PIC 1  Online      1x OC-48 SONET, SMSR

lcc1-re0:
-----

lcc2-re0:
-----
Slot 1  Online      FPC Type 3
  PIC 0  Online      1x OC-192 SM SR1
Slot 5  Online      FPC Type 2
  PIC 0  Online      1x OC-48 SONET, SMSR
  PIC 1  Online      2x G/E, 1000 BASE-LX
  PIC 2  Online      2x G/E, 1000 BASE-LX
  PIC 3  Online      1x OC-48 SONET, SMSR

lcc3-re0:
-----

show chassis fpc      user@host> show chassis fpc pic-status lcc 0
pic-status lcc (TX Matrix
Router)              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 lcc (TX
Matrix Router)      user@host> show chassis fpc lcc 0
lcc0-re0:
-----
Slot State      Temp CPU      Utilization (%) Memory Utilization (%)
      (C) Total Interrupt      DRAM (MB)      Heap      Buffer
0  Empty
1  Online      27      2      0      256      8      44
2  Online      27      3      0      256      15     44
3  Empty
4  Empty
5  Empty
6  Empty
7  Empty

show chassis fpc      user@host> show chassis fpc pic-status
pic-status (TX Matrix
Router)              lcc0-re0:
-----
Slot 0  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 1   Online      1x OC-192 SONET XFP
PIC 2   Online      1x OC-192 SM SR2
PIC 3   Online      10x 1GE(LAN), 1000 BASE

```

lcc1-re0:

```

-----
Slot 4  Online      FPC Type 4-ES
PIC 0   Online      4x 10GE (LAN/WAN) XFP
PIC 1   Online      4x OC-192 SONET XFP
Slot 6  Online      FPC Type 4-ES
PIC 0   Online      4x 10GE (LAN/WAN) XFP
Slot 7  Online      FPC Type 3-ES
PIC 0   Online      10x 1GE(LAN), 1000 BASE

```

lcc2-re0:

```

-----
Slot 4  Online      FPC Type 4-ES
Slot 6  Online      FPC Type 4-ES
PIC 0   Online      4x OC-192 SONET XFP
Slot 7  Online      E2-FPC Type 3
PIC 0   Online      10x 1GE(LAN), 1000 BASE

```

lcc3-re0:

```

-----
Slot 2  Online      FPC Type 4-ES
Slot 4  Online      FPC Type 4
PIC 0   Online      4x OC-192 SONET XFP
Slot 5  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   Online      1x Tunnel

```

**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 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 1   Online      1x OC-192 SONET XFP
PIC 2   Online      1x OC-192 SM SR2
PIC 3   Online      10x 1GE(LAN), 1000 BASE

```

show chassis fpc-feb-connectivity

Syntax	show chassis fpc-feb-connectivity
Release Information	Command introduced in JUNOS 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 351
Output Fields	Table 75 on page 350 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	<p>State of the FPC. State can be any of the following:</p> <ul style="list-style-type: none"> ■ 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 Software 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	<p>State of the FEB. State can be any of the following:</p> <ul style="list-style-type: none"> ■ 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 Software or FEB is coming up but is not online. ■ Ready—FEB is in transition state.
Link status	<p>Status of the link connecting the R-FEB and R-FPC:</p> <ul style="list-style-type: none"> ■ 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 Switch)	show chassis hardware <detail extensive>
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 Release 7.4. models option introduced in JUNOS Release 8.2. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	<p>Display a list of all Flexible PIC Concentrators (FPCs) and PICs installed in the router or switch chassis, including the hardware version level and serial number.</p> <p>In EX Series switch command output, FPC refers to the following:</p> <ul style="list-style-type: none"> ■ On EX3200 switches and EX4200 standalone switches—Refers to the switch; <i>fpc-number</i> is always 0. ■ On EX4200 switches in a Virtual Chassis configuration—Refers to the member ID of a Virtual Chassis member switch. ■ On EX8208 and EX8216 switches—Refers to a line card.
Options	<p>none—Display information about hardware. For a TX Matrix router, display information about the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display information about the TX Matrix Plus router and its attached T1600 routers.</p> <p>clei-models—(M Series, T Series, TX Matrix, and TX Matrix Plus routers only) (Optional) Display Common Language Equipment Identifier (CLEI) barcode and model number for orderable field-replaceable units (FRUs).</p> <p>detail—(Optional) Include RAM and disk information in output.</p> <p>extensive—(Optional) Display ID EEPROM information.</p>

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—(M Series, T Series, TX Matrix, and TX Matrix Plus routers only) (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.

Required Privilege Level view

List of Sample Output

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 show chassis hardware (J6300 Router) on page 356
 show chassis hardware (M7i Router) on page 356
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 show chassis hardware detail (MX960 Router) on page 368
 show chassis hardware (T320 Router) on page 368
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 show chassis hardware extensive (T640 Router) on page 370
 show chassis hardware lcc (TX Matrix Router) on page 371
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 show chassis hardware (T1600 Router) on page 372
 show chassis hardware (TX Matrix Plus Router) on page 373
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 show chassis hardware clei-models (TX Matrix Plus Router) on page 379
 show chassis hardware detail (TX Matrix Plus Router) on page 381

show chassis hardware models (TX Matrix Plus Router) on page 382

Output Fields Table 76 on page 354 lists the output fields for the `show chassis hardware` command. Output fields are listed in the approximate order in which they appear.

Table 76: show chassis hardware Output Fields

Field Name	Field Description	Level of Output
Item	Chassis component: <ul style="list-style-type: none"> ■ (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 output only) Identification number that describes the FRU hardware.	All levels
FRU model number	(models keyword only) Model number of FRU hardware component.	none specified
CLEI code	(models 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

Table 76: show chassis hardware Output Fields (continued)

Field Name	Field Description	Level of Output
Description	<p>Brief description of the hardware item:</p> <ul style="list-style-type: none"> ■ Type of power supply. ■ Type of PIC. If the PIC type is not supported on the current software release, the output states Hardware Not Supported ■ Type of FPC: FPC Type 1, FPC Type 2, FPC Type 3, FPC Type 4 , or FPC Type OC192. <p>On the J Series routers, the FPC type corresponds to the Physical Interface Module (PIM). The following list shows the PIM abbreviation in the output and the corresponding PIM name.</p> <ul style="list-style-type: none"> ■ 2x FE—Either two built-in Fast Ethernet interfaces (fixed PIM) or dual-port Fast Ethernet PIM ■ 4x FE—4-port Fast Ethernet ePIM ■ 1x GE Copper—Copper Gigabit Ethernet ePIM (one 10-Mbps, 100-Mbps, or 1000-Mbps port) ■ 1x GE SFP—SFP Gigabit Ethernet ePIM (one fiber port) ■ 4x GE Base PIC—Four built-in Gigabit Ethernet ports on a J4350 or J6350 chassis (fixed PIM) ■ 2x Serial—Dual-port serial PIM ■ 2x T1—Dual-port T1 PIM ■ 2x E1—Dual-port E1 PIM ■ 2x 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, 4x FXO, TIM514—TIM514 Analog Telephony Interface Module (Avaya VoIP media module with four analog LINE ports and four analog TRUNK ports) ■ 4x BRI TIM521—TIM521 BRI Telephony Interface Module (Avaya VoIP media module with four ISDN BRI ports) ■ Crypto Accelerator Module—For enhanced performance of cryptographic algorithms used in IP Security (IPSec) services ■ For hosts, the Routing Engine type. ■ For small form-factor pluggable transceiver (SFP) modules, the type of fiber: LX, SX, LH, or T. 	All levels

**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

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 CHOC3 SONET CE SFP
Xcvr 0	REV 01	740-012434	AGT063832PS	SFP-SR
Xcvr 1	REV 01	740-012434	AGT063832LY	SFP-SR
Xcvr 3	REV 01	740-016064	C06J19018	SFP-LR
PIC 2	REV 15	750-014895	DM5757	MultiServices 100
PIC 3	REV 01	750-025390	JW9448	12x T1/E1 CE
FPC 1				E-FPC
PIC 2		BUILTIN	BUILTIN	1x Tunnel
PIC 3	REV 09	750-009099	DM0899	1x G/E, 1000 BASE
Xcvr 0	REV 01	740-012434	AGT07150HGJ	UNKNOWN
Fan Tray				Rear Fan Tray

show chassis hardware
(M10 Router)

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

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

show chassis hardware
models (M10 Router)

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

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 04	710-008920		CHAS-MP-M10i-S
Power Supply 0	Rev 06	740-008537		PWR-M10i-M7i-AC-S
Power Supply 1	Rev 06	740-008537		PWR-M10i-M7i-AC-S
HCM 0	REV 03	710-010580		HCM-M10i-S
HCM 1	REV 03	710-010580		HCM-M10i-S
Routing Engine 0	REV 09	740-009459		RE-400-256-S
CFEB 0	REV 05	750-010465		FEB-M10i-M7i-S
FPC 0				
PIC 0	REV 10	750-002971		PE-40C3-SON-MM
PIC 1	REV 11	750-002992		PE-4FE-TX
PIC 2	REV 03	750-002977		PE-20C3-ATM-MM
PIC 3	REV 08	750-005724		PE-20C3-ATM2-MM
FPC 1				
PIC 2	REV 12	750-008425		PE-AS
PIC 3	REV 13	750-005636		PE-4CHDS3-QPP
Fan Tray 0				FANTRAY-M10I-S
Fan Tray 1				FANTRAY-M10I-S

show chassis hardware
(M20 Router)

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

Item	Version	Part number	Serial number	Description
Chassis			20033	M20
Backplane	REV 07	710-001517	S/N AA7940	
Power supply B	Rev 01	740-001465	S/N 000001	AC
Display	REV 02	710-001519	S/N AA9704	

```

Host 0
SSB slot 0      REV 01  710-001951  S/N AD5905  98000004f8f27501  teknor
                SSRAm bank 0  REV 01  710-001385  S00480      Internet Processor II
                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-20C3-ATM-MM
Fan Tray 0				FANTRAY-F-M20-S
Fan Tray 1				FANTRAY-F-M20-S
Fan Tray 2				FANTRAY-F-M20-S
Fan Tray 3				FANTRAY-R-M20-S

show chassis hardware (M40 Router)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Backplane	REV 02	710-000073	S/N AA0053	
Power supply A	Rev 2	740-000235	S/N 000042	DC
Maxicab	REV X1	710-000229	S/N AA0139	
Minicab	REV X1	710-000482	S/N AA0201	
Display	REV 06	710-000150	S/N AA0905	
Host				cpv5000
SCB	REV X1	710-000075	S/N AA0158	Internet Processor I
SSRAm bank 0	REV 02	710-000077	S/N AA2267	1 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	MPBBTOX2HS2E3M	Hard Disk
CB 0	REV 03	710-011403	CM8346	M120 Control Board
CB 1	REV 06	710-011403	CP6728	M120 Control Board
FPC 1	REV 02	710-015908	CP6925	M120 CFPC 10GE
PIC 0		BUILTIN	BUILTIN	1x 10GE(LAN/WAN) XFP
Xcvr 0	REV 01	740-014279	62E204N00007	XFP-10G-LR
FPC 3	REV 03	710-011393	CJ9234	M120 FPC Type 2
PIC 0	REV 16	750-008155	NB5229	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F15JB	SFP-SX
Xcvr 1	REV 01	740-007326	P4Q0R9G	SFP-SX
PIC 1	REV 09	750-007745	CG4360	4x OC-3 SONET, SMIR
PIC 2	REV 16	750-008155	ND7787	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F12AS	SFP-SX
Xcvr 1	REV 01	740-011613	P9F1ALU	SFP-SX
PIC 3	REV 07	750-011800	JW1284	8x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011613	P9F1AM6	SFP-SX
Xcvr 6	REV 01	740-011613	P9F16NN	SFP-SX
Xcvr 7	REV 01	740-011782	P8C29Y7	SFP-SX
Board B	REV 02	710-011395	CN3754	M120 FPC Mezz
FPC 4	REV 02	710-011398	CP6741	M120 FPC Type 3
PIC 0	REV 16	750-007141	NB2855	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011782	P922A1F	SFP-SX
Xcvr 1	REV 01	740-011782	P922A16	SFP-SX
Xcvr 2	REV 01	740-011782	P922A0U	SFP-SX
Xcvr 3	REV 01	740-011782	P9229UZ	SFP-SX
Xcvr 4	REV 01	740-009029	P11JXWP	SFP-LX
Xcvr 6	REV 01	740-011613	P9F1ALW	SFP-SX
FPC 5	REV 01	710-011388	CJ9088	M120 FPC Type 1
PIC 0	*** Hardware Not Supported ***			
PIC 1	REV 05	750-012052	NB0410	1x CHOC3 IQ SONET, SMLR
PIC 2	REV 01	750-013167	CM3824	4x CHDS3 IQ
PIC 3	REV 01	750-010240	CB5366	1x G/E SFP, 1000 BASE
Board B	REV 01	710-011390	CJ9103	M120 FPC Mezz Board
FEB 3	REV 04	710-011663	CP6673	M120 FEB
FEB 4	REV 04	710-011663	CJ9368	M120 FEB
FEB 5	REV 04	710-011663	CJ9386	M120 FEB
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Top Fan Tray
Fan Tray 3				Rear Bottom Fan Tray

show chassis hardware models (M120 Router)

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

```
Hardware inventory:
```

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 01	710-013667		
FPM CIP	REV 02	710-011410		CRAFT-M120-S
PEM 0	Rev 05	740-011936		PWR-M120-AC-S
PEM 1	Rev 05	740-011936		PWR-M120-AC-S
Routing Engine 0	REV 03	740-014080		RE-A-1000-2048-S
CB 0	REV 03	710-011403		CB-M120-S
CB 1	REV 06	710-011403		CB-M120-S
FPC 1	REV 02	710-015908		M120-cFPC-1XGE-XFP

FPC 3				
PIC 0	REV 16	750-008155		PB-2GE-SFP-QPP
PIC 1	REV 09	750-007745		PC-40C3-SON-SMIR
PIC 2	REV 16	750-008155		PB-2GE-SFP-QPP
PIC 3	REV 07	750-011800		PB-8GE-TYPE2-SFP-IQ2
FPC 4				
PIC 0	REV 16	750-007141		PC-10GE-SFP
FPC 5				
PIC 1	REV 05	750-012052		PB-1CHOC3-SMIR-QPP
PIC 2	REV 01	750-013167		PE-4CHDS3-QPP
PIC 3	REV 01	750-010240		PB-1GE-SFP
Fan Tray 0				FFANTRAY-M120-S
Fan Tray 1				FFANTRAY-M120-S
Fan Tray 2				RFANTRAY-M120-S
Fan Tray 3				RFANTRAY-M120-S

**show chassis hardware
(M160 Router)**

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

Item	Version	Part number	Serial number	Description
Chassis			101	M160
Midplane	REV 02	710-001245	S/N AB4107	
FPM CMB	REV 01	710-001642	S/N AA2911	
FPM Display	REV 01	710-001647	S/N AA2999	
CIP	REV 02	710-001593	S/N AA9563	
PEM 0	Rev 01	740-001243	S/N KJ35769	DC
PEM 1	Rev 01	740-001243	S/N KJ35765	DC
PCG 0	REV 01	710-001568	S/N AA9794	
PCG 1	REV 01	710-001568	S/N AA9804	
Host 1			da000004f8d57001	teknor
MCS 1	REV 03	710-001226	S/N AA9777	
SFM 0 SPP	REV 04	710-001228	S/N AA2975	
SFM 0 SPR	REV 02	710-001224	S/N AA9838	Internet Processor I
SFM 1 SPP	REV 04	710-001228	S/N AA2860	
SFM 1 SPR	REV 01	710-001224	S/N AB0139	Internet Processor I
FPC 0	REV 03	710-001255	S/N AA9806	FPC Type 1
CPU	REV 02	710-001217	S/N AA9590	
PIC 1	REV 05	750-000616	S/N AA1527	1x OC-12 ATM, MM
PIC 2	REV 05	750-000616	S/N AA1535	1x OC-12 ATM, MM
PIC 3	REV 01	750-000616	S/N AA1519	1x OC-12 ATM, MM
FPC 1	REV 02	710-001611	S/N AA9523	FPC Type 2
CPU	REV 02	710-001217	S/N AA9571	
PIC 0	REV 03	750-001900	S/N AA9626	1x STM-16 SDH, SMIR
PIC 1	REV 01	710-002381	S/N AD3633	2x G/E, 1000 BASE-SX
FPC 2				FPC Type OC192
CPU	REV 03	710-001217	S/N AB3329	
PIC 0	REV 01			1x OC-192 SM SR-2
Fan Tray 0				Rear Bottom Blower
Fan Tray 1				Rear Top Blower
Fan Tray 2				Front Top Blower
Fan Tray 3				Front Fan Tray

**show chassis hardware
models (M160 Router)**

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user@host> show chassis hardware models
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Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 03	710-009120		CHAS-BP-M320-S
FPM Display	REV 02	710-009351		CRAFT-M320-S
CIP	REV 03	710-005926		CIP-M320-S
PEM 2	Rev X4	740-009148		PWR-M-DC-S
PEM 3	Rev X4	740-009148		PWR-M-DC-S
Routing Engine 0	REV 02	740-008883		RE-1600-2048-S
Routing Engine 1	REV 02	740-008883		RE-1600-2048-S
FPC 0	REV 02	710-010419		M320-FPC1

PIC 0	REV 01	750-001323	P-TUNNEL
PIC 1	REV 02	750-002987	PE-10C12-SON-SMIR
PIC 2	REV 04	750-001894	PB-1GE-SX
PIC 3	REV 04	750-001896	PB-10C12-SON-SMIR
FPC 1	REV 02	710-010419	M320-FPC1
PIC 0	REV 04	750-001894	PB-1GE-SX
PIC 1	REV 04	750-001894	PB-1GE-SX
PIC 3	REV 03	750-001894	PB-1GE-SX
FPC 2	REV 02	710-010419	M320-FPC1
PIC 0	REV 10	750-005634	PB-1CHOC12SMIR-QPP
PIC 1	REV 10	750-005634	PB-1CHOC12SMIR-QPP
PIC 2	REV 07	750-005634	PB-1CHOC12SMIR-QPP
PIC 3	REV 07	750-005634	PB-1CHOC12SMIR-QPP
PIC 1	REV 10	750-005634	PB-1CHOC12SMIR-QPP
PIC 2	REV 07	750-005634	PB-1CHOC12SMIR-QPP
PIC 3	REV 07	750-005634	PB-1CHOC12SMIR-QPP
FPC 3			
PIC 0	REV 03	750-001895	PB-10C12-SON-MM
PIC 1	REV 04	750-001894	PB-1GE-SX
PIC 3	REV 04	750-003141	PB-1GE-SX-B
FPC 4	REV 02	710-010419	M320-FPC1
FPC 5	REV 02	710-010419	M320-FPC1
FPC 6	REV 02	710-010419	M320-FPC1
FPC 7			
PIC 0	REV 15	750-001901	PB-40C12-SON-SMIR
PIC 1	REV 06	750-001900	PB-10C48-SON-SMSR
PIC 2	REV 07	750-001900	PB-10C48-SON-SMSR
PIC 3	REV 05	750-003737	PB-4GE-SX
SIB 0	REV 03	710-009184	SIB-M-S
SIB 1	REV 03	710-009184	SIB-M-S
SIB 2	REV 03	710-009184	SIB-M-S
SIB 3	REV 03	710-009184	SIB-M-S
Fan Tray 0			FFANTRAY-M320-S
Fan Tray 1			FFANTRAY-M320-S
Fan Tray 2			RFANTRAY-M320-S

**show chassis hardware
detail (M160 Router)**

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			101	M160
Midplane	REV 02	710-001245	S/N AB4107	
FPM CMB	REV 01	710-001642	S/N AA2911	
FPM Display	REV 01	710-001647	S/N AA2999	
CIP	REV 02	710-001593	S/N AA9563	
PEM 0	Rev 01	740-001243	S/N KJ35769	DC
PEM 1	Rev 01	740-001243	S/N KJ35765	DC
PCG 0	REV 01	710-001568	S/N AA9794	
PCG 1	REV 01	710-001568	S/N AA9804	
Host 1			da000004f8d57001	teknor
MCS 1	REV 03	710-001226	S/N AA9777	
SFM 0 SPP	REV 04	710-001228	S/N AA2975	
SFM 0 SPR	REV 02	710-001224	S/N AA9838	Internet Processor I
SSRAM bank 0	REV 01	710-000077	S/N 306456	1 Mbyte
SSRAM bank 1	REV 01	710-000077	S/N 306474	1 Mbyte
SSRAM bank 2	REV 01	710-000077	S/N 306388	1 Mbyte
SSRAM bank 3	REV 01	710-000077	S/N 306392	1 Mbyte
SFM 1 SPP	REV 04	710-001228	S/N AA2860	
SFM 1 SPR	REV 01	710-001224	S/N AB0139	Internet Processor I
SSRAM bank 0	REV 01	710-000077	S/N 302917	1 Mbyte
SSRAM bank 1	REV 01	710-000077	S/N 302662	1 Mbyte
SSRAM bank 2	REV 01	710-000077	S/N 302593	1 Mbyte

SSRAM bank 3	REV 01	710-000077	S/N 100160	1 Mbyte
FPC 0	REV 03	710-001255	S/N AA9806	FPC Type 1
CPU	REV 02	710-001217	S/N AA9590	
SSRAM	REV 01	710-000077	S/N 302836	1 Mbyte
SDRAM 0	REV 01	710-001196	S00141	32 Mbytes
SDRAM 1	REV 01	710-001196	S0010;	32 Mbytes
SSRAM	REV 01	710-000077	S/N 302633	1 Mbyte
SDRAM 0	REV 01	710-001196	S00143	32 Mbytes
SDRAM 1	REV 01	710-001196	S00115	32 Mbytes
SSRAM	REV 01	710-000077	S/N 302952	1 Mbyte
SDRAM 0	REV 01	710-001196	S00135	32 Mbytes
SDRAM 1	REV 01	710-001196	S001=3	32 Mbytes
SSRAM	REV 01	710-000077	S/N 302892	1 Mbyte
SDRAM 0	REV 01	710-001196	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 05	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)

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user@host> show chassis hardware models
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Hardware inventory:

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

show chassis hardware (MX240 Router)

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user@host> show chassis hardware
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Hardware inventory:

Item	Version	Part number	Serial number	Description
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Chassis			JN10C7F7EAFB	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
(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 1	RevX02	740-002595	MD21814	Power Entry Module

SCG 0	REV 03	710-003423	HA4508	T640 Sonet Clock Gen.
Routing Engine 0	REV 02	740-005022	210865700483	RE-3.0 (RE-600)
CB 0	REV 01	710-002728	HD3044	T Series Control Board
FPC 2	REV 04	710-001721	HD5572	FPC Type 3
CPU	REV 06	710-001726	HA4712	FPC CPU
PIC 1	REV 03	750-009567	HV2331	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-009898	USC202R103	XENPAK-SR
PIC 2	REV 03	750-009567	HV2332	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-011268	USC202R112	XENPAK-ZR
PIC 3	REV 03	750-009567	HX4416	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-012056	434TC004	XENPAK-CX4
PIC 4	REV 03	750-009567	HX4420	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-012058	434TC124	XENPAK-LX4
FPC 5	REV 01	710-013553	JE4839	E2-FPC Type 1
CPU	REV 01	710-013569	JW9163	FPC CPU
PIC 0	REV 01	750-009567	HX4419	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-009898	USC202RT05	XENPAK-LR
PIC 1	REV 03	750-009567	HN7426	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-009550	03L90051	XENPAK-ER
PIC 2	REV 03	750-009467	HT7423	1x 10GE(LAN),XENPAK
SFP 0		NON-JNPR		UNKNOWN
PIC 3	REV 04	750-005100	AY4850	1x 10GE(LAN),DWDM
FPC 4	REV 01	710-010845	JD3872	FPC Type 4
CPU	REV 02	710-011481	JB6042	FPC CPU
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray

show chassis hardware models (T640 Router)

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

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 04	710-002726		CHAS-BP-T640-S
FPM Display	REV 02	710-002897		CRAFT-T640-S
CIP	REV 05	710-002895		CIP-L-T640-S
PEM 0	Rev 01	740-002595		PWR-T-DC-S
SCG 0	REV 04	710-003423		SCG-T-S
SCG 1	REV 04	710-003423		SCG-T-S
Routing Engine 0	REV 01	740-005022		RE-600-2048-S
Routing Engine 1	REV 07	740-005022		RE-600-2048-S
CB 0	REV 06	710-002726		CHAS-BP-T640-S
CB 1	REV 06	710-002728		CB-L-T-S
FPC 5	REV 05	710-007527		T640-FPC2
PIC 0	REV 05	750-002510		PB-2GE-SX
PIC 1	REV 05	750-001901		PB-40C12-SON-SMIR
FPC 6	REV 03	710-001721		T640-FPC3
PIC 1	REV 01	750-009553		PC-40C48-SON-SFP
SIB 4	REV 02	750-005486		SIB-I-T640-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FAN-REAR-TX-T640-S

show chassis hardware extensive (T640 Router)

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

Item	Version	Part number	Serial number	Description
Chassis				T640
Jedec Code:	0x7fb0	EEPROM Version:	0x01	
P/N:	S/N:	
Assembly ID:	0x0507	Assembly Version:	00.00	
Date:	00-00-0000	Assembly Flags:	0x00	
Version:			
ID: Gibson LCC Chassis				

```

Board Information Record:
  Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
  Address 0x00: 7f b0 01 ff 05 07 00 00 00 00 00 00 00 00 00 00
  Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x20: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane          REV 04   710-002726   AX5633
Jedec Code:      0x7fb0          EEPROM Version:    0x01
P/N:             710-002726.      S/N:           S/N AX5633.
Assembly ID:     0x0127          Assembly Version: 01.04
Date:            06-27-2001      Assembly Flags:  0x00
Version:         REV 04.....
ID: Gibson Backplane
Board Information Record:
  Address 0x00: ad 01 08 00 00 90 69 0e f8 00 ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 01 ff 01 27 01 04 52 45 56 20 30 34 00 00
  Address 0x10: 00 00 00 00 37 31 30 2d 30 30 32 37 32 36 00 00
  Address 0x20: 53 2f 4e 20 41 58 35 36 33 33 00 00 00 1b 06 07
  Address 0x30: d1 ff ff ff ad 01 08 00 00 90 69 0e f8 00 ff ff
  Address 0x40: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
FPM GBUS          REV 02   710-002901   HE3245
...
FPM Display       REV 02   710-002897   HA4873
...
CIP               REV 05   710-002895   HA4729
...
PEM 1             RevX02   740-002595   MD21815           Power Entry Module
...
SCG 0             REV 04   710-003423   HF6023
...
SCG 1             REV 04   710-003423   HF6061
...
Routing Engine 0  REV 01   740-005022   210865700292     RE-3.0
...
CB 0              REV 06   710-002728   HE3614
...
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)**

```
user@host> show chassis hardware scc
scc-re0:
```

```
-----
```

Hardware inventory:				
Item	Version	Part number	Serial number	Description
Chassis				TX Matrix
Midplane	REV 04	710-004396	RB0014	SCC Midplane
FPM GBUS	REV 04	710-004617	HW9141	SCC FPM Board
FPM Display	REV 04	710-004619	HS5950	SCC FPM
CIP 0	REV 01	710-010218	HV9151	SCC CIP
CIP 1	REV 01	710-010218	HV9152	SCC CIP
PEM 1	Rev 11	740-002595	QB13977	Power Entry Module
Routing Engine 0	REV 05	740-008883	P11123900153	RE-4.0 (RE-1600)
CB 0	REV 01	710-011709	HR5964	Control Board (CB-TX)
SPMB 0	REV 09	710-003229	HW5293	T Series Switch CPU
SIB 3				
SIB 4	REV 01	710-005839	HW1177	SIB-S8-F16
B Board	REV 01	710-005840	HW1202	SIB-S8-F16 (B)

**show chassis hardware
(T1600 Router)**

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			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
Routing Engine 1	REV 01	740-026942	737F-1024	LCC RE
CB 0	REV 05	710-022597	DV4264	LCC Control Board
CB 1	REV 03	710-022597	DP8558	LCC Control Board
FPC 0	REV 14	710-013037	DS9967	FPC Type 4-ES
CPU	REV 08	710-016744	DS3989	ST-PMB2

PIC 0	REV 12	750-013198	DL7506	1x Tunnel
PIC 1	REV 12	750-013198	DL7505	1x Tunnel
MMB 0	REV 01	710-025563	DS8524	ST-MMB2
MMB 1	REV 01	710-025563	DS8373	ST-MMB2
FPC 1	REV 14	710-013037	DT0027	FPC Type 4-ES
CPU	REV 09	710-016744	DS7684	ST-PMB2
PIC 0	REV 12	750-013198	DL7512	1x Tunnel
PIC 1	REV 12	750-013198	DL7498	1x Tunnel
MMB 0	REV 01	710-025563	DS8494	ST-MMB2
MMB 1	REV 01	710-025563	DS8436	ST-MMB2
SPMB 0	REV 04	710-023321	DV3867	LCC Switch CPU
SPMB 1	REV 02	710-023321	DP0238	LCC Switch CPU
SIB 0	REV 06	710-022594	DT8268	LCC SIB
B Board	REV 06	710-023185	DT5791	LCC SIB Mezz
SIB 1	REV 06	710-022594	DT8261	LCC SIB
B Board	REV 06	710-023185	DT5769	LCC SIB Mezz
SIB 2	REV 04	710-022594	DS2315	LCC SIB
B Board	REV 06	710-023185	DT5788	LCC SIB Mezz
SIB 3	REV 06	710-022594	DT8253	LCC SIB
B Board	REV 06	710-023185	DT5811	LCC SIB Mezz
SIB 4	REV 06	710-022594	DT8248	LCC SIB
B Board	REV 06	710-023185	DT5812	LCC SIB Mezz
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray

show chassis hardware
(TX Matrix Plus Router)

```
user@host> show chassis hardware
sfc0-re0:
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Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Midplane      REV 05    710-022574   TS4027         SFC Midplane
FPM Display   REV 03    710-024027   DX0282         TXP FPM Display
CIP 0         REV 04    710-023792   DW4889         TXP CIP
CIP 1         REV 04    710-023792   DW4887         TXP CIP
PEM 0         Rev 07    740-027463   UM26368        Power Entry Module
Routing Engine 0 REV 01    740-026942   737A-1064      SFC RE
Routing Engine 1 REV 01    740-026942   737A-1082      SFC RE
CB 0          REV 09    710-022606   DW6099         SFC Control Board
CB 1          REV 09    710-022606   DW6096         SFC Control Board
SPMB 0        BUILTIN
SPMB 1        BUILTIN
SIB F13 0     REV 04    710-022600   DX0841         F13 SIB
  B Board     REV 03    710-023431   DX0966         F13 SIB Mezz
SIB F13 1     REV 04    750-024564   DW5776         F13 SIB
  B Board     REV 03    710-023431   DW9028         F13 SIB
SIB F13 3     REV 04    750-024564   DW5762         F13 SIB
  B Board     REV 03    710-023431   DW9059         F13 SIB
SIB F13 4     REV 04    750-024564   DW5797         F13 SIB
  B Board     REV 03    710-023431   DW9041         F13 SIB
SIB F13 6     REV 04    750-024564   DW5770         F13 SIB
  B Board     REV 03    710-023431   DW9079         F13 SIB Mezz
SIB F13 7     REV 04    750-024564   DW5758         F13 SIB
  B Board     REV 03    710-023431   DW9047         F13 SIB
SIB F13 8     REV 04    750-024564   DW5761         F13 SIB
  B Board     REV 03    710-023431   DW9043         F13 SIB Mezz
SIB F13 9     REV 04    750-024564   DW5754         F13 SIB
  B Board     REV 03    710-023431   DW9078         F13 SIB Mezz
SIB F13 11    REV 04    710-022600   DX0826         F13 SIB
  B Board     REV 03    710-023431   DX0967         F13 SIB Mezz
SIB F13 12    REV 04    750-024564   DW5794         F13 SIB
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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

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lcc0-re1:
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Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN1103199AHA	T1600
Midplane	REV 03	710-017247	RC3765	T Series Backplane
FPM GBUS	REV 10	710-002901	DR1407	T640 FPM Board
FPM Display	REV 01	710-021387	DN5441	T1600 FPM Display
CIP	REV 06	710-002895	DP6021	T Series CIP
PEM 0	Rev 07	740-017906	UA26384	Power Entry Module 3x80
PEM 1	Rev 07	740-017906	UA26296	Power Entry Module 3x80
SCG 0	REV 15	710-003423	DR0875	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	xxx-xxxxxx	737F-1094	LCC RE

Routing Engine 1	REV 01	xxx-xxxxxx	737F-1082	LCC RE
CB 0	REV 06	710-022597	DW8534	LCC Control Board
CB 1	REV 06	710-022597	DW8527	LCC Control Board
FPC 4	REV 12	710-013037	DJ8717	FPC Type 4-ES
CPU	REV 07	710-016744	DJ8669	ST-PMB2
PIC 0	REV 11	750-017405	DP8795	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 02	740-014289	C841XU02D	XFP-10G-SR
Xcvr 1	REV 02	740-014289	C839XU0B3	XFP-10G-SR
Xcvr 2	REV 02	740-014289	C839XU0LY	XFP-10G-SR
Xcvr 3	REV 02	740-014289	C841XU01H	XFP-10G-SR
PIC 1	REV 11	750-017405	DP8794	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 02	740-014289	C839XU0J8	XFP-10G-SR
Xcvr 1	REV 02	740-014289	C839XU0K6	XFP-10G-SR
Xcvr 2	REV 02	740-014289	C839XU0J7	XFP-10G-SR
Xcvr 3	REV 02	740-014289	C839XU0KF	XFP-10G-SR
MMB 0	REV 04	710-016036	DJ7620	ST-MMB2
MMB 1	REV 04	710-016036	DJ0991	ST-MMB2
FPC 6	REV 14	710-013037	DS5335	FPC Type 4-ES
CPU	REV 08	710-016744	DS4082	ST-PMB2
PIC 0	REV 13	750-017405	DS7634	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 02	740-014289	C841XU040	XFP-10G-SR
Xcvr 1	REV 02	740-014289	C839XU0GP	XFP-10G-SR
Xcvr 2	REV 02	740-014289	C839XU0K2	XFP-10G-SR
Xcvr 3	REV 02	740-014289	C841XU03Z	XFP-10G-SR
PIC 1	REV 13	750-017405	DS7637	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 02	740-014289	C841XU05A	XFP-10G-SR
Xcvr 1	REV 02	740-014289	C839XU0PV	XFP-10G-SR
Xcvr 2	REV 02	740-014289	C841XU038	XFP-10G-SR
Xcvr 3	REV 02	740-014289	C839XU0SC	XFP-10G-SR
MMB 0	REV 04	710-016036	DF2972	ST-MMB2
MMB 1	REV 01	710-025563	DS1988	ST-MMB2
FPC 7	REV 07	710-013035	DM0990	FPC Type 3-ES
CPU	REV 08	710-016744	DP2563	ST-PMB2
PIC 0	REV 16	750-007141	JJ8067	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011782	P8J1YNJ	SFP-SX
Xcvr 1	REV 01	740-011782	PBB3BSY	SFP-SX
Xcvr 2	REV 01	740-011782	PBB3ZJE	SFP-SX
Xcvr 3	REV 01	740-011782	PBE2DY9	SFP-SX
Xcvr 4	REV 01	740-011782	PB8300R	SFP-SX
Xcvr 5	REV 01	740-011782	PCH2NYC	SFP-SX
Xcvr 6	REV 01	740-011782	PCH2PLP	SFP-SX
Xcvr 7	REV 01	740-011782	PCH2UP9	SFP-SX
Xcvr 8	REV 01	740-011782	PB81NBQ	SFP-SX
Xcvr 9	REV 01	740-011782	PCH2UDP	SFP-SX
PIC 1	REV 08	750-015749	WE9598	1x OC-192 SONET XFP
Xcvr 0	REV 01	740-014279	AA0716N10AQ	XFP-OC192-SR
PIC 2	REV 10	750-009450	HX6466	1x OC-192 SM SR2
PIC 3	REV 08	750-015749	WH0361	1x OC-192 SONET XFP
MMB 0	REV 04	710-016036	DP3271	ST-MMB2
SPMB 0	REV 04	710-023321	DW3635	LCC Switch CPU
SPMB 1	REV 04	710-023321	DW4350	LCC Switch CPU
SIB 0	REV 08	710-022594	DW8033	LCC SIB
B Board	REV 08	710-023185	DW8153	LCC SIB Mezz
SIB 1	REV 08	710-022594	DW8044	LCC SIB
B Board	REV 07	710-023185	DW3949	LCC SIB Mezz
SIB 2	REV 08	710-022594	DW8020	LCC SIB
B Board	REV 08	710-023185	DW8130	LCC SIB Mezz
SIB 3	REV 08	710-022594	DW8063	LCC SIB
B Board	REV 08	710-023185	DW8171	LCC SIB Mezz
SIB 4	REV 08	710-022594	DW8064	LCC SIB

B Board	REV 08	710-023185	DW8211	LCC SIB Mezz
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray

lcc1-re1:

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN1102675AHA	T1600
Midplane	REV 04	710-017247	RC5361	T Series Backplane
FPM GBUS	REV 10	710-002901	DS3450	T640 FPM Board
FPM Display	REV 01	710-021387	DS6430	T1600 FPM Display
CIP	REV 06	710-002895	DS4239	T Series CIP
PEM 0	Rev 08	740-017906	UD26649	Power Entry Module 3x80
SCG 0	REV 15	710-003423	DP5820	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	740-026941	737F-1143	LCC RE
Routing Engine 1	REV 01	740-026941	737F-1135	LCC RE
CB 0	REV 06	710-022597	DW8523	LCC Control Board
CB 1	REV 06	710-022597	DW8528	LCC Control Board
FPC 4	REV 12	710-013037	DP8509	FPC Type 4-ES
CPU	REV 08	710-016744	DP8095	ST-PMB2
PIC 0	REV 11	750-017405	DP8808	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 01	740-014289	T08E19304	XFP-10G-SR
Xcvr 1	REV 02	740-014289	C841XU02A	XFP-10G-SR
Xcvr 2	REV 02	740-014289	C839XU0K1	XFP-10G-SR
Xcvr 3	REV 02	740-014289	C839XU0K3	XFP-10G-SR
PIC 1	REV 11	750-017405	DP7263	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 02	740-014289	C839XU0KN	XFP-10G-SR
Xcvr 1	REV 02	740-014289	C839XU0K4	XFP-10G-SR
Xcvr 2	REV 02	740-014289	C839XU0K5	XFP-10G-SR
Xcvr 3	REV 02	740-014289	C839XU0KL	XFP-10G-SR
MMB 0	REV 04	710-016036	DR0596	ST-MMB2
MMB 1	REV 04	710-016036	DR0590	ST-MMB2
FPC 6	REV 14	710-013037	DS9961	FPC Type 4-ES
CPU	REV 09	710-016744	DS7661	ST-PMB2
PIC 0	REV 13	750-017405	DS5532	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 02	740-014289	C839XU0V5	XFP-10G-SR
Xcvr 1	REV 02	740-014289	C841XU05B	XFP-10G-SR
Xcvr 2	REV 02	740-014289	C839XU0UF	XFP-10G-SR
Xcvr 3	REV 02	740-014289	C839XU0H0	XFP-10G-SR
PIC 1	REV 13	750-017405	DS7639	4x 10GE (LAN/WAN) XFP
MMB 0	REV 01	710-025563	DS8557	ST-MMB2
MMB 1	REV 01	710-025563	DS8376	ST-MMB2
FPC 7	REV 03	710-013035	DF5564	FPC Type 3-ES
CPU	REV 01	710-016744	JT0000	ST-PMB2
PIC 0	REV 16	750-007141	JJ8063	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011782	P8910GM	SFP-SX
Xcvr 1	REV 01	740-011782	P8910TT	SFP-SX
Xcvr 2	REV 01	740-011782	P8918S9	SFP-SX
Xcvr 3	REV 01	740-011782	P9M0TD8	SFP-SX
Xcvr 4	REV 01	740-007326	P4TOWLZ	SFP-SX
Xcvr 5	REV 01	740-011782	PCH2NTA	SFP-SX
Xcvr 6	REV 01	740-011782	PBE2E0S	SFP-SX
Xcvr 7	REV 01	740-011782	PCH2PDJ	SFP-SX
Xcvr 8	REV 01	740-011785	P9E22FD	SFP-LX
Xcvr 9	REV 01	740-011782	PCH2UE1	SFP-SX
MMB 0	REV 04	710-016036	DF2947	ST-MMB2
SPMB 0	REV 04	710-023321	DW4351	LCC Switch CPU
SPMB 1	REV 04	710-023321	DW3638	LCC Switch CPU

SIB 0	REV 08	710-022594	DW8035	LCC SIB
B Board	REV 07	710-023185	DW3942	LCC SIB Mezz
SIB 1	REV 10	710-022594	DX7672	LCC SIB
B Board	REV 08	710-023185	DW8192	LCC SIB Mezz
SIB 2	REV 08	710-022594	DW8060	LCC SIB
B Board	REV 08	710-023185	DW8133	LCC SIB Mezz
SIB 3	REV 08	710-022594	DW8072	LCC SIB
B Board	REV 08	710-023185	DW8177	LCC SIB Mezz
SIB 4	REV 08	710-022594	DW8043	LCC SIB
B Board	REV 08	710-023185	DW8193	LCC SIB Mezz
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray

show chassis hardware
sfc (TX Matrix Plus
Router)

user@host> **show chassis hardware sfc 0**
sfc0-re0:

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Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              JN112F007AHB
Midplane             REV 05      710-022574    TS4027         SFC Midplane
FPM Display          REV 03      710-024027    DX0282         TXP FPM Display
CIP 0                REV 04      710-023792    DW4889         TXP CIP
CIP 1                REV 04      710-023792    DW4887         TXP CIP
PEM 0                Rev 07      740-027463    UM26368        Power Entry Module
Routing Engine 0     REV 01      740-026942    737A-1064      SFC RE
Routing Engine 1     REV 01      740-026942    737A-1082      SFC RE
CB 0                 REV 09      710-022606    DW6099         SFC Control Board
CB 1                 REV 09      710-022606    DW6096         SFC Control Board
SPMB 0               BUILTIN
SPMB 1               BUILTIN
SIB F13 0            REV 04      710-022600    DX0841         F13 SIB
B Board              REV 03      710-023431    DX0966         F13 SIB Mezz
SIB F13 1            REV 04      750-024564    DW5776         F13 SIB
B Board              REV 03      710-023431    DW9028         F13 SIB
SIB F13 3            REV 04      750-024564    DW5762         F13 SIB
B Board              REV 03      710-023431    DW9059         F13 SIB
SIB F13 4            REV 04      750-024564    DW5797         F13 SIB
B Board              REV 03      710-023431    DW9041         F13 SIB
SIB F13 6            REV 04      750-024564    DW5770         F13 SIB
B Board              REV 03      710-023431    DW9079         F13 SIB Mezz
SIB F13 7            REV 04      750-024564    DW5758         F13 SIB
B Board              REV 03      710-023431    DW9047         F13 SIB
SIB F13 8            REV 04      750-024564    DW5761         F13 SIB
B Board              REV 03      710-023431    DW9043         F13 SIB Mezz
SIB F13 9            REV 04      750-024564    DW5754         F13 SIB
B Board              REV 03      710-023431    DW9078         F13 SIB Mezz
SIB F13 11           REV 04      710-022600    DX0826         F13 SIB
B Board              REV 03      710-023431    DX0967         F13 SIB Mezz
SIB F13 12           REV 04      750-024564    DW5794         F13 SIB
B Board              REV 03      710-023431    DW9044         F13 SIB Mezz
SIB F2S 0/0          REV 05      710-022603    DW7897         F2S SIB
B Board              REV 05      710-023787    DW7657         NEO PMB
SIB F2S 0/2          REV 05      710-022603    DW7833         F2S SIB
B Board              REV 05      710-023787    DW7526         NEO PMB
SIB F2S 0/4          REV 05      710-022603    DW7875         F2S SIB
B Board              REV 05      710-023787    DW7588         NEO PMB
SIB F2S 0/6          REV 05      710-022603    DW7860         F2S SIB
B Board              REV 05      710-023787    DW7589         NEO PMB
SIB F2S 1/0          REV 04      710-022603    DW4820         F2S SIB
B Board              REV 05      710-023787    DW8510         NEO PMB
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SIB F2S 1/2	REV 05	710-022603	DW7849	F2S SIB
B Board	REV 05	710-023787	DW7525	NEO PMB
SIB F2S 1/4	REV 05	710-022603	DW7927	F2S SIB
B Board	REV 05	710-023787	DW7556	F2S SIB Mezz
SIB F2S 1/6	REV 05	710-022603	DW7866	F2S SIB
B Board	REV 05	710-023787	DW7651	NEO PMB
SIB F2S 2/0	REV 05	710-022603	DW7880	F2S SIB
B Board	REV 05	710-023787	DW7523	NEO PMB
SIB F2S 2/2	REV 05	710-022603	DW7895	F2S SIB
B Board	REV 05	710-023787	DW7591	NEO PMB
SIB F2S 2/4	REV 05	710-022603	DW7907	F2S SIB
B Board	REV 05	710-023787	DW7590	NEO PMB
SIB F2S 2/6	REV 05	710-022603	DW7785	F2S SIB
B Board	REV 05	710-023787	DW7524	NEO PMB
SIB F2S 3/0	REV 05	710-022603	DW7782	F2S SIB
B Board	REV 05	710-023787	DW7634	NEO PMB
SIB F2S 3/2	REV 05	710-022603	DW7793	F2S SIB
B Board	REV 05	710-023787	DW7548	NEO PMB
SIB F2S 3/4	REV 05	710-022603	DW7779	F2S SIB
B Board	REV 05	710-023787	DW7587	NEO PMB
SIB F2S 3/6	REV 05	710-022603	DW7930	F2S SIB
B Board	REV 05	710-023787	DW7505	NEO PMB
SIB F2S 4/0	REV 05	710-022603	DW7867	F2S SIB
B Board	REV 05	710-023787	DW7656	NEO PMB
SIB F2S 4/2	REV 05	710-022603	DW7917	F2S SIB
B Board	REV 05	710-023787	DW7640	NEO PMB
SIB F2S 4/4	REV 05	710-022603	DW7929	F2S SIB
B Board	REV 05	710-023787	DW7643	NEO PMB
SIB F2S 4/6	REV 05	710-022603	DW7870	F2S SIB
B Board	REV 05	710-023787	DW7635	NEO PMB
Fan Tray 0	REV 06	760-024497	DV7831	Front Fan Tray
Fan Tray 1	REV 06	760-024497	DV9614	Front Fan Tray
Fan Tray 2	REV 06	760-024502	DV9618	Rear Fan Tray
Fan Tray 3	REV 06	760-024502	DV9616	Rear Fan Tray
Fan Tray 4	REV 06	760-024502	DV7807	Rear Fan Tray
Fan Tray 5	REV 06	760-024502	DV7828	Rear Fan Tray

**show chassis hardware
extensive (TX Matrix
Plus Router)**

user@host> show chassis hardware extensive
sfc0-re0:

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Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Jedec Code:   0x7fb0          EEPROM Version: 0x02
S/N:          JN112F007AHB
Assembly ID:  0x052c          Assembly Version: 00.00
Date:         00-00-0000      Assembly Flags:  0x00
ID: TXP
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 7f b0 02 ff 05 2c 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x20: 4a 4e 31 31 32 46 30 30 37 41 48 42 00 00 00 00
Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane     REV 05          710-022574    TS4027          SFC Midplane
Jedec Code:   0x7fb0          EEPROM Version: 0x01
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user@host> show chassis hardware clei-models
sfc0-re0:
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show chassis hardware ■ 379

SIB F13 7	REV 04	750-024564	SIB-TXP-F13
SIB F13 8	REV 04	750-024564	SIB-TXP-F13
SIB F13 9	REV 04	750-024564	SIB-TXP-F13
SIB F13 12	REV 04	750-024564	SIB-TXP-F13
SIB F2S 0/0	REV 05	710-022603	
SIB F2S 0/2	REV 05	710-022603	
SIB F2S 0/4	REV 05	710-022603	
SIB F2S 0/6	REV 05	710-022603	
SIB F2S 1/0	REV 04	710-022603	
SIB F2S 1/2	REV 05	710-022603	
SIB F2S 1/4	REV 05	710-022603	SIB-TXP-F2S
SIB F2S 1/6	REV 05	710-022603	
SIB F2S 2/0	REV 05	710-022603	
SIB F2S 2/2	REV 05	710-022603	
SIB F2S 2/4	REV 05	710-022603	
SIB F2S 2/6	REV 05	710-022603	
SIB F2S 3/0	REV 05	710-022603	
SIB F2S 3/2	REV 05	710-022603	
SIB F2S 3/4	REV 05	710-022603	
SIB F2S 3/6	REV 05	710-022603	
SIB F2S 4/0	REV 05	710-022603	
SIB F2S 4/2	REV 05	710-022603	
SIB F2S 4/4	REV 05	710-022603	
SIB F2S 4/6	REV 05	710-022603	
Fan Tray 0	REV 06	760-024497	FANTRAY-TXP-F
Fan Tray 1	REV 06	760-024497	FANTRAY-TXP-F
Fan Tray 2	REV 06	760-024502	FANTRAY-TXP-R
Fan Tray 3	REV 06	760-024502	FANTRAY-TXP-R
Fan Tray 4	REV 06	760-024502	FANTRAY-TXP-R
Fan Tray 5	REV 06	760-024502	FANTRAY-TXP-R

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lcc0-re1:
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Hardware inventory:
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Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 03	710-017247		CHAS-BP-T1600-S
FPM Display	REV 01	710-021387		CRAFT-T1600-S
CIP	REV 06	710-002895		CIP-L-T640-S
PEM 0	Rev 07	740-017906	IPUPAC7KTA	PWR-T1600-3-80-DC-S
PEM 1	Rev 07	740-017906	IPUPAC7KTA	PWR-T1600-3-80-DC-S
SCG 0	REV 15	710-003423		SCG-T-S
CB 0	REV 06	710-022597		CB-LCC
CB 1	REV 06	710-022597		CB-LCC
FPC 4	REV 12	710-013037		T1600-FPC4-ES
PIC 0	REV 11	750-017405		PD-4XGE-XFP
PIC 1	REV 11	750-017405		PD-4XGE-XFP
FPC 6	REV 14	710-013037		T1600-FPC4-ES
PIC 0	REV 13	750-017405		PD-4XGE-XFP
PIC 1	REV 13	750-017405		PD-4XGE-XFP
FPC 7	REV 07	710-013035		T1600-FPC3-ES
PIC 0	REV 16	750-007141		PC-10GE-SFP
PIC 1	REV 08	750-015749		PC-10C192-SON-XFP
PIC 2	REV 10	750-009450		PC-10C192-SON-SR2
PIC 3	REV 08	750-015749		PC-10C192-SON-XFP
SIB 0	REV 08	710-022594		SIB-TXP-T1600-S
SIB 1	REV 08	710-022594		SIB-TXP-T1600-S
SIB 2	REV 08	710-022594		SIB-TXP-T1600-S
SIB 3	REV 08	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
Fan Tray 2

FANTRAY-T-S
FANTRAY-TXP-R-S

**show chassis hardware
detail (TX Matrix Plus
Router)**

user@host> **show chassis hardware detail**
sfc0-re0:

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN111B023AHB	TXP
Midplane	REV 01	710-022574	TR7990	SFC Midplane
FPM Display	REV 03	710-024027	DW4699	TXP FPM Display
CIP 0	REV 01	710-023792	DR1437	TXP CIP
CIP 1	REV 02	710-023792	DS4564	TXP CIP
PEM 0	Rev 07	740-027463	UM26360	Power Entry Module
Routing Engine 0	REV 01	740-026942	737A-1024	SFC RE
ad0	3887 MB	SMART CF	200811050193CEB1CEB1	Compact Flash
ad1	30533 MB	SAMSUNG MCBQE32G8MPP-0V	SY814A0762	Disk 1
Routing Engine 1	REV 01	740-026942	737A-1024	SFC RE
ad0	3887 MB	SMART CF	20081105004C19A019A0	Compact Flash
ad1	30533 MB	SAMSUNG MCBQE32G8MPP-0V	SY814A0794	Disk 1
CB 0	REV 03	710-022606	DR7134	SFC Control Board
CB 1	REV 01	710-022606	DP8890	SFC Control Board
SPMB 0		BUILTIN		SFC Switch CPU
SPMB 1		BUILTIN		SFC Switch CPU
SIB F13 0	REV 03	750-024564	DT9478	F13 SIB
B Board	REV 02	710-023431	DT6554	F13 SIB
SIB F13 1	REV 03	750-024564	DT9454	F13 SIB
B Board	REV 02	710-023431	DT6551	F13 SIB
SIB F2S 0/0	REV 02	710-022603	DT2838	F2S SIB
B Board	REV 02	710-023787	DT1725	NEO PMB
SIB F2S 0/2	REV 02	710-022603	DT2824	F2S SIB
B Board	REV 02	710-023787	DT1706	NEO PMB
SIB F2S 0/4	REV 02	710-022603	DT2822	F2S SIB
B Board	REV 02	710-023787	DT1696	NEO PMB
SIB F2S 0/6	REV 02	710-022603	DT2823	F2S SIB
B Board	REV 02	710-023787	DT1717	NEO PMB
SIB F2S 1/0	REV 03	710-022603	DV0059	F2S SIB
B Board	REV 03	710-023787	DT9942	NEO PMB
SIB F2S 1/2	REV 02	710-022603	DT2826	F2S SIB
B Board	REV 02	710-023787	DT1713	NEO PMB
SIB F2S 1/4	REV 03	710-022603	DV0092	F2S SIB
B Board	REV 03	710-023787	DV0000	NEO PMB
SIB F2S 1/6	REV 03	710-022603	DV0079	F2S SIB
B Board	REV 03	710-023787	DT9972	NEO PMB
SIB F2S 2/0	REV 03	710-022603	DV0100	F2S SIB
B Board	REV 03	710-023787	DT9925	NEO PMB
SIB F2S 2/2	REV 03	710-022603	DV0050	F2S SIB
B Board	REV 03	710-023787	DV0005	NEO PMB
SIB F2S 2/4	REV 03	710-022603	DV0097	F2S SIB
B Board	REV 03	710-023787	DT9936	NEO PMB
Fan Tray 0	REV 02	760-024497	DR8286	Front Fan Tray
Fan Tray 1	REV 06	760-024497	DV9624	Front Fan Tray
Fan Tray 2	REV 02	760-024502	DR8259	Rear Fan Tray
Fan Tray 3	REV 02	760-024502	DR8270	Rear Fan Tray
Fan Tray 4	REV 02	760-024502	DR8284	Rear Fan Tray
Fan Tray 5	REV 06	760-024502	DV7813	Rear Fan Tray

lcc0-re0:

Hardware inventory:

Item	Version	Part number	Serial number	Description
------	---------	-------------	---------------	-------------

Chassis			JN1101F27AHA	T1600
Midplane	REV 04	710-017247	RC5317	T Series Backplane
FPM GBUS	REV 10	710-002901	DS8197	T640 FPM Board
FPM Display	REV 01	710-021387	DS6433	T1600 FPM Display
CIP	REV 06	710-002895	DS1493	T Series CIP
PEM 0	Rev 08	740-017906	UD26601	Power Entry Module 3x80
SCG 0	REV 15	710-003423	DP5847	T640 Sonet Clock Gen.
SCG 1	REV 15	710-003423	DR0924	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	740-026942	737F-1024	LCC RE
ad0	3887 MB	SMART CF	2008110502B63E513E51	Compact Flash
ad1	30533 MB	SAMSUNG MCBQE32G8MPP-0V	SY814A1208	Disk 1
Routing Engine 1	REV 01	740-026942	737F-1024	LCC RE
ad0	3887 MB	SMART CF	2008110500F9A8A8A8A8	Compact Flash
ad1	30533 MB	SAMSUNG MCBQE32G8MPP-0V	SY814A1076	Disk 1
CB 0	REV 05	710-022597	DV4264	LCC Control Board
CB 1	REV 03	710-022597	DP8558	LCC Control Board
FPC 0	REV 14	710-013037	DS9967	FPC Type 4-ES
CPU	REV 08	710-016744	DS3989	ST-PMB2
PIC 0	REV 12	750-013198	DL7506	1x Tunnel
PIC 1	REV 12	750-013198	DL7505	1x Tunnel
MMB 0	REV 01	710-025563	DS8524	ST-MMB2
MMB 1	REV 01	710-025563	DS8373	ST-MMB2
FPC 1	REV 14	710-013037	DT0027	FPC Type 4-ES
CPU	REV 09	710-016744	DS7684	ST-PMB2
PIC 0	REV 12	750-013198	DL7512	1x Tunnel
PIC 1	REV 12	750-013198	DL7498	1x Tunnel
MMB 0	REV 01	710-025563	DS8494	ST-MMB2
MMB 1	REV 01	710-025563	DS8436	ST-MMB2
SPMB 0	REV 04	710-023321	DV3867	LCC Switch CPU
SPMB 1	REV 02	710-023321	DP0238	LCC Switch CPU
SIB 0	REV 06	710-022594	DT8268	LCC SIB
B Board	REV 06	710-023185	DT5791	LCC SIB Mezz
SIB 1	REV 06	710-022594	DT8261	LCC SIB
B Board	REV 06	710-023185	DT5769	LCC SIB Mezz
SIB 2	REV 04	710-022594	DS2315	LCC SIB
B Board	REV 06	710-023185	DT5788	LCC SIB Mezz
SIB 3	REV 06	710-022594	DT8253	LCC SIB
B Board	REV 06	710-023185	DT5811	LCC SIB Mezz
SIB 4	REV 06	710-022594	DT8248	LCC SIB
B Board	REV 06	710-023185	DT5812	LCC SIB Mezz
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray

show chassis hardware models (TX Matrix Plus Router)

```

user@host> show chassis hardware models
sfc0-re0:
-----
Hardware inventory:
Item          Version  Part number  Serial number  FRU model number
FPM Display   REV 03   710-024027   DX0282         CRAFT-TXP
CIP 0         REV 04   710-023792   DW4889         CIP-TXP
CIP 1         REV 04   710-023792   DW4887         CIP-TXP
PEM 0         Rev 07   740-027463   UM26368        yyyyyyyyyyyyyyyyyyyyyyyyyyy
Routing Engine 0 REV 01   740-026942   737A-1064      RE-TXP-SFC-DU0-2600-16G
Routing Engine 1 REV 01   740-026942   737A-1082      RE-TXP-SFC-DU0-2600-16G
CB 0          REV 09   710-022606   DW6099         CB-TXP
CB 1          REV 09   710-022606   DW6096         CB-TXP
SIB F13 1     REV 04   750-024564   DW5776         SIB-TXP-F13
SIB F13 3     REV 04   750-024564   DW5762         SIB-TXP-F13
SIB F13 4     REV 04   750-024564   DW5797         SIB-TXP-F13
SIB F13 6     REV 04   750-024564   DW5770         SIB-TXP-F13

```

SIB F13 7	REV 04	750-024564	DW5758	SIB-TXP-F13
SIB F13 8	REV 04	750-024564	DW5761	SIB-TXP-F13
SIB F13 9	REV 04	750-024564	DW5754	SIB-TXP-F13
SIB F13 12	REV 04	750-024564	DW5794	SIB-TXP-F13
SIB F2S 0/0	REV 05	710-022603	DW7897	
SIB F2S 0/2	REV 05	710-022603	DW7833	
SIB F2S 0/4	REV 05	710-022603	DW7875	
SIB F2S 0/6	REV 05	710-022603	DW7860	
SIB F2S 1/0	REV 04	710-022603	DW4820	
SIB F2S 1/2	REV 05	710-022603	DW7849	
SIB F2S 1/4	REV 05	710-022603	DW7927	SIB-TXP-F2S
SIB F2S 1/6	REV 05	710-022603	DW7866	
SIB F2S 2/0	REV 05	710-022603	DW7880	
SIB F2S 2/2	REV 05	710-022603	DW7895	
SIB F2S 2/4	REV 05	710-022603	DW7907	
SIB F2S 2/6	REV 05	710-022603	DW7785	
SIB F2S 3/0	REV 05	710-022603	DW7782	
SIB F2S 3/2	REV 05	710-022603	DW7793	
SIB F2S 3/4	REV 05	710-022603	DW7779	
SIB F2S 3/6	REV 05	710-022603	DW7930	
SIB F2S 4/0	REV 05	710-022603	DW7867	
SIB F2S 4/2	REV 05	710-022603	DW7917	
SIB F2S 4/4	REV 05	710-022603	DW7929	
SIB F2S 4/6	REV 05	710-022603	DW7870	
Fan Tray 0	REV 06	760-024497	DV7831	FANTRAY-TXP-F
Fan Tray 1	REV 06	760-024497	DV9614	FANTRAY-TXP-F
Fan Tray 2	REV 06	760-024502	DV9618	FANTRAY-TXP-R
Fan Tray 3	REV 06	760-024502	DV9616	FANTRAY-TXP-R
Fan Tray 4	REV 06	760-024502	DV7807	FANTRAY-TXP-R
Fan Tray 5	REV 06	760-024502	DV7828	FANTRAY-TXP-R

1cc0-re0:

Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 03	710-017247	RC3765	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	DN5441	CRAFT-T1600-S
CIP	REV 06	710-002895	DP6021	CIP-L-T640-S
PEM 0	Rev 07	740-017906	UA26384	PWR-T1600-3-80-DC-S
PEM 1	Rev 07	740-017906	UA26296	PWR-T1600-3-80-DC-S
SCG 0	REV 15	710-003423	DR0875	SCG-T-S
CB 0	REV 06	710-022597	DW8534	CB-LCC
CB 1	REV 06	710-022597	DW8527	CB-LCC
FPC 4	REV 12	710-013037	DJ8717	T1600-FPC4-ES
PIC 0	REV 11	750-017405	DP8795	PD-4XGE-XFP
PIC 1	REV 11	750-017405	DP8794	PD-4XGE-XFP
FPC 6	REV 14	710-013037	DS5335	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS7634	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS7637	PD-4XGE-XFP
FPC 7	REV 07	710-013035	DM0990	T1600-FPC3-ES
PIC 0	REV 16	750-007141	JJ8067	PC-10GE-SFP
PIC 1	REV 08	750-015749	WE9598	PC-10C192-SON-XFP
PIC 2	REV 10	750-009450	HX6466	PC-10C192-SON-SR2
SIB 0	REV 08	710-022594	DW8033	SIB-TXP-T1600-S
SIB 1	REV 08	710-022594	DW8044	SIB-TXP-T1600-S
SIB 2	REV 08	710-022594	DW8020	SIB-TXP-T1600-S
SIB 3	REV 08	710-022594	DW8063	SIB-TXP-T1600-S
SIB 4	REV 08	710-022594	DW8064	SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

```
lcc1-re0:
```

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

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 04	710-017247	RC5361	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	DS6430	CRAFT-T1600-S
CIP	REV 06	710-002895	DS4239	CIP-L-T640-S
PEM 0	Rev 08	740-017906	UD26649	PWR-T1600-3-80-DC-S
SCG 0	REV 15	710-003423	DP5820	SCG-T-S
CB 0	REV 06	710-022597	DW8523	CB-LCC
CB 1	REV 06	710-022597	DW8528	CB-LCC
FPC 4	REV 12	710-013037	DP8509	T1600-FPC4-ES
PIC 0	REV 11	750-017405	DP8808	PD-4XGE-XFP
PIC 1	REV 11	750-017405	DP7263	PD-4XGE-XFP
FPC 6	REV 14	710-013037	DS9961	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS5532	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS7639	PD-4XGE-XFP
FPC 7	REV 03	710-013035	DF5564	T1600-FPC3-ES
PIC 0	REV 16	750-007141	JJ8063	PC-10GE-SFP
SIB 0	REV 08	710-022594	DW8035	SIB-TXP-T1600-S
SIB 1	REV 10	710-022594	DX7672	SIB-TXP-T1600-S
SIB 2	REV 08	710-022594	DW8060	SIB-TXP-T1600-S
SIB 3	REV 08	710-022594	DW8072	SIB-TXP-T1600-S
SIB 4	REV 08	710-022594	DW8043	SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

```
lcc2-re0:
```

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

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 03	710-017247	RC3956	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	DN7030	CRAFT-T1600-S
CIP	REV 06	710-002895	DM3962	CIP-L-T640-S
PEM 0	Rev 08	740-017906	UD26519	PWR-T1600-3-80-DC-S
PEM 1	Rev 07	740-017906	UC26601	PWR-T1600-3-80-DC-S
SCG 0	REV 15	710-003423	DP0277	SCG-T-S
CB 0	REV 06	710-022597	DW8524	CB-LCC
CB 1	REV 06	710-022597	DW8536	CB-LCC
FPC 4	REV 12	710-013037	DR1194	T1600-FPC4-ES
PIC 0	REV 11	750-017405	DP8811	PD-4XGE-XFP
PIC 1	REV 11	750-017405	DP8823	PD-4XGE-XFP
FPC 5	REV 12	710-013037	DR1184	T1600-FPC4-ES
PIC 1	REV 11	750-017405	DP4744	PD-4XGE-XFP
FPC 6	REV 12	710-013037	DN8622	T1600-FPC4-ES
PIC 0	REV 14	750-012518	JY9924	PD-40C192-SON-XFP
PIC 1	REV 11	750-017405	DP8776	PD-4XGE-XFP
FPC 7	REV 04	710-013560	JR3968	T640-FPC3-E2
PIC 0	REV 16	750-007141	NC9330	PC-10GE-SFP
SIB 0	REV 07	710-022594	DW4217	SIB-TXP-T1600-S
SIB 1	REV 07	710-022594	DW4213	SIB-TXP-T1600-S
SIB 2	REV 07	710-022594	DW4189	SIB-TXP-T1600-S
SIB 3	REV 07	710-022594	DW4173	SIB-TXP-T1600-S
SIB 4	REV 07	710-022594	DW4201	SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

```
lcc3-re0:
```

Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 04	710-017247	RC5319	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	DS6402	CRAFT-T1600-S
CIP	REV 06	710-002895	DR9973	CIP-L-T640-S
PEM 0	Rev 07	740-017906	UC26496	PWR-T1600-3-80-DC-S
PEM 1	Rev 07	740-017906	UC26599	PWR-T1600-3-80-DC-S
SCG 0	REV 15	710-003423	DP5831	SCG-T-S
CB 0	REV 06	710-022597	DW8533	CB-LCC
CB 1	REV 06	710-022597	DW8538	CB-LCC
FPC 0	REV 14	710-013037	DS5345	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS7641	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS5479	PD-4XGE-XFP
FPC 1	REV 14	710-013037	DS7338	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS7631	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS7632	PD-4XGE-XFP
FPC 2	REV 14	710-013037	DS9962	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS7581	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS7627	PD-4XGE-XFP
FPC 4	REV 10	710-010845	JZ6573	T640-FPC4-ES
PIC 0	REV 14	750-012518	JT5124	PD-40C192-SON-XFP
FPC 5	REV 14	710-013037	DT0016	T1600-FPC4-ES
PIC 0	REV 14	750-012518	JY9918	PD-40C192-SON-XFP
FPC 7	REV 07	710-013035	DM0967	T1600-FPC3-ES
PIC 0	REV 16	750-007141	JJ8059	PC-10GE-SFP
PIC 1	REV 13	750-004695	DM5712	PC-TUNNEL
SIB 0	REV 07	710-022594	DW4174	SIB-TXP-T1600-S
SIB 1	REV 07	710-022594	DW4207	SIB-TXP-T1600-S
SIB 2	REV 06	710-022594	DT8231	SIB-TXP-T1600-S
SIB 3	REV 07	710-022594	DW4175	SIB-TXP-T1600-S
SIB 4	REV 07	710-022594	DW4209	SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

show chassis in-service-upgrade

Syntax show chassis in-service-upgrade

Release Information Command introduced in JUNOS 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 Topics

- request system software abort
- request system software in-service-upgrade

List of Sample Output show chassis in-service-upgrade on page 386

Output Fields Table 77 on page 386 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 77: 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 following: <ul style="list-style-type: none"> ■ 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 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 Topics	■ request chassis lcc
List of Sample Output	show chassis lccs on page 388
Output Fields	Table 78 on page 388 lists the output fields for the show chassis lccs command. Output fields are listed in the approximate order in which they appear.

Table 78: show chassis lccs Output Fields

Field Name	Field Description
Slot	LCC slot number.
State	LCC status: <ul style="list-style-type: none"> ■ 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 <i>name</i> by-slot fpc <i>number</i> lcc <i>number</i>) lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis location <fpc interface (by-name <i>name</i> by-slot fpc <i>number</i> lcc <i>number</i>) lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display the physical location of the chassis. This command can only be used on the master Routing Engine.
Options	<p>none—Display all information about the physical location of the chassis. On a TX Matrix router, display all information about the physical location of the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display all information about the physical location of the TX Matrix Plus router and its attached T1600 routers.</p> <p>fpc—(TX Matrix and TX Matrix Plus routers only) (Optional) Display the physical location of all Flexible PIC Concentrators (FPCs).</p> <p>interface by-name <i>name</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) Display the physical location of a specified interface name. On a TX Matrix router, this option displays the FPC number and T640 router (or line-card chassis) number associated with the specified interface. On a TX Matrix Plus router, this option displays the FPC number and T1600 router (or line-card chassis) number associated with the specified interface.</p> <p>interface by-slot fpc <i>number</i> lcc <i>number</i>—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display the global FPC number of an interface by specifying its local FPC number and T640 router (or line-card chassis) number. On a TX Matrix Plus router, display the global FPC number of an interface by specifying its local FPC number and T1600 router (or line-card chassis) number.</p> <ul style="list-style-type: none"> ■ 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 <i>number</i> with a value from 0 through 7. ■ For lcc, replace <i>number</i> with a value from 0 through 3. <p>lcc <i>number</i>—(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)</p>

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 390
 show chassis location fpc (TX Matrix Router) on page 390
 show chassis location interface by-slot (TX Matrix Router) on page 391
 show chassis location on page 391
 show chassis location fpc (TX Matrix Plus Router) on page 391
 show chassis location interface by-slot (TX Matrix Plus Router) on page 391

Output Fields Table 79 on page 390 lists the output fields for the **show chassis location** command. Output fields are listed in the approximate order in which they appear.

Table 79: 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 <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis mac-addresses <lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display the media access control (MAC) addresses for the router or switch chassis.
Options	<p>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.</p> <p><i>lcc number</i>—(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 <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display MAC addresses for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display MAC addresses for the TX Matrix Plus router (or switch-fabric chassis).</p>
Required Privilege Level	view
List of Sample Output	show chassis mac-addresses on page 393 show chassis mac-addresses (TX Matrix Router) on page 393 show chassis mac-addresses (TX Matrix Plus Router) on page 393
Output Fields	Table 80 on page 392 lists the output fields for the show chassis mac-addresses command. Output fields are listed in the approximate order in which they appear.

Table 80: 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.
Public count	Number of allocated public addresses.

Table 80: show chassis mac-addresses Output Fields (continued)

Field Name	Field Description
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 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 81 on page 395 lists the output fields for the <code>show chassis network services</code> command. Output fields are listed in the approximate order in which they appear.

Table 81: show chassis network services Output Fields

Field Name	Field Description
Network services mode	Network services mode configured for the MX Series router: <ul style="list-style-type: none"> ■ IP—IP Services mode. ■ Ethernet—Ethernet Services mode.

```

show chassis network  user@host> show chassis network services
services             Network Services Mode: IP

```

show chassis pic

Syntax	<code>show chassis pic fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i></code>
Syntax (TX Matrix and TX Matrix Plus Routers)	<code>show chassis pic fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i> <fcc <i>number</i>></code>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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	<p><code>fpc-slot <i>slot-number</i></code>—Display information about the PIC in this particular FPC slot:</p> <ul style="list-style-type: none"> ■ 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 <code>fcc <i>number</i></code> option (the recommended method), replace <i>slot-number</i> with a value from 0 through 7. Otherwise, replace <i>slot-number</i> with a value from 0 through 31. For example, the following commands have the same result: <pre> user@host> show chassis pic fpc-slot 1 fcc 1 pic-slot 1 user@host> show chassis pic fpc-slot 9 pic-slot 1 </pre> <p>Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 router by using the <code>fcc <i>number</i></code> option (the recommended method), replace <i>slot-number</i> with a value from 0 through 7. Otherwise, replace <i>slot-number</i> with a value from 0 through 31. For example, the following commands have the same result:</p> <ul style="list-style-type: none"> ■ M120 routers only—Replace <i>slot-number</i> with a value from 0 through 5. ■ MX240 routers only—Replace <i>slot-number</i> with a value from 0 through 2. ■ MX480 routers only—Replace <i>slot-number</i> with a value from 0 through 5. ■ MX960 routers only—Replace <i>slot-number</i> with a value from 0 through 11. ■ Other routers—Replace <i>slot-number</i> with a value from 0 through 7. ■ EX Series switches: <ul style="list-style-type: none"> ■ EX3200 switches and EX4200 standalone switches—Replace <i>slot-number</i> with 0. ■ EX4200 switches in a Virtual Chassis configuration—Replace <i>slot-number</i> with a value from 0 through 9 (switch's member ID). ■ EX8208 switches—Replace <i>slot-number</i> with a value from 0 through 7 (line card). ■ EX8216 switches—Replace <i>slot-number</i> 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 Topics ■ request chassis pic

List of Sample Output

- show chassis pic fpc-slot pic-slot on page 398
- show chassis pic fpc-slot pic-slot (PIC Offline) on page 399
- show chassis pic fpc-slot pic-slot (FPC Offline) on page 399
- show chassis pic fpc-slot pic-slot (FPC Not Present) on page 399
- show chassis pic fpc-slot pic-slot (PIC Not Present) on page 399
- show chassis pic fpc-slot 3 pic-slot 0 (M120 Router) on page 399
- show chassis pic fpc-slot pic-slot (MX960 Router Bidirectional Optics) on page 399
- show chassis pic fpc-slot pic-slot lcc (TX Matrix Router) on page 399
- show chassis pic fpc-slot pic-slot lcc (TX Matrix Plus Router) on page 400
- show chassis pic fpc-slot pic-slot (Next-generation SONET/SDH SFP) on page 400
- show chassis pic fpc-slot pic-slot (12-port T1/E1) on page 400
- show chassis pic fpc-slot 0 pic-slot 1 (4x CHOC3 SONET CE SFP) on page 400
- show chassis pic fpc-slot pic-slot (OTN) on page 401

Output Fields Table 82 on page 397 lists the output fields for the **show chassis pic** command. Output fields are listed in the approximate order in which they appear.

Table 82: show chassis pic Output Fields

Field Name	Field Description
Type	PIC type.
ASIC type	Type of ASIC on the PIC.
State	Status of the PIC. State is displayed only when a PIC is in the slot. <ul style="list-style-type: none"> ■ Online— PIC is online and running. ■ Offline—PIC is powered down.
PIC version	PIC hardware version.
Uptime	How long the PIC has been online.
Package	(MultiServices PICs only) Services package supported: Layer-2 or Layer-3.

Table 82: show chassis pic Output Fields (continued)

Field Name	Field Description
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. <ul style="list-style-type: none"> ■ 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. <ul style="list-style-type: none"> ■ 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. <ul style="list-style-type: none"> ■ 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 pick-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 4 pick-slot 1 (MX960 Router Bidirectional Optics)
user@host> show chassis pic fpc-slot 4 pick-slot 1
FPC slot 4, PIC slot 1 information:
Type                10x 1GE(LAN)
State               Online
PIC version         0.0
Uptime              18 days, 5 hours, 41 minutes, 54 seconds

PIC port information:
Port  Cable type      Fiber type  Xcvr vendor      Xcvr vendor      Wavelength
      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 1 pic-slot 1 lcc 0 (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 0 pic-slot 0 lcc (TX Matrix Plus Router)
user@host> show chassis pic fpc-slot 0 pic-slot 0 lcc 0
lcc0-re0:
-----
FPC slot 0, PIC slot 0 information:
  Type               4x OC-192 SONET XFP
  ASIC type          D16 chip
  State              Online
  PIC version        1.16
  Uptime             1 hour, 40 minutes, 17 seconds

PIC port information:
  Port  Cable type      Fiber type  Xcvr vendor      Xcvr vendor      Wavelength
                                part number
  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 4 pic-slot 0 (Next-generation SONET/SDH SFP)
user@host> show chassis pic fpc-slot 4 pic-slot 0
FPC slot 4, PIC slot 0 information:
  Type               4x OC-3 1x OC-12 SFP
  ASIC type          D FPGA
  State              Online
  PIC version        1.3
  Uptime             1 day, 50 minutes, 4 seconds

PIC port information:
  Port  Cable type      Fiber type  Xcvr vendor      Xcvr vendor      Wavelength
                                part number
  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 0 pic-slot 3 (12-port T1/E1)
user@host> show chassis pic fpc-slot 0 pic-slot 3
FPC slot 0, PIC slot 3 information:
  Type               12x T1/E1 CE
  State              Online
  PIC version        1.1
  CPU load average    1 percent
  Interrupt load average 0 percent
  Total DRAM size     128 MB
  Memory buffer utilization 100 percent
  Memory heap utilization 4 percent
  Uptime             1 day, 22 hours, 28 minutes, 12 seconds
  Internal Clock Synchronization Normal

show chassis pic fpc-slot 0 pic-slot 1 (4x CHOC3 SONET CE SFP)
user@host> show chassis pic fpc-slot 0 pic-slot 1
FPC slot 0, PIC slot 1 information:
  Type               4x CHOC3 SONET CE SFP
  State              Online
  PIC version        1.3
  CPU load average    1 percent
  Interrupt load average 0 percent
  Total DRAM size     128 MB
  Memory buffer utilization 99 percent
  Memory heap utilization 4 percent

```

```

Uptime                      1 day, 22 hours, 55 minutes, 37 seconds
Internal Clock Synchronization Normal

```

PIC port information:

Port	Cable type	Fiber type	Xcvr vendor	Xcvr vendor part number	Wavelength
0	OC3 short reach	MM	AVAGO	HFBR-57E0P-JU2	n/a
1	OC3 short reach	MM	AVAGO	HFBR-57E0P-JU2	n/a
3	OC3 long reach	SM	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 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 404 show chassis power-ratings (Power Management Disabled) on page 404
Output Fields	Table 83 on page 402 lists the output fields for the show chassis power-ratings command. Output fields are listed in the approximate order in which they appear.

Table 83: 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	<p>Maximum number of low-power, high-power, and heat tokens available for the router:</p> <ul style="list-style-type: none"> ■ 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 83: show chassis power-ratings Output Fields (continued)

Field Name	Field Description
<i>FPC number</i>	<p>PIM slot number and power and heat information for the PIM in this slot:</p> <ul style="list-style-type: none"> ■ 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: <p>NOTE: The <code>request chassis fpc</code> command has no effect on the status of the PIM slot.</p> <ul style="list-style-type: none"> ■ 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 <code>set chassis fpc offline</code> command.
<i>Tokens Used</i>	<p>Total number of low-power, high-power, and heat tokens used by the router:</p> <ul style="list-style-type: none"> ■ 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 <code>set chassis disable_power_management</code> command. <p>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.</p>

```

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 Release 10.0
Description	(MX Series Ethernet Services Routers only) Display power limits and usage information for the Power Entry Modules (PEMs).
Options	This command has no options.
Required Privilege Level	view
Related Topics	■ show chassis power sequence
List of Sample Output	show chassis power on page 406
Output Fields	Table 84 on page 405 lists the output fields for the <code>show chassis power</code> command. Output fields are listed in the approximate order in which they appear.

Table 84: show chassis power Output Fields

Field Name	Field Description
AC/DC PEM <i>number</i>	AC or DC PEM number on the chassis.
Limits	Power limits for the DPC: <ul style="list-style-type: none"> ■ Voltage—Voltage supply limit for the DPC. ■ Current—Power limit for the DPC, in watts. ■ Rating—Rating limit for output power for the chassis, in watts. ■ MaxDPC—Maximum power rating for the DPC, in watts.

Table 84: show chassis power Output Fields (continued)

Field Name	Field Description
Input	<p>Input power details for the DPC:</p> <ul style="list-style-type: none"> ■ Zone—Zone in which the PEM is located: 0 or 1. ■ Feed—The input power feed for the PEM: 1 or 2 feeds. ■ Switch—The Dip Switch number for the input power feed: 0 or 1 feeds. ■ Code—Configuration code for feed and Dip Switch: <ul style="list-style-type: none"> ■ 1-G—(MX960 router AC and DC PEMS) 1 feed with dip switch 0 is configured. This is correct configuration. ■ 1-B—(MX960 router AC and DC PEMS) 1 feed with dip switch 0 is configured. This is incorrect configuration. ■ 2-B—(MX960 router AC and DC PEMS) 2 feeds with dip switch 0 is configured. This is incorrect configuration. ■ 2-G—(MX960 router AC and DC PEMS) 2 feeds with dip switch 1 are configured. This is correct configuration. ■ 1-L—(MX480 router AC PEMS) Indicates low current and low voltage. Current should be 16A, voltage should be 100V, available power should be 1450W. ■ 1-H—(MX480 router AC PEMS) Indicates high current and high voltage. Current should be 16A, voltage should be 200V, available power should be 2600W. ■ 1-L—(MX480 router DC PEMS) One feed with dip switch 0 is configured. This indicates low current and low voltage. ■ 1-H—(MX480 router DC PEMS) One feed with dip switch 1 is configured. This indicates high current and high voltage.
Output	<p>Actual power output for the DPC:</p> <ul style="list-style-type: none"> ■ Voltage—Actual output voltage, in volts. ■ Current—Current power supply for the DPC, in watts. ■ Rating—Current power rating for the chassis, in watts. ■ Power—Current power supplied to the DPC. ■ Load—Current load on the PEM. ■ Remaining Power—Unused power available for the DPC, in watts.

```

show chassis power user@host> show chassis power
DC PEM 0
Limits: Voltage Current Rating MaxDPC
        48      101    4100    600
Input:  Zone   Feed   Switch Code
        0       2      1      2-G
Output: Voltage Current Power Load(%) RemainingPower
        58      16     928    22      3172
State:  Online

DC PEM 1
Limits: Voltage Current Rating MaxDPC
        48      101    4100    600
Input:  Zone   Feed   Switch Code
        1       2      1      2-G

```

```

Output: Voltage Current Power Load(%) RemainingPower
        57      7      399    9      3701
State: Online

```

```

DC PEM 2
Limits: Voltage Current Rating MaxDPC
        48      70      2800    352
Input:  Zone    Feed    Switch  Code
        0       1       0      1-G
State:  Present

```

```

DC PEM 3
Limits: Voltage Current Rating MaxDPC
        48      70      2800    352
Input:  Zone    Feed    Switch  Code
        1       1       0      1-G
State:  Present

```

show chassis power sequence

Syntax	show chassis power sequence
Release Information	Command introduced in JUNOS 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 Topics	■ show chassis power
List of Sample Output	show chassis power sequence on page 408
Output Fields	Table 85 on page 408 lists the output fields for the show chassis power sequence command. Output fields are listed in the approximate order in which they appear.

Table 85: 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 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 <i>JUNOS Protected System Domain Configuration Guide</i> .
Required Privilege Level	view
List of Sample Output	show chassis psd on page 409
Output Fields	Table 86 on page 409 lists the output fields for the show chassis psd command. Output fields are listed in the approximate order in which they appear.

Table 86: show chassis psd Output Fields

Field Name	Field Description
Slot Description	PSD identification.
State	PSD status: <ul style="list-style-type: none"> ■ 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 <i>group-name</i> >
Release Information	Command introduced in JUNOS Release 8.2.
Description	(M120 routers only) Display information about the status of configured Forwarding Engine Board (FEB) redundancy groups.
Options	<p>none—Display information about the status of all configured FEB redundancy groups.</p> <p>redundancy-group <i>group-name</i>—(Optional) Display information about the specified configured redundancy group.</p> <p>errors—(Optional) Display information about any errors encountered on the components in configured redundancy groups or on links between a FEB and a Flexible PIC Concentrator (FPC).</p>
Required Privilege Level	view
List of Sample Output	<p>show chassis redundancy feb on page 411</p> <p>show chassis redundancy feb redundancy-group grp1 on page 411</p> <p>show chassis redundancy feb redundancy-group grp0 errors on page 411</p>
Output Fields	Table 87 on page 410 lists the output fields for the show chassis redundancy feb command. Output fields are listed in the approximate order in which they appear.

Table 87: 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: <ul style="list-style-type: none"> ■ 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 87: show chassis redundancy feb Output Fields (continued)

Field name	Field Description
Redundancy State	(Standard and redundancy-group option) Status of the FEB: <ul style="list-style-type: none"> ■ 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           5              Not ready
1    Online           Primary          0              Active
Auto-failover: Enabled
Group:          grp0
FEB  State          Priority  Connected FPCs  Redundancy state
3    Offline         Backup           0              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         Backup           3              Active
5    Online         Primary          0              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 <i>slot</i> >
Syntax (EX Series Switch)	show chassis routing-engine < <i>slot</i> >
Syntax (TX Matrix Router)	show chassis routing-engine <bios <i>slot</i> > <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis routing-engine <bios <i>slot</i> > <lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release in 9.6.
Description	Display the status of the Routing Engine.
Options	<p>none—Display information about one or more Routing Engines. On a TX Matrix router, display information about all Routing Engines on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display information about all Routing Engines on the TX Matrix Plus router and its attached T1600 routers.</p> <p>bios—(Optional) Display the basic input/output system (BIOS) firmware version.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display Routing Engine information for a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display Routing Engine information for a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display Routing Engine information for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display Routing Engine information for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p> <p><i>slot</i>—(Systems with multiple Routing Engines) (Optional) Display information for an individual Routing Engine. Replace <i>slot</i> with 0 or 1.</p>
Required Privilege Level	view

Related Topics ■ request chassis routing-engine master

List of Sample Output

- show chassis routing-engine (M5) on page 415
- show chassis routing-engine (M10) on page 415
- show chassis routing-engine (M20) on page 416
- show chassis routing-engine (M40) on page 416
- show chassis routing-engine (M120) on page 417
- show chassis routing-engine (M160) on page 418
- show chassis routing-engine (MX240) on page 418
- show chassis routing-engine (MX480) on page 419
- show chassis routing-engine (MX960) on page 419
- show chassis routing-engine (TX Matrix Router) on page 419
- show chassis routing-engine lcc (TX Matrix Router) on page 420
- show chassis routing-engine bios (TX Matrix Router) on page 421
- show chassis routing-engine (TX Matrix Plus Router) on page 421
- show chassis routing-engine lcc (TX Matrix Plus Router) on page 422
- show chassis routing-engine bios (TX Matrix Plus Router) on page 423

Output Fields Table 88 on page 414 lists the output fields for the `show chassis routing-engine` command. Output fields are listed in the approximate order in which they appear.

Table 88: 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: <ul style="list-style-type: none"> ■ User—Percentage of CPU time being used by user processes. ■ Background—Percentage of CPU time being used by background processes. ■ Kernel—Percentage of CPU time being used by kernel processes. ■ Interrupt—Percentage of CPU time being used by interrupts. ■ Idle—Percentage of CPU time that is idle.
Model	Routing Engine model number.
Serial ID	(Systems with multiple Routing Engines) Identification number of the Routing Engine in this slot.
Start time	Time at which the Routing Engine started running.
Uptime	How long the Routing Engine has been running.

Table 88: show chassis routing-engine Output Fields (continued)

Field Name	Field Description
Last reboot reason	Reason for last reboot, including: <ul style="list-style-type: none"> ■ power cycle/failure—Reboot due to the switching off of the power button behind the Routing Engine, not the power button on the chassis. ■ watchdog—Reboot due to a hardware watchdog. ■ reset-button reset—(Not available on the J Series router or EX Series switch) Reboot due to pressing of the reset button on the Routing Engine. ■ power-button hard power off—Reboot due to pressing of the power button. ■ misc hardware reason—Reboot due to miscellaneous hardware reasons. ■ thermal shutdown—Reboot due to the router 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)**

```

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)**

```

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)**

```
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)**

```
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)**

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      user@host> show chassis routing-engine
routing-engine (M160) 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      user@host> show chassis routing-engine
routing-engine (MX240) 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      user@host> show chassis routing-engine
routing-engine (MX480) 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      user@host> show chassis routing-engine
routing-engine (MX960) 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      user@host> show chassis routing-engine
routing-engine (TX scc-re0:
Matrix Router) -----
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 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 425
Output Fields	Table 89 on page 424 lists the output fields for the show chassis scb command. Output fields are listed in the approximate order in which they appear.

Table 89: show chassis scb Output Fields

Field Name	Field Description
Temperature	Temperature of the air passing by the SCB, in degrees Celsius.
CPU utilization	Total percentage of CPU being used by the SCB's processor.
Interrupt utilization	Of the total CPU being used by the SCB's processor, the percentage being used for interrupts.
Heap utilization	Percentage of heap space being used by the SCB's processor.
Buffer utilization	Percentage of buffer space being used by the SCB's processor.
DRAM	Total DRAM available to the SCB's processor.
Start time	Time when the SCB started running.
Uptime	How long the SCB has been running.
Internet Processor memory	Information about the memory of the Internet Processor ASIC on the SCB: <ul style="list-style-type: none"> ■ 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 Release 7.4.
Description	(M40e and M160 routers only) Display Switching and Forwarding Module (SFM) status information.
Options	<p>none—Display standard status information about all SFMs.</p> <p>detail—(Optional) Display detailed SFM status information.</p> <p>sfm-slot—(Optional) Display status information about the SFM in the specified slot only. For the M40e router, replace <i>sfm-slot</i> with 0 or 1. For the M160 router, replace <i>sfm-slot</i> with a value from 0 through 3.</p>
Required Privilege Level	view
Related Topics	<ul style="list-style-type: none"> ■ request chassis sfm ■ request chassis sfm master switch
List of Sample Output	<p>show chassis sfm (M160) on page 427</p> <p>show chassis sfm detail (M40e) on page 427</p> <p>show chassis sfm detail (M160) on page 428</p>
Output Fields	Table 90 on page 426 lists the output fields for the show chassis sfm command. Output fields are listed in the approximate order in which they appear.

Table 90: show chassis sfm Output Fields

Field Name	Field Description	Level of Output
Slot	Slot number	All levels
State	<p>Status of the SFM. State can be any of the following:</p> <ul style="list-style-type: none"> ■ Online—SFM is online and running. ■ Online-Standby (M40e router only)—SFM is online, operating as Standby. ■ Offline—SFM is powered down. ■ Empty—No SFM is present. 	All levels
Reason	If the status is Offline , reason for this state.	All levels
Temp	Temperature of air passing by the SFM, in degrees Celsius.	none specified
CPU Utilization (%)	Information about CPU usage.	none specified
Total	Total percentage of the CPU being used by the SFM's processor.	All levels

Table 90: show chassis sfm Output Fields (continued)

Field Name	Field Description	Level of Output
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)**

```

user@host> show chassis sfm
SFM status:

```

Slot	State	Temp (C)	CPU Total	Utilization (%) Interrupt	Memory DRAM (MB)	Utilization (%) 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)**

```

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      user@host> show chassis sfm detail
(M160)
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 <fcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis sibs <fcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	(M320 and T Series routers only) Display Switch Interface Boards (SIB) status information.
Options	<p>none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the SIB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display the SIB status for the TX Matrix Plus router and its attached T1600 routers.</p> <p>fcc <i>number</i>—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display SIB status information for a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display SIB status information for a specified T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display SIB status information for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display SIB status information for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
Required Privilege Level	maintenance
Related Topics	<ul style="list-style-type: none"> ■ request chassis sib ■ show chassis spmb sibs
List of Sample Output	<p>show chassis sibs (T640) on page 430</p> <p>show chassis sibs (TX Matrix Router) on page 430</p> <p>show chassis sibs (T1600 router) on page 431</p> <p>show chassis sibs (TX Matrix Plus Router) on page 431</p> <p>show chassis sibs sfc (TX Matrix Plus Router) on page 432</p>
Output Fields	Table 91 on page 430 lists the output fields for the show chassis sibs command. Output fields are listed in the approximate order in which they appear.

Table 91: show chassis sibs Output Fields

Field Name	Field Description
Slot	SIB slot number.
State	<p>SIB status:</p> <ul style="list-style-type: none"> ■ 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. ■ Spare—SIB is redundant and will move to active state if one of the working SIBs fail 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: <ul style="list-style-type: none"> ■ Onboard fabric ASIC is not operational. ■ Fiber optic connector faults. ■ FPC connector faults. ■ SIB mid-plane connector faults. ■ Check—SIB is in alarmed state where the SIB's plane is partially operational for the following reasons: <ul style="list-style-type: none"> ■ SIB is not inserted properly. ■ Two or more links between the SIB and PFE fail.
Type	(TX Matrix Plus router only) SIB Type.
Uptime	How long the SIB has been up and running.

show chassis sibs (T640)

```

user@host> show chassis sibs
Slot  State                Uptime
  0    Spare
  1    Online              7 days, 2 hours, 13 minutes, 57 seconds
  2    Online              7 days, 2 hours, 13 minutes, 57 seconds
  3    Online              7 days, 2 hours, 13 minutes, 57 seconds
  4    Online              7 days, 2 hours, 13 minutes, 57 seconds

```

show chassis sibs (TX Matrix Router)

```

user@host> show chassis sibs
scc-re0:
-----
Slot  State                Uptime
  0    Empty
  1    Empty
  2    Empty

```

```

3    Offline
4    Online          7 days, 21 hours, 50 minutes, 4 seconds
lcc0-re0:

```

```

-----
Slot State          Uptime
0    Empty
1    Empty
2    Empty
3    Disconnected   7 days, 21 hours, 46 minutes, 53 seconds
4    Online          7 days, 21 hours, 46 minutes, 52 seconds
...

```

show chassis sibs
(T1600 router)

```

user@host> show chassis sibs
Slot State          Uptime
0    Check          4 hours, 6 minutes, 51 seconds
1    Disconnected   4 hours, 7 minutes, 28 seconds
2    Disconnected   4 hours, 7 minutes, 18 seconds
3    Disconnected   4 hours, 7 minutes, 9 seconds
4    Disconnected   4 hours, 7 minutes

```

show chassis sibs (TX
Matrix Plus Router)

```

user@host> show chassis sibs
sfc0-re0:
-----
Slot State          Type          Uptime
0    Online          SIB F13       4 hours, 1 minute, 56 seconds
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                4 hours, 1 minute, 34 seconds
1      Disconnected         4 hours, 2 minutes, 11 seconds
2      Disconnected         4 hours, 2 minutes, 1 second
3      Disconnected         4 hours, 1 minute, 52 seconds
4      Disconnected         4 hours, 1 minute, 43 seconds
```

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      Online              SIB F13            4 hours, 15 minutes, 12 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, 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 spmb

Syntax	show chassis spmb
Syntax (TX Matrix Routers)	show chassis spmb <sibs> <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Routers)	show chassis spmb <sibs> <lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. sibs option introduced for the T1600 and TX Matrix Plus routers in JUNOS Release 9.6.
Description	(T Series routers only) Display Switch Processor Mezzanine Board (SPMB) status information.
Options	<p>none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display SPMB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display SPMB status for the TX Matrix Plus router and its attached T1600 routers.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display information about the SPMB on a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display information about the SPMB on a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display information about the SPMB on the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display information about the SPMB on the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p> <p>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:</p> <p>lcc <i>number</i> (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 <i>number</i> with a value from 0 through 3.</p> <p>scc <i>number</i>—(TX Matrix routers only) (Optional) Display information about the SIBs on the TX Matrix router (or switch-card chassis). Replace <i>number</i> with 0.</p>

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

Required Privilege Level view

Related Topics

- request chassis sib
- show chassis spmb sibs

List of Sample Output

show chassis spmb on page 434
 show chassis spmb lcc (TX Matrix Router) on page 435
 show chassis spmb scc (TX Matrix Router) on page 435
 show chassis spmb (T1600) on page 435
 show chassis spmb sibs (T1600) on page 435
 show chassis spmb (TX Matrix Plus Router) on page 435
 show chassis spmb lcc (TX Matrix Plus Router) on page 437
 show chassis spmb scc (TX Matrix Plus Router) on page 437
 show chassis spmb sibs (TX Matrix Plus Router) on page 438

Output Fields Table 92 on page 434 lists the output fields for the `show chassis spmb` command. Output fields are listed in the approximate order in which they appear.

Table 92: show chassis spmb Output Fields

Field Name	Field Description
Slot	SPMB slot number: 0 or 1.
State	SPMB status: <ul style="list-style-type: none"> ■ 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)

```

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)

```

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 <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis spmb sibs <lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	(T Series routers only) Display Switch Processor Mezzanine Board (SPMB) Switch Interface Board (SIB) status information.
Options	<p>none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the SIB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display the SIB status for the TX Matrix Plus router and its attached T1600 routers.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display SIB status information for a specified T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display SIB status information for a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix router only) (Optional) Display SIB status information for the TX Matrix router (or switch-card chassis).</p> <p>sfc—(TX Matrix Plus router only) (Optional) Display SIB status information for the TX Matrix Plus router (or switch-fabric chassis).</p>
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 Topics	■ request chassis spmb restart
List of Sample Output	<p>show chassis spmb sibs (T320) on page 441</p> <p>show chassis-spmb-sibs (T1600) on page 441</p> <p>show chassis spmb sibs (TX Matrix Router) on page 442</p> <p>show chassis spmb sibs lcc (TX Matrix Router) on page 442</p> <p>show chassis spmb sibs scc (TX Matrix Router) on page 442</p> <p>show chassis spmb sibs (TX Matrix Plus Router) on page 442</p> <p>show chassis spmb sibs sfc (TX Matrix Plus Router) on page 443</p>

Output Fields Table 93 on page 441 lists the output fields for the `show chassis spmb sibs` command. Output fields are listed in the approximate order in which they appear.

Table 93: show chassis spmb sibs Output Fields

Field Name	Field Description
Slot	<p>SIB slot number:</p> <ul style="list-style-type: none"> ■ T640 router, T1600 router or TX Matrix router, and TX Matrix Plus router—0 through 4 ■ T320 router—0 through 2
State	<p>SIB status:</p> <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ On-board F-chip is not operational. ■ Fiber optic connector faults. ■ FPC connector faults. ■ SIB mid-plane connector faults. ■ Check—SIB is in alarmed state where the SIB's plane is partially operational for the following reasons: <ul style="list-style-type: none"> ■ 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      user@host> show chassis spmb sibs
(T320)
Slot  State
0     Spare
1     Online
2     Online

```

```

show chassis-spmb-sibs     user@host> show chassis spmb sibs
(T1600)
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 <i><slot></i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(M20 routers only) Display status information about the System and Switch Board (SSB).
Options	<p>none—Display information about all SSBs.</p> <p><i>slot</i>—(Optional) Display information about the SSB in the specified slot. Replace <i>slot</i> with 0 or 1.</p>
Required Privilege Level	view
Related Topics	■ request chassis ssb master switch
List of Sample Output	show chassis ssb on page 445
Output Fields	Table 94 on page 444 lists the output fields for the <code>show chassis ssb</code> command. Output fields are listed in the approximate order in which they appear.

Table 94: show chassis ssb Output Fields

Field Name	Field Description
Failover	Number of times the mastership has changed.
Slot	SSB slot number.
State	<p>Current state of the SSB in this slot. State can be any one of the following:</p> <ul style="list-style-type: none"> ■ 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.
Start time	Time when the SSB started running.

Table 94: show chassis ssb Output Fields (*continued*)

Field Name	Field Description
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 Release 7.6 for M320 routers. Command introduced in JUNOS Release 8.3 for M40e routers. Command introduced in JUNOS Release 9.3 for M120 routers.
Description	(M320, M40e, and M120 routers only) Display information about the external clock source currently used for chassis synchronization.
Options	<p>extensive—(Optional) Display clock synchronization information in detail.</p> <p>backup—(Optional) Display clock synchronization information about the backup clock.</p> <p>master— (Optional) Display clock synchronization information about the master clock.</p>
Required Privilege Level	maintenance
Related Topics	■ request chassis synchronization switch
List of Sample Output	<p>show chassis synchronization on page 447</p> <p>show chassis synchronization master on page 447</p> <p>show chassis synchronization backup on page 447</p> <p>show chassis synchronization extensive on page 448</p>
Output Fields	Table 95 on page 446 lists the output fields for the show chassis synchronization command. Output fields are listed in the approximate order in which they appear.

Table 95: show chassis synchronization Output Fields

Field Name	Field Description
Current state	<p>Indicates current status of external clock sources:</p> <ul style="list-style-type: none"> ■ backup—Source is currently the backup clock source. ■ master—Source is currently the master clock source.
Current clock state	<p>Indicates current source of external synchronization:</p> <ul style="list-style-type: none"> ■ internal—Source is providing its own clocking. ■ locked to master CB—Source is locked to master clock source.
Selected for	Number of seconds this clock has been the master or backup clock source.
Selected since	Time stamp for establishment as master or backup clock source.
Deviation (in ppm)	Difference in clock timing, in parts per million (ppm).

Table 95: show chassis synchronization Output Fields (continued)

Field Name	Field Description
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: <ul style="list-style-type: none"> ■ primary—Source is a primary reference. ■ secondary—Source is a secondary reference.
Deviation (in ppm)	Current difference in clock timing, in ppm: <ul style="list-style-type: none"> ■ measuring—Establishing source deviation. ■ number—Deviation in ppm.
Last deviation (in ppm)	Previous difference in clock timing, in ppm: <ul style="list-style-type: none"> ■ number—Deviation in ppm.
Status	Indicates status of external sources: <ul style="list-style-type: none"> ■ 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      user@host> show chassis synchronization extensive
synchronization
extensive
Clock Synchronization Status :
  Clock module on CB 0
    Current state           : master
    Current clock state     : internal
    Selected for            : 8 days, 36 minutes, 29 seconds
    Selected since          : 2008-08-27 21:05:40 PDT
    Deviation (in ppm)      : +0.00
    Last deviation (in ppm) : +0.00
Clock Synchronization Status :
  Clock module on CB 1
    Current state           : backup
    Current clock state     : locked to master CB
    Selected for            : 34 days, 20 hours, 19 minutes, 53 seconds
    Selected since          : 2008-08-01 01:22:16 PDT

```

show chassis temperature-thresholds

Syntax	show chassis temperature-thresholds
Syntax (TX Matrix Router)	show chassis temperature-thresholds <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis temperature-thresholds <lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced in JUNOS Release 8.0. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc command introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display chassis temperature threshold settings, in degrees Celsius.
Options	<p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the temperature threshold details of a specified T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display the temperature threshold details of a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display the temperature threshold details of the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display the temperature threshold details of the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
Required Privilege Level	view
List of Sample Output	<p>show chassis temperature-thresholds on page 450</p> <p>show chassis temperature-thresholds on page 450</p> <p>show chassis temperature-thresholds (TX Matrix Plus Router) on page 451</p> <p>show chassis temperature-thresholds lcc (TX Matrix Plus Router) on page 452</p> <p>show chassis temperature-thresholds sfc (TX Matrix Plus Router) on page 453</p>
Output Fields	Table 96 on page 449 lists the output fields for the show chassis temperature-thresholds command. Output fields are listed in the approximate order in which they appear.

Table 96: 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 96: show chassis temperature-thresholds Output Fields (continued)

Field name	Field Description
Fan speed	<p>The temperature threshold settings, in degrees Celsius, for the fans to operate at normal and high speeds.</p> <ul style="list-style-type: none"> ■ Normal—The fans operate at normal speed if the component is at or below this temperature and all the fans are present and functioning normally. ■ High—The fans operate at high speed if the component has exceeded this temperature or a fan has failed or is missing. <p>An alarm is not triggered until the temperature exceeds the threshold settings for a yellow alarm or a red alarm.</p>
Yellow alarm	<p>The temperature threshold settings, in degrees Celsius, that trigger a yellow alarm.</p> <ul style="list-style-type: none"> ■ Normal—The component has exceeded this temperature and the fans have been turned on to full speed. ■ Bad fan—The component has exceeded this temperature and one or more fans have failed or are missing.
Red alarm	<p>The temperature threshold settings, in degrees Celsius, that trigger a red alarm.</p> <ul style="list-style-type: none"> ■ Normal—The component has exceeded this temperature and the fans have been turned on to full speed. ■ High—The component has exceeded this temperature and 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	48	54	70	60	80	70
FPC 3	48	54	70	60	80	70
FPC 4	48	54	70	60	80	70
FPC 5	48	54	70	60	80	70
FEB 0	48	54	70	60	80	70
FEB 1	48	54	70	60	80	70
FEB 2	48	54	70	60	80	70
FEB 3	48	54	70	60	80	70
FEB 4	48	54	70	60	80	70
FEB 5	48	54	70	60	80	70

```

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	48	54	85	85	100	100

**show chassis
temperature-thresholds
(TX Matrix Plus Router)**

user@host> **show chassis temperature-thresholds**
sfc0-re0:

Item	Fan speed		Yellow alarm		Red alarm	
	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:

Item	Fan speed		Yellow alarm		Red alarm	
	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:

Item	Fan speed		Yellow alarm		Red alarm	
	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:

Item	Fan speed		Yellow alarm		Red alarm	
	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:

Item	Fan speed		Yellow alarm		Red alarm	
	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:

Item	Fan speed		Yellow alarm		Red alarm	
	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:
```

Item	Fan speed		Yellow alarm		Red alarm	
	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 97 on page 455 summarizes the command-line interface (CLI) commands you can use to perform and monitor CLI management functions. Commands are listed in alphabetical order.

Table 97: CLI Operational Mode Commands

Task	Command
Clear the logical system view and return to a full router view.	<code>clear cli logical-system</code>
Set the CLI to complete partial command entries.	<code>set cli complete-on-space</code>
Set the current working directory.	<code>set cli directory</code>
Set the maximum time that an individual session can be idle before the user is logged off the router.	<code>set cli idle-timeout</code>
Set the CLI to the specified logical routing instance.	<code>set cli logical-system</code>
Set the CLI prompt.	<code>set cli prompt</code>
Set the CLI to prompt you to restart the router after a software upgrade.	<code>set cli restart-on-upgrade</code>
Set the number of lines on the screen.	<code>set cli screen-length</code>
Set the number of characters on a line.	<code>set cli screen-width</code>
Set the terminal type.	<code>set cli terminal</code>
Timestamp CLI output.	<code>set cli timestamp</code>
Set the system date and time.	<code>set date</code>
Display all CLI settings.	<code>show cli</code>
Display login permissions for the current user.	<code>show cli authorization</code>
Display the current working directory.	<code>show cli directory</code>

Table 97: CLI Operational Mode Commands *(continued)*

Task	Command
Display a list of previous CLI commands.	show cli history



NOTE: For information about how to configure CLI parameters, see the *JUNOS 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 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 Topics	■ set cli logical-system
List of Sample Output	clear cli logical-system on page 457
Output Fields	When you enter this command, you are provided feedback on the status of your request.
clear cli logical-system	<pre>user@host:lr1> clear cli logical-system Cleared default logical system user@host></pre>

set cli complete-on-space

Syntax	set cli complete-on-space (off on)
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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 Topics	■ show cli
List of Sample Output	set cli complete-on-space on page 458
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 <i>directory</i>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Set the current working directory.
Options	<i>directory</i> —Pathname of the working directory.
Required Privilege Level	view
Related Topics	■ show cli directory
List of Sample Output	set cli directory on page 459
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 Release 7.4. Command introduced in JUNOS 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	<i>minutes</i> —(Optional) Maximum idle time. The range of values, in minutes, is 0 through 100,000. If you do not issue this command, and the user's login class does not specify this value, the user is never forced off the system after extended idle times. Setting the value to 0 disables the timeout.
Required Privilege Level	view
Related Topics	■ show cli
List of Sample Output	set cli idle-timeout on page 460
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 <i>logical-system</i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Set the CLI to the specified logical system view.
Options	<i>logical-system</i> —logical system name.
Required Privilege Level	view
List of Sample Output	set cli logical-system on page 461
Output Fields	When you enter this command, you are provided feedback on the status of your request.
set cli logical-system	<pre>user@host> set cli logical-system log-router-A logical system: log-router-A user@host:log-router-A></pre>

set cli prompt

Syntax	set cli prompt <i>string</i>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Set the prompt so that it is displayed within the CLI.
Options	<i>string</i> —CLI prompt string. To include spaces in the prompt, enclose the string in quotation marks. By default, the string is <i>username@hostname</i> .
Required Privilege Level	view
Related Topics	■ show cli
List of Sample Output	set cli prompt on page 462
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 Release 7.4. Command introduced in JUNOS 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 Topics	■ show cli
List of Sample Output	set cli restart-on-upgrade on page 463
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 <i>length</i>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Set terminal screen length.
Options	<i>length</i> —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 <code>—(more)—</code> prompt appears on the screen is a function of this setting and the settings for the <code>set cli screen-width</code> and <code>set cli terminal</code> commands.
Required Privilege Level	view
Related Topics	<ul style="list-style-type: none"> ■ set cli screen-width ■ set cli terminal ■ show cli
List of Sample Output	set cli screen-length on page 464
Output Fields	When you enter this command, you are provided feedback on the status of your request.
set cli screen-length	<pre>user@host> set cli screen-length 75 Screen length set to 75</pre>

set cli screen-width

Syntax	set cli screen-width <i>width</i>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Set the terminal screen width.
Options	<i>width</i> —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 <code>—(more)—</code> prompt appears on the screen is a function of this setting and the settings for the <code>set cli screen-length</code> and <code>set cli terminal</code> commands.
Required Privilege Level	view
Related Topics	<ul style="list-style-type: none"> ■ set cli screen-length ■ set cli terminal ■ show cli
List of Sample Output	set cli screen-width on page 465
Output Fields	When you enter this command, you are provided feedback on the status of your request.
set cli screen-width	<pre>user@host> set cli screen-width Screen width set to 132</pre>

set cli terminal

Syntax	set cli terminal <i>terminal-type</i>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Set the terminal type.
Options	<i>terminal-type</i> —Type of terminal that is connected to the Ethernet management port: <ul style="list-style-type: none"> ■ 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 Topics	<ul style="list-style-type: none"> ■ show cli
List of Sample Output	set cli terminal on page 466
Output Fields	This command provides no output.
set cli terminal	user@host> set cli terminal xterm

set cli timestamp

Syntax	set cli timestamp (format <i>timestamp-format</i> disable)
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Set a timestamp for CLI output.
Options	<p>format <i>timestamp-format</i>—Set the date and time format for the timestamp. The timestamp format you specify can include the following placeholders in any order:</p> <ul style="list-style-type: none"> ■ %m—Two-digit month ■ %d—Two-digit date ■ %T—Six-digit hour, minute, and seconds <p>disable—Remove the timestamp from the CLI.</p>
Required Privilege Level	view
Related Topics	■ show cli
List of Sample Output	set cli timestamp on page 467
Output Fields	When you enter this command, you are provided feedback on the status of your request.
set cli timestamp	<pre>user@host> set cli timestamp format '%m-%d-%T' '04-21-17:39:13' CLI timestamp set to: '%m-%d-%T'</pre>

set date

Syntax	set date (<i>date-time</i> ntp < <i>ntp-server</i> > <source-address <i>source-address</i> >)
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Set the date and time.
Options	<p><i>date-time</i>—Date and time. Enter this string inside quotation marks.</p> <p>ntp—Use a Network Time Protocol (NTP) server to synchronize the current date and time setting on the router or switch.</p> <p><i>ntp-server</i>—(Optional) Specify the IP address of one or more NTP servers.</p> <p>source-address <i>source-address</i>—(Optional) Specify the source address that the router or switch uses to contact the remote NTP server.</p>
Required Privilege Level	view
Related Topics	■ show cli
List of Sample Output	set date on page 468
Output Fields	When you enter this command, you are provided feedback on the status of your request.
set date	<pre>user@host> set date ntp 21 Apr 17:22:02 ntpdate[3867]: step time server 172.17.27.46 offset 8.759252 sec</pre>

show cli

Syntax	show cli
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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 469
Output Fields	Table 98 on page 469 lists the output fields for the show cli command. Output fields are listed in the approximate order in which they appear.

Table 98: 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 Release 7.4. Command introduced in JUNOS 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 471
Output Fields	Table 99 on page 470 lists the output fields for the <code>show cli authorization</code> command. In the table, all possible permissions are displayed and output fields are listed in alphabetical order.

Table 99: 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.
interface	Can view interface configuration information.
interface-control	Can modify interface configuration information.

Table 99: show cli authorization Output Fields *(continued)*

Field Name	Field Description
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 Release 7.4. Command introduced in JUNOS 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 473
Output Fields	Table 100 on page 473 lists the output fields for the <code>show cli directory</code> command. Output fields are listed in the approximate order in which they appear.

Table 100: 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 <i><count></i>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Display a list of previous CLI commands.
Options	none—Display all previous CLI commands. <i>count</i> —(Optional) Maximum number of commands to display.
Required Privilege Level	view
List of Sample Output	show cli history on page 474
Output Fields	Table 101 on page 474 lists the output fields for the <code>show cli history</code> command. Output fields are listed in the approximate order in which they appear.

Table 101: show cli history Output Fields

Field Name	Field Description
<i>timestamp</i>	Time at which the command was entered.
<i>command-syntax</i>	Command that was entered.

```

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 102 on page 475 summarizes the command-line interface (CLI) commands you can use to perform and monitor file management functions. Commands are listed in alphabetical order.

Table 102: 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 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 <i>filename</i> <all>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Remove contents of a log file.
Options	<i>filename</i> —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 Topics	■ show log
List of Sample Output	clear log on page 477
Output Fields	See file list for an explanation of output fields.
clear log	<p>The following sample commands list log file information, clear the contents of a log file, and then display the updated log file information:</p> <pre> 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 </pre>

file archive

Syntax	file archive destination <i>destination</i> source <i>source</i> <compress>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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	<p>destination <i>destination</i>—Destination of the archived file or files. Specify the destination as a URL or filename. The JUNOS Software adds one of the following suffixes if the destination filename does not already have it:</p> <ul style="list-style-type: none"> ■ For archived files—The suffix .tar ■ For archived and compressed files—The suffix .tgz <p>source <i>source</i>—Source of the original file or files. Specify the source as a URL or filename.</p> <p>compress—(Optional) Compress the archived file with the GNU zip (gzip) compression utility. The compressed files have the suffix .tgz.</p>
Required Privilege Level	maintenance
List of Sample Output	<p>file archive (Multiple Files) on page 478</p> <p>file archive (Single File) on page 478</p> <p>file archive (with Compression) on page 479</p>
Output Fields	When you enter this command, you are provided feedback on the status of your request.
file archive (Multiple Files)	<p>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:</p> <pre>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></pre>
file archive (Single File)	<p>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:</p> <pre>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></pre>

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	<code>file checksum md5 <pathname> filename</code>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Calculate the Message Digest 5 (MD5) checksum of a file.
Options	<i>pathname</i> —(Optional) Path to a filename. <i>filename</i> —Name of a local file for which to calculate the MD5 checksum.
Required Privilege Level	maintenance
List of Sample Output	file checksum md5 on page 480
Output Fields	When you enter this command, you are provided feedback on the status of your request.
file checksum md5	<pre> user@host> file checksum md5 jbundle-5.3R2.4-export-signed.tgz MD5 (jbundle-5.3R2.4-export-signed.tgz) = 2a3b69e43f9bd4893729cc16f505a0f5 </pre>

file checksum sha1

Syntax	<code>file checksum sha1 <pathname> filename</code>
Release Information	Command introduced in JUNOS Release 9.5. Command introduced in JUNOS Release 9.5 for EX Series switches.
Description	Calculate the Secure Hash Algorithm (SHA-1) checksum of a file.
Options	<i>pathname</i> —(Optional) Path to a filename. <i>filename</i> —Name of a local file for which to calculate the SHA-1 checksum.
Required Privilege Level	maintenance
List of Sample Output	file checksum sha1 on page 481
Output Fields	When you enter this command, you are provided feedback on the status of your request.
file checksum sha1	<pre>user@host> file checksum sha1 /var/db/scripts/opscript.slax SHA1 (/var/db/scripts/commitscript.slax) = ba9e47120c7ce55cff29afd73eacd370e162c676</pre>

file checksum sha-256

Syntax	<code>file checksum sha-256 <pathname> filename</code>
Release Information	Command introduced in JUNOS Release 9.5. Command introduced in JUNOS Release 9.5 for EX Series switches.
Description	Calculate the Secure Hash Algorithm 2 family (SHA-256) checksum of a file.
Options	<i>pathname</i> —(Optional) Path to a filename. <i>filename</i> —Name of a local file for which to calculate the SHA-256 checksum.
Required Privilege Level	maintenance
List of Sample Output	file checksum sha-256 on page 482
Output Fields	When you enter this command, you are provided feedback on the status of your request.
file checksum sha-256	<pre> user@host> file checksum sha-256 /var/db/scripts/commitscript.slax SHA256 (/var/db/scripts/commitscript.slax) = 94c2b061fb55399e15babd2529453815601a602b5c98e5c12ed929c9d343dd71 </pre>

file compare

Syntax	file compare (files <i>filename filename</i>) < context unified> <ignore-white-space >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	<p>Compare two local files and describe the differences between them in default, context, or unified output styles:</p> <ul style="list-style-type: none"> ■ 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 (<i>xx,xxx,x</i>). 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	<p>files <i>filename</i>—Names of two local files to compare.</p> <p>context—(Optional) Display output in context format.</p> <p>ignore-white-space—(Optional) Ignore changes in amount of white space.</p> <p>unified—(Optional) Display output in unified format.</p>
Required Privilege Level	none
List of Sample Output	<p>file compare files on page 484</p> <p>file compare files context on page 484</p> <p>file compare files unified on page 484</p> <p>file compare files unified ignore-white-space on page 485</p>
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  user@host> file compare files /tmp/one /tmp/two context
context            *** /tmp/one   Wed Dec  3 17:12:50 2003
--- /tmp/two   Wed Dec  3 09:13:14 2003
*****
*** 97,104 ****
        }
    }
    user bill {
!         full-name "Bill Smith";
!         class foo; # 'foo' is not defined
        authentication {
            encrypted-password SECRET;
        }
--- 97,105 ----
    }
    user bill {
!         full-name "Bill Smith";
!         uid 1089;
!         class super-user;
        authentication {
            encrypted-password SECRET;
        }
    }

```

```

file compare files 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	<code>file copy source destination</code> <code><source-address address></code>
Release Information	Command introduced before JUNOS Release 7.4. <code>source-address</code> option added in JUNOS Release 7.4. Command introduced in JUNOS 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	<p><code>source</code>—Source of the original file. Specify this as a URL or filename.</p> <p><code>destination</code>—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 (.).</p> <p><code>source-address address</code>—(Optional) Source IP host address. This option is useful for specifying the source address of a secure copy (scp) file transfer.</p>
Required Privilege Level	maintenance
List of Sample Output	<p><code>file copy</code> (A File from the Router to a PC) on page 486</p> <p><code>file copy</code> (A Configuration File Between Routing Engines) on page 486</p> <p><code>file copy</code> (A Log File Between Routing Engines) on page 486</p> <p><code>file copy</code> (A File From the TX Matrix Plus Router to a T1600 Router connected to the TX Matrix Plus Router) on page 486</p>
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)	<pre>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%</pre>
file copy (A Configuration File Between Routing Engines)	<p>The following sample command copies a configuration file from Routing Engine 0 to Routing Engine 1:</p> <pre>user@host> file copy /config/juniper.conf re1:/var/tmp/copied-juniper.conf</pre>
file copy (A Log File Between Routing Engines)	<p>The following sample command copies a log file from Routing Engine 0 to Routing Engine 1:</p> <pre>user@host> file copy lcc0-re0:/var/log/chassisd lcc0-re1:/var/tmp</pre>
file copy (A File From the TX Matrix Plus Router to a T1600 Router connected to the TX Matrix Plus Router)	<p>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:</p> <pre>user@host> file copy sfc0-re1:/tmp/sample.txt lcc0-re1:/var/tmp</pre>

file delete

Syntax	<code>file delete filename</code> <code><purge></code>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Delete a file on the local router or switch.
Options	<i>filename</i> —Name of the file to delete. For a routing matrix, include chassis information in the filename if the file to be deleted is not local to the Routing Engine from which the command is issued. <i>purge</i> —(Optional) Overwrite regular files before deleting them.
Required Privilege Level	maintenance
List of Sample Output	file delete on page 487 file delete (Routing Matrix) on page 487
Output Fields	When you enter this command, you are provided feedback on the status of your request.
file delete	<pre> 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 </pre>
file delete (Routing Matrix)	<pre> 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 </pre>

file list

Syntax	file list <detail recursive> <filename>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Display a list of files on the local router or switch.
Options	<p>none—Display a list of all files for the current directory.</p> <p>detail recursive—(Optional) Display detailed output or descend recursively through the directory hierarchy, respectively.</p> <p>filename—(Optional) Display a list of files. For a routing matrix, the filename must include the chassis information.</p>
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 488 file list (Routing Matrix) on page 489
Output Fields	When you enter this command, you are provided feedback on the status of your request.
file list	<pre>user@host> file list /var/tmp dcd.core rpd.core snmpd.core</pre>

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	<code>file rename <i>source destination</i></code>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Rename a file on the local router or switch.
Options	<p><i>destination</i>—New name for the file.</p> <p><i>source</i>—Original name of the file. For a routing matrix, the filename must include the chassis information.</p>
Required Privilege Level	maintenance
List of Sample Output	<p>file rename on page 490</p> <p>file rename (Routing Matrix) on page 491</p>
Output Fields	When you enter this command, you are provided feedback on the status of your request.
file rename	<p>The following example lists the files in <code>/var/tmp</code>, renames one of the files, and then displays the list of files again to reveal the newly named file.</p> <pre> user@host> 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 </pre>

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	<code>file show <i>filename</i></code> <code><encoding base64></code>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Display the contents of a file.
Options	<i>filename</i> —Name of a file. For a routing matrix, the filename must include the chassis information. <code>encoding base64</code> —(Optional) Encode file contents.
Required Privilege Level	maintenance
List of Sample Output	<code>file show</code> on page 492 <code>file show (Routing Matrix)</code> on page 492
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 user@host> file show lcc0-re0:/var/tmp/.gdbinit
(Routing Matrix) lcc0-re0:

```

```

-----
#####
# Settings
#####

set print pretty

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

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

```

```
        printf "%x ", $ch[$j]
        set $j = $j + 1
        if (!( $j % 16 ))
            printf "\n"
        end
    end
end
```

show log

Syntax	show log <filename user <username>>
Syntax (TX Matrix Router)	show log <all-lcc lcc <i>number</i> scc> <filename user <username>>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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	<p>none—List all log files.</p> <p><all-lcc lcc <i>number</i> scc>—(Routing matrix only) (Optional) Display logging information about all T640 routers (or line-card chassis) or a specific T640 router (replace <i>number</i> with a value from 0 through 3) connected to a TX Matrix router. Or, display logging information about the TX Matrix router (or switch-card chassis).</p> <p><i>filename</i>—(Optional) Display the log messages in the specified log file. For the routing matrix, the filename must include the chassis information.</p> <p>user <username>—(Optional) Display logging information about users who have recently logged in to the router or switch. If you include <i>username</i>, display logging information about the specified user.</p>
Required Privilege Level	trace
List of Sample Output	<p>show log on page 494</p> <p>show log filename on page 494</p> <p>show log user on page 495</p>
show log	<pre> 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 </pre>
show log filename	<pre> user@host> show log rpd </pre>

```

Oct  1 18:00:18 trace_on: Tracing to ?/var/log/rpd? started
Oct  1 18:00:18 EVENT <MTU> ds-5/2/0.0 index 24 <Broadcast PointToPoint Multicast
Oct  1 18:00:18
Oct  1 18:00:19 KRT rcv len 56 V9 seq 148 op add Type route/if af 2 addr
13.13.13.21 nhop type local nhop 13.13.13.21
Oct  1 18:00:19 KRT rcv len 56 V9 seq 149 op add Type route/if af 2 addr
13.13.13.22 nhop type unicast nhop 13.13.13.22
Oct  1 18:00:19 KRT rcv len 48 V9 seq 150 op add Type ifaddr index 24 devindex
43
Oct  1 18:00:19 KRT rcv len 144 V9 seq 151 op chnge Type ifdev devindex 44
Oct  1 18:00:19 KRT rcv len 144 V9 seq 152 op chnge Type ifdev devindex 45
Oct  1 18:00:19 KRT rcv len 144 V9 seq 153 op chnge Type ifdev devindex 46
Oct  1 18:00:19 KRT rcv len 1272 V9 seq 154 op chnge Type ifdev devindex 47
...

```

```

show log user      user@host> show log user
darius  mg2546                Thu Oct  1 19:37   still logged in
darius  mg2529                Thu Oct  1 19:08 - 19:36 (00:28)
darius  mg2518                Thu Oct  1 18:53 - 18:58 (00:04)
root    mg1575                Wed Sep 30 18:39 - 18:41 (00:02)
root    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 103 on page 497 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 103: PFE Operational Mode Commands

Task	Command
Display Packet Forwarding Engine Compact Forwarding Engine Board (CFEB) status and statistics information.	<code>show pfe cfeb</code>
Display Packet Forwarding Engine Forwarding Engine Board (FEB) status and statistics information.	<code>show pfe feb</code>
Display Packet Forwarding Engine statistics for the specified Flexible PIC Concentrator (FPC).	<code>show pfe fpc</code>
(J Series router only) Display Packet Forwarding Engine forwarding process (fwdd) status and statistics information.	<code>show pfe fwdd</code>
(Routing matrix only) Display Packet Forwarding Engine information for the specified T640 router (or line-card chassis).	<code>show pfe lcc</code>
Display Packet Forwarding Engine next-hop information.	<code>show pfe next-hop</code>
Display IPv4 Packet Forwarding Engine statistics.	<code>show pfe statistics ip</code>
(M320 and T320 routers, and T-640 only) Display Packet Forwarding Engine resource and L-chip SRAM memory usage statistics.	<code>show pfe resource usage memory</code>
Display the routes in the Packet Forwarding Engine forwarding table.	<code>show pfe route</code>
(M40 routers only) Display Packet Forwarding Engine System Control Board (SCB) status and statistics information.	<code>show pfe scb</code>
(M40e and M160 routers only) Display Packet Forwarding Engine Switching and Forwarding Module (SFM) status and statistics information.	<code>show pfe sfm</code>

Table 103: PFE Operational Mode Commands *(continued)*

Task	Command
(M20 routers only) Display Packet Forwarding Engine System and Switch Board (SSB) status and statistics information.	<code>show pfe ssb</code>
Display Packet Forwarding Engine direct memory access (DMA) statistics.	<code>show pfe statistics dma</code>
Display Packet Forwarding Engine error statistics.	<code>show pfe statistics error</code>
Display IPv4 Packet Forwarding Engine statistics.	<code>show pfe statistics ip</code>
Display Packet Forwarding Engine IPv6 statistics.	<code>show pfe statistics ip6</code>
Display Packet Forwarding Engine notification statistics.	<code>show pfe statistics notification</code>
Display Packet Forwarding Engine polled I/O (PIO) statistics.	<code>show pfe statistics pio</code>
Display Packet Forwarding Engine traffic statistics.	<code>show pfe statistics traffic</code>
Display Packet Forwarding Engine traffic statistics for Bidirectional Forwarding Detection (BFD).	<code>show pfe statistics traffic protocol bfd</code>
Display Packet Forwarding Engine traffic statistics for Connectivity Fault Management (CFM).	<code>show pfe statistics traffic protocol cfm</code>
Display Packet Forwarding Engine traffic statistics for Link Fault Management (LFM).	<code>show pfe statistics traffic protocol lfm</code>
Display Packet Forwarding Engine status information.	<code>show pfe terse</code>



NOTE: For information about how to configure PFE parameters, see the *JUNOS System Basics Configuration Guide*.

show pfe cfep

Syntax show pfe cfep

Release Information Command introduced before JUNOS 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 cfep on page 499

```
user@host> show pfe cfep
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 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 502

```

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 <i>slot</i> <detail extensive>
Syntax (TX Matrix and TX Matrix Plus Router)	show pfe fpc <fcc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	Display Packet Forwarding Engine statistics for the specified Flexible PIC Concentrator (FPC).
Options	<p><i>slot</i>—FPC slot number, for example, 0. The number of slots depends on the .</p> <p>detail extensive—(Optional) Display the specified level of detail.</p> <p>fcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, the slot number of the T640 router (or line-card chassis) that houses the FPC. On a TX Matrix Plus router, the slot number of the T1600 router (or line-card chassis) that houses the FPC. Replace <i>number</i> with a value from 0 through 3.</p>
Required Privilege Level	admin
List of Sample Output	<p>show pfe fpc on page 505</p> <p>show pfe fpc fcc on page 506</p>
show pfe fpc	<pre> 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 </pre>

```

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 Release 7.4.
Description	(J Series 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 509

```

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 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 512

```
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 <i>interface-name</i> >
Syntax (TX Matrix and TX Matrix Plus router)	show pfe next-hop <fpc <i>slot</i> > <interface <i>interface-name</i> > <lcc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Display Packet Forwarding Engine next-hop information.
Options	<p>none—Display all Packet Forwarding Engine next-hop information.</p> <p>fpc <i>slot</i>—(TX Matrix and TX Matrix Plus router only) (Optional) Show the next hops for a Flexible PIC Concentrator (FPC) slot.</p> <p>On a TX Matrix router, if you specify the number of a T640 router by using the <i>lcc number</i> option (the recommended method), replace <i>slot</i> with a value from 0 through 7. Otherwise, replace <i>slot</i> with a value from 0 through 31. On a TX Matrix Plus router, if you specify the number of a T1600 router by using the <i>lcc number</i> option (the recommended method), replace <i>slot</i> with a value from 0 through 7. Otherwise, replace <i>slot</i> with a value from 0 through 31. For example, the following commands have the same result:</p> <pre> user@host> show pfe next-hop fpc 1 lcc 1 user@host> show pfe next-hop fpc 9 </pre> <p>interface <i>interface-name</i>—(Optional) Display the Packet Forwarding Engine next-hop interface.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, the slot number of the T640 router (or line-card chassis) that houses the FPC. On a TX Matrix Plus router, the slot number of the T1600 router (or line-card chassis) that houses the FPC. Replace <i>number</i> with a value from 0 through 3.</p>
Required Privilege Level	admin
List of Sample Output	<p>show pfe next-hop on page 516</p> <p>show pfe next-hop fpc (TX Matrix router) on page 516</p> <p>show pfe next-hop fpc (TX Matrix Plus router) on page 516</p>

show pfe next-hopuser@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 (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 Release 7.4.
 Command introduced in JUNOS 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 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 520
 show pfe route iso on page 520
 show pfe route lcc summary (TX Matrix Router) on page 520
 show pfe route lcc summary (TX Matrix Plus Router) on page 522

show pfe route ip user@host> show pfe route ip

```
IPv4 Route Table 0, default.0, 0x0:
Destination                NH IP Addr      Type      NH ID Interface
-----
default                    127.0.0.1      Discard   8
127.0.0.1                  127.0.0.1      Local    256
172.16/12                  192.168.71.254 Unicast   68 fxp0.0
192.168.0/18               192.168.71.254 Unicast   68 fxp0.0
192.168.40/22              192.168.71.254 Unicast   68 fxp0.0
192.168.64/18              192.168.71.254 Unicast   68 fxp0.0
192.168.64/21              192.168.71.254 Resolve   67 fxp0.0
192.168.71.249             192.168.71.249 Local     66
192.168.220.0/30           192.168.71.249 Resolve   303 fe-0/0/0.0
192.168.220.0             192.168.220.0 Receive   301 fe-0/0/0.0
224.0.0.1                  Mcast          5
255.255.255.255           Bcast          6

...
```

show pfe route iso user@host# show pfe route iso

```
CLNS Route Table 0, CLNP.0, 0x0:
Destination                Type      NH ID Interface
-----
default                    Reject    60
47.0005.80ff.f800.0000.0108.0001.0102.5508.2159/152 Local    514
49.0001.00a0.c96b.c491/72 Local     536
```

show pfe route lcc summary (TX Matrix Router) user@host> show pfe route lcc 2 summary
 Slot 0

```
IPv4 Route Tables:
Index      Routes      Size(b)
-----
Default    43          3081
```

```
1                4                281
```

MPLS Route Tables:

Index	Routes	Size(b)
Default	1	68

IPv6 Route Tables:

Index	Routes	Size(b)
Default	9	717
1	5	389

Slot 1

IPv4 Route Tables:

Index	Routes	Size(b)
Default	43	3081
1	4	281

MPLS Route Tables:

Index	Routes	Size(b)
Default	1	68

IPv6 Route Tables:

Index	Routes	Size(b)
Default	9	717
1	5	389

Slot 16

IPv4 Route Tables:

Index	Routes	Size(b)
Default	41	2938
1	4	281

MPLS Route Tables:

Index	Routes	Size(b)
Default	1	68

IPv6 Route Tables:

Index	Routes	Size(b)
Default	9	717
1	5	389

Slot 17

IPv4 Route Tables:

Index	Routes	Size(b)
Default	41	2938
1	4	281

```

MPLS Route Tables:
Index          Routes      Size(b)
-----
Default        1          68

```

```

IPv6 Route Tables:
Index          Routes      Size(b)
-----
Default        9          717
1              5          389

```

show pfe route lcc summary (TX Matrix Plus Router) user@host> **show pfe route lcc 2 summary**
Slot 0

```

IPv4 Route Tables:
Index          Routes      Size(b)
-----
Default        25         2266
1              9          815
2              6          545
3              5          453
4              15         1371
5              5          453
6              13         1187

```

```

MPLS Route Tables:
Index          Routes      Size(b)
-----
Default        1          88
4              5          452

```

```

IPv6 Route Tables:
Index          Routes      Size(b)
-----
Default        7          697
1              13         1305
3              4          385
4              4          385
5              4          385
6              18         1833

```

Slot 6

```

IPv4 Route Tables:
Index          Routes      Size(b)
-----
Default        25         2266
1              9          815
2              6          545
3              5          453
4              15         1371
5              5          453
6              13         1187

```

```

MPLS Route Tables:
Index          Routes      Size(b)
-----

```

Default	1	88
4	5	452

IPv6 Route Tables:

Index	Routes	Size(b)
-----	-----	-----
Default	7	697
1	13	1305
3	4	385
4	4	385
5	4	385
6	18	1833
...		

show pfe scb

Syntax	show pfe scb
Release Information	Command introduced before JUNOS 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 524

```

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	<code>show pfe sfm slot</code> <detail extensive>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(M40e and M160 routers only) Display Packet Forwarding Engine Switching and Forwarding Module (SFM) status and statistics information.
Options	<i>slot</i> —Display statistics from the specified SFM slot. Replace <i>slot</i> 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 526

```

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 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 528

```

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 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 531
 show pfe statistics dma lcc (Routing Matrix) on page 532

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 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 534
 show pfe statistics error lcc (Routing Matrix) on page 535
 show pfe statistics error on page 536

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 Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Display IPv4 Packet Forwarding Engine statistics.
Options	<p>none—Display all IPv4 Packet Forward Engine statistics.</p> <p>fpc slot—(TX Matrix and TX Matrix Plus routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot. On a TX Matrix router, if you specify the number of a T640 router by using the 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:</p> <pre> user@host> show pfe statistics ip fpc 1 lcc 1 user@host> show pfe statistics ip fpc 9 </pre> <p>icmp—(Optional) Display Packet Forwarding Engine IP ICMP statistics.</p> <p>lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display error statistics for a specific T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display error statistics for a specific T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace number with a value from 0 through 3.</p> <p>options—(Optional) Display Packet Forwarding Engine IP options statistics.</p>
Required Privilege Level	admin
List of Sample Output	<p>show pfe statistics ip icmp on page 538</p> <p>show pfe statistics ip options on page 539</p>
Output Fields	Table 104 on page 538 lists the output fields for the show pfe statistics ip command. Output fields are listed in the approximate order in which they appear.

Table 104: show pfe statistics ip Output Fields

Field Name	Field Description
ICMP Statistics	<p>ICMP statistics, including the following:</p> <ul style="list-style-type: none"> ■ 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 unreachable—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	<p>ICMP errors, including the following:</p> <ul style="list-style-type: none"> ■ unknown unreachable—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	<p>ICMP discard statistics, including the following:</p> <ul style="list-style-type: none"> ■ 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 unreachable
                           0 ttl expired
                           0 ttl captured
                           0 redirects

```

```

0 mtu exceeded
0 icmp/option handoffs
ICMP Errors:
0 unknown unreachable
0 unsupported ICMP type
0 unprocessed redirects
0 invalid ICMP type
0 invalid protocol
0 bad input interface
0 throttled icmps
0 runts
ICMP Discards:
0 multicasts
0 bad source addresses
0 bad dest addresses
0 IP fragments
0 ICMP errors

```

```

show pfe statistics ip options user@host> show pfe statistics ip options
IP Option Values:
LSRR/SSRR forwarding enabled
IP Option Statistics:
0 loose source routes
0 strict source routes
0 record routes
889382 router alerts
0 other options
IP Option Errors:
0 runts
2 bad versions
0 runt header lengths
0 giant header lengths
0 null frames
0 bad option lengths
0 duplicate options
0 bad option pointers
0 source route frames dropped
188 frames queued
1126 frames dropped

```

show pfe statistics ip6

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 Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Display Packet Forwarding Engine IPv6 statistics.
Options	<p>none—Display all Packet Forwarding Engine IPv6 statistics.</p> <p>fpc slot—(TX Matrix and TX Matrix Plus router only) (Optional) Display statistics for a Flexible PIC Concentrator slot. On a TX Matrix router, if you specify the number of a T640 router by using the lcc number option (the recommended method), replace slot with a value from 0 through 7. Otherwise, replace slot with a value from 0 through 31. Likewise, on a TX Matrix Plus router, if you specify the number of a T1600 router by using the lcc number option (the recommended method), replace slot with a value from 0 through 7. Otherwise, replace slot with a value from 0 through 31. For example, the following commands have the same result:</p> <pre> user@host> show pfe statistics ip6 fpc 1 lcc 1 user@host> show pfe statistics ip6 fpc 9 </pre> <p>icmp—(Optional) Display Packet Forwarding Engine IP ICMP statistics.</p> <p>lcc number—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display statistics for a specific T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display statistics for a specific T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace number with a value from 0 through 3.</p>
Required Privilege Level	admin
List of Sample Output	show pfe statistics ip6 icmp on page 541 show pfe statistics ip6 lcc on page 542
Output Fields	Table 105 on page 541 lists the output fields for the show pfe statistics ip6 command. Output fields are listed in the approximate order in which they appear.

Table 105: show pfe statistics ip6 Output Fields

Field Name	Field Description
ICMP6 Statistics	<p>ICMP6 statistics, including the following:</p> <ul style="list-style-type: none"> ■ 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 unreachable—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	<p>ICMP6 errors, including the following:</p> <ul style="list-style-type: none"> ■ unknown unreachable—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	<p>ICMP6 discard statistics, including the following:</p> <ul style="list-style-type: none"> ■ 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 unreachable
                                0 ttl expired
                                0 ttl captured

```

```

0 redirects
0 mtu exceeded
0 icmp/option handoffs
ICMP6 Errors:
0 unknown unreachablees
0 unsupported ICMP type
0 unprocessed redirects
0 invalid ICMP type
0 invalid protocol
0 bad input interface
0 throttled icmps
0 runts
ICMP6 Discards:
0 multicasts
0 bad source addresses
0 bad dest addresses
0 IP fragments
0 ICMP errors

```

```

show pfe statistics ip6 user@host> show pfe statistics ip6 lcc 0 fpc 0
lcc sfc0-re0:

```

```

-----
ICMP Statistics:
0 requests
0 network unreachablees
0 ttl expired
0 ttl captured
0 redirects
0 mtu exceeded
0 icmp/option handoffs

ICMP Errors:
0 unknown unreachablees
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 Release 7.4.
Description	Display Packet Forwarding Engine notification statistics.
Options	<p>none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display statistics about the Packet Forwarding Engine notification on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display statistics about the Packet Forwarding Engine notification on the TX Matrix Plus router and its attached T1600 routers.</p> <p>fpc slot—(TX Matrix and TX Matrix Plus routers only) (Optional) Display notification for a Flexible PIC Concentrator (FPC) slot. On a TX Matrix router, if you specify the number of a T640 router by using the lcc number option (the recommended method), replace <i>slot</i> with a value from 0 through 7. On a TX Matrix Plus router, if you specify the number of a T1600 router by using the lcc number option (the recommended method), replace <i>slot</i> with a value from 0 through 7. Otherwise, replace <i>slot</i> with a value from 0 through 31. For example, the following commands have the same result:</p> <pre> user@host> show pfe statistics notification fpc 1 lcc 1 user@host> show pfe statistics notification fpc 9 </pre> <p>lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display notification for a specific T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display notification for a specific T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p>
Required Privilege Level	admin
List of Sample Output	show pfe statistics notification on page 543 show pfe statistics notification lcc (Routing Matrix) on page 544
show pfe statistics notification	<pre> 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 </pre>

Unclass	1733	1733	0	0
Option	0	0	0	0
Next-Hop	720	720	0	0
Discard	0	0	0	0
Sample	0	0	0	0
Redirect	0	0	0	0
DontFrag	0	0	0	0
CfDF	0	0	0	0

show pfe statistics user@host> **show pfe statistics notification lcc 0**
notification lcc (Routing
Matrix) Slot 0

PFE Notification statistics:
 1252 parsed
 0 aged
 0 corrupt
 0 illegal
 0 sample
 0 giants
 0 transit options/ttl-exceeded
 0 transit options/ttl-exceeded errors
 0 svc options sent to ASP
 0 svc options sent to RE
 0 post svc options sent out
 121 options or ttl expired (not RE-destined)

PFE Notification Type statistics:

	Parsed	Input	Failed	Ignored
Illegal	0	0	0	0
Unclass	695	695	0	0
Option	30	30	0	0
Next-Hop	527	527	0	0
Discard	0	0	0	0
Sample	0	0	0	0
Redirect	0	0	0	0
DontFrag	0	0	0	0
CfDF	0	0	0	0
Poison	0	0	0	0

Slot 1

PFE Notification statistics:
 0 parsed
 0 aged
 ...

show pfe statistics pio

Syntax	show pfe statistics pio
Syntax (TX Matrix Router)	show pfe statistics pio <fpc slot> < lcc number>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Display Packet Forwarding Engine polled I/O (PIO) statistics.
Options	<p>none—(TX Matrix routers only) Display statistics about the Packet Forwarding Engine polled I/O on the TX Matrix routers and its attached T640 routers.</p> <p>fpc slot—(TX Matrix routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot. If you specify the number of a T640 router by using the lcc number option (the recommended method), replace slot with a value from 0 through 7. Otherwise, replace slot with a value from 0 through 31. For example, the following commands have the same result:</p> <pre> user@host> show pfe statistics pio fpc 1 lcc 1 user@host> show pfe statistics pio fpc 9 </pre> <p>lcc number—(TX Matrix routers only) (Optional) Display statistics for a specific T640 router (or line-card chassis) that is connected to a TX Matrix router. Replace number with a value from 0 through 3.</p>
Required Privilege Level	admin
List of Sample Output	<p>show pfe statistics pio on page 545</p> <p>show pfe statistics pio lcc (Routing Matrix) on page 545</p>
show pfe statistics pio	<pre> 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 </pre>
show pfe statistics pio lcc (Routing Matrix)	<pre> 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 ... </pre>

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 Release 7.4.
Description	Display Packet Forwarding Engine traffic statistics.
Options	<p>none—Display statistics about PFE traffic. On the TX Matrix router, display statistics about PFE traffic for all its attached T640 routers. On the TX Matrix Plus router, display statistics about PFE traffic for all its attached T1600 routers</p> <p>fpc slot—(T Series and M320 router only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot. On a TX Matrix router, if you specify the number of a T640 router by using the 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:</p> <pre> user@host> show pfe statistics traffic fpc 1 lcc 1 user@host> show pfe statistics traffic fpc 9 </pre> <p>lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display statistics for a specific T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display statistics for a specific T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace number with a value from 0 through 3.</p>
Required Privilege Level	admin
List of Sample Output	show pfe statistics traffic on page 548
Output Fields	Table 106 on page 546 lists the output fields for the show pfe statistics traffic command. Output fields are listed in the approximate order in which they appear.

Table 106: show pfe statistics traffic Output Fields

Field Name	Field Description
Packet Forwarding Engine Traffic statistics	<p>Information about Packet Forwarding Engine traffic:</p> <ul style="list-style-type: none"> ■ Input Packets—Number and rate of input packets. ■ Output Packets—Number and rate of output packets.

Table 106: show pfe statistics traffic Output Fields (continued)

Field Name	Field Description
Packet Forwarding Engine Local Traffic statistics	<p>Information about Packet Forwarding Engine local traffic:</p> <ul style="list-style-type: none"> ■ 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	<p>Information about the Packet Forwarding Engine Local Protocol:</p> <ul style="list-style-type: none"> ■ 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	<p>Information about Packet Forwarding Engine hardware discards:</p> <ul style="list-style-type: none"> ■ 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 user@host> show pfe statistics traffic
traffic Packet Forwarding Engine traffic statistics:
          Input packets:          102682          5 pps
          Output packets:         58033          4 pps
Packet Forwarding Engine local traffic statistics:
          Local packets input      :          44628
          Local packets output     :          46146
          Software input control plane drops :          0
          Software input high drops :          0
          Software input medium drops :          0
          Software input low drops  :          0
          Software output drops     :          0
          Hardware input drops     :          0
Packet Forwarding Engine local protocol statistics:
          HDLC keepalives          :          0
          ATM OAM                   :          0
          Frame Relay LMI           :          0
          PPP LCP/NCP               :          5597
          OSPF hello                :          3195
          OSPF3 hello               :          0
          RSVP hello                :          0
          LDP hello                 :          7478
          BFD                       :          0
          IS-IS IIH                 :          0
          LACP                      :          0
          ARP                      :          0
          ETHER OAM                  :          0
          Unknown                    :          8
Packet Forwarding Engine hardware discard statistics:
          Timeout                   :          0
          Truncated key             :          0
          Bits to test              :          0
          Data error                :          0
          Stack underflow           :          0
          Stack overflow            :          0
          Normal discard            :          0
          Extended discard          :          0
          Invalid interface         :          0
          Info cell drops           :          0
          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 Release 8.4.
Description	Display Packet Forwarding Engine traffic protocol statistics for Bidirectional Forwarding Detection hello packets.
Options	<p>None—Display all PFE traffic protocol BFD statistics.</p> <p>fpc slot—(M320 and MX960 routers, and T Series routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot.</p> <p>user@host> show pfe statistics traffic protocol bfd fpc 1</p> <p>lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display statistics for a specific T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display statistics for a specific T1 600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>user@host> show pfe statistics traffic protocol bfd fpc 1 lcc 1</p>
Required Privilege Level	admin
List of Sample Output	show pfe statistics traffic protocol bfd on page 550
Output Fields	Table 107 on page 549 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 107: show pfe statistics traffic protocol bfd Output Fields

Field Name	Field Description
Packets with invalid interface	Number of packets discarded due to invalid interface.
Packets with invalid address family	Number of packets discarded due to invalid address family.
Packets with bad IP checksum	Number of packets discarded due to bad IP checksum.
Packets with bad IP options	Number of packets discarded due to bad IP options.

Table 107: show pfe statistics traffic protocol bfd Output Fields *(continued)*

Field Name	Field Description
Packets with bad IP length	Number of packets discarded due to bad IP length.
Packets with bad udp checksum	Number of packets discarded due to bad UDP checksum.
Packets with bad udp length	Number of packets discarded due to bad UDP length.
Packets with bad udp ports	Number of packets discarded due to bad UDP ports.
Packets with no logical interface	(T640 and M20 only) Number of packets discarded due to non-availability of logical interface.
Packets with prefix length mismatch	(T640 and M20 only) Number of packets discarded due to prefix length mismatch.
Packets received	Number of packets received.
Packets absorbed	Number of packets absorbed.
Packets failed to transmit	Number of packets discarded due to 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 Release 8.5.
Description	Display Packet Forwarding Engine traffic protocol statistics for Connectivity Fault Management (CFM).
Options	<p>None—Display all PFE traffic protocol CFM statistics.</p> <p>fpc slot—(M320 and MX960 routers, and T Series routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot.</p> <p>user@host> show pfe statistics traffic protocol cfm fpc 1</p> <p>lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display statistics for a specific T640 router (or line-card chassis) that is connected to a TX Matrix routers. On a TX Matrix Plus router, display statistics for a specific T1 600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>user@host> show pfe statistics traffic protocol cfm fpc 1 lcc 1</p>
Required Privilege Level	admin
List of Sample Output	show pfe statistics traffic protocol cfm on page 552
Output Fields	Table 108 on page 551 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 108: show pfe statistics traffic protocol cfm Output Fields

Field Name	Field Description
Packets transmitted	Number of packets transmitted.
Packets failed to transmit	Number of packets that were not transmitted.
Packets received	Number of packets received.
Packets sent to RE	Number of packets sent to the Routing Engine.
Packets absorbed	Number of packets absorbed.
Packets with invalid length	Number of packets with invalid length.

Table 108: show pfe statistics traffic protocol cfm Output Fields *(continued)*

Field Name	Field Description
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 Release 8.5
Description	Display Packet Forwarding Engine traffic protocol Link Fault Management (LFM) statistics.
Options	<p>none—Display all PFE traffic protocol LFM statistics.</p> <p>fpc slot—(M320 and MX960 routers, and T Series routers only) (Optional) Display statistics for a Flexible PIC Concentrator (FPC) slot.</p> <p>user@host> show pfe statistics traffic protocol lfm fpc 1</p> <p>lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display statistics for a specific T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display statistics for a specific T1 600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>user@host> show pfe statistics traffic protocol lfm fpc 1 lcc 1</p>
Required Privilege Level	admin
List of Sample Output	show pfe statistics traffic protocol lfm on page 554
Output Fields	Table 109 on page 553 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 109: 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 user@host> **show pfe statistics traffic protocol lfm**
traffic protocol lfm

user@host> show pfe statistics traffic protocol lfm

```
LFM protocol statistics:
  Packets transmitted      : 0
  Packets failed to transmit : 0
  Packets received         : 0
  Packets send to RE       : 0
  Packets absorbed         : 0
  Packets dropped (Invalid) : 0
```

show pfe terse

Syntax	show pfe terse
Syntax (TX Matrix and TX Matrix Plus Router)	show pfe terse <fcc number scc>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Display Packet Forwarding Engine status information.
Options	<p>none—Display brief information about the Packet Forwarding Engine..</p> <p>fcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix, display Packet Forwarding Engine information for a specific T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display Packet Forwarding Engine information for a specific T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display Packet Forwarding Engine information for the TX Matrix router (or switch-card chassis).</p> <p>sfc—(TX Matrix Plus routers only) (Optional) Display Packet Forwarding Engine information for the TX Matrix Plus router (or switch-fabric chassis).</p>
Required Privilege Level	admin
List of Sample Output	<p>show pfe terse (TX Matrix Router) on page 555</p> <p>show pfe terse (TX Matrix Plus Router) on page 555</p> <p>show pfe terse sfc (TX Matrix Plus Router) on page 556</p>
show pfe terse (TX Matrix Router)	<pre> 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 </pre>
show pfe terse (TX Matrix Plus Router)	<pre> 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 </pre>

**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 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 558

Output Fields Table 110 on page 557 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 110: show pfe resource usage memory Output Fields

Field Name	Field Description
Resource Name	Name of the resource, including: <ul style="list-style-type: none"> ■ 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

```

Resource Name	Free	Inuse	Total	%Use
Fpc 0				(* - resource 80% used)
Pfe 2 Lin 3				
SRAM Pages (Page = 4096 bytes)	510	3	512	0.59
Channel Table Pages		1		
Accounting Pages		1		
Pfe 2 Lout 3				
L2rw Zones (Bytes)				
Multicast List Table	16384	0	16384	0.00
L2 Descriptor Table	2080748	20	2080768	0.00
L2 Tag Table	488	24	512	4.69
Pfe 2 Lin 4				
SRAM Pages (Page = 4096 bytes)	511	33	512	6.45
Channel Table Pages		0		
Accounting Pages		1		
Pfe 2 Lout 4				
L2rw Zones (Bytes)				
Multicast List Table	16384	0	16384	0.00
L2 Descriptor Table	2080768	0	2080768	0.00
L2 Tag Table	504	8	512	1.56

Chapter 11

Remote System Access Operational Mode Commands

Table 111 on page 561 summarizes the command-line interface (CLI) commands you can use to access remote systems. Commands are listed in alphabetical order.

Table 111: Remote System Access Operational Mode Commands

Task	Command
Open a Secure Shell (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 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>`

Release Information Command introduced before JUNOS Release 7.4.

Description Use the Secure Shell (SSH) program to open a connection between a local router and a remote system and execute commands on the remote system. You can issue the `ssh` command from the JUNOS CLI to log in to a remote system or from a remote system to log in to the local router. 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 System Basics Configuration Guide*.

Beginning with Release 8.0, 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 System Basics Configuration Guide*.

If you use SSH to connect between a router running JUNOS Release 5.x and one running Release 4.x, the console displays warnings because of minor discrepancies between the two implementations: “Warning: Server lies about size of server host key: actual size is 1023 bits vs. announced 1024. Warning: This may be due to an old implementation of ssh.” The warnings are informational and do not affect SSH operation.

Required Privilege Level network

List of Sample Output ssh on page 563

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*>

Release Information Command introduced before JUNOS Release 7.4.

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 Beginning with Release 8.0, 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 System Basics Configuration Guide*.

Required Privilege Level network

List of Sample Output telnet on page 565

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 112 on page 567 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 112: SNMP Operational Commands

Task	Command
Clear SNMP statistics.	<code>clear snmp statistics</code>
Spoof (mimic) the behavior of an SNMP trap.	<code>request snmp spoof-trap</code>
Display information about health monitor alarms.	<code>show snmp health-monitor</code>
Display statistics about SNMP informs.	<code>show snmp inform-statistics</code>
Display local Management Information Base (MIB) object values through the command-line interface (CLI).	<code>show snmp mib</code>
Display information about Remote Monitoring (RMON) alarms and events.	<code>show snmp rmon</code>
Display statistics about SNMP packets sent and received.	<code>show snmp statistics</code>
Display SNMP version 3 statistics.	<code>show snmp v3</code>



NOTE: For information about how to configure SNMP, see the *JUNOS Network Management Configuration Guide*.

clear snmp statistics

Syntax	clear snmp statistics
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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 Topics	■ show snmp statistics
List of Sample Output	clear snmp statistics on page 568
Output Fields	See show snmp statistics for an explanation of output fields.
clear snmp statistics	<p>In the following example, SNMP statistics are displayed before and after the clear snmp statistics command is issued:</p> <pre> 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 </pre>

request snmp spoof-trap

Syntax	request snmp spoof-trap <trap> variable-bindings <object> <instance> <value>
Release Information	Command introduced in JUNOS Release 8.2. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Spoof (mimic) the behavior of a Simple Network Management Protocol (SNMP) trap.
Options	<p><trap>—Name of the trap to spoof.</p> <p>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.</p> <p><dummy name>—A dummy trap name to display the list of available traps.</p> <p>Question mark (?)—Question mark? to display possible completions.</p>
Required Privilege Level	request
List of Sample Output	request snmp spoof-trap (with Variable Bindings) on page 569 request snmp spoof-trap (Illegal Trap Name) on page 569 request snmp spoof-trap (question mark ?) on page 573
request snmp spoof-trap (with Variable Bindings)	<pre>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</pre>
request snmp spoof-trap (Illegal Trap Name)	<pre>user@host> request snmp spoof-trap xx Spoof trap request result: trap not found</pre> <p>Allowed Traps:</p> <pre>adslAtucInitFailureTrap adslAtucPerfESsThreshTrap adslAtucPerfLofsThreshTrap adslAtucPerfLolsThreshTrap adslAtucPerfLossThreshTrap adslAtucPerfLprsThreshTrap adslAtucRateChangeTrap adslAturPerfESsThreshTrap adslAturPerfLofsThreshTrap adslAturPerfLossThreshTrap adslAturPerfLprsThreshTrap adslAturRateChangeTrap apsEventChannelMismatch apsEventFEPLF apsEventModeMismatch</pre>

```

apsEventPSBF
apsEventSwitchover
authenticationFailure
bfdSessDown
bfdSessUp
bgpBackwardTransition
bgpEstablished
coldStart
dlswTrapCircuitDown
dlswTrapCircuitUp
dlswTrapTConnDown
dlswTrapTConnPartnerReject
dlswTrapTConnProtViolation
dlswTrapTConnUp
dsx1LineStatusChange
dsx3LineStatusChange
entConfigChange
fallingAlarm
frDLCIStatusChange
ggsnTrapChanged
ggsnTrapCleared
ggsnTrapNew
gmpIsTunnelDown
ifMauJabberTrap
ipv6IfStateChange
isisAreaMismatch
isisAttemptToExceedMaxSequence
isisAuthenticationFailure
isisAuthenticationTypeFailure
isisCorruptedLSPDetected
isisDatabaseOverload
isisIDLenMismatch
isisLSPTooLargeToPropagate
isisManualAddressDrops
isisMaxAreaAddressesMismatch
isisOriginatingLSPBufferSizeMismatch
isisOwnLSPPurge
isisProtocolsSupportedMismatch
isisRejectedAdjacency
isisSequenceNumberSkip
isisVersionSkew
jnxAccessAuthServerDisabled
jnxAccessAuthServerEnabled
jnxAccessAuthServiceDown
jnxAccessAuthServiceUp
jnxBfdSessDetectionTimeHigh
jnxBfdSessTxIntervalHigh
jnxBgpM2BackwardTransition
jnxBgpM2Established
jnxCmCfgChange
jnxCmRescueChange
jnxCollFlowOverload
jnxCollFlowOverloadCleared
jnxCollFtpSwitchover
jnxCollMemoryAvailable
jnxCollMemoryUnavailable
jnxCollUnavailableDest
jnxCollUnavailableDestCleared
jnxCollUnsuccessfulTransfer
jnxDfcHardMemThresholdExceeded
jnxDfcHardMemUnderThreshold

```

```

jnxDfcHardPpsThresholdExceeded
jnxDfcHardPpsUnderThreshold
jnxDfcSoftMemThresholdExceeded
jnxDfcSoftMemUnderThreshold
jnxDfcSoftPpsThresholdExceeded
jnxDfcSoftPpsUnderThreshold
jnxEventTrap
jnxExampleStartup
jnxFEBSwitchover
jnxFanFailure
jnxFanOK
jnxFruCheck
jnxFruFailed
jnxFruInsertion
jnxFruOK
jnxFruOffline
jnxFruOnline
jnxFruPowerOff
jnxFruPowerOn
jnxFruRemoval
jnxHardDiskFailed
jnxHardDiskMissing
jnxJsAvPatternUpdateTrap
jnxJsChassisClusterSwitchover
jnxJsFwAuthCapacityExceeded
jnxJsFwAuthFailure
jnxJsFwAuthServiceDown
jnxJsFwAuthServiceUp
jnxJsNatAddrPoolThresholdStatus
jnxJsScreenAttack
jnxJsScreenCfgChange
jnxLdpLspDown
jnxLdpLspUp
jnxLdpSesDown
jnxLdpSesUp
jnxMIMstCistPortLoopProtectStateChangeTrap
jnxMIMstCistPortRootProtectStateChangeTrap
jnxMIMstErrTrap
jnxMIMstGenTrap
jnxMIMstInvalidBpduRxdTrap
jnxMIMstMstiPortLoopProtectStateChangeTrap
jnxMIMstMstiPortRootProtectStateChangeTrap
jnxMIMstNewRootTrap
jnxMIMstProtocolMigrationTrap
jnxMIMstRegionConfigChangeTrap
jnxMIMstTopologyChgTrap
jnxMacChangedNotification
jnxMplsLdpInitSesThresholdExceeded
jnxMplsLdpPathVectorLimitMismatch
jnxMplsLdpSessionDown
jnxMplsLdpSessionUp
jnxOspfV3IfConfigError
jnxOspfV3IfRxBadPacket
jnxOspfV3IfStateChange
jnxOspfV3LsdbApproachingOverflow
jnxOspfV3LsdbOverflow
jnxOspfV3NbrRestartHelperStatusChange
jnxOspfV3NbrStateChange
jnxOspfV3NssaTranslatorStatusChange
jnxOspfV3RestartStatusChange
jnxOspfV3VirtIfConfigError

```

```

jnxOspfV3VirtIfRxBadPacket
jnxOspfV3VirtIfStateChange
jnxOspfV3VirtNbrRestartHelperStatusChange
jnxOspfV3VirtNbrStateChange
jnxOtnAlarmCleared
jnxOtnAlarmSet
jnxOverTemperature
jnxPMonOverloadCleared
jnxPMonOverloadSet
jnxPingEgressJitterThresholdExceeded
jnxPingEgressStdDevThresholdExceeded
jnxPingEgressThresholdExceeded
jnxPingIngressJitterThresholdExceeded
jnxPingIngressStdDevThresholdExceeded
jnxPingIngressThresholdExceeded
jnxPingRttJitterThresholdExceeded
jnxPingRttStdDevThresholdExceeded
jnxPingRttThresholdExceeded
jnxPortBpduErrorStatusChangeTrap
jnxPortLoopProtectStateChangeTrap
jnxPortRootProtectStateChangeTrap
jnxPowerSupplyFailure
jnxPowerSupplyOK
jnxRedundancySwitchover
jnxRmonAlarmGetFailure
jnxRmonGetOk
jnxSecAccessIfMacLimitExceeded
jnxSecAccessSdsRateLimitCrossed
jnxSonetAlarmCleared
jnxSonetAlarmSet
jnxSpSvcSetCpuExceeded
jnxSpSvcSetCpuOk
jnxSpSvcSetZoneEntered
jnxSpSvcSetZoneExited
jnxStormEventNotification
jnxSyslogTrap
jnxTemperatureOK
jnxVccpPortDown
jnxVccpPortUp
jnxVpnIfDown
jnxVpnIfUp
jnxVpnPwDown
jnxVpnPwUp
jnxl2aldGlobalMacLimit
jnxl2aldInterfaceMacLimit
jnxl2aldRoutingInstMacLimit
linkDown
linkUp
lldpRemTablesChange
mfrMibTrapBundleLinkMismatch
mplsLspChange
mplsLspDown
mplsLspInfoChange
mplsLspInfoDown
mplsLspInfoPathDown
mplsLspInfoPathUp
mplsLspInfoUp
mplsLspPathDown
mplsLspPathUp
mplsLspUp
mplsNumVrfRouteMaxThreshExceeded

```

```

mplsNumVrfRouteMidThreshExceeded
mplsNumVrfSecIllglLb1ThrshExcd
mplsTunnelDown
mplsTunnelReoptimized
mplsTunnelRerouted
mplsTunnelUp
mplsVrfIfDown
mplsVrfIfUp
mplsXCDown
mplsXCUp
msdpBackwardTransition
msdpEstablished
newRoot
ospfIfAuthFailure
ospfIfConfigError
ospfIfRxBadPacket
ospfIfStateChange
ospfLsdbApproachingOverflow
ospfLsdbOverflow
ospfMaxAgeLsa
ospfNbrStateChange
ospfOriginateLsa
ospfTxRetransmit
ospfVirtIfAuthFailure
ospfVirtIfConfigError
ospfVirtIfRxBadPacket
ospfVirtIfStateChange
ospfVirtIfTxRetransmit
ospfVirtNbrStateChange
pethMainPowerUsageOffNotification
pethMainPowerUsageOnNotification
pethPsePortOnOffNotification
pingProbeFailed
pingTestCompleted
pingTestFailed
ptopoConfigChange
risingAlarm
rpMauJabberTrap
sd1cLSStatusChange
sd1cPortStatusChange
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

```

```
ads1AturPerfLprsThreshTrap
ads1AturRateChangeTrap
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 Release 8.0. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Display information about Simple Network Management Protocol (SNMP) health monitor alarms and logs.
Options	<p>none—Display information about all health monitor alarms and logs.</p> <p>alarms <detail>—(Optional) Display detailed information about health monitor alarms.</p> <p>logs—(Optional) Display information about health monitor logs.</p>
Required Privilege Level	view
List of Sample Output	<p>show snmp health-monitor on page 577</p> <p>show snmp health-monitor alarms detail on page 579</p>
Output Fields	Table 113 on page 575 describes the output fields for the show snmp health-monitor command. Output fields are listed in the approximate order in which they appear.

Table 113: 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 113: show snmp health-monitor Output Fields (continued)

Field Name	Field Description	Level of Output
State	<p>State of the alarm or event entry:</p> <ul style="list-style-type: none"> ■ Alarms: <ul style="list-style-type: none"> ■ 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	<p>Alarm that might be sent when this entry is first activated, depending on the following criteria:</p> <ul style="list-style-type: none"> ■ Alarm is sent when one of the following situations exists: <ul style="list-style-type: none"> ■ 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 <i>not</i> sent when one of the following situations exists: <ul style="list-style-type: none"> ■ 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 113: 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          sysAppElmtRunCPU.3
Variable OID           1.3.6.1.2.1.54.1.2.3.1.9.3
Sample type            delta value
Startup alarm          rising alarm
Owner                  Health Monitor: jkernel daemon CPU
                        utilization
Creator                Health Monitor
State                  active
Sample interval        300 seconds
Rising threshold       24000
Falling threshold      21000
Rising event index     32768
Falling event index    32768
    Instance Name: sysAppElmtRunCPU.3.1.1
    Instance Description: Init daemon
    Instance Value: 0
    Instance State: active

    Instance Name: sysAppElmtRunCPU.3.2.2786
    Instance Description: Chassis daemon
    Instance Value: 50
    Instance State: active

    Instance Name: sysAppElmtRunCPU.3.3.2938
    Instance Description: Firewall daemon
    Instance Value: 0
    Instance State: active

    Instance Name: sysAppElmtRunCPU.3.4.2942
    Instance Description: Interface daemon
    Instance Value: 5
    Instance State: active

    Instance Name: sysAppElmtRunCPU.3.7.7332
    Instance Description: SNMP daemon
    Instance Value: 11
    Instance State: active

    Instance Name: sysAppElmtRunCPU.3.9.2914
    Instance Description: MIB2 daemon
    Instance Value: 42
    Instance State: active

    Instance Name: sysAppElmtRunCPU.3.12.2916
    Instance Description: Sonet APS daemon
    Instance Value: 0

```

```
Instance State: active

Instance Name: sysAppElmtRunCPU.3.13.2917
Instance Description: VRRP daemon
Instance Value: 0
Instance State: active

Instance Name: sysAppElmtRunCPU.3.14.2787
Instance Description: Alarm daemon
Instance Value: 3
Instance State: active

Instance Name: sysAppElmtRunCPU.3.15.2940
Instance Description: PFE daemon
Instance Value: 0
Instance State: active

Instance Name: sysAppElmtRunCPU.3.16.2788
Instance Description: CRAFT daemon
Instance Value: 0
Instance State: active

Instance Name: sysAppElmtRunCPU.3.17.2918
Instance Description: Traffic sampling control daemon
---(more 23%)---
```

show snmp inform-statistics

Syntax	show snmp inform-statistics
Release Information	Command introduced in JUNOS Release 7.4. Command introduced in JUNOS 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 582
Output Fields	Table 114 on page 582 describes the output fields for the show snmp inform-statistics command. Output fields are listed in the approximate order in which they appear.

Table 114: 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      user@host> show snmp inform-statistics
inform-statistics Inform Request Statistics:
                    Target Name: TA1_v3_md5_none Address: 172.17.20.184
                    Sent: 176, Pending: 0
                    Discarded: 0, Timeouts: 0, Probe Failures: 0
                    Target Name: TA2_v3_sha_none Address: 192.168.110.59
                    Sent: 0, Pending: 4
                    Discarded: 84, Timeouts: 0, Probe Failures: 258
                    Target Name: TA5_v2_none Address: 172.17.20.184
                    Sent: 0, Pending: 0
                    Discarded: 2, Timeouts: 10, Probe Failures: 0

```

show snmp mib

Syntax	show snmp mib (get get-next walk) (ascii decimal) <i>object-id</i> .
Release Information	Command introduced before JUNOS Release 7.4. ascii and decimal options introduced in JUNOS Release 9.6.
Description	Display local Simple Network Management Protocol (SNMP) Management Information Base (MIB) object values.
Options	<p>get—Retrieve and display one or more SNMP object values.</p> <p>get-next—Retrieve and display the next SNMP object values.</p> <p>walk—Retrieve and display the SNMP object values that are associated with the requested object identifier (OID). When you use this option, the JUNOS Software displays the objects below the subtree that you specify.</p> <p>ascii—Display the SNMP object's string indices as an ascii-key representation.</p> <p>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.</p> <p>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.</p>
Required Privilege Level	snmp—To view this statement in the configuration.
List of Sample Output	<p>show snmp mib get on page 584</p> <p>show snmp mib get (Multiple Objects) on page 584</p> <p>show snmp mib get-next on page 584</p> <p>show snmp mib get-next (Specify an OID) on page 584</p> <p>show snmp mib walk on page 584</p> <p>show snmp mib walk decimal on page 584</p> <p>show snmp mib walk (ascii) on page 584</p> <p>show snmp mib walk (Multiple Indices) on page 584</p> <p>show snmp mib walk decimal (Multiple Indices) on page 584</p>
Output Fields	Table 115 on page 583 describes the output fields for the show snmp mib command. Output fields are listed in the approximate order in which they appear.

Table 115: show snmp mib Output Fields

Field Name	Field Description
<i>name</i>	Object name and numeric instance value.

Table 115: show snmp mib Output Fields *(continued)*

Field Name	Field Description
<i>object value</i>	Object value. The JUNOS Software translates OIDs into the corresponding object names.

show snmp mib get	<pre>user@host> show snmp mib get sysObjectID.0 sysObjectID.0 = jnxProductNameM20</pre>
show snmp mib get (Multiple Objects)	<pre>user@host> show snmp mib get ?sysObjectID.0 sysUpTime.0? sysObjectID.0 = jnxProductNameM20 sysUpTime.0 = 1640992</pre>
show snmp mib get-next	<pre>user@host> show snmp mib get-next jnxMibs jnxBoxClass.0 = jnxProductLineM20.0</pre>
show snmp mib get-next (Specify an OID)	<pre>user@host> show snmp mib get-next 1.3.6.1 sysDescr.0 = Juniper Networks, Inc. m20 internet router, kernel JUNOS release #0: 2004-1 Build date: build date UTC Copyright (c) 1996-2004 Juniper Networks, Inc.</pre>
show snmp mib walk	<pre>user@host> show snmp mib walk system sysDescr.0 = Juniper Networks, Inc. m20 internet router, kernel JUNOS 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</pre>
show snmp mib walk decimal	<pre>user@host show snmp mib walk decimal jnxUtilData jnxUtilCounter32Value.102.114.101.100 = 100</pre>
show snmp mib walk (ascii)	<pre>show snmp mib walk ascii jnxUtilData jnxUtilCounter32Value."fred" = 100</pre>
show snmp mib walk (Multiple Indices)	<pre>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</pre>
show snmp mib walk decimal (Multiple Indices)	<pre>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</pre>

show snmp rmon

Syntax	show snmp rmon <alarms <brief detail> events <brief detail> logs>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Display information about Simple Network Management Protocol (SNMP) Remote Monitoring (RMON) alarms and events.
Options	<p>none—Display information about all RMON alarms and events.</p> <p>alarms—(Optional) Display information about RMON alarms.</p> <p>brief detail—(Optional) Display brief or detailed information about RMON alarms or events.</p> <p>events—(Optional) Display information about RMON events.</p> <p>logs—(Optional) Display information about RMON monitoring logs.</p>
Required Privilege Level	view
List of Sample Output	<p>show snmp rmon on page 587</p> <p>show snmp rmon alarms detail on page 587</p> <p>show snmp rmon events detail on page 588</p>
Output Fields	Table 116 on page 585 describes the output fields for the show snmp rmon command. Output fields are listed in the approximate order in which they appear.

Table 116: show snmp rmon Output Fields

Field Name	Field Description	Level of Output
Alarm Index	Alarm identifier.	All levels

Table 116: show snmp rmon Output Fields (continued)

Field Name	Field Description	Level of Output
State	<p>State of the alarm or event entry:</p> <p>Alarms:</p> <ul style="list-style-type: none"> ■ 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. <p>Events:</p> <ul style="list-style-type: none"> ■ 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	<p>Type of notification made when an event is triggered. It can be one of the following:</p> <ul style="list-style-type: none"> ■ 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 <i>yyyy-mm-dd hh:mm:ss timezone</i> .	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 116: 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: <ul style="list-style-type: none"> ■ Alarm is sent when one of the following situations exists: <ul style="list-style-type: none"> ■ 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 <i>not</i> sent when one of the following situations exists: <ul style="list-style-type: none"> ■ 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 Release 7.4. Command introduced in JUNOS 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 Topics	■ clear snmp statistics
List of Sample Output	show snmp statistics on page 592
Output Fields	Table 117 on page 589 describes the output fields for the show snmp statistics command. Output fields are listed in the approximate order in which they appear.

Table 117: show snmp statistics Output Fields

Field Name	Field Description
Input	<p>Information about received packets:</p> <ul style="list-style-type: none"> ■ Packets(snmplnPkts)—Total number of messages delivered to the SNMP entity from the transport service. ■ Bad versions—(snmplnBadVersions) Total number of messages delivered to the SNMP entity that were for an unsupported SNMP version. ■ Bad community names—(snmplnBadCommunityNames) Total number of messages delivered to the SNMP entity that used an SNMP community name not known to the entity. ■ Bad community uses—(snmplnBadCommunityUses) 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—(snmplnASNParseErrs) Total number of ASN.1 or BER errors encountered by the SNMP entity when decoding received SNMP messages. ■ Too bigs—(snmplnTooBigs) Total number of SNMP PDUs delivered to the SNMP entity with an error status field of tooBig. ■ No such names—(snmplnNoSuchNames).Total number of SNMP PDUs delivered to the SNMP entity with an error status field of noSuchName. ■ Bad values—(snmplnBadValues) Total number of SNMP PDUs delivered to the SNMP entity with an error status field of badValue. ■ Read onlys—(snmplnReadOnlys) 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 117: show snmp statistics Output Fields (continued)

Field Name	Field Description
Input (continued)	<ul style="list-style-type: none"> ■ General errors—(snmplnGenErrs) Total number of SNMP PDUs delivered to the SNMP entity with an error status field of genErr. ■ Total requests varbinds—(snmplnTotalReqVars) 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—(snmplnSetVars) Total number of MIB objects modified successfully by the SNMP entity as a result of receiving valid SNMP SetRequest PDUs. ■ Get requests—(snmplnGetRequests) Total number of SNMP GetRequest PDUs that have been accepted and processed by the SNMP entity. ■ Get nexts—(snmplnGetNexts) Total number of SNMP GetNext PDUs that have been accepted and processed by the SNMP entity. ■ Set requests—(snmplnSetRequests) Total number of SNMP SetRequest PDUs that have been accepted and processed by the SNMP entity. ■ Get responses—(snmplnGetResponses) Total number of SNMP GetResponse PDUs that have been accepted and processed by the SNMP entity. ■ Traps—(snmplnTraps) 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 117: show snmp statistics Output Fields (continued)

Field Name	Field Description
V3 Input	<p>Information about SNMP version 3 packets:</p> <ul style="list-style-type: none"> ■ 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 117: show snmp statistics Output Fields (continued)

Field Name	Field Description
Output	<p>Information about transmitted packets:</p> <ul style="list-style-type: none"> ■ Packets—(snmpOutPkts) Total number of messages passed from the SNMP entity to the transport service. ■ Too bigs—(snmpOutTooBig) 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 Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Display the Simple Network Management Protocol version 3 (SNMPv3) operating configuration.
Options	<p>none—Display all of the SNMPv3 operating configuration.</p> <p>access—(Optional) Display SNMPv3 access information.</p> <p>brief detail—(Optional) Display brief or detailed information about SNMPv3 access information.</p> <p>community—(Optional) Display SNMPv3 community information.</p> <p>general—(Optional) Display SNMPv3 general information.</p> <p>groups—(Optional) Display SNMPv3 security-to-group information.</p> <p>notify <filter>—(Optional) Display SNMPv3 notify and, optionally, notify filter information.</p> <p>target <address parameters>—(Optional) Display SNMPv3 target and, optionally, either target address or target parameter information.</p> <p>users—(Optional) Display SNMPv3 user information.</p>
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 594
Output Fields	Table 118 on page 594 describes the output fields for the show snmp v3 command. Output fields are listed in the approximate order in which they appear.

Table 118: show snmp v3 Output Fields

Field Name	Field Description
Access control	<p>Information about access control:</p> <ul style="list-style-type: none"> ■ 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	<p>Information about local engine configuration:</p> <ul style="list-style-type: none"> ■ 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	<p>Information about engine ID:</p> <ul style="list-style-type: none"> ■ 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 model	Security name	Storage type	Status
g1	usm	user1	nonvolatile	active
g2	usm	user2	nonvolatile	active
g3	usm	user3	nonvolatile	active

Access control:

Group	Context prefix	Security model/level	Read view	Write view	Notify view
g1		usm/privacy	v1	v1	
g2		usm/authent	v1	v1	
g3		usm/none	v1	v1	

Chapter 13

System Software Operational Mode Commands

Table 119 on page 597 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 119: 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 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
(J Series routing routers only) Clear DHCP server statistics.	clear system services dhcp statistics
Enter configuration mode.	configure
Execute an operation (op) script.	op

Table 119: System Software Operational Mode Commands *(continued)*

Task	Command
Send messages to users currently logged in to the router.	<code>request message</code>
On a router with two Routing Engines, specify a tty connection for login.	<code>request routing-engine login</code>
Collect information for customer support.	<code>request support information</code>
Delete an existing rescue configuration.	<code>request system configuration rescue delete</code>
Save the most recently committed configuration as the rescue configuration.	<code>request system configuration rescue save</code>
(J Series routers only) Upgrade or downgrade firmware.	<code>request system firmware</code>
Stop the routing software.	<code>request system halt</code>
Add a license key.	<code>request system license add</code>
Delete a license key.	<code>request system license delete</code>
(J Series routers only) Save installed license keys to a file or URL.	<code>request system license save</code>
Log out a user from the configuration database.	<code>request system logout</code>
Abort a previously scheduled partition request.	<code>request system partition abort</code>
Schedule the hard disk for partitioning.	<code>request system partition hard-disk</code>
Power off the routing software.	<code>request system power-off</code>
Reboot the routing software.	<code>request system reboot</code>
Convert an Extensible Stylesheet Language Transformations (XSLT) script to Stylesheet Language, Alternative syntax (SLAX), or convert a SLAX script to XSLT.	<code>request system scripts convert</code>
Back up the file systems on the router.	<code>request system snapshot</code>
(M320 router, T320 router, and T640 router only) Abort a unified in-service software upgrade (ISSU).	<code>request system software abort</code>
Install software bundles or packages onto the router.	<code>request system software add</code>
Remove software bundles or packages from the router.	<code>request system software delete</code>

Table 119: System Software Operational Mode Commands *(continued)*

Task	Command
(J Series routers only) Delete the backup JUNOS Software file (if it exists) to free up compact flash drive space.	<code>request system software delete-backup</code>
(M320 router, T320 router, and T640 router only) Perform a unified ISSU.	<code>request system software in-service-upgrade</code>
Roll back to a previously installed version.	<code>request system software rollback</code>
Check candidate software compatibility against the current configuration.	<code>request system software validate</code>
Free storage space on the router by rotating log files and deleting unnecessary files.	<code>request system storage cleanup</code>
Restart a JUNOS Software process.	<code>restart</code>
Display the contents of the ARP table.	<code>show arp</code>
Display the current running system configuration.	<code>show configuration</code>
Display the address bindings in the client table on the extended DHCP local server.	<code>show dhcp server binding</code>
Display extended DHCP local server statistics.	<code>show dhcp server statistics</code>
Display Domain Name System (DNS) hostname information.	<code>show host</code>
Display AAA statistics.	<code>show network-access aaa statistics</code>
Display information about AAA subscribers.	<code>show network-access aaa subscribers</code>
Display information about AAA subscriber sessions.	<code>show network-access aaa subscribers session-id</code>
Display state information for address-assignment pools.	<code>show network-access address-assignment pool</code>
Display Network Time Protocol (NTP) peers.	<code>show ntp associations</code>
Display variables returned by NTP peers.	<code>show ntp status</code>
Display Information about static subscriber sessions.	<code>show static-subscribers sessions</code>
Display information about active subscribers	<code>show subscribers</code>
Show system alarms.	<code>show system alarms</code>
Display state and checksum values for files in a file system.	<code>show system audit</code>

Table 119: System Software Operational Mode Commands *(continued)*

Task	Command
(J Series routers only) Display autoinstallation status information.	<code>show system autoinstallation status</code>
Display boot messages.	<code>show system boot-messages</code>
Display system memory and buffer usage information.	<code>show system buffers</code>
Display information about a pending commit operation.	<code>show system commit</code>
Display directory and number of files queued for archival transfer.	<code>show system configuration archival</code>
Display information about the rescue configuration.	<code>show system configuration rescue</code>
Display information about active IP sockets on the Routing Engine.	<code>show system connections</code>
Display directory usage information.	<code>show system directory-usage</code>
(J Series routers only) Display system firmware information.	<code>show system firmware</code>
Display a list of installed licenses.	<code>show system license</code>
Display dynamic hostname to IP address mappings.	<code>show system name-resolution</code>
Display software processes running on the router.	<code>show system processes</code>
Display statistics about queues on interfaces.	<code>show system queues</code>
Display any pending system reboots or halts.	<code>show system reboot</code>
View or compare previous configurations.	<code>show system rollback</code>
(J Series routers only) Display client binding information.	<code>show system services dhcp binding</code>
(J Series routers only) Display DHCP client-detected conflicts for IP addresses.	<code>show system services dhcp conflict</code>
(J Series routers only) Display global configuration settings for a DHCP server.	<code>show system services dhcp global</code>
(J Series routers only) Display IP address pools defined for a DHCP server.	<code>show system services dhcp pool</code>
(J Series routers only) Display statistics associated with a DHCP server.	<code>show system services dhcp statistics</code>

Table 119: System Software Operational Mode Commands *(continued)*

Task	Command
Display information about a Session and Resource Control (SRC) client.	<code>show system services service-deployment</code>
Display information about the backup software that located in the <code>/altroot</code> and <code>/altconfig</code> file systems.	<code>show system snapshot</code>
Display JUNOS Software extensions.	<code>show system software</code>
Display system-wide protocol-related statistics.	<code>show system statistics</code>
Display system-wide Address Resolution Protocol (ARP) statistics.	<code>show system statistics arp</code>
Display system-wide Connectionless Network Service (CLNS) statistics.	<code>show system statistics clnl</code>
Display system-wide End System-to-Intermediate System (ES-IS) statistics.	<code>show system statistics esis</code>
Display system-wide Internet Control Message Protocol (ICMP) statistics.	<code>show system statistics icmp</code>
Display system-wide ICMP version 6 statistics.	<code>show system statistics icmp6</code>
Display system-wide Internet Group Management Protocol (IGMP) statistics.	<code>show system statistics igmp</code>
Display system-wide IPv4 statistics.	<code>show system statistics ip</code>
Display system-wide IPv6 statistics.	<code>show system statistics ip6</code>
Display system-wide Multiprotocol Label Switching (MPLS) statistics.	<code>show system statistics mpls</code>
Display system-wide Reliable Datagram Protocol (RDP) statistics.	<code>show system statistics rdp</code>
Display system-wide Transmission Control Protocol (TCP) statistics.	<code>show system statistics tcp</code>
Display system-wide Trivial Network Protocol (TNP) statistics.	<code>show system statistics tnp</code>
Display system-wide Trivial User Datagram Protocol (TUDP) statistics.	<code>show system statistics tudp</code>
Display system-wide User Datagram Protocol (UDP) statistics.	<code>show system statistics udp</code>
Display system-wide Virtual Private LAN Services (VPLS) statistics.	<code>show system statistics vpls</code>

Table 119: System Software Operational Mode Commands *(continued)*

Task	Command
Display statistics about the amount of free disk space in the router's file systems.	<code>show system storage</code>
View configurations of the primary and secondary Routing Engines.	<code>show system switchover</code>
Display the current time and information about how long the router, router software, and routing protocols have been running.	<code>show system uptime</code>
Display users currently logged in to the router.	<code>show system users</code>
Display JUNOS kernel memory usage.	<code>show system virtual-memory</code>
Display routing protocol tasks on the Routing Engine.	<code>show task</code>
Display I/O statistics for routing protocol tasks on the Routing Engine.	<code>show task io</code>
Display memory utilization for routing protocol tasks on the Routing Engine.	<code>show task memory</code>
Display whether or not graceful Routing Engine switchover (GRES) and nonstop active routing (NSR) are configured on the router.	<code>show task replication</code>
Display the hostname and version information about the software running on the router.	<code>show version</code>
Display the hostname and version information about the software running on a router with two Routing Engines.	<code>show version invoke-on</code>
Create a UNIX-level shell.	<code>start shell</code>
Verify the syntax of a configuration file.	<code>test configuration</code>



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 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 <i>hostname</i> > <logical-system <i>logical-system-name</i> > <vpn <i>vpn</i> >
Release Information	Command introduced before JUNOS 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 <i>logical-system-name</i> command, and then issue the clear arp command.
Options	<p>none—Clear all entries from the ARP table.</p> <p>hostname <i>hostname</i>—(Optional) Clear the specified host entry only.</p> <p>logical-system <i>logical-system-name</i>—(Optional) Clear entries for the specified logical system; only available in main router context.</p> <p>vpn <i>vpn</i>—(Optional) Clear entries from the ARP table for the specified virtual private network (VPN).</p>
Required Privilege Level	clear
Related Topics	<ul style="list-style-type: none"> ■ set cli logical-system ■ show arp
List of Sample Output	<p>clear arp on page 603</p> <p>clear arp logical-system ls1 on page 603</p>
Output Fields	When you enter this command, you are provided feedback on the status of your request.
clear arp	<pre>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</pre>
clear arp logical-system ls1	<pre>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</pre>

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 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 604
 clear dhcp server binding all on page 605
 clear dhcp server binding interface on page 605

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 user@host> clear dhcp server binding all
binding all
```

```
clear dhcp server user@host> clear dhcp server binding interface fe-0/0/2
binding interface
```

clear dhcp server statistics

Syntax	clear dhcp server statistics <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
Release Information	Command introduced in JUNOS Release 9.0.
Description	Clear all extended Dynamic Host Configuration Protocol (DHCP) local server statistics.
Options	<p>logical-system <i>logical-system-name</i>—(Optional) Clear the statistics for DHCP clients on the specified logical system. If you do not specify a logical system, statistics are cleared for the default logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Clear the statistics for DHCP clients on the specified routing instance. If you do not specify a routing instance, statistics are cleared for the default routing instance.</p>
Required Privilege Level	view
List of Sample Output	clear dhcp server statistics on page 606
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
  DHCPPOFFER     0
  DHCPACK        0
  DHCPNAK        0
```

clear network-access aaa statistics

Syntax	clear network-access aaa statistics <accounting> <address-assignment (client pool <i>pool-name</i>)> <authentication> <dynamic-requests> <re-authentication>
Release Information	Command introduced in JUNOS Release 10.0.
Description	Clear AAA statistics.
Options	<p>accounting—Clear AAA accounting statistics.</p> <p>address-assignment client—Clear AAA address-assignment statistics for the client.</p> <p>address-assignment pool <i>pool-name</i>—Clear AAA address-assignment pool statistics.</p> <p>authentication—Clear AAA authentication statistics.</p> <p>dynamic-requests—Clear AAA dynamic-request statistics.</p> <p>re-authentication—Clear AAA reauthentication statistics.</p>
Required Privilege Level	maintenance
List of Sample Output	<p>clear network-access aaa statistics accounting on page 608</p> <p>clear network-access aaa statistics address-assignment pool on page 608</p>
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 <i>username</i> > <username <i>username</i> >
Release Information	Command introduced in JUNOS Release 9.1.
Description	Clear AAA subscriber statistics and log out subscribers.
Options	<p>statistics username <i>username</i>—Clear AAA subscriber statistics and log out the subscriber.</p> <p>username <i>username</i>—Log out the AAA subscriber.</p>
Required Privilege Level	maintenance
List of Sample Output	clear network-access aaa subscriber statistics username on page 609 clear network-access aaa subscriber username on page 609
Output Fields	When you enter this command, you are provided feedback on the status of your request.
clear network-access aaa subscriber statistics username	<pre>user@host> clear network-access aaa subscriber statistics username dsmith@isp5555.com</pre>
clear network-access aaa subscriber username	<pre>user@host> clear network-access aaa subscriber username dsmith@isp5555.com</pre>

clear system commit

Syntax	clear system commit
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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 Topics	■ show system commit
List of Sample Output	clear system commit on page 610 clear system commit (None Pending) on page 610 clear system commit (User Does Not Have Required Privilege Level) on page 610
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 <i>member-id</i> >
Syntax (TX Matrix Router)	clear system reboot <both-routing-engines> <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	clear system reboot <both-routing-engines> <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
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	<p>none—Clear all pending system software reboots or halts.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Clear all halt or reboot requests for all the Routing Engines in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, clear all halt or reboot requests for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, clear all halt or reboot requests for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Clear all halt or reboot requests on all members of the Virtual Chassis configuration.</p> <p>both-routing-engines—(Systems with multiple Routing Engines) (Optional) Clear all halt or reboot requests on both Routing Engines. On a TX Matrix router, clear both Routing Engines on all chassis connected to the TX Matrix router. Likewise, on a TX Matrix Plus router, clear both Routing Engines on all chassis connected to the TX Matrix Plus router.</p>

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, clear all halt or reboot requests for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, clear all halt or reboot requests for a specific T1600 router that is connected to the TX Matrix Plus router. Replace *number* with a value from 0 through 3.

local—(EX4200 switches only) (Optional) Clear all halt or reboot requests on the local Virtual Chassis member.

member *member-id*—(EX4200 switches only) (Optional) Clear all halt or reboot requests on the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

scc—(TX Matrix routers only) (Optional) Clear all halt or reboot requests for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Clear all halt or reboot requests for the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

Required Privilege Level maintenance

Related Topics ■ request system reboot

List of Sample Output clear system reboot on page 613
clear system reboot (TX Matrix Router) on page 613

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 Release 7.4.
Description	(J Series routers only) Remove obsolete IP address bindings on a Dynamic Host Configuration Protocol (DHCP) server and return them to the IP address pool.
Options	<i>address</i> —(Optional) Remove a specific IP address binding and return it to the address pool.
Required Privilege Level	view and system
Related Topics	■ show system services dhcp binding
List of Sample Output	clear system services dhcp binding on page 614
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 Release 7.4.
Description	(J Series routers only) Remove IP addresses from the Dynamic Host Configuration Protocol (DHCP) server conflict list and return them to the IP address pool.
Options	<i>address</i> —(Optional) Remove a specific IP address from the conflict list and return it to the address pool.
Required Privilege Level	view and system
Related Topics	■ show system services dhcp conflict
List of Sample Output	clear system services dhcp conflict on page 615
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 Release 7.4.
Description	(J Series routers only) Clear Dynamic Host Configuration Protocol (DHCP) server statistics.
Options	This command has no options.
Required Privilege Level	view and system
Related Topics	■ show system services dhcp statistics
List of Sample Output	clear system services dhcp statistics on page 616
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 <exclusive> <private>
Release Information	Command introduced before JUNOS Release 7.4.
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	<p>exclusive—(Optional) Lock the candidate configuration for as long as you remain in configuration mode, allowing you to make changes without interference from other users. Other users can enter and exit configuration mode, but they cannot change the configuration.</p> <p>private—(Optional) Allow multiple users to edit different parts of the configuration at the same time and to commit only their own changes, or to roll back without interfering with one another's changes. You cannot commit changes in configure private mode when another user is in configure exclusive mode.</p>
Additional Information	For more information about the different methods of entering configuration mode and the restrictions that apply, see the <i>JUNOS System Basics Configuration Guide</i> .
Required Privilege Level	configure
Related Topics	■ show configuration
List of Sample Output	configure on page 617
Output Fields	When you enter this command, you are placed in configuration mode and the system prompt changes from <i>hostname></i> to <i>hostname#</i> .
configure	<pre> user@host> configure Entering configuration mode [edit] user@host# </pre>

op

Syntax	<code>op filename</code> <code><argument-name argument-value></code>
Release Information	Command introduced in JUNOS Release 7.6. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Execute an op script stored in the <code>/var/db/scripts/op</code> directory on the router or switch.
Options	<i>argument-name argument-value</i> —(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.
Additional Information	For more information about JUNOS op scripts, see the <i>JUNOS Configuration and Diagnostic Automation Guide</i> .
Required Privilege Level	maintenance
List of Sample Output	op on page 618
Output Fields	When you enter this command, you are provided feedback on the status of your request.
op	<code>user@host> op script1 interface ge-0/2/0.0 protocol inet</code>

request message

Syntax	request message all message "text" request message message "text" (terminal <i>terminal-name</i> user <i>user-name</i>)
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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 <i>terminal-name</i> —Name of the terminal on which to display the message. user <i>user-name</i> —Name of the user to whom to direct the message.
Required Privilege Level	maintenance
List of Sample Output	request message message on page 619
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request message message	<pre> user@host> request message message "Maintenance window in 10 minutes" user maria Message from user@host on tty0 at 20:27 ... Maintenance window in 10 minutes EOF </pre>

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 <i>n</i> rsd) master (psd <i>n</i> rsd) other-routing-engine re0 (psd <i>n</i> rsd) re1 (psd <i>n</i> rsd))
Syntax (TX Matrix Router)	request routing-engine login (backup master other-routing-engine re0 re1) <lcc <i>number</i> > <scc <i>number</i> >
Syntax (TX Matrix Plus Router)	request routing-engine login (backup master other-routing-engine re0 re1) <lcc <i>number</i> > <sfc <i>number</i> >
Release Information	<p>Command introduced before JUNOS Release 7.4.</p> <p>psd and rsd options added in JUNOS Release 9.1. These options are available from the Root System Domain (RSD). An RSD is supported on a T320 router or T640 or T1600 router that is interconnected with the JCS1200 platform.</p> <p>sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.</p>
Description	On a router with two Routing Engines, specify a tty connection for login.
Options	<p>backup—Log in to the backup Routing Engine.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, log in to a specific T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, log in to a specific T1600 router (or line-card chassis) that is connected to the TX Matrix router. Replace <i>number</i> with a value from 0 through 3.</p> <p>master—Log in to the master Routing Engine.</p> <p>other-routing-engine—Log in to the other Routing Engine.</p> <p>psd <i>n</i>—(RSD only) Log in to the specified Protected System Domain (PSD). Replace <i>n</i> with a value from 1 to 31. A PSD is accessible from a T320 router or a T640 or T1600 router that is interconnected with the JCS1200 platform. When you log in to a PSD, you are required to provide user authentication.</p> <p>re0—Log in to the Routing Engine in slot 0.</p> <p>re1—Log in to the Routing Engine in slot 1.</p> <p>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.</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) Log in to the specified Routing Engine on the TX Matrix Plus router (or switch-fabric chassis):</p>

- backup—Log in to the backup Routing Engine.
- master—Log in to the master Routing Engine.
- re0—Log in to the Routing Engine in slot 0.
- re1—Log in to the Routing Engine in slot 1.

Additional Information For more information about PSDs, RSDs, and the JCS1200 platform, see the *JUNOS Protected System Domain Configuration Guide*.

Required Privilege Level maintenance

List of Sample Output request routing-engine login other-routing-engine on page 621
request routing-engine login psd on page 621

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

request routing-engine login psd
{master}
user@host> request routing-engine login psd 1 re0
€login: regress
Password:

--- JUNOS 9.1-20080321.0 built 2008-03-21 05:43:06 UTC
% cli
user@psd1>

request support information

Syntax	request support information
Syntax (TX Matrix Router)	request support information <all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	request support information <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	<p>Command introduced before JUNOS Release 7.4.</p> <p>show chassis alarms added to output in JUNOS Release 8.0.</p> <p>show route summary added to output in JUNOS Release 8.5.</p> <p>show krt queue added to output in JUNOS Release 8.5.</p> <p>show krt state added to output in JUNOS Release 8.5.</p> <p>sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.</p>
Description	Display information about the system. Issue this command before contacting customer support, and then include the command output in your support request.
Options	<p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system information for all chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system information for all chassis for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system storage information for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display system information for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display system information for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
Additional Information	<p>The output of this command can be lengthy. We recommend that you redirect the output to a file. This command is a combination of the following commands:</p> <ul style="list-style-type: none"> ■ 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 623
 request support information scc (TX Matrix Router) on page 623
 request support information sfc (TX Matrix Plus Router) on page 624

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
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 Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Delete an existing rescue configuration.
Options	This command has no options.
Required Privilege Level	maintenance
Related Topics	<ul style="list-style-type: none">■ request system configuration rescue save■ request system software rollback■ show system commit
List of Sample Output	request system configuration rescue delete on page 627
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 Release 7.4. Command introduced in JUNOS 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 Topics	<ul style="list-style-type: none">■ request system software delete■ request system software rollback■ show system commit
List of Sample Output	request system configuration rescue save on page 628
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 (<i>upgrade</i> <i>downgrade</i>) (<i>fpc</i> <slot slot-number> <i>pic</i> <assembly-id assembly-id> < fpc-slot fpc-slot-number> <partnumber partnumber> <pic-slot pic-slot-number> <tag tag>)
Release Information	Command introduced in JUNOS Release 7.4.
Description	(J Series routers only) Upgrade or downgrade firmware on a Physical Interface Modules (PIM).
Options	<p><i>fpc</i>—Flexible PIM concentrator (FPC).</p> <p><i>slot slot-number</i>—(Optional) Location of the FPC to upgrade or downgrade.</p> <p><i>pic</i>—Physical interface card (PIC).</p> <p><i>assembly-id assembly-id</i>—(Optional) Component assembly identifier.</p> <p><i>fpc-slot fpc-slot-number</i>—(Optional) Physical location of the PIC to upgrade or downgrade.</p> <p><i>partnumber partnumber</i>—(Optional) Part number of the component to upgrade or downgrade.</p> <p><i>pic-slot pic-slot-number</i>—(Optional) Location of the PIC to upgrade or downgrade.</p> <p><i>tag tag</i>—(Optional) Firmware release number.</p>
Required Privilege Level	maintenance
List of Sample Output	request system firmware upgrade on page 629
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 <i>time</i> > <both-routing-engines> <other-routing-engine> <in <i>minutes</i> > <media (compact-flash disk removable-compact-flash usb)> <message " <i>text</i> ">
Syntax (EX Series Switch)	request system halt <all-members> <at <i>time</i> > <both-routing-engines> <in <i>minutes</i> > <local> <media (external internal)> <member <i>member-id</i> > <message " <i>text</i> "> <other-routing-engine> <slice <i>slice</i> >
Syntax (TX Matrix Router)	request system halt <all-lcc lcc <i>number</i> scc> <at <i>time</i> > <both-routing-engines> <other-routing-engine> <in <i>minutes</i> > <media (compact-flash disk)> <message " <i>text</i> ">
Syntax (TX Matrix Plus Router)	request system halt <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> > <at <i>time</i> > <both-routing-engines> <other-routing-engine> <in <i>minutes</i> > <media (compact-flash disk)> <message " <i>text</i> ">
Release Information	Command introduced before JUNOS Release 7.4. other-routing-engine option introduced in JUNOS Release 8.0. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
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 633
 request system halt (In 2 Hours) on page 633
 request system halt (Immediately) on page 633
 request system halt (at 1:20 AM) on page 633

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 the system to 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 (<i>filename</i> terminal)
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Add a license key.
Options	<i>filename</i> —License key from a file or URL. Specify the filename or the URL where the key is located. terminal—License key from the terminal.
Required Privilege Level	maintenance
List of Sample Output	request system license add on page 634
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	<code>request system license delete <i>license-id</i></code>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Delete a license key. You can delete only one license at a time.
Options	<i>license-id</i> —License ID that uniquely identifies a license key.
Required Privilege Level	maintenance
List of Sample Output	request system license delete on page 635
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request system license delete	<pre>user@host> request system license delete G03000002223</pre>

request system license save

Syntax	<code>request system license save (<i>filename</i> terminal)</code>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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	<i>filename</i> —License key from a file or URL. Specify the filename or the URL where the key is located. terminal—License key from the terminal.
Required Privilege Level	maintenance
List of Sample Output	request system license save on page 636
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request system license save	<code>user@host> request system license save ftp://user@host/license.conf</code>

request system logout

Syntax	request system logout (pid <i>pid</i> terminal <i>terminal</i> user <i>username</i>) <all>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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 <code>configure exclusive</code> lock, this command clears the exclusive lock.
Options	<p>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.)</p> <p>pid <i>pid</i>—Log out the user session using the specified management process identifier (PID). The PID type must be management process.</p> <p>terminal <i>terminal</i>—Log out the user for the specified terminal session.</p> <p>user <i>username</i>—Log out the specified user.</p>
Additional Information	For information about using the <code>configure exclusive</code> command, see the <i>JUNOS System Basics Configuration Guide</i> .
Required Privilege Level	configure
List of Sample Output	request system logout on page 637
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request system logout	<pre>user@host> request system logout user tammy all Connection closed by foreign host.</pre>

request system partition abort

Syntax	request system partition abort
Syntax (TX Matrix Router)	request system partition abort <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	request system partition abort <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. sfc option introduced for the TX Matrix Plus router in JUNOS 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	<p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Abort a previously scheduled partition operation for all chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, abort a previously scheduled partition operation on all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, abort a previously scheduled partition operation on all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix Plus router, abort a previously scheduled partition operation on a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, abort a previously scheduled partition operation on a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Abort a previously scheduled partition operation on the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Abort a previously scheduled partition operation on the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
Required Privilege Level	maintenance
Related Topics	■ request system partition hard-disk
List of Sample Output	request system partition abort on page 638
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request system partition abort	<pre>user@host> request partition abort</pre> <p>The hard disk is no longer scheduled to be partitioned.</p>

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 <i>number</i> scc>
Syntax (TX Matrix Plus Router)	request system partition hard-disk <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. sfc option introduced for the TX Matrix Plus router in JUNOS 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	<p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Schedule a partition of the hard disk for all routers in the chassis at its next reboot.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, schedule a partition of the hard disk on all T640 routers (or line-card chassis) connected to the TX Matrix router at their next reboot. On a TX Matrix Plus router, schedule a partition of the hard disk on all T1600 routers (or line-card connected to the TX Matrix Plus router.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix Plus router, schedule a partition of the hard disk on a specific T640 router connected to the TX Matrix router. On a TX Matrix Plus router, schedule a partition of the hard disk on a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Schedule a partition of the hard disk on the T640 router connected to the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Schedule a partition of the hard disk on the T1600 router connected to the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
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 Topics	■ request system partition abort
List of Sample Output	request system partition hard-disk on page 640
Output Fields	When you enter this command, you are provided feedback on the status of your request.

request system partition user@host> **request partition hard-disk**
hard-disk

request system power-off

Syntax	request system power-off <both-routing-engines> <other-routing-engine> <at <i>time</i> > <in <i>minutes</i> > <media (compact-flash disk removable-compact-flash usb)> <message " <i>text</i> ">
Syntax (EX Series Switch)	request system power-off <all-members> <at <i>time</i> > <both-routing-engines> <in <i>minutes</i> > <local> <media (external internal)> <member <i>member-id</i> > <message " <i>text</i> "> <other-routing-engine> <slice <i>slice</i> >
Syntax (TX Matrix Router)	request system power-off <all-chassis all-lcc lcc <i>number</i> scc> <both-routing-engines> <other-routing-engine> <at <i>time</i> > <in <i>minutes</i> > <media (compact-flash disk)> <message " <i>text</i> ">
Syntax (TX Matrix Plus Router)	request system power-off <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> > <both-routing-engines> <other-routing-engine> <at <i>time</i> > <in <i>minutes</i> > <media (compact-flash disk)> <message " <i>text</i> ">
Release Information	Command introduced in JUNOS Release 8.0. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Power off the software.
Options	<p>none—Power off the router or switch software immediately.</p> <p>all-chassis—(Optional) (TX Matrix and TX Matrix Plus router only) Power off all Routing Engines in the chassis.</p> <p>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</p>

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 643

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 <i>time</i> > <in <i>minutes</i> > <media (compact-flash disk removable-compact-flash usb)> <message "text">
Syntax (EX Series Switch)	request system reboot <all-members> <at <i>time</i> > <in <i>minutes</i> > <local> <media (external internal)> <member <i>member-id</i> > <message "text"> <other-routing-engine> <slice <i>slice</i> >
Syntax (TX Matrix Router)	request system reboot <all-chassis all-lcc lcc <i>number</i> scc> <other-routing-engine> <at <i>time</i> > <in <i>minutes</i> > <media (compact-flash disk)> <message "text">
Syntax (TX Matrix Plus Router)	request system reboot <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> > <other-routing-engine> <partition (1 2 alternate)> <at <i>time</i> > <in <i>minutes</i> > <media (compact-flash disk)> <message "text">
Release Information	Command introduced before JUNOS Release 7.4. other-routing-engine option added in JUNOS Release 8.0. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Reboot the software.
Options	<p>none—Reboot the software immediately.</p> <p>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.</p>

all-icc—(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.

icc *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 Topics ■ clear system reboot

List of Sample Output request system reboot on page 647
 request system reboot (at 2300) on page 647
 request system reboot (In 2 Hours) on page 647
 request system reboot (Immediately) on page 647
 request system reboot (At 1:20 AM) on page 647

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 <i>source/filename</i> destination <i>destination/<filename></i>
Release Information	Command introduced in JUNOS Release 8.2. Command introduced in JUNOS 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	<p>destination <i>destination/<filename></i>—Specify a destination for the converted file.</p> <p>Optionally, you can specify a filename for the converted file. If you do not specify a filename, the software assigns one automatically. The default destination filename is the same as the source filename, except the file extension is altered. For example, the software converts a source file called test.xml to test.slax. The software converts a source file called test1.slax to test1.xml.</p> <p>slax-to-xslt—Convert a SLAX script to XSLT.</p> <p>source <i>source/filename</i>—Specify a source file that you want to convert.</p> <p>xslt-to-slax—Convert an XSLT script to SLAX.</p>
Required Privilege Level	maintenance
List of Sample Output	request system scripts convert slax-to-xslt on page 648 request system scripts convert xslt-to-slax on page 648
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request system scripts convert slax-to-xslt	<pre>user@host> request system scripts convert slax-to-xslt source /var/db/scripts/op/script1.slax destination /var/db/scripts/op conversion complete</pre>
request system scripts convert xslt-to-slax	<pre>user@host> request system scripts convert xslt-to-slax source /var/db/scripts/commit/script1.xml destination /var/db/scripts/commit conversion complete</pre>

request system snapshot

Syntax	request system snapshot <partition>
Syntax (TX Matrix Router)	request system snapshot <all-chassis all-lcc lcc <i>number</i> scc> <partition>
Syntax (TX Matrix Plus Router)	request system snapshot <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> > <partition>
Syntax (J Series Routers)	request system snapshot <as-primary> <config-size <i>size</i> > <data-size <i>size</i> > <factory> <media <i>type</i> > <partition> <root-size <i>size</i> > <swap-size <i>size</i> >
Release Information	Command introduced before JUNOS 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*—(J Series routers only) (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**—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 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 System Basics Configuration Guide*.

Required Privilege Level maintenance

Related Topics ■ `show system snapshot`

List of Sample Output `request system snapshot` on page 651
`request system snapshot (When Partition Flag Is On)` on page 652
`request system snapshot (When Mirroring Is Enabled)` on page 652
`request system snapshot all-lcc (Routing Matrix)` on page 653

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      user@host> request system snapshot partition  
snapshot (When      Performing preliminary partition checks ...  
Partition Flag Is On) Partitioning ad0 ...  
                        umount: /altroot: not currently mounted  
                        Copying / to /altroot.. (this may take a few minutes)  
  
                        The following filesystems were archived: / /config  
  
request system      user@host> request system snapshot  
snapshot (When      Snapshot is not possible since mirror-flash-on-disk is configured.  
Mirroring Is Enabled)
```

```

request system      user@host> request system snapshot all-lcc
snapshot all-lcc    lcc0-re0:
(Routing Matrix)  -----
                    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 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 <code>request system in-service-upgrade</code> command that launched the unified ISSU.
Options	This command has no options.
Required Privilege Level	view
Related Topics	<ul style="list-style-type: none"> ■ request system software in-service-upgrade ■ show chassis in-service-upgrade
List of Sample Output	<p>request system software abort (New Router Session) on page 654</p> <p>request system software in-service-upgrade (Unified ISSU Session) on page 654</p>
Output Fields	When you enter the <code>request system software abort</code> 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 <code>request system software in-service-upgrade</code> command.
request system software abort (New Router Session)	<pre>user@host> request system software abort</pre>
request system software in-service-upgrade (Unified ISSU Session)	<pre>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...</pre>

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	<pre>request system software add <i>package-name</i> <best-effort-load> <delay-restart> <force> <no-copy> <no-validate> <reboot> <unlink> <validate></pre>
Syntax (TX Matrix Router)	<pre>request system software add <i>package-name</i> <best-effort-load> <delay-restart> <force> <lcc <i>number</i> scc> <no-copy> <no-validate> <re0 re1> <reboot> <unlink> <validate></pre>
Syntax (TX Matrix Plus Router)	<pre>request system software add <i>package-name</i> <best-effort-load> <delay-restart> <force> <lcc <i>number</i> sfc <i>number</i>> <no-copy> <no-validate> <re0 re1> <reboot> <unlink> <validate></pre>
Release Information	<p>Command introduced before JUNOS Release 7.4.</p> <p>best-effort-load and unlink options added in JUNOS Release 7.4.</p> <p>Command introduced in JUNOS Release 9.0 for EX Series switches.</p> <p>sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.</p>
Description	Install a software package or bundle on the router or switch.
Options	<p><i>package-name</i>—Location from which the software package or bundle is to be installed. For example:</p> <ul style="list-style-type: none"> ■ <i>/var/tmp/package-name</i>—For a software package or bundle that is being installed from a local directory on the router or switch. ■ <i>protocol://hostname/pathname/package-name</i>—For a software package or bundle that is to be downloaded and installed from a remote location. Replace <i>protocol</i> with one of the following:

- **ftp**—File Transfer Protocol.
Use `ftp://hostname/pathname/package-name`. To specify authentication credentials, use `ftp://<username>:<password>@hostname/pathname/package-name`. To have the system prompt you for the password, specify **prompt** in place of the password. If a password is required, and you do not specify the password or **prompt**, an error message is displayed.
- **http**—Hypertext Transfer Protocol.
Use `http://hostname/pathname/package-name`. To specify authentication credentials, use `http://<username>:<password>@hostname/pathname/package-name`. If a password is required and you omit it, you are prompted for it.
- **scp**—Secure copy (available only for Canada and U.S. version).
Use `scp://hostname/pathname/package-name`. To specify authentication credentials, use `scp://<username>:<password>@hostname/pathname/package-name`.

**NOTE:**

- The *pathname* in the protocol is the relative path to the user's home directory on the remote system and not the root directory.
 - 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, **jkernl**, last. Add the operating system package, **jkernl**, first and the routing software package, **jroute**, last. If you are upgrading all packages at once, delete and add them in the following order:

```
user@host> request system software add /var/tmp/jbase
user@host> request system software add /var/tmp/jkernl
user@host> request system software add /var/tmp/jpfe
user@host> request system software add /var/tmp/jdocs
user@host> request system software add /var/tmp/jroute
user@host> request system software add /var/tmp/jcrypto
```

By default, when you issue the **request system software add *package-name*** command on a TX Matrix master Routing Engine, all the T640 master Routing Engines that are connected to it are upgraded to the same version of software. If you issue the same

command on the TX Matrix backup Routing Engine, all the T640 backup Routing Engines that are connected to it are upgraded to the same version of software.

Likewise, when you issue the `request system software add package-name` command on a TX Matrix Plus master Routing Engine, all the T1600 master Routing Engines that are connected to it are upgraded to the same version of software. If you issue the same command on the TX Matrix Plus backup Routing Engine, all the T1600 backup Routing Engines that are connected to it are upgraded to the same version of software.

Required Privilege Level maintenance

Related Topics

- `request system software delete`
- `request system software rollback`
- `request system storage cleanup`

List of Sample Output `request system software add validate` on page 659

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 <i>software-package</i> <force>
Syntax (TX Matrix Router)	request system software delete <i>software-package</i> <force> <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	request system software delete <i>software-package</i> <force> <lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
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 Topics

- request system software add
- request system software rollback
- request system software validate

List of Sample Output request system software delete jdocs on page 662

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 Release 7.4.
Description	(J Series router only) Delete the backup JUNOS Software file (if it exists) to free up compact flash drive 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 Software.
Options	This command has no options.
Required Privilege Level	maintenance
List of Sample Output	request system software delete-backup on page 664
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 <i>package-name</i> <no-old-master-upgrade> <reboot>
Release Information	Command introduced in JUNOS Release 9.0.
Description	Perform a unified in-service software upgrade (ISSU). A unified ISSU enables you to upgrade from one JUNOS Software 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	<p><i>package-name</i>—Location from which the software package or bundle is to be installed. For example:</p> <ul style="list-style-type: none"> ■ <i>/var/tmp/package-name</i>— For a software package or bundle that is being installed from a local directory on the router. ■ <i>protocol://hostname/pathname/package-name</i>—For a software package or bundle that is to be downloaded and installed from a remote location. Replace <i>protocol</i> with one of the following: <ul style="list-style-type: none"> ■ <i>ftp</i>—File Transfer Protocol ■ <i>http</i>—Hypertext Transfer Protocol ■ <i>scp</i>—Secure copy (available only for Canada and U.S. version) <p><i>no-old-master-upgrade</i>—(Optional) When the <i>no-old-master-upgrade</i> 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 <i>no-old-master-upgrade</i> option, the system will automatically upgrade the former master Routing Engine.</p> <p><i>reboot</i>—(Optional) When the <i>reboot</i> option is included, the former master (new backup) Routing Engine is automatically rebooted after being upgraded to the new software. When the <i>reboot</i> option is not included, you must manually reboot the former master (new backup) Routing Engine using the request system reboot command.</p>
Additional Information	<p>The following conditions apply to unified ISSUs:</p> <ul style="list-style-type: none"> ■ 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 <i>JUNOS High Availability Configuration Guide</i>.

- 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 High Availability Configuration Guide*.

Required Privilege Level view

- Related Topics**
- request system software abort
 - request system software abort
 - show chassis in-service-upgrade

List of Sample Output request system software-in-service upgrade reboot on page 666

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

```

request system      {master}
software-in-service user@host> request system software in-service-upgrade
upgrade reboot      /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 <i>member-id</i> >
Syntax (TX Matrix Router)	request system software rollback <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	request system software rollback <lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Revert to the software that was loaded at the last successful request system software add command.
Options	<p>none—Revert to the set of software as of the last successful request system software add.</p> <p>all-members—(EX4200 switches only) (Optional) Attempt to roll back to the previous set of packages on all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, attempt to roll back to the previous set of packages on a T640 router (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, attempt to roll back to the previous set of packages on a T1600 router (or line-card chassis) connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Attempt to roll back to the previous set of packages on the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Attempt to roll back to the previous set of packages on the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Attempt to roll back to the previous set of packages on the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Attempt to roll back to the previous set of packages on the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>

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 Topics

- request system software add
- request system software delete
- request system software validate
- request system configuration rescue delete
- request system configuration rescue save

List of Sample Output request system software rollback on page 671

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

```

request system software user@host> request system software rollback
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 <i>package-name</i>
Syntax (EX Series Switch)	request system software validate <member <i>member-id</i> >
Syntax (TX Matrix Router)	request system software validate <i>package-name</i> <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	request system software validate <i>package-name</i> <lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Validate candidate software against the current configuration of the router or switch.
Options	<p>lcc <i>number</i>—(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 <i>number</i> with a value from 0 through 3.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Validate the software bundle or package on the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p><i>package-name</i>—Name of the software bundle or package to test.</p> <p>scc—(TX Matrix routers only) (Optional) Validate the software bundle or package for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Validate the software bundle or package for the TX Matrix Plus router (or switch-fabric chassis).</p>
Additional Information	<p>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.</p> <p>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.</p>

Required Privilege Level	maintenance
Related Topics	<ul style="list-style-type: none">■ request system software add■ request system software delete■ request system software rollback
List of Sample Output	request system software validate (Successful Case) on page 674 request system software validate (Failure Case) on page 674
Output Fields	When you enter this command, you are provided feedback on the status of your request.

```

request system software      user@host> request system software validate
validate (Successful      /var/sw/pkg/jbundle-5.3I20020124_0520_sjg.tgz
Case)                     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      user@host> request system software validate 6.3/
validate (Failure Case)      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 storage cleanup

Syntax	request system storage cleanup <dry-run>
Syntax (EX Series Switch)	request system storage cleanup <all-members> <dry-run> <local> <member <i>member-id</i> >
Release Information	Command introduced in JUNOS Release 7.4. dry-run option introduced in JUNOS Release 7.6. Command introduced in JUNOS 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 <i>member-id</i> —(EX4200 switches only) (Optional) Delete files on the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.
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 675 request system storage cleanup on page 676
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request system storage cleanup dry-run	<pre> 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 </pre>

```

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 user@host> request system storage cleanup
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 | mounstd-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	<p>Command introduced before JUNOS Release 7.4.</p> <p><code>dynamic-flow-capture</code> option added in JUNOS Release 7.4.</p> <p><code>dlsd</code> option added in JUNOS Release 7.5.</p> <p><code>event-processing</code> option added in JUNOS Release 7.5.</p> <p><code>ppp</code> option added in JUNOS Release 7.5.</p> <p><code>l2ald</code> option added in JUNOS Release 8.0.</p> <p><code>link-management</code> option added in Release 8.0.</p> <p><code>pgcp-service</code> option added in JUNOS Release 8.4.</p> <p>Command introduced in JUNOS Release 9.0 for EX Series switches.</p> <p><code>sbc-configuration-process</code> option added in JUNOS Release 9.5.</p> <p><code>services pgcp gateway</code> option added in JUNOS Release 9.6.</p> <p><code>sfc</code> and <code>all-sfc</code> options introduced for the TX Matrix Router in JUNOS Release 9.6.</p>
Description	Restart a JUNOS Software process.



CAUTION: Never restart a software process unless instructed to do so by a customer support engineer. A restart might cause the router to drop calls and interrupt transmission, resulting in possible loss of data.

Options	<p>none—Same as <code>gracefully</code>.</p> <p>adaptive-services—(Optional) Restart the configuration management process that manages the configuration for stateful firewall, Network Address Translation (NAT), intrusion detection services (IDS), and IP Security (IPsec) services on the Adaptive Services PIC.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Restart the software process on all chassis.</p> <p>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.</p> <p>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).</p> <p>audit-process—(Optional) Restart the RADIUS accounting process.</p> <p>autoinstallation—(EX Series switch only) (Optional) Restart the autoinstallation process.</p> <p>chassis-control—(Optional) Restart the chassis management process.</p> <p>class-of-service—(Optional) Restart the class-of-service (CoS) process, which controls the router's or switch's CoS configuration.</p> <p>database-replication—(EX Series switch only) (Optional) Restart the database replication process.</p> <p>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</p>
----------------	---

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.

dls—(J Series router only) (Optional) Restart the data link switching (DLSw) service.

dot1x-protocol—(EX Series switch only) (Optional) Restart the Port-based Network Access Control process.

dynamic-flow-capture—(Optional) Restart the dynamic flow capture (DFC) process, which controls DFC configurations on Monitoring Services III PICs.

ecc-error-logging—(Optional) Restart the error checking and correcting (ECC) process, which logs ECC parity errors in memory on the Routing Engine.

ethernet-link-fault-management—(EX Series switch only) (Optional) Restart the Ethernet OAM link fault management process.

ethernet-switching—(EX Series switch only) (Optional) Restart the Ethernet switching process.

event-processing—(Optional) Restart the event process (eventd).

firewall—(Optional) Restart the firewall management process, which manages firewall configuration.

general-authentication-service—(EX Series switch only) (Optional) Restart the general authentication process.

gracefully—(Optional) Restart the software process.

immediately—(Optional) Immediately restart the software process.

interface-control—(Optional) Restart the interface process, which controls the router's or switch's physical interface devices and logical interfaces.

ipsec-key-management—(Optional) Restart the IPsec key management process.

isdn-signaling—(J Series router only) (Optional) Restart the ISDN signaling process, which initiates ISDN connections.

kernel-replication—(Optional) Restart the kernel replication process, which replicates the state of the backup Routing Engine when graceful Routing Engine switchover is configured.

l2-learning—(Optional) Restart the Layer 2 address flooding and learning process.

l2tp-service—(Optional) (M10, M10i, and M7i routers only) Restart the Layer 2 Tunneling Protocol (L2TP) process, which establishes L2TP tunnels and Point-to-Point Protocol (PPP) sessions through L2TP tunnels.

lACP—(Optional) Restart the Link Aggregation Control Protocol process.

lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) For a TX Matrix router, restart the software process for a specific T640 router that is connected to the TX Matrix router. For a TX Matrix Plus router, restart the software process for a specific T1600 router that is connected to the TX Matrix Plus router. Replace *number* with a value from 0 through 3.

license-service—(EX Series switch only) (Optional) Restart the feature license management process.

link-management— (TX Matrix and TX Matrix Plus routers and EX Series switches only) (Optional) Restart the Link Management Protocol (LMP) process, which establishes and maintains LMP control channels.

lldpd-service—(EX Series switch only) (Optional) Restart the Link Layer Discovery Protocol process.

mib-process—(Optional) Restart the Management Information Base (MIB) II process, which provides the router's MIB II agent.

mountd-service—(EX Series switch only) (Optional) Restart the service for NFS mounts requests.

multicast-snooping—(EX Series switch only) (Optional) Restart the multicast snooping process.

network-access-service—(J Series router only) (Optional) Restart the network access process, which provides the router's Challenge Handshake Authentication Protocol (CHAP) authentication service.

pgcp-service—(Optional) Restart the pgcpd service process running on the Routing Engine. This option does not restart pgcpd processes running on mobile station PICs. To restart pgcpd processes running on mobile station PICs, use the **services pgcp gateway** option.

pgm—(Optional) Restart the process that implements the Pragmatic General Multicast (PGM) protocol for assisting in the reliable delivery of multicast packets.

pic-services-logging—(Optional) Restart the logging process for some PICs. With this process, also known as fsad (the file system access daemon), PICs send special logging information to the Routing Engine for archiving on the hard disk.

ppp—(Optional) Restart the Point-to-Point Protocol (PPP) process.

pppoe—(Optional) Restart the Point-to-Point Protocol over Ethernet (PPPoE) process.

- protected-system-domain-service**—(Optional) Restart the Protected System Domain (PSD) process.
- redundancy-interface-process**—(Optional) Restart the ASP redundancy process.
- remote-operations**—(Optional) Restart the remote operations process, which provides the ping and traceroute MIBs.
- root-system-domain-service**—(Optional) Restart the Root System Domain (RSD) service.
- routing**—(EX Series switch only) (Optional) Restart the routing protocol process.
- routing** <logical-system *logical-system-name*>—(Optional) Restart the routing protocol process, which controls the routing protocols that run on the router or switch and maintains the routing tables. Optionally, restart the routing protocol process for the specified logical system only.
- sampling**—(Optional) Restart the sampling process, which performs packet sampling and cflowd export.
- scc**—(TX Matrix routers only) Restart the software process on the TX Matrix router (or switch-card chassis).
- secure-neighbor-discovery**—(EX Series switch only) (Optional) Restart the secure Neighbor Discovery Protocol process.
- sfc** *number*—(TX Matrix Plus routers only) Restart the software process on the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.
- service-deployment**—(Optional) Restart the service deployment service process.
- services pgcp gateway** *gateway-name*—(Optional) Restart the pgcpd process for a specific BGP running on an MS-PIC. This option does not restart the pgcpd process running on the Routing Engine. To restart the pgcpd process on the Routing Engine, use the **pgcp-service** option.
- sflow-service**—(EX Series switch only) (Optional) Restart the flow sampling (sFlow technology) process.
- snmp**—(Optional) Restart the SNMP process, which provides the router's or switch's SNMP master agent.
- soft**—(Optional) Reread and reactivate the configuration without completely restarting the software processes. For example, BGP peers stay up and the routing table stays constant. Omitting this option results in a graceful restart of the software process.
- usb-control**—(J Series router only) (Optional) Restart the USB control process.
- vrrp**—(EX Series switch only) (Optional) Restart the Virtual Router Redundancy Protocol process.
- web-management**—(J Series router and EX Series switch only) (Optional) Restart the Web management process.

Required Privilege Level reset

List of Sample Output restart interfaces on page 682

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 <no-resolve> <expiration-time>
Release Information	Command introduced before JUNOS Release 7.4. expiration-time option added in JUNOS Release 8.1.
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 <i>logical-system-name</i> command, and then enter the show arp command.
Options	<p>none—Display the entries in the ARP table.</p> <p>no-resolve—(Optional) Do not attempt to determine the hostname that corresponds to the IP address.</p> <p>expiration-time—(Optional) Display the amount of time, in seconds, until each ARP entry is set to expire.</p>
Required Privilege Level	view
Related Topics	<ul style="list-style-type: none"> ■ clear arp ■ set cli logical-system
List of Sample Output	<p>show arp on page 684</p> <p>show arp no-resolve on page 684</p> <p>show arp expiration-time on page 684</p>
Output Fields	Table 120 on page 683 describes the output fields for the show arp command. Output fields are listed in the approximate order in which they appear.

Table 120: 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.
Name	Hostname.
Interface	Interface name.

Table 120: show arp Output Fields (continued)

Field Name	Field Description
Flags	(no-resolve option only) Indicates how mappings between IP and MAC addresses are defined: <ul style="list-style-type: none"> ■ 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 Release 7.4. Command introduced in JUNOS 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	<p>none—Display the entire configuration.</p> <p><i>statement-path</i>—(Optional) Display one of the following hierarchies in a configuration. (Each <i>statement-path</i> option has additional suboptions not described here. See the appropriate configuration guide for more information.)</p> <ul style="list-style-type: none"> ■ 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.
- **vlan**s—(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

List of Sample Output show configuration on page 686
show configuration policy-options on page 687

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      user@host> show configuration policy-options  
policy-options        policy-options {  
                        policy-statement "direct routes" {  
                          from protocol direct;  
                          then accept;  
                        }  
                      }
```

show dhcp server binding

Syntax	show dhcp server binding <detail> <interface <i>interface-name</i> > < <i>ip-address</i> <i>mac-address</i> > <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
Release Information	Command introduced in JUNOS Release 9.0.
Description	Display the address bindings in the client table on the extended Dynamic Host Configuration Protocol (DHCP) local server.
Options	<p>detail—(Optional) Display detailed information about all active client bindings.</p> <p>interface <i>interface-name</i>—(Optional) Display information about active client bindings on the specified interface.</p> <p><i>ip-address</i>—(Optional) IP address of the DHCP client.</p> <p><i>mac-address</i>—(Optional) MAC address of the DHCP client.</p> <p>logical-system <i>logical-system-name</i>—(Optional) Display information about active client bindings for DHCP clients on the specified logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Display information about active client bindings for DHCP clients on the specified routing instance.</p>
Required Privilege Level	view
Related Topics	■ clear dhcp server binding
List of Sample Output	<p>show dhcp server binding on page 690</p> <p>show dhcp server binding detail on page 690</p> <p>show dhcp server binding ip-address on page 690</p> <p>show dhcp server binding ip-address detail on page 690</p>
Output Fields	Table 121 on page 688 lists the output fields for the show dhcp server binding command. Output fields are listed in the approximate order in which they appear.

Table 121: show dhcp server binding Output Fields

Field Name	Field Description	Level of Output
<i>number</i> clients, (<i>number</i> bound, <i>number</i> selecting, <i>number</i> renewing, <i>number</i> rebinding)	Summary counts of the total number of DHCP clients and the number of DHCP clients in each state.	detail none
IP address	IP address of the DHCP client.	All levels

Table 121: show dhcp server binding Output Fields (continued)

Field Name	Field Description	Level of Output
Hardware address	Hardware address of the DHCP client.	All levels
Request received on	Name of the interface on which the DHCP request was received and the IP address from which the request was relayed (if applicable). This field might also display the Integrated Routing and Bridging (IRB) unit to which the interface is assigned if IRB is configured for the interface.	detail
Type	Type of DHCP packet processing performed on the router: <ul style="list-style-type: none"> ■ active—Router actively processes and relays DHCP packets. ■ passive—Router passively snoops DHCP packets passing through the router. 	All levels
Lease expires at	Date and time at which the client's IP address lease expires or, for a client with a state of bound-grace , the time at which the grace period for the client's IP address lease expires.	All levels
State	State of the address binding table on the extended DHCP local server: <ul style="list-style-type: none"> ■ init—Initial state. ■ reboot—Client sends DHCP DISCOVER request. ■ select—Client receives offers from DHCP servers. ■ request—Client requests a DHCP server. ■ add—Client is in process of being added. ■ delete—Client is in process of being deleted. ■ bound—Client has active IP address lease. ■ bound-grace—Grace period for the client's IP address lease is active in the client table; this entry is included in the summary counts line in the number bound category. ■ renew—Client sends request to renew IP address lease. ■ rebind—Client broadcasts request to renew IP address lease. 	detail
Active binding information	Information about active IP address binding: <ul style="list-style-type: none"> ■ IP address—IP address of the DHCP client. ■ Hardware address—Hardware address of the DHCP client. ■ Request received on—(detail level only) Interface on which the client request was received. ■ relayed by—(detail level only) IP address on which the client request was relayed. 	All levels (unless otherwise specified) when command includes <i>ip-address</i> or <i>mac-address</i> value
Lease information	Information about the client's IP address lease: <ul style="list-style-type: none"> ■ Type—Type of IP address lease; always DHCP. ■ Obtained at—Date and time at which the client's IP address lease was obtained. ■ Expires at—Date and time at which the client's IP address lease expires. ■ State—(detail level only) State of the address binding table on the extended DHCP local server. 	All levels (unless otherwise specified) when command includes <i>ip-address</i> or <i>mac-address</i> value

show dhcp server binding

```
user@host> show dhcp server binding
5 clients, (0 bound, 0 selecting, 0 renewing, 5 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
100.20.32.4	90:00:00:03:00:01	active	2007-01-17 11:38:01 PST
100.20.32.5	90:00:00:04:00:01	active	2007-01-17 11:38:07 PST
100.20.32.6	90:00:00:05:00:01	active	2007-01-17 11:38:47 PST

show dhcp server binding detail

```
user@host> show dhcp server binding detail
5 clients, (0 bound, 0 selecting, 0 renewing, 5 rebinding)
```

IP address	Hardware address	Type	Lease expires	State
100.20.32.1	90:00:00:01:00:01	active	2007-01-17 11:38:47 PST	rebind
100.20.32.3	90:00:00:02:00:01	active	2007-01-17 11:38:41 PST	rebind
100.20.32.4	90:00:00:03:00:01	active	2007-01-17 11:38:01 PST	rebind
100.20.32.5	90:00:00:04:00:01	active	2007-01-17 11:38:07 PST	rebind
100.20.32.6	90:00:00:05:00:01	active	2007-01-17 11:38:47 PST	rebind
100.20.32.6	90:00:00:06:00:01	active	2007-01-19 16:38:47 PST	bound-grace

show dhcp server binding ip-address

```
user@host> show dhcp server binding 100.20.32.1
Active binding information:
  IP address      100.20.32.1
  Hardware address 90:00:00:01:00:01

Lease information:
  Type      DHCP
  Obtained at 2007-01-17 11:28:47 PST
  Expires at 2007-01-17 11:38:47 PST
```

show dhcp server binding ip-address detail

```
user@host> show dhcp server binding 100.20.32.1 detail
Active binding information:
  IP address      100.20.32.1
  Hardware address 90:00:00:01:00:01
  Request received on fe-0/0/2.0, relayed by 100.20.32.2

Lease information:
  Type      DHCP
  Obtained at 2007-01-17 11:28:47 PST
  Expires at 2007-01-17 11:38:47 PST
  State      rebind
```

show dhcp server statistics

Syntax	show dhcp server statistics <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
Release Information	Command introduced in JUNOS Release 9.0.
Description	Display extended Dynamic Host Configuration Protocol (DHCP) local server statistics.
Options	<p>logical-system <i>logical-system-name</i>—(Optional) Display information about extended DHCP local server statistics on the specified logical system. If you do not specify a logical system, statistics are displayed for the default logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Display information about extended DHCP local server statistics on the specified routing instance. If you do not specify a routing instance, statistics are displayed for the default routing instance.</p>
Required Privilege Level	view
Related Topics	■ clear dhcp server statistics
List of Sample Output	show dhcp server statistics on page 692
Output Fields	Table 122 on page 692 lists the output fields for the show dhcp server statistics command. Output fields are listed in the approximate order in which they appear.

Table 122: show dhcp server statistics Output Fields

Field Name	Field Description
Packets dropped	<p>Number of packets discarded by the extended DHCP local server because of errors. Only nonzero statistics appear in the Packets dropped output. When all of the Packets dropped statistics are 0 (zero), only the Total field appears.</p> <ul style="list-style-type: none"> ■ 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	<p>Number of DHCP messages received.</p> <ul style="list-style-type: none"> ■ 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	<p>Number of DHCP messages sent.</p> <ul style="list-style-type: none"> ■ 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

```

show dhcp server statistics user@host> show dhcp server statistics
Packets dropped:
    Total                  30
    Bad hardware address   1
    Bad opcode             1
    Bad options            3
    Invalid server address 5
    No available addresses 1
    No interface match     2
    No routing instance match 9
    No valid local address 4

```

Packet too short	2
Read error	1
Send error	1
Messages received:	
BOOTREQUEST	89163
DHCPDECLINE	0
DHCPDISCOVER	8110
DHCPINFORM	0
DHCPRELEASE	0
DHCPREQUEST	81053
Messages sent:	
BOOTREPLY	32420
DHCPOFFER	8110
DHCPACK	8110
DHCPNAK	8100

show host

Syntax	show host <i>hostname</i>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Display Domain Name System (DNS) hostname information.
Options	<i>hostname</i> —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 694
show host	<pre>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:</pre>

show network-access aaa statistics

Syntax	show network-access aaa statistics <accounting> <address-assignment (client <i>client</i> pool <i>pool-name</i>)> <authentication> <dynamic-requests>
Release Information	Command introduced in JUNOS Release 9.1. Address-assignment option introduced in JUNOS Release 10.0.
Description	Display AAA accounting, authentication, address-assignment, and dynamic request statistics.
Options	<p>accounting—(Optional) Display AAA accounting statistics.</p> <p>address-assignment (client pool <i>pool-name</i>)—(Optional) Display AAA address-assignment client and pool statistics.</p> <p>authentication—(Optional) Display AAA authentication statistics.</p> <p>dynamic-requests—(Optional) Display AAA dynamic requests.</p>
Required Privilege Level	view
List of Sample Output	<p>show network-access aaa statistics accounting on page 696</p> <p>show network-access aaa statistics address-assignment client on page 696</p> <p>show network-access aaa statistics address-assignment pool on page 696</p> <p>show network-access aaa statistics authentication on page 696</p> <p>show network-access aaa statistics dynamic-requests on page 696</p>
Output Fields	Table 123 on page 695 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 123: show network-access aaa statistics Output Fields

Field Name	Field Description
Accepts	Number of authentication requests accepted by the authentication 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.
Challenges	Number of authentication requests challenged by the authentication server.
Client	Client type; for example, DHCP, Mobile IP, PPP.
errors during processing	Number of dynamic requests that resulted in processing errors by the AAA framework.
No Matches	Number of times there were no network matches for the pool.

Table 123: show network-access aaa statistics Output Fields *(continued)*

Field Name	Field Description
Out of Addresses	Number of times there were no available addresses in the pool.
Out of Memory	Number of times an address was not given to the client due to memory issues.
Pool Name	Name of the address-assignment pool for this client.
processed successfully	Number of dynamic requests processed successfully by the AAA framework.
Rejects	Number of authentication requests rejected by the authentication server.
requests received	<ul style="list-style-type: none"> ■ 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.
Requests timedout	Number of accounting requests to the accounting server that timed out.
silently dropped	Number of dynamic requests dropped by the AAA framework due to multiple back-to-back or duplicate requests.

```

show network-access      user@host> show network-access aaa statistics accounting
aaa statistics          Accounting module statistics
accounting              Requests received: 0
                           Accounting Response failures: 0
                           Accounting Response Success: 0
                           Requests timedout: 0

show network-access      user@host> show network-access aaa statistics address-assignment client
aaa statistics          Address-assignment statistics
address-assignment      Client: jdhcpd
client                  Out of Memory: 0
                           No Matches: 2

show network-access      user@host> show network-access aaa statistics address-assignment pool isp_1
aaa statistics          Address-assignment statistics
address-assignment pool Pool Name: isp_1
                           Out of Memory: 0
                           Out of Addresses: 5

show network-access      user@host> show network-access aaa statistics authentication
aaa statistics          Requests received: 0
authentication         Accepts: 0
                           Rejects: 0
                           Challenges: 0

show network-access      user@host> show network-access aaa statistics dynamic-requests
aaa statistics          requests received: 0
dynamic-requests       processed successfully: 0
                           errors during processing: 0
                           silently dropped: 0

```

show network-access aaa subscribers

Syntax	show network-access aaa subscribers <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> > <statistics> <username>
Release Information	Command introduced in JUNOS Release 9.1.
Description	Display subscriber-specific AAA statistics.
Options	<p>logical-system <i>logical-system-name</i>—(Optional) List subscribers in the specific logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) List subscribers for the specific routing instance. If you do not specify a routing instance name, the default routing instance is assumed.</p> <p>statistics—(Optional) Display statistics for the subscriber events.</p> <p>username—(Optional) Display information for the specified subscriber.</p>
Required Privilege Level	view
List of Sample Output	<p>show network-access aaa subscribers logical-system on page 698</p> <p>show network-access aaa subscribers on page 698</p> <p>show network-access aaa subscribers statistics username on page 698</p> <p>show network-access aaa subscribers username on page 699</p>
Output Fields	Table 124 on page 697 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 124: 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.
INTERIM send failures	Number of accounting interim requests that failed to make it to the accounting server for this subscriber.

Table 124: show network-access aaa subscribers Output Fields (continued)

Field Name	Field Description
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 user@host> show network-access aaa subscribers logical-system
aaa subscribers Username Virtual router name Client type
logical-system cbenson@address.net default ppp
00010e020304.1231 isp-bos-metro-12:isp-cmborg-12-32 dhcp
conley@isp3.com default:isp-gtown-r3-00 dhcp
0020df980102.2334 isp-bos-metro-16:isp-cmborg-12-32 dhcp

show network-access user@host> show network-access aaa subscribers logical-system isp-bos-metro-16
aaa subscribers routing-instance isp-cmborg-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-cmborg-12-32

show network-access user@host> show network-access aaa subscribers statistics username
aaa subscribers 00010e020304.1231
statistics username 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
Successful responses: 0
Aborts handled: 0
Service statistics
Service name: filter-serv
Creation requests: 1
Deletion requests: 0
Request timeouts: 0
Service name: filter-serv2
Creation requests: 144

```

Deletion requests: 0
Request timeouts: 144

```

show network-access user@host> show network-access aaa subscribers username fred@isp5.net
aaa subscribers Virtual router name      Client type  Session uptime  Accounting
username       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              time        6000 secs     on/volume
GamingBurst

```

show network-access aaa subscribers session-id

Syntax	show network-access aaa subscribers session-id <i>session-id</i> <brief detail>
Release Information	Command introduced in JUNOS Release 10.0.
Description	Display information about the specified subscriber session.
Options	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 701 show network-access aaa subscribers session-id detail on page 701
Output Fields	Table 125 on page 700 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 125: 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.
Logical system/Routing instance	Name of the routing instance, logical system name, or both, for the session.
Session ID	ID of the subscriber session.
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.
IP Address	IP address of the subscriber.
Authentication State	State of the subscriber authentication session: AuthInit, AuthStart, AuthChallenge, AuthRedirect, AuthCintRespWait, AuthAcctVolStatsAckWait, AuthAcctStopAckWait, AuthServCreateRespWait, AuthLogoutStart, AuthStateActive, AuthCintLogoutRespWait, 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.
Service State	State of the subscriber service session: SvcInit, SvcActivateStart, SvcActive, SvcInactivateStart, SvcCleanup1, SvcCleanup2, SvcInactive

```

show network-access user@host> show network-access aaa subscribers session-id 5 brief
aaa subscribers Logical system/Routing instance Client type Session uptime Accounting
session-id brief default:default dhcp 00:04:49 on/volume+time

```

```

show network-access user@host> show network-access aaa subscribers session-id 5 detail
aaa subscribers Type: dhcp
session-id detail Username: larry@isp5.net
Logical system/Routing instance: default:default
Session ID: 5
Accounting Session ID: jnpr ge-1/0/0.101:1
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
Service name: filter-service-2
Service State: SvcActive

```

show network-access address-assignment pool

Syntax	show network-access address-assignment pool <i>pool-name</i> <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
Release Information	Command introduced in JUNOS Release 9.0.
Description	Display state information for each address-assignment pool.
Options	<p>none—Display information about clients that have obtained addresses from the address-assignment pool.</p> <p>pool <i>pool-name</i>—Display information about the specified address-assignment pool.</p> <p>logical-system <i>logical-system-name</i>—(Optional) Perform this operation on the specified logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Perform this operation on the specified routing instance.</p>
Required Privilege Level	view and system
List of Sample Output	show network-access address-assignment pool on page 702
Output Fields	Table 126 on page 702 lists the output fields for the show address-assignment pool command. Output fields are listed in the approximate order in which they appear.

Table 126: 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 user@host> show network-access address-assignment pool sunnywest logical-system
address-assignment pool 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 Release 7.4. Command introduced in JUNOS 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 Topics	■ show ntp status
List of Sample Output	show ntp associations on page 704
Output Fields	Table 127 on page 703 describes the output fields for the show ntp associations command. Output fields are listed in the approximate order in which they appear.

Table 127: 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 127: show ntp associations Output Fields (*continued*)

Field Name	Field Description
<i>peer-name</i>	<p>Peer name and status of the peer in the clock selection process:</p> <ul style="list-style-type: none"> ■ 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 Release 7.4. Command introduced in JUNOS 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 Topics	■ show ntp associations
List of Sample Output	show ntp status on page 705
show ntp status	<pre> 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 </pre>

show static-subscribers sessions

Syntax	show static-subscribers sessions <group-name> <interface-name>
Release Information	Command introduced in JUNOS 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	<p><i>group-name</i>—(Optional) Display session information for static subscribers on all interfaces in the specified group.</p> <p><i>interface-name</i>—(Optional) Display session information for the static subscriber on the specified in the specified group.</p>
Required Privilege Level	view
List of Sample Output	<p>show static-subscribers sessions on page 707</p> <p>show static-subscribers sessions group on page 707</p> <p>show static-subscribers sessions interface on page 707</p>
Output Fields	Table 128 on page 706 lists the output fields for the show static-subscribers sessions command. Output fields are listed in the approximate order in which they appear.

Table 128: 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: <ul style="list-style-type: none"> ■ 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*>
 <count>
 <interface *interface*>
 <logical-system *logical-system*>
 <profile-name *profile-name*>
 <routing-instance *routing-instance*>
 <vlan-id *vlan-id*>
 <stacked-vlan-id *stacked-vlan-id*>
 <detail | terse>

Release Information Command introduced in JUNOS Release 9.3.
 Command introduced in JUNOS Release 9.3 for EX Series switches.

Description Display information for active subscribers.

Options *address*—(Optional) Display subscribers whose IP address matches the specified address.

count—(Optional) Display the specified count. The count option cannot be used with any other options.

interface—(Optional) Display subscribers whose interface matches the specified interface.

logical system—(Optional) Display subscribers whose logical system matches the specified logical system.

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.

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—(Optional) Display the specified level of output.

Required Privilege Level view

List of Sample Output show subscribers on page 709
 show subscribers detail on page 709
 show subscribers logical-system on page 710
 show subscribers count on page 710
 show subscribers vlan-id on page 710
 show subscribers vlan-id detail on page 710

show subscribers stacked-vlan-id detail on page 710
 show subscribers stacked-vlan-id vlan-id detail (combined output) on page 710
 show subscribers stacked-vlan-id vlan-id interface detail (combined output for a specific interface) on page 711

Output Fields Table 129 on page 709 lists the output fields for the `show subscribers` command. Output fields are listed in the approximate order in which they appear.

Table 129: show subscribers Output Fields

Field Name	Field Description
User Name	Name of subscriber.
IP Address	Subscriber IP address. Both IPv4 and IPv6 addresses are supported.
IP Netmask	Subscriber IP netmask.
Logical System	Logical system 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.
Routing Instance	Routing instance associated with the subscriber.
MAC Address	MAC address associated with the subscriber.
State	Current status of the subscriber session.
VLAN Id	VLAN ID associated with the subscriber in the form <i>tpid.vlan-id</i> .
Stacked VLAN Id	Stacked VLAN ID associated with the subscriber in the form <i>tpid.vlan-id</i> .
RADIUS Accounting ID	RADIUS accounting ID associated with the subscriber.
DHCP Relay IP Address	IP address used by the DHCP relay agent.
Login Time	Date and time at which the subscriber logged in.

show subscribers user@host> **show subscribers**

Interface	IP Address	User Name
ge-0/0/0.0	192.168.15.10	user@isp5555.net
ge-0/0/0.1	1234:5678:9012:3456:7890:1234:5678:9012	useripv6@isp5555.net

show subscribers detail user@host> **show subscribers detail**

```
Type: DHCP
User Name: igmp-user1
IP Address: 192.168.1.10
IP Netmask: 255.255.0.0
```

```

Logical System: default
Routing Instance: default
Interface: demux0.1073741824
Interface type: Static
Dynamic Profile Name: user-profile-15
MAC Address: 00:00:65:02:01:02
State: Active
Radius Accounting ID: 1
DHCP Relay IP Address: 192.168.32.2
Login Time: 2008-10-08 08:22:12 PDT

```

show subscribers logical-system user@host> **show subscribers logical-system default terse**

Interface	User Name	Ip Address
ge-0/0/0.1	user1@isp5555.net	192.168.15.10
ge-0/0/0.2	user2@isp5555.net	2001:0db8:0:22:3300:4040:1428:57ab

show subscribers count user@host> **show subscribers count**
Total Subscribers: 2, Active Subscribers: 2

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 system alarms

Syntax show system alarms

Release Information Command introduced before JUNOS Release 7.4.
Command introduced in JUNOS 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 System Basics Configuration Guide*.

Required Privilege Level admin

List of Sample Output show system alarms on page 712

```

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 <i>member-id</i> > <root-only>
Syntax (TX Matrix Router)	show system audit <all-lcc lcc <i>number</i> scc> <root-only>
Syntax (TX Matrix Plus Router)	show system audit <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> > <root-only>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display the state and checksum values for file systems.
Options	<p>none—Display the state and checksum values for all file systems.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display file system MD5 hash and permissions information for all of the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display file system MD5 hash and permissions information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display file system MD5 hash and permissions information for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display file system MD5 hash and permissions information on all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display file system MD5 hash and permissions information for a specific T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display file system MD5 hash and permissions information for a specific T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display file system MD5 hash and permissions information on the local Virtual Chassis member.</p>

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 714
show system audit lcc (TX Matrix Router) on page 715
show system audit lcc (TX Matrix Plus Router) on page 717

```
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 \
```

```

compat      md5digest=9b7126385734bcae753f4179ab59d8e5
            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=82e1637682d58ec28964dfec7fccb62e
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
.
  COPYRIGHT  type=dir nlink=23 size=512 time=1242347096.0
             mode=0644 size=6196 time=1168587741.0 \
             md5digest=bbad415e1c29bbdd9b383537100412c
  kernel     type=link size=17 time=1242347011.0 link=/packages/jkernel
  staging     type=link mode=0777 size=8 time=1242346935.0 link=/var/tmp

# ./snap
.snap        type=dir mode=0775 nlink=2 size=512 time=1242346922.0
# ./snap
..

# ./altconfig
altconfig    type=dir mode=0500 nlink=2 size=512 time=1242319843.0
# ./altconfig
..

# ./altroot
altroot      type=dir mode=0500 nlink=2 size=512 time=1242319843.0
# ./altroot
..

# ./bin
bin          type=dir nlink=2 size=512 time=1242346944.0
  \133       type=link size=28 time=1242346942.0 \
             link=/packages/mnt/jbase/bin/test
  cat        type=link size=27 time=1242346941.0 \
             link=/packages/mnt/jbase/bin/cat
  chflags    type=link size=31 time=1242346941.0 \
             link=/packages/mnt/jbase/bin/chflags
  chmod      type=link size=29 time=1242346941.0 \
             link=/packages/mnt/jbase/bin/chmod
  cp         type=link size=26 time=1242346941.0 \
             link=/packages/mnt/jbase/bin/cp
  csh        type=link size=27 time=1242346941.0 \
             link=/packages/mnt/jbase/bin/csh
  date       type=link size=28 time=1242346941.0 \
             link=/packages/mnt/jbase/bin/date
  dd         type=link size=26 time=1242346941.0 \
             link=/packages/mnt/jbase/bin/dd

```

```

df          type=link size=26 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/df
echo        type=link size=28 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/echo
ed          type=link size=26 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/ed
expr        type=link size=28 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/expr
hostname    type=link size=32 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/hostname
kill        type=link size=28 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/kill
ln          type=link size=26 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/ln
ls          type=link size=26 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/ls
mkdir       type=link size=29 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/mkdir
mv          type=link size=26 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/mv
pax         type=link size=27 time=1242346944.0 \
            link=/packages/mnt/jbase/bin/pax
ps          type=link size=26 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/ps
pwd         type=link size=27 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/pwd
rcp         type=link size=27 time=1242346942.0 \
            link=/packages/mnt/jbase/bin/rcp
red         type=link size=26 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/ed
rm          type=link size=26 time=1242346942.0 \
            link=/packages/mnt/jbase/bin/rm
rmdir       type=link size=29 time=1242346942.0 \
            link=/packages/mnt/jbase/bin/rmdir
sh          type=link size=26 time=1242346942.0 \
            link=/packages/mnt/jbase/bin/sh
sleep       type=link size=29 time=1242346942.0 \
            link=/packages/mnt/jbase/bin/sleep
stty        type=link size=28 time=1242346942.0 \
            link=/packages/mnt/jbase/bin/stty
sync        type=link size=28 time=1242346942.0 \
            link=/packages/mnt/jbase/bin/sync
tcsh        type=link size=27 time=1242346941.0 \
            link=/packages/mnt/jbase/bin/csh
test        type=link size=28 time=1242346942.0 \
            link=/packages/mnt/jbase/bin/test
# ./bin
...

```

show system autoinstallation status

Syntax	show system autoinstallation status
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	(J Series routers and EX Series switch 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 719
show system autoinstallation status	<pre> 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 </pre>

show system boot-messages

Syntax	show system boot-messages
Syntax (EX Series Switch)	show system boot-messages <all-members> <local> <member <i>member-id</i> >
Syntax (TX Matrix Router)	show system boot-messages <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system boot-messages <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display initial messages generated by the system kernel upon startup. These messages are the contents of /var/run/dmesg.boot.
Options	<p>none—Display all boot time messages.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display boot time messages for all of the chassis.</p> <p>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.</p> <p>all-members—(EX4200 switches only) (Optional) Display boot time messages on all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display 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 <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display boot time messages on the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display boot time messages on the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display boot time messages for the TX Matrix router (or switch-card chassis).</p>

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 721
show system boot-messages lcc (TX Matrix Router) on page 722
show system boot-messages (TX Matrix Plus Router) on page 723

```

show system boot-messages (TX Matrix Router) user@host> show system boot-messages
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Copyright (c) 1996-2000 Juniper Networks, Inc.
All rights reserved.
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JUNOS 4.1-20000216-Zf8469 #0: 2000-02-16 12:57:28 UTC
    tlim@single.juniper.net:/p/build/20000216-0905/4.1/release_kernel/sys/compile/GENERIC
CPU: Pentium Pro (332.55-MHz 686-class CPU)
    Origin = "GenuineIntel" Id = 0x66a Stepping=10
    Features=0x183f9ff<FPU,VME,DE,PSE,TSC,MSR,PAE,MCE,CX8,SEP,MTRR,PGE,MCA,CMOV,<b16>,<b17>,MMX,<b24>>
Teknor CPU Card Recognized
real memory = 805306368 (786432K bytes)
avail memory = 786280448 (767852K bytes)
Probing for devices on PCI bus 0:
chip0 <generic PCI bridge (vendor=8086 device=7192 subclass=0)> rev 3 class 6000
0 on pci0:0:0
chip1 <Intel 82371AB PCI-ISA bridge> rev 1 class 60100 on pci0:7:0
chip2 <Intel 82371AB IDE interface> rev 1 class 10180 on pci0:7:1
chip3 <Intel 82371AB USB interface> rev 1 class c0300 int d irq 11 on pci0:7:2
smb0 <Intel 82371AB SMB controller> rev 1 class 68000 on pci0:7:3
pcic0 <TI PCI-1131 PCI-CardBus Bridge> rev 1 class 60700 int a irq 15 on pci0:13:0
TI1131 PCI Config Reg: [pci only][FUNC0 pci int]
pcic1 <TI PCI-1131 PCI-CardBus Bridge> rev 1 class 60700 int b irq 12 on pci0:13:1
TI1131 PCI Config Reg: [pci only][FUNC1 pci int]
fxp0 <Intel EtherExpress Pro 10/100B Ethernet> rev 8 class 20000 int a irq 12 on pci0:16:0
chip4 <generic PCI bridge (vendor=1011 device=0022 subclass=4)> rev 4 class 6040
0 on pci0:17:0
fxp1 <Intel EtherExpress Pro 10/100B Ethernet> rev 8 class 20000 int a irq 10 on pci0:19:0
Probing for devices on PCI bus 1:
mcs0 <Miscellaneous Control Subsystem> rev 12 class ff0000 int a irq 12 on pci1:13:0

```

```

fxp2 <Intel EtherExpress Pro 10/100B Ethernet> rev 8 class 20000 int a irq 10 on

pci1:14:0
Probing for devices on the ISA bus:
sc0 at 0x60-0x6f irq 1 on motherboard
sc0: EGA color <16 virtual consoles, flags=0x0>
ed0 not found at 0x300
ed1 not found at 0x280
ed2 not found at 0x340
psm0 not found at 0x60
sio0 at 0x3f8-0x3ff irq 4 flags 0x20010 on isa
sio0: type 16550A, console
sio1 at 0x3e8-0x3ef irq 5 flags 0x20000 on isa
sio1: type 16550A
sio2 at 0x2f8-0x2ff irq 3 flags 0x20000 on isa
sio2: type 16550A
pcic0 at 0x3e0-0x3e1 on isa
PC-Card ctrlr(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:
-----
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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,WME,DE,PSE,TSC,MSR,PAE,MCE,CX8,SEP,MTRR,PGE,MCA,CMOV,PAT,PSE36,PN,MMX,FXSR,SSE>
real memory = 2147467264 (2097136K bytes)
sio0: gdb debugging port

```

```

avail memory = 2084040704 (2035196K bytes)
Preloaded elf kernel "kernel" at 0xc06d9000.
DEVFS: ready for devices
Pentium Pro MTRR support enabled
md0: Malloc disk
DRAM Data Integrity Mode: ECC Mode with h/w scrubbing
npx0: <math processor> on motherboard
npx0: INT 16 interface
pcib0: <ServerWorks NB6635 3.0LE host to PCI bridge> on motherboard
pci0: <PCI bus> on pcib0
pcic-pci0: <TI PCI-1410 PCI-CardBus Bridge> irq 15 at device 1.0 on pci0
pcic-pci0: TI12XX PCI Config Reg: [pwr save][pci only]
fxp0: <Intel Embedded 10/100 Ethernet> port 0x1000-0x103f mem
0xfb800000-0xfb81ffff,0xfb820000-0xfb820fff irq 9 at device 3.0 on pci0
fxp1: <Intel Embedded 10/100 Ethernet> port 0x1040-0x107f mem
0xfb840000-0xfb85ffff,0xfb821000-0xfb821fff irq 11 at device 4.0 on pci0
...

```

**show system
boot-messages (TX
Matrix Plus Router)**

```
user@host> show system boot-messages
```

```
sfc0-re0:
```

```

-----
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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.
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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 <i>member-id</i> >
Syntax (TX Matrix Router)	show system buffers <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system buffers <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
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	<p>none—Show all buffer statistics.</p> <p>all-members—(EX4200 switches only) (Optional) Show buffer statistics for on all members of the Virtual Chassis configuration.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, 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.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Show buffer statistics for all of the chassis.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, show buffer statistics for a specific T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, show buffer statistics for a specific T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Show buffer statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Show buffer statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p>

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 726
 show system buffers scc (TX Matrix Router) on page 727
 show system buffers sfc (TX Matrix Plus Router) on page 727
 show system buffers all-chassis (TX Matrix Plus Router) on page 727

Output Fields Table 130 on page 726 describes the output fields for the **show system buffers** command. Output fields are listed in the approximate order in which they appear.

Table 130: 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 protocol 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 Release 7.4. Command introduced in JUNOS 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 Topics	■ clear system commit
List of Sample Output	show system commit on page 730 show system commit (At a Particular Time) on page 730 show system commit (At the Next Reboot) on page 730 show system commit (Rollback Pending) on page 730
Output Fields	Table 131 on page 729 describes the output fields for the show system commit command. Output fields are listed in the approximate order in which they appear.

Table 131: 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: <ul style="list-style-type: none"> ■ cli—CLI interactive user performed the commit operation. ■ junoscript—JUNOScript 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      user@host> show system commit
(At a Particular Time)  commit requested by root via cli at Tue May  7 15:59:00 2002

show system commit      user@host> show system commit
(At the Next Reboot)    commit requested by root via cli at reboot

show system commit      user@host> show system commit
(Rollback Pending)      0 2005-01-05 15:00:37 PST by root via cli commit confirmed, rollback in 3mins

```

show system configuration archival

Syntax	show system configuration archival
Release Information	Introduced in JUNOS Release 7.6. Command introduced in JUNOS 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 731
show system configuration archival	<pre>user@host> show system configuration archival /var/transfer/config/: total 8</pre>

show system configuration rescue

Syntax	show system configuration rescue
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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 732
show system configuration rescue	<pre> 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; } } </pre>

show system connections

Syntax	<pre>show system connections <extensive> <all-chassis all-lcc lcc <i>number</i> scc> <inet inet6> <show-routing-instances></pre>
Syntax (EX Series Switch)	<pre>show system connections <extensive> <all-members> <inet inet6> <local> <member <i>member-id</i>> <show-routing-instances></pre>
Syntax (TX Matrix Router)	<pre>show system connections <extensive> <all-chassis all-lcc lcc <i>number</i> scc> <inet inet6> <show-routing-instances></pre>
Syntax (TX Matrix Plus Router)	<pre>show system connections <extensive> <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i>> <inet inet6> <show-routing-instances></pre>
Release Information	<p>Command introduced before JUNOS Release 7.4.</p> <p>Command introduced in JUNOS Release 9.0 for EX Series switches.</p> <p>sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.</p>
Description	<p>Display information about the active IP sockets on the Routing Engine. Use this command to verify which servers are active on a system and what connections are currently in progress.</p>
Options	<p>none—Display information about all active IP sockets on the Routing Engine.</p> <p>extensive—(Optional) Display exhaustive system process information, which, for TCP connections, includes the TCP control block. This option is useful for debugging TCP connections.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system connection activity for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system connection activity for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system connection activity for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p>

all-members—(EX4200 switches only) (Optional) Display system connection activity 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 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).

inet | inet6—(Optional) Display IPv4 connections or IPv6 connections, respectively.

show-routing-instances—(Optional) Display routing instances.

Additional Information

By default, when you issue the **show system connections** command on a TX Matrix or TX Matrix Plus master Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) master Routing Engines or T1600 (in a routing matrix based on a TX Matrix Plus router) master Routing Engines connected to it. Likewise, if you issue the same command on the TX Matrix or TX Matrix Plus backup Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on the TX Matrix Plus router) backup Routing Engines that are connected to it.

Required Privilege Level

view

List of Sample Output

show system connections on page 735
 show system connections extensive on page 736
 show system connections lcc (TX Matrix Router) on page 736
 show system connections show-routing-instances on page 737
 show system connections (TX Matrix Plus Router) on page 737
 show system connections sfc (TX Matrix Plus Router) on page 741
 show system connections show-routing-instances (TX Matrix Plus Router) on page 743

Output Fields

Table 132 on page 734 describes the output fields for the **show system connections** command. Output fields are listed in the approximate order in which they appear.

Table 132: show system connections Output Fields

Field Name	Field Description
Proto	Protocol of the socket: IP, TCP, or UDP for IPv4 or IPv6.

Table 132: show system connections Output Fields (continued)

Field Name	Field Description
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
          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
          ESTABLISHED
tcp4      0      0 *.33005    *.*
          LISTEN
tcp4      0      0 162.0.0.4.9000 162.0.0.4.51611 FIN_WAIT_2
          CLOSE_WAIT
tcp4      0      0 162.0.0.4.51611 162.0.0.4.9000

```

```

tcp4      0      0 *.6151          *.*
          LISTEN
tcp4      0      0 *.6154          *.*
          LISTEN
tcp4      0      0 *.6153          *.*
          LISTEN
tcp4      0      0 *.31343         *.*
          LISTEN
tcp4      0      0 *.31341         *.*
          LISTEN
tcp4      0      0 *.6152          *.*
          LISTEN
tcp4      0      0 *.32003         *.*
          LISTEN
tcp4      0      0 *.33009         *.*
          LISTEN
tcp4      0      0 *.3221          *.*
          LISTEN
tcp4      0      0 *.23            *.*
          LISTEN
tcp4      0      0 *.22            *.*
          LISTEN
tcp4      0      0 *.514           *.*
          LISTEN
tcp4      0      0 *.513           *.*
          LISTEN
tcp4      0      0 *.21            *.*
          LISTEN
tcp4      0      0 *.79            *.*
          LISTEN
tcp4      0      0 *.514           *.*
          LISTEN
tcp4      0      0 *.513           *.*
          LISTEN
tcp4      0      0 *.6234          *.*
          LISTEN
udp4      0      0 127.0.0.1.123   *.*
udp4      0      0 10.255.178.11.123 *.*
udp4      0      0 *.123           *.*
udp46     0      0 *.514           *.*
udp4      0      0 *.514           *.*
udp46     0      0 *.50895         *.*
udp4      0      0 *.50794         *.*
udp4      0      0 *.31342         *.*
udp46     0      0 *.161           *.*
udp4      0      0 *.161           *.*
udp4      0      0 *.31340         *.*
udp4      0      0 *.31340         *.*
udp46     0      0 *.49152         *.*
udp46     0      0 *.4784          *.*
udp46     0      0 *.3784          *.*
udp4      0      0 *.49152         *.*
udp4      0      0 *.4784          *.*
udp4      0      0 *.3784          *.*
udp4      0      0 *.6333          *.*
ip4       104     0 *.*             *.*
ip4       0      0 *.*             *.*
ip4       0      0 *.*             *.*

```

**show system
connections
show-routing-instances
(TX Matrix Plus Router)**

user@host> **show system connections show-routing-instances**
sfc0-re0:

```
-----
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q Local Address           Foreign Address
-----
Routing Instance        (state)
tcp4      0      0 *.6156                  __juniper_private1__  LISTEN      *.
tcp4      0      0 *.9000                  __juniper_private1__  LISTEN      *.
tcp4      0      0 *.666                   __juniper_private1__  LISTEN      *.
tcp4      0      2 192.168.178.11.23      default            ESTABLISHED
172.17.28.19.3565
tcp4      0      0 192.168.178.11.23      default            ESTABLISHED
172.17.28.204.62719
tcp4      0      0 192.168.178.11.23      default            ESTABLISHED
192.168.69.199.51255
tcp4      0      0 192.168.178.11.23      default            ESTABLISHED
172.24.26.227.42860
tcp4      0      0 162.0.0.4.32012        __juniper_private1__  ESTABLISHED 162.0.0.5.58935
tcp4      0      0 *.32012                 __juniper_private1__  LISTEN      *.
tcp4      0      0 *.33007                 __juniper_private2__  LISTEN      *.
tcp4      0      0 162.0.0.4.6161         __juniper_private1__  ESTABLISHED 162.0.0.5.62026
tcp4      0      0 *.33005                 __juniper_private2__  LISTEN      *.
tcp4      0      0 162.0.0.4.9000         __juniper_private1__  FIN_WAIT_2   162.0.0.4.51611
tcp4      0      0 162.0.0.4.51611        __juniper_private1__  CLOSE_WAIT   162.0.0.4.9000
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     default    LISTEN     *.*
tcp4      0      0 *.513     __juniper_private1__ LISTEN     *.*
tcp4      0      0 *.6234    __juniper_private1__ LISTEN     *.*
udp4      0      0 127.0.0.1.123 default    LISTEN     *.*
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   default    *.*
udp46     0      0 *.161     __juniper_private1__ *.*
udp4      0      0 *.161     default    *.*
udp4      0      0 *.31340   default    *.*
udp4      0      0 *.31340   __juniper_private2__ *.*
udp46     0      0 *.49152   __juniper_private1__ *.*
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    default    *.*
ip4       0      0 *.*       __juniper_private1__ *.*
ip4       0      0 *.*       default    *.*
ip4       0      0 *.*       default    *.*
ip4       0      0 *.*       default

```

```
lcc0-re0:
```

```

-----
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q Local Address           Foreign Address
      Routing Instance      (state)
tcp4      0      0 *.7000    __juniper_private1__   LISTEN     *.*

```

```

tcp4      0      0 192.168.178.3.23      default      ESTABLISHED
172.24.26.227.50399
tcp4      0      0 *.6234                __juniper_private1__ LISTEN        *. *
tcp4      0      0 *.9000                __juniper_private1__ LISTEN        *. *
tcp4      0      0 *.33009               __juniper_private2__ LISTEN        *. *
tcp4      0      0 *.3221                default      LISTEN        *. *
tcp4      0      0 *.23                  default      LISTEN        *. *
tcp4      0      0 *.22                  default      LISTEN        *. *
tcp4      0      0 *.514                 default      LISTEN        *. *
tcp4      0      0 *.513                 default      LISTEN        *. *
tcp4      0      0 *.21                  default      LISTEN        *. *
tcp4      0      0 *.79                  default      LISTEN        *. *
tcp4      0      0 *.514                 __juniper_private1__ LISTEN        *. *
tcp4      0      0 *.513                 __juniper_private1__ LISTEN        *. *
udp46     0      0 *.514                 default      *. *
udp4       0      0 *.514                 default      *. *
udp46     0      0 *.59924               default      *. *
udp4       0      0 *.59412               default      *. *
udp46     0      0 *.161                 default      *. *
udp4       0      0 *.161                 default      *. *
udp4       0      0 *.31342               __juniper_private1__ *. *
udp4       0      0 *.6333                __juniper_private1__

```

```
lcc1-re0:
```

```

-----
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q Local Address           Routing Instance         (state)        Foreign Address
tcp4      0      0 *.7000                  __juniper_private1__    LISTEN         *. *
tcp4      0      0 *.6234                  __juniper_private1__    LISTEN         *. *
tcp4      0      0 *.9000                  __juniper_private1__    LISTEN         *. *
tcp4      0      0 *.3221                  default                 LISTEN         *. *
tcp4      0      0 *.23                    default                 LISTEN         *. *
tcp4      0      0 *.22                    default                 LISTEN         *. *
tcp4      0      0 *.514                   default                 LISTEN         *. *

```

tcp4	0	0	*.513	default	LISTEN	*.*
tcp4	0	0	*.21	default	LISTEN	*.*
tcp4	0	0	*.79	default	LISTEN	*.*
tcp4	0	0	*.514	default	LISTEN	*.*
tcp4	0	0	*.513	__juniper_private1__	LISTEN	*.*
tcp4	0	0	*.33009	__juniper_private1__	LISTEN	*.*
udp46	0	0	*.514	__juniper_private2__	LISTEN	*.*
udp4	0	0	*.514	default		*.*
udp46	0	0	*.59924	default		*.*
udp4	0	0	*.59412	default		*.*
udp4	0	0	*.31342	default		*.*
udp46	0	0	*.161	__juniper_private1__		*.*
udp4	0	0	*.161	default		*.*
udp4	0	0	*.6333	default		*.*
				__juniper_private1__		

lcc2-re0:

Active Internet connections (including servers) (including routing-instances)

Proto Recv-Q Send-Q Local Address Foreign Address

				Routing Instance	(state)	
tcp4	0	0	*.7000			*.*
tcp4	0	0	*.6234	__juniper_private1__	LISTEN	*.*
tcp4	0	0	*.9000	__juniper_private1__	LISTEN	*.*
tcp4	0	0	*.33009	__juniper_private1__	LISTEN	*.*
tcp4	0	0	*.3221	__juniper_private2__	LISTEN	*.*
tcp4	0	0	*.23	default	LISTEN	*.*
tcp4	0	0	*.22	default	LISTEN	*.*
tcp4	0	0	*.514	default	LISTEN	*.*
tcp4	0	0	*.513	default	LISTEN	*.*
tcp4	0	0	*.21	default	LISTEN	*.*
tcp4	0	0	*.79	default	LISTEN	*.*
tcp4	0	0	*.514	default	LISTEN	*.*
tcp4	0	0	*.513	__juniper_private1__	LISTEN	*.*
tcp4	0	0	*.513	__juniper_private1__	LISTEN	*.*

```

udp46      0      0 *.514
            default
            *.
udp4        0      0 *.514
            default
            *.
udp4        0      0 *.31342
            __juniper_private1__
            *.
udp46      0      0 *.62103
            default
            *.
udp4        0      0 *.59924
            default
            *.
udp46      0      0 *.161
            default
            *.
udp4        0      0 *.161
            default
            *.
udp4        0      0 *.6333
            __juniper_private1__
            *.

```

lcc3-re0:

```

-----
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q Local Address           Foreign Address
      Routing Instance      (state)
tcp4      0      0 *.7000
            __juniper_private1__ LISTEN
            *.
tcp4      0      0 *.6234
            __juniper_private1__ LISTEN
            *.
tcp4      0      0 *.9000
            __juniper_private1__ LISTEN
            *.
tcp4      0      0 *.33009
            __juniper_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
            *.

```

```
udp4      0      0  *.6333   default   *.*
__juniper_private1__
```

show system core-dumps

Syntax	show system core-dumps <core-filename> <core-file-info> <brief detail>
Syntax (TX Matrix Router)	show system core-dumps <all-chassis all-lcc lcc number scc> <core-filename> <core-file-info> <brief detail>
Syntax (TX Matrix Plus Router)	show system core-dumps <all-chassis all-lcc lcc number sfc number> <core-filename> <core-file-info> <brief detail>
Release Information	Command introduced before JUNOS Release 8.5. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	<p>Show core files on all JUNOS routers or switches. 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.</p> <p>You can use the option <i>core-filename</i> and its options <i>core-file-info</i>, <i>brief</i>, and <i>detail</i> to display more information about the specified core-dump files.</p>
Options	<p>none—Display a list of all existing core-dump files.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system core files on all the T640 routers (in a routing matrix based on the TX Matrix router) or T1600 routers (in a routing matrix based on the TX Matrix Plus routing matrix) in the chassis.</p> <p><all-lcc lcc number>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display core dump files for all T640 routers (or line-card chassis) or a specific T640 router connected to the TX Matrix router. On a TX Matrix Plus router, display logging information about all T1600 routers (or line-card chassis) or a specific T1600 router connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3. .</p> <p>all-members—(EX4200 switches only) (Optional) Display system core files on all members of the Virtual Chassis configuration.</p> <p>brief—(Optional) View details of binary.</p>

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 750
show system core-dumps on page 751
show system core-dumps (TX Matrix Plus Router) on page 751

Output Fields Table 133 on page 750 describes the output fields for the **show system core-dumps** command. Output fields are listed in the approximate order in which they appear.

Table 133: show system core-dumps Output Fields

Field Name	Field Description
<i>Permissions</i>	Read/write permissions for the file named.
<i>Links</i>	Number of links to the file.
<i>Owner</i>	Name of the file owner.
<i>Group</i>	Name of the group with file access.
<i>File size</i>	File size in bytes.
<i>Modified</i>	Last file modification date and time.
<i>Path/filename</i>	File path where the file resides and the filename.

show system This example shows the command output if core files exist.

core-dumps

```
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 <i>number</i> > <path>
Syntax (EX Series Switch)	show system directory-usage <all-members> <depth <i>number</i> > <local> <member <i>member-id</i> > <path>
Syntax (TX Matrix Router)	show system directory-usage <all-chassis all-lcc lcc <i>number</i> scc> <depth <i>number</i> > <path>
Syntax (TX Matrix Plus Router)	show system directory-usage <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> > <depth <i>number</i> > <path>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display directory usage information.
Options	<p>none—Display all directory usage information.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display directory usage information about all the T640 routers (in a routing matrix based on a TX Matrix router) or T1600 routers (in a routing matrix based on a TX Matrix Plus router) in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display directory information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display directory information for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display directory information for all members of the Virtual Chassis configuration.</p> <p>depth <i>number</i>—(Optional) Depth of the directory to traverse. This option is useful when you want to limit the output shown for a large file system.</p> <p>lcc <i>number</i>—(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</p>

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 755
show system directory-usage sfc (TX Matrix Plus Router) on page 755

Output Fields Table 134 on page 754 describes the output fields for the **show system directory-usage** command. Output fields are listed in the approximate order in which they appear.

Table 134: show system directory-usage Output Fields

Field Name	Field Description
<i>bytes</i>	Number of bytes used by files in a directory.
<i>directory-name</i>	Name of the directory.

```

show system
directory-usage scc (TX
Matrix Router)
user@host> show system directory-usage /var/tmp scc
/var/tmp
1.0K /var/tmp/vi.recover
2.0K /var/tmp/instmp.tPMk8u
1.0K /var/tmp/install
/var/tmp/instmp.GUMpur
4.8M /var/tmp/instmp.GUMpur/packages
6.4M /var/tmp/troy1
297M /var/tmp/dsw
/var/tmp/pkg_tmp.2073
83K /var/tmp/pkg_tmp.2073/bin
/var/tmp/instmp.oMIDb1
89K /var/tmp/instmp.oMIDb1/bin
/var/tmp/instmp.byhMjR
4.6M /var/tmp/instmp.byhMjR/packages
/var/tmp/instmp.6fqHf3
1.7M /var/tmp/instmp.6fqHf3/packages
/var/tmp/instmp.mljECe
4.6M /var/tmp/instmp.mljECe/packages

```

```

show system
directory-usage sfc (TX
Matrix Plus Router)
user@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 Release 7.4.
Description	(J Series routers only) Display firmware information.
Options	compatibility—(Optional) Display firmware compatibility information.
Required Privilege Level	view
List of Sample Output	show system firmware on page 756 show system firmware compatibility on page 756
Output Fields	Table 135 on page 756 lists the output fields for the show system firmware command. Output fields are listed in the approximate order in which they appear.

Table 135: show system firmware Output Fields

Field Name	Field Description
Part	Physical part on the router affected by the firmware.
Type	Type of firmware on the router.
Tag	Location of the firmware on the interface.
Current version	Firmware version on the affected router parts.
Available version	New versions of firmware for upgrading or downgrading.
Status	Firmware condition on the router.
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 version	Available version	Status
FPC 0	ROM Monitor	0	6.4.10		OK
Routing Engine 0	RE BIOS	0	0		OK

show system firmware compatibility user@host> **show system firmware compatibility**

Part	Type	Tag	Current version	Available version	Action
FPC 0	ROM Monitor	0	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 Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Display licenses and information about how they are used.
Options	<p>none—Display all license information.</p> <p>installed—(Optional) Display installed licenses only.</p> <p>keys—(Optional) Display a list of license keys. Use this information to verify that each expected license key is present.</p> <p>usage—(Optional) Display the state of licensed features.</p>
Required Privilege Level	maintenance
List of Sample Output	<p>show system license on page 758</p> <p>show system license installed on page 758</p> <p>show system license keys on page 758</p> <p>show system license usage on page 758</p>
Output Fields	Table 136 on page 757 lists the output fields for the show system license command. Output fields are listed in the approximate order in which they appear.

Table 136: 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.
Licenses installed	<p>Information about the installed license key:</p> <ul style="list-style-type: none"> ■ 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.

Table 136: show system license Output Fields (continued)

Field Name	Field Description
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:

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
subscriber-accounting	0	1	0	permanent
subscriber-authentication	0	1	0	permanent
subscriber-address-assignment	0	1	0	permanent
subscriber-vlan	0	1	0	permanent
subscriber-ip	0	1	0	permanent
scale-subscriber	0	1000	0	permanent
scale-l2tp	0	1000	0	permanent
scale-mobile-ip	0	1000	0	permanent

Licenses installed:

License identifier: E000185416

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: E000185416

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**

E000185416 aeaqeb qfdyps aijca4 udcgiw pa7tqn uc5fwn
ns3v7t 7hzgbm lrxec vkoqz4 tj6yy4 prms7p
xifvfv 35auxq 7dq

show system license usage user@host> **show system license usage**

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
--------------	------------------	-----------------------	--------------------	--------

subscriber-accounting	1	1	0	permanent
subscriber-authentication	1	1	0	permanent
subscriber-address-assignment	1	1	0	permanent
subscriber-vlan	0	1	0	permanent
subscriber-ip	0	1	0	permanent

show system name-resolution

Syntax	show system name-resolution
Release Information	Command introduced in JUNOS Release 9.6.
Description	Display hostname-to-IP-address mappings.
Options	This command has no options.
Required Privilege Level	view
Output Fields	Table 137 on page 760 lists the output fields for the <code>show system name-resolution</code> command. Output fields are listed in the approximate order in which they appear.

Table 137: 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 user@host> show system name-resolution
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	<pre>show system processes <brief detail extensive summary> <health (pid <i>process-identifier</i> process-name <i>process-name</i>)> <providers> <resource-limits (brief detail) <i>process-name</i>> <wide></pre>
Syntax (EX Series Switch)	<pre>show system processes <all-members> <brief detail extensive summary> <health (pid <i>process-identifier</i> process-name <i>process-name</i>)> <local> <member <i>member-id</i>> <providers> <resource-limits (brief detail) <i>process-name</i>> <wide></pre>
Syntax (TX Matrix Router)	<pre>show system processes <brief detail extensive summary> <all-chassis all-lcc lcc <i>number</i> scc> <wide></pre>
Syntax (TX Matrix Plus Router)	<pre>show system processes <brief detail extensive summary> <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i>> <wide></pre>
Release Information	<p>Command introduced before JUNOS Release 7.4.</p> <p>Command introduced in JUNOS Release 9.0 for EX Series switches.</p> <p>sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.</p>
Description	Display information about software processes that are running on the router or switch and that have controlling terminals.
Options	<p>none—Display standard information about system processes.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display standard system process information about all the T640 routers (in a routing matrix based on the TX Matrix router) or all the T1600 routers (in a routing matrix based on the TX Matrix Plus router) in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display standard system process information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display standard system process information for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display standard system process information for all members of the Virtual Chassis configuration.</p>

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

health (*pid process-identifier* | *process-name process-name*)—(Optional) Display process health information.

lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display standard system process information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display standard system process information for a specific T1600 router that is connected to the TX Matrix Plus router. Replace *number* with a value from 0 through 3.

local—(EX4200 switches only) (Optional) Display standard system process information for the local Virtual Chassis member.

member member-id—(EX4200 switches only) (Optional) Display standard system process information for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

providers—(Optional) Display provider processes.

resource-limits (**brief | detail**) *process-name*—(Optional) Display process resource limits.

scc—(TX Matrix routers only) (Optional) Display standard system process information for the TX Matrix router (or switch-card chassis).

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

wide—(Optional) Display process information that might be wider than 80 columns.

Additional Information

By default, when you issue the **show system processes** command on a TX Matrix or TX Matrix Plus master Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on the TX Matrix router) or T1600 (in a routing matrix based on the TX Matrix Plus router) master Routing Engines connected to it. Likewise, if you issue the same command on the TX Matrix or TX Matrix Plus backup Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on the TX Matrix router) or T1600 (in a routing matrix based on the TX Matrix Plus router) backup Routing Engines that are connected to it.

Required Privilege Level

view

List of Sample Output

show system processes on page 764
 show system processes brief on page 765
 show system processes detail on page 765
 show system processes extensive on page 765
 show system processes lcc wide (TX Matrix Routing Matrix) on page 766
 show system processes summary on page 767
 show system processes (TX Matrix Plus Router) on page 767
 show system processes sfc (TX Matrix Plus Router) on page 774
 show system processes lcc wide (TX Matrix Plus Routing Matrix) on page 777

Output Fields

Table 138 on page 763 describes the output fields for the **show system processes** command. Output fields are listed in the approximate order in which they appear.

Table 138: 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	<p>Symbolic process state. The state is given by a sequence of letters. The first letter indicates the run state of the process:</p> <ul style="list-style-type: none"> ■ 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
USERNAME	Process owner.	extensive summary
PPID	Parent process identifier.	detail
CPU	<p>(D)—Short-term CPU usage.</p> <p>(E and S)—Raw (unweighted) CPU usage. The value of this field is used to sort the processes in the output.</p>	detail extensive summary

Table 138: show system processes Output Fields (continued)

Field Name	Field Description	Level of Output
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 user@host> show system processes brief
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 user@host> show system processes detail
detail

```

PID	UID	PPID	CPU	PRI	NI	RSS	WCHAN	STARTED	TT	STAT	TIME	COMMAND
3151	1049	3129	2	28	0	672	-	1:13PM	p0	R+	0:00.00	ps -ax -r
1	0	0	0	10	0	376	wait	1:51PM	??	Is	0:00.29	/sbin/ini
2	0	0	0	-18	0	12	psleep	1:51PM	??	DL	0:00.00	(pagedae
3	0	0	0	28	0	12	psleep	1:51PM	??	DL	0:00.00	(vmdaemon
4	0	0	0	28	0	12	update	1:51PM	??	DL	0:07.15	(update)
5	0	0	0	2	0	12	pfesel	1:51PM	??	IL	0:02.90	(if_pfe)
27	0	1	0	10	0	17936	mfsidl	1:51PM	??	Is	0:00.46	mfs /dev/
81	0	1	0	2	0	496	select	1:52PM	??	Ss	0:31.21	syslogd -
119	1	1	0	2	0	492	select	1:52PM	??	Is	0:00.00	portmap
134	0	1	0	2	0	580	select	1:52PM	??	S	0:02.95	amd -p -a
151	0	1	0	18	0	532	pause	1:52PM	??	Is	0:00.34	cron
183	0	1	0	2	0	420	select	1:52PM	??	Ss	0:00.07	/usr/loca
206	0	1	0	18	0	72	pause	1:52PM	??	S	0:00.51	/sbin/wat
207	0	1	0	2	0	520	select	1:52PM	??	I	0:00.16	/usr/sbin
208	0	1	0	2	0	536	select	1:52PM	??	S	0:08.21	/sbin/dcd
210	0	1	255	2	-12	740	select	1:52PM	??	S<	0:05.83	/usr/sbin
211	0	1	0	2	0	376	select	1:52PM	??	S	0:00.03	/usr/sbin
215	0	1	0	2	0	548	select	1:52PM	??	I	0:00.50	/usr/sbin
219	0	1	0	3	0	540	ttyin	1:52PM	v0	Is+	0:00.02	/usr/libe
220	0	1	0	3	0	540	ttyin	1:52PM	v1	Is+	0:00.01	/usr/libe
221	0	1	0	3	0	540	ttyin	1:52PM	v2	Is+	0:00.01	/usr/libe
222	0	1	0	3	0	540	ttyin	1:52PM	v3	Is+	0:00.01	/usr/libe
735	0	1	0	2	0	468	select	2:47PM	??	S	0:19.14	/usr/sbin
736	0	1	0	2	0	212	select	2:47PM	??	S	0:14.13	/usr/sbin
1380	0	1	0	3	0	888	ttyin	7:32PM	d0	Is+	0:00.46	bash
3019	0	207	0	2	0	636	select	10:49AM	??	Ss	0:02.93	tnp.chass
3122	0	1380	0	2	0	1764	select	12:33PM	d0	S	0:00.77	./rpd -N
3128	0	215	0	2	0	580	select	12:45PM	??	Ss	0:00.12	rlogind
3129	1049	3128	0	18	0	944	pause	12:45PM	p0	Ss	0:00.14	-tcsh (tc
0	0	0	0	-18	0	0	sched	1:51PM	??	DLs	0:00.10	(swapper

```

show system processes user@host> show system processes extensive
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 [vnlr]
42  ??  DL       0:00.39 [syncer]
43  ??  DL       0:00.05 [softdepflush]
44  ??  DL       0:00.00 [netdaemon]
45  ??  DL       0:00.02 [vmuncachedaemon]
```

```

46 ?? DL 0:00.00 [if_pic_listen]
47 ?? DL 0:00.35 [vmkmemdaemon]
48 ?? DL 0:00.00 [cb_poll]
49 ?? DL 0:00.06 [if_pfe_listen]
50 ?? DL 0:00.00 [scs_housekeeping]
51 ?? IL 0:00.00 [kern_dump_proc]
52 ?? IL 0:00.00 [nfsiod 0]
53 ?? IL 0:00.00 [nfsiod 1]
54 ?? IL 0:00.00 [nfsiod 2]
55 ?? IL 0:00.00 [nfsiod 3]
56 ?? DL 0:00.37 [schedcpu]
57 ?? DL 0:00.56 [md0]
79 ?? DL 0:02.58 [md1]
100 ?? DL 0:00.03 [md2]
118 ?? DL 0:00.01 [md3]
139 ?? DL 0:00.95 [md4]
160 ?? DL 0:00.12 [md5]
181 ?? DL 0:00.00 [md6]
217 ?? DL 0:00.02 [md7]
227 ?? DL 0:00.05 [md8]
1341 ?? SL 0:01.34 [bcmTX]
1342 ?? SL 0:01.68 [bcmXGS3AsyncTX]
1343 ?? SL 0:41.40 [bcmLINK.0]
1345 ?? SL 0:33.83 [bcmLINK.1]
1350 ?? Is 0:00.01 /usr/sbin/cron
1502 ?? S 0:00.01 /sbin/watchdog -t-1
1503 ?? S 0:00.86 /usr/libexec/bslockd -mp -N
1504 ?? S 0:00.01 /usr/sbin/tnetd -N
1507 ?? S 0:01.32 /usr/sbin/alarmd -N
1508 ?? S 0:14.54 /usr/sbin/craftd -N
1509 ?? S 0:01.19 /usr/sbin/mgd -N
1512 ?? I 0:00.05 /usr/sbin/inetd -N
1513 ?? S 0:00.10 /usr/sbin/tnp.sntpd -N
1517 ?? S 0:00.11 /usr/sbin/smartd -N
1525 ?? S 0:01.10 /usr/sbin/idpd -N
1526 ?? S 0:01.43 /usr/sbin/license-check -U -M -p 10 -i 10
1527 ?? I 0:00.01 /usr/libexec/getty Pc ttyv0
1616 ?? DL 0:00.30 [peer proxy]
1617 ?? DL 0:00.32 [peer proxy]
1618 ?? DL 0:00.34 [peer proxy]
1619 ?? DL 0:00.30 [peer proxy]
2391 ?? Is 0:00.01 telnetd
7331 ?? Ss 0:00.03 telnetd
9538 ?? DL 0:01.16 [jsr_kkcm]
9613 ?? DL 0:00.18 [peer proxy]
23781 ?? Ss 0:00.01 telnetd
23926 ?? Ss 0:00.01 mgd: (mgd) (regress)/dev/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/apds -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 [vn1ru]
40 ?? DL 0:00.01 [syncer]
41 ?? DL 0:00.00 [softdepflush]
42 ?? DL 0:00.00 [netdaemon]
43 ?? DL 0:00.00 [vmuncachedaemon]
44 ?? DL 0:00.00 [if_pic_listen]
45 ?? DL 0:00.02 [vmkmemdaemon]
46 ?? DL 0:00.01 [cb_poll]
47 ?? DL 0:00.00 [if_pfe_listen]
48 ?? DL 0:00.00 [scs_housekeeping]
49 ?? IL 0:00.00 [kern_dump_proc]
50 ?? IL 0:00.00 [nfsiod 0]
51 ?? IL 0:00.00 [nfsiod 1]
52 ?? IL 0:00.00 [nfsiod 2]
53 ?? IL 0:00.00 [nfsiod 3]
54 ?? DL 0:00.01 [schedcpu]
55 ?? DL 0:00.73 [md0]
77 ?? DL 0:03.54 [md1]
98 ?? DL 0:00.37 [md2]
116 ?? DL 0:00.02 [md3]
137 ?? DL 0:00.56 [md4]
158 ?? DL 0:00.15 [md5]
179 ?? DL 0:00.00 [md6]
215 ?? DL 0:00.03 [md7]
225 ?? DL 0:00.03 [md8]
1078 ?? DL 0:00.00 [jsr_kkcm]
1363 ?? SL 0:00.09 [bcmTX]
1364 ?? SL 0:00.10 [bcmXGS3AsyncTX]
1365 ?? SL 0:03.08 [bcmLINK.0]
1370 ?? Is 0:00.00 /usr/sbin/cron
1522 ?? S 0:00.00 /sbin/watchdog -t-1
1523 ?? S 0:00.05 /usr/libexec/bslockd -mp -N
1524 ?? I 0:00.01 /usr/sbin/tnetd -N
1526 ?? S 0:04.98 /usr/sbin/chassisd -N
1527 ?? S 0:00.04 /usr/sbin/alarmd -N
1528 ?? I 0:00.40 /usr/sbin/craftd -N
1529 ?? S 0:00.08 /usr/sbin/mgd -N
1532 ?? I 0:00.04 /usr/sbin/inetd -N
1533 ?? I 0:00.00 /usr/sbin/tnp.sntpd -N
1534 ?? I 0:00.00 /usr/sbin/tnp.sntpc -N
1536 ?? S 0:00.01 /usr/sbin/smartd -N
1540 ?? I 0:00.07 /usr/sbin/jcsd -N
1541 ?? S 0:00.11 /usr/sbin/idpd -N
1542 ?? I 0:00.00 /usr/libexec/getty Pc ttyv0
2089 ?? DL 0:00.01 [peer proxy]
2090 ?? DL 0:00.01 [peer proxy]

```

```

2091 ?? DL      0:00.01 [peer proxy]
2657 ?? S       0:00.02 /usr/sbin/dfwd -N
2658 ?? S       0:00.02 /sbin/dcd -N
2659 ?? S       0:00.05 /usr/sbin/snmpd -N
2660 ?? S       0:00.01 /usr/sbin/mib2d -N
2661 ?? S       0:00.01 /usr/sbin/pfed -N
2662 ?? S       0:00.01 /usr/sbin/irsd -N
2667 ?? S       0:00.13 /usr/sbin/ksyncd -N
2690 ?? Ss      0:00.00 mgd: (mgd) (root) (mgd)
2691 ?? R       0:00.00 /bin/ps -ax
1164 d0- S      0:00.00 /usr/sbin/usbd -N
1182 d0- S      0:00.34 /usr/sbin/eventd -N -r -s -A
1543 d0 Is+    0:00.00 /usr/libexec/getty std.9600 ttyd0

```

```
lcc1-re0:
```

```

-----
PID  TT  STAT      TIME COMMAND
  0  ??  WLS      0:00.00 [swapper]
  1  ??  ILs      0:00.17 /packages/mnt/jbase/sbin/init --
  2  ??  DL       0:00.01 [g_event]
  3  ??  DL       0:00.16 [g_up]
  4  ??  DL       0:00.11 [g_down]
  5  ??  DL       0:00.00 [thread taskq]
  6  ??  DL       0:00.00 [kqueue taskq]
  7  ??  DL       0:00.00 [pagedaemon]
  8  ??  DL       0:00.00 [vmdaemon]
  9  ??  DL       0:01.77 [pagezero]
 10  ??  DL       0:00.00 [ktrace]
 11  ??  RL      17:22.83 [idle]
 12  ??  WL       0:00.35 [swi2: net]
 13  ??  WL       0:01.20 [swi7: clock sio]
 14  ??  WL       0:00.00 [swi6: vm]
 15  ??  DL       0:00.10 [yarrow]
 16  ??  WL       0:00.00 [swi9: +]
 17  ??  WL       0:00.00 [swi8: +]
 18  ??  WL       0:00.00 [swi5: cambio]
 19  ??  WL       0:00.00 [swi9: task queue]
 20  ??  WL       0:02.87 [irq10: bcm0 uhci1*]
 21  ??  WL       0:00.02 [irq11: cb0 uhci0+*]
 22  ??  DL       0:00.00 [usb0]
 23  ??  DL       0:00.00 [usbtask]
 24  ??  DL       0:00.00 [usb1]
 25  ??  DL       0:00.05 [usb2]
 26  ??  DL       0:00.00 [usb3]
 27  ??  DL       0:00.00 [usb4]
 28  ??  DL       0:00.00 [usb5]
 29  ??  DL       0:00.04 [usb6]
 30  ??  DL       0:00.00 [usb7]
 31  ??  WL       0:00.00 [irq14: ata0]
 32  ??  WL       0:00.00 [irq15: ata1]
 33  ??  WL       0:00.00 [irq1: atkbd0]
 34  ??  WL       0:00.00 [swi0: sio]
 35  ??  WL       0:00.00 [swi3: ip6opt ipopt]
 36  ??  WL       0:00.00 [swi4: ip6mismatch+]
 37  ??  WL       0:00.00 [swi1: ipfwd]
 38  ??  DL       0:00.00 [bufdaemon]
 39  ??  DL       0:00.00 [vnlr]
 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

```

```
1cc2-re0:
```

```

-----
PID TT STAT TIME COMMAND
0 ?? Wls 0:00.00 [swapper]
1 ?? ILs 0:00.18 /packages/mnt/jbase/sbin/init --
2 ?? DL 0:00.01 [g_event]

```

```

3 ?? DL 0:00.17 [g_up]
4 ?? DL 0:00.12 [g_down]
5 ?? DL 0:00.00 [thread taskq]
6 ?? DL 0:00.00 [kqueue taskq]
7 ?? DL 0:00.00 [pagedaemon]
8 ?? DL 0:00.00 [vmdaemon]
9 ?? DL 0:01.77 [pagezero]
10 ?? DL 0:00.00 [ktrace]
11 ?? RL 17:19.13 [idle]
12 ?? WL 0:00.36 [swi2: net]
13 ?? WL 0:01.20 [swi7: clock sio]
14 ?? WL 0:00.00 [swi6: vm]
15 ?? DL 0:00.13 [yarrow]
16 ?? WL 0:00.00 [swi9: +]
17 ?? WL 0:00.00 [swi8: +]
18 ?? WL 0:00.00 [swi5: cambio]
19 ?? WL 0:00.00 [swi9: task queue]
20 ?? WL 0:03.03 [irq10: bcm0 uhci1*]
21 ?? WL 0:00.02 [irq11: cb0 uhci0+*]
22 ?? DL 0:00.00 [usb0]
23 ?? DL 0:00.00 [usbtask]
24 ?? DL 0:00.00 [usb1]
25 ?? DL 0:00.05 [usb2]
26 ?? DL 0:00.00 [usb3]
27 ?? DL 0:00.00 [usb4]
28 ?? DL 0:00.00 [usb5]
29 ?? DL 0:00.04 [usb6]
30 ?? DL 0:00.00 [usb7]
31 ?? WL 0:00.00 [irq14: ata0]
32 ?? WL 0:00.00 [irq15: ata1]
33 ?? WL 0:00.00 [irq1: atkbd0]
34 ?? WL 0:00.00 [swi0: sio]
35 ?? WL 0:00.00 [swi3: ip6opt ipopt]
36 ?? WL 0:00.00 [swi4: ip6mismatch+]
37 ?? WL 0:00.00 [swi1: ipfwd]
38 ?? DL 0:00.00 [bufdaemon]
39 ?? DL 0:00.00 [vn1ru]
40 ?? DL 0:00.01 [syncer]
41 ?? DL 0:00.00 [softdepflush]
42 ?? DL 0:00.00 [netdaemon]
43 ?? DL 0:00.00 [vmuncachedaemon]
44 ?? DL 0:00.00 [if_pic_listen]
45 ?? DL 0:00.02 [vmknemdaemon]
46 ?? DL 0:00.01 [cb_poll]
47 ?? DL 0:00.00 [if_pfe_listen]
48 ?? DL 0:00.00 [scs_housekeeping]
49 ?? IL 0:00.00 [kern_dump_proc]
50 ?? IL 0:00.00 [nfsiod 0]
51 ?? IL 0:00.00 [nfsiod 1]
52 ?? IL 0:00.00 [nfsiod 2]
53 ?? IL 0:00.00 [nfsiod 3]
54 ?? DL 0:00.02 [schedcpu]
55 ?? DL 0:00.75 [md0]
77 ?? DL 0:03.48 [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.snptd -N
1508 ?? I       0:00.00 /usr/sbin/tnp.snptc -N
1510 ?? S       0:00.01 /usr/sbin/smartd -N
1514 ?? I       0:00.07 /usr/sbin/jcsd -N
1515 ?? S       0:00.17 /usr/sbin/idpd -N
1516 ?? I       0:00.00 /usr/libexec/getty Pc ttyv0
2591 ?? DL      0:00.01 [peer proxy]
2592 ?? DL      0:00.01 [peer proxy]
2593 ?? DL      0:00.01 [peer proxy]
2597 ?? DL      0:00.00 [peer proxy]
3192 ?? S       0:00.01 /usr/sbin/irsd -N
3193 ?? S       0:00.05 /usr/sbin/snmpd -N
3194 ?? S       0:00.02 /sbin/dcd -N
3195 ?? S       0:00.01 /usr/sbin/pfed -N
3196 ?? S       0:00.01 /usr/sbin/mib2d -N
3197 ?? S       0:00.02 /usr/sbin/dfwd -N
3198 ?? S       0:00.13 /usr/sbin/ksyncd -N
3228 ?? Ss      0:00.00 mgd: (mgd) (root) (mgd)
3229 ?? R       0:00.00 /bin/ps -ax
1138 d0- S       0:00.00 /usr/sbin/usbd -N
1156 d0- S       0:00.42 /usr/sbin/eventd -N -r -s -A
1517 d0 Is+     0:00.00 /usr/libexec/getty std.9600 ttyd0
...

```

**show system processes
sfc (TX Matrix Plus
Router)**

```

user@host> show system processes sfc 0
sfc0-re0:

```

PID	TT	STAT	TIME	COMMAND
0	??	Wls	0:00.00	[swapper]
1	??	SLs	0:00.18	/packages/mnt/jbase/sbin/init --
2	??	DL	0:00.20	[g_event]
3	??	DL	0:00.39	[g_up]
4	??	DL	0:00.32	[g_down]
5	??	DL	0:00.00	[thread taskq]
6	??	DL	0:00.09	[kqueue taskq]
7	??	DL	0:00.01	[pagedaemon]
8	??	DL	0:00.00	[vmdaemon]
9	??	DL	0:06.63	[pagezero]
10	??	DL	0:00.00	[ktrace]
11	??	RL	312:09.00	[idle]
12	??	WL	0:11.07	[swi2: net]
13	??	WL	0:27.70	[swi7: clock sio]
14	??	WL	0:00.00	[swi6: vm]
15	??	DL	0:03.03	[yarrow]
16	??	WL	0:00.00	[swi9: +]
17	??	WL	0:00.00	[swi8: +]
18	??	WL	0:00.00	[swi5: cambio]
19	??	WL	0:00.00	[swi9: task queue]

```

20 ?? WL 0:11.46 [irq16: uhci0 uhci*]
21 ?? DL 0:00.00 [usb0]
22 ?? DL 0:00.00 [usbtask]
23 ?? WL 0:39.63 [irq17: uhci1 uhci*]
24 ?? DL 0:00.00 [usb1]
25 ?? WL 0:00.00 [irq18: uhci2 uhci*]
26 ?? DL 0:00.84 [usb2]
27 ?? DL 0:00.00 [usb3]
28 ?? DL 0:00.00 [usb4]
29 ?? DL 0:00.00 [usb5]
30 ?? DL 0:00.73 [usb6]
31 ?? DL 0:00.00 [usb7]
32 ?? WL 0:00.00 [irq14: ata0]
33 ?? WL 0:00.00 [irq15: ata1]
34 ?? WL 0:00.00 [irq1: atkbd0]
35 ?? WL 0:00.00 [swi0: sio]
36 ?? WL 0:00.00 [irq11: isab0]
37 ?? WL 0:00.00 [swi3: ip6opt ipopt]
38 ?? WL 0:00.00 [swi4: ip6mismatch+]
39 ?? WL 0:00.00 [swi1: ipfwd]
40 ?? DL 0:00.02 [bufdaemon]
41 ?? DL 0:00.02 [vn1ru]
42 ?? DL 0:00.39 [syncer]
43 ?? DL 0:00.05 [softdepflush]
44 ?? DL 0:00.00 [netdaemon]
45 ?? DL 0:00.02 [vmuncachedaemon]
46 ?? DL 0:00.00 [if_pic_listen]
47 ?? DL 0:00.35 [vmkmemdaemon]
48 ?? DL 0:00.00 [cb_poll]
49 ?? DL 0:00.06 [if_pfe_listen]
50 ?? DL 0:00.00 [scs_housekeeping]
51 ?? IL 0:00.00 [kern_dump_proc]
52 ?? IL 0:00.00 [nfsiod 0]
53 ?? IL 0:00.00 [nfsiod 1]
54 ?? IL 0:00.00 [nfsiod 2]
55 ?? IL 0:00.00 [nfsiod 3]
56 ?? DL 0:00.37 [schedcpu]
57 ?? DL 0:00.56 [md0]
79 ?? DL 0:02.58 [md1]
100 ?? DL 0:00.03 [md2]
118 ?? DL 0:00.01 [md3]
139 ?? DL 0:00.95 [md4]
160 ?? DL 0:00.12 [md5]
181 ?? DL 0:00.00 [md6]
217 ?? DL 0:00.02 [md7]
227 ?? DL 0:00.05 [md8]
1341 ?? SL 0:01.35 [bcmTX]
1342 ?? SL 0:01.69 [bcmXGS3AsyncTX]
1343 ?? SL 0:41.57 [bcmLINK.0]
1345 ?? SL 0:33.97 [bcmLINK.1]
1350 ?? Is 0:00.01 /usr/sbin/cron
1502 ?? S 0:00.01 /sbin/watchdog -t-1
1503 ?? S 0:00.86 /usr/libexec/bslockd -mp -N
1504 ?? I 0:00.01 /usr/sbin/tnetd -N
1507 ?? S 0:01.32 /usr/sbin/alarmd -N
1508 ?? S 0:14.54 /usr/sbin/craftd -N
1509 ?? S 0:01.20 /usr/sbin/mgd -N
1512 ?? S 0:00.05 /usr/sbin/inetd -N
1513 ?? S 0:00.10 /usr/sbin/tnp.snptd -N
1517 ?? S 0:00.11 /usr/sbin/smartd -N
1525 ?? S 0:01.11 /usr/sbin/idpd -N

```

```

1526 ?? S      0:01.43 /usr/sbin/license-check -U -M -p 10 -i 10
1527 ?? I      0:00.01 /usr/libexec/getty Pc ttyv0
1616 ?? DL    0:00.30 [peer proxy]
1617 ?? DL    0:00.32 [peer proxy]
1618 ?? DL    0:00.34 [peer proxy]
1619 ?? DL    0:00.30 [peer proxy]
2391 ?? Is    0:00.01 telnetd
7331 ?? Ss    0:00.03 telnetd
9538 ?? DL    0:01.16 [jsr_kkcm]
9613 ?? DL    0:00.18 [peer proxy]
23781 ?? Ss   0:00.01 telnetd
23926 ?? Ss   0:00.03 mgd: (mgd) (regress)/dev/tty2 (mgd)
36867 ?? S    0:03.14 /usr/sbin/rpd -N
36874 ?? S    0:00.08 /usr/sbin/lmpd
36876 ?? S    0:00.17 /usr/sbin/lacpd -N
36877 ?? S    0:00.15 /usr/sbin/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/apd -N
45731 ?? SN    0:00.10 /usr/sbin/sampled -N
45732 ?? S    0:00.03 /usr/sbin/ilmid -N
45733 ?? S    0:00.09 /usr/sbin/rmopd -N
45734 ?? S    0:00.31 /usr/sbin/cosd
45735 ?? I    0:00.00 /usr/sbin/rtsdpd -N
45736 ?? S    0:00.06 /usr/sbin/fsad -N
45737 ?? S    0:00.05 /usr/sbin/rdd -N
45738 ?? S    0:00.10 /usr/sbin/pppd -N
45739 ?? S    0:00.05 /usr/sbin/dfcd -N
45740 ?? S    0:00.08 /usr/sbin/lfmd -N
45741 ?? S    0:00.01 /usr/sbin/mpiisoamd -N
45742 ?? I    0:00.01 /usr/sbin/sendd -N
45743 ?? S    0:00.08 /usr/sbin/appidd -N
45744 ?? S    0:00.05 /usr/sbin/mspd -N
45745 ?? S    0:00.27 /usr/sbin/jdiameterd -N
45746 ?? S    0:00.10 /usr/sbin/pfed -N
45747 ?? S    0:00.19 /usr/sbin/lpdfd -N
45748 ?? S    0:00.64 /sbin/dcd -N
45750 ?? S    0:00.46 /usr/sbin/mib2d -N
45751 ?? S    0:00.16 /usr/sbin/dfwd -N
45752 ?? S    0:00.15 /usr/sbin/irsd -N
45764 ?? S    0:20.60 /usr/sbin/snmpd -N
56481 ?? Ss   0:00.02 telnetd
56548 ?? Rs   0:00.19 mgd: (mgd) (regress)/dev/tty0 (mgd)
56577 ?? Ss   0:00.00 mgd: (mgd) (root) (mgd)
56578 ?? R    0:00.00 /bin/ps -ax
1142 d0- S    0:00.01 /usr/sbin/usbd -N
1160 d0- S    0:29.71 /usr/sbin/eventd -N -r -s -A
6527 d0 Is+   0:00.00 /usr/libexec/getty std.9600 ttyd0
56482 p0 Is    0:00.00 login [pam] (login)
56483 p0 S      0:00.01 -csh (csh)
56547 p0 S+    0:00.02 cli
2392 p1 Is    0:00.00 login [pam] (login)
2393 p1 I      0:00.00 -csh (csh)
2394 p1 I      0:00.00 su -
2395 p1 I+     0:00.01 -su (csh)
23782 p2 Is    0:00.00 login [pam] (login)
23881 p2 I      0:00.00 -csh (csh)
23925 p2 S+    0:00.03 cli

```

```

7332 p3 Is 0:00.00 login [pam] (login)
7333 p3 I 0:00.00 -csh (csh)
23780 p3 S+ 0:00.02 telnet aj

```

show system processes
lcc wide (TX Matrix Plus
Routing Matrix)

```

user@host> show system processes lcc 2 wide
lcc2-re0:

```

PID	TT	STAT	TIME	PROVIDER	COMMAND
0	??	WLs	0:00.00	(null)	[swapper]
1	??	ILs	0:00.19		/packages/mnt/jbase/sbin/init --
2	??	DL	0:00.02		[g_event]
3	??	DL	0:00.19		[g_up]
4	??	DL	0:00.13		[g_down]
5	??	DL	0:00.00		[thread taskq]
6	??	DL	0:00.00		[kqueue taskq]
7	??	DL	0:00.00		[pagedaemon]
8	??	DL	0:00.00		[vmdaemon]
9	??	DL	0:01.77		[pagezero]
10	??	DL	0:00.00		[ktrace]
11	??	RL	20:33.81		[idle]
12	??	WL	0:00.38		[swi2: net]
13	??	WL	0:01.43		[swi7: clock sio]
14	??	WL	0:00.00		[swi6: vm]
15	??	DL	0:00.14		[yarrow]
16	??	WL	0:00.00		[swi9: +]
17	??	WL	0:00.00		[swi8: +]
18	??	WL	0:00.00		[swi5: cambio]
19	??	WL	0:00.00		[swi9: task queue]
20	??	WL	0:03.18		[irq10: bcm0 uhci1*]
21	??	WL	0:00.03		[irq11: cb0 uhci0+*]
22	??	DL	0:00.00		[usb0]
23	??	DL	0:00.00		[usbtask]
24	??	DL	0:00.00		[usb1]
25	??	DL	0:00.06		[usb2]
26	??	DL	0:00.00		[usb3]
27	??	DL	0:00.00		[usb4]
28	??	DL	0:00.00		[usb5]
29	??	DL	0:00.05		[usb6]
30	??	DL	0:00.00		[usb7]
31	??	WL	0:00.00		[irq14: ata0]
32	??	WL	0:00.00		[irq15: ata1]
33	??	WL	0:00.00		[irq1: atkbd0]
34	??	WL	0:00.00		[swi0: sio]
35	??	WL	0:00.00		[swi3: ip6opt ipopt]
36	??	WL	0:00.00		[swi4: ip6mismatch+]
37	??	WL	0:00.00		[swi1: ipfwd]
38	??	DL	0:00.00		[bufdaemon]
39	??	DL	0:00.00		[vn1ru]
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 <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system queues <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display queue statistics.
Options	<p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system queue statistics for all the T640 routers in the chassis that are connected to the TX Matrix router. On a TX Matrix Plus router, display system queue statistics for all the T1600 routers in the chassis that are connected the TX Matrix Plus router.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system queue statistics for all LCC chassis attached to the TX Matrix or TX Matrix Plus routers.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system queue statistics for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system queue statistics for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display queue statistics for the TX Matrix router.</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display system queue statistics for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
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	<p>show system queues on page 781</p> <p>show system queues scc (TX Matrix Router) on page 781</p> <p>show system queues sfc (TX Matrix Router) on page 782</p>

Output Fields Table 139 on page 781 lists the output fields for the `show system queues` command. Output fields are listed in the approximate order in which they appear.

Table 139: show system queues Output Fields

Field Name	Field Description
Output interface	Interface on the router on which the queue exists: <ul style="list-style-type: none"> ■ 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 user@host> **show system queues sfc 0**
(TX Matrix Router) sfc0-re0:

output interface	bytes	max	packets	max	drops
ixgbe1	0	125000000	0	45000	4384
ixgbe0	0	125000000	0	45000	0
lsi	0	12500	0	41	0
dsc	0	0	0	0	0
lo0	0	0	0	0	0
em0	0	12500000	0	41666	1
gre	0	12500	0	41	0
ipip	0	12500	0	41	0
tap	0	0	0	0	0
pime	0	12500	0	41	0
pimd	0	12500	0	41	0
mtun	0	12500	0	41	0
xe-12/0/0	0	1250000	0	4166	0
xe-12/0/1	0	1250000	0	4166	0
xe-12/0/2	0	1250000	0	4166	0
xe-12/0/3	0	1250000	0	4166	0
xe-12/1/0	0	1250000	0	4166	0
xe-12/1/1	0	1250000	0	4166	0
xe-12/1/2	0	1250000	0	4166	0
xe-12/1/3	0	1250000	0	4166	0
xe-20/0/0	0	1250000	0	4166	0
xe-20/0/1	0	1250000	0	4166	0
xe-20/0/2	0	1250000	0	4166	0
xe-20/0/3	0	1250000	0	4166	0
xe-20/1/0	0	1250000	0	4166	0
xe-20/1/1	0	1250000	0	4166	0
xe-20/1/2	0	1250000	0	4166	0
xe-20/1/3	0	1250000	0	4166	0
ge-15/0/0	0	1250000	0	4166	75
ge-15/0/1	0	1250000	0	4166	0
ge-15/0/2	0	1250000	0	4166	75
ge-15/0/3	0	1250000	0	4166	75
ge-15/0/4	0	1250000	0	4166	0
ge-15/0/5	0	1250000	0	4166	0
ge-15/0/6	0	1250000	0	4166	0

ge-15/0/7	0	1250000	0	4166	0
ge-15/0/8	0	1250000	0	4166	0
ge-15/0/9	0	1250000	0	4166	0
xe-4/0/0	0	1250000	0	4166	0
xe-4/0/1	0	1250000	0	4166	0
xe-4/0/2	0	1250000	0	4166	0
xe-4/0/3	0	1250000	0	4166	0
xe-4/1/0	0	1250000	0	4166	0
xe-4/1/1	0	1250000	0	4166	0
xe-4/1/2	0	1250000	0	4166	0
xe-4/1/3	0	1250000	0	4166	0
xe-24/0/0	0	1250000	0	4166	0
xe-24/0/1	0	1250000	0	4166	0
xe-24/0/2	0	1250000	0	4166	0
xe-24/0/3	0	1250000	0	4166	0
xe-24/1/0	0	1250000	0	4166	0
xe-24/1/1	0	1250000	0	4166	0
xe-24/1/2	0	1250000	0	4166	0
xe-24/1/3	0	1250000	0	4166	0
ge-7/0/0	0	1250000	0	4166	0
ge-7/0/1	0	1250000	0	4166	0
ge-7/0/2	0	1250000	0	4166	0
ge-7/0/3	0	1250000	0	4166	75
ge-7/0/4	0	1250000	0	4166	0
ge-7/0/5	0	1250000	0	4166	0
ge-7/0/6	0	1250000	0	4166	0
ge-7/0/7	0	1250000	0	4166	0
ge-7/0/8	0	1250000	0	4166	0
ge-7/0/9	0	1250000	0	4166	0
so-7/1/0	0	125000	0	416	0
so-7/2/0	0	125000	0	416	0
xe-21/0/0	0	1250000	0	4166	0
xe-21/0/1	0	1250000	0	4166	0
xe-21/0/2	0	1250000	0	4166	0
xe-21/0/3	0	1250000	0	4166	0
xe-21/1/0	0	1250000	0	4166	0
xe-21/1/1	0	1250000	0	4166	0
xe-21/1/2	0	1250000	0	4166	0
xe-21/1/3	0	1250000	0	4166	0
xe-14/0/0	0	1250000	0	4166	0
xe-14/0/1	0	1250000	0	4166	0
xe-14/0/2	0	1250000	0	4166	0
xe-14/0/3	0	1250000	0	4166	0
xe-14/1/0	0	1250000	0	4166	0
xe-14/1/1	0	1250000	0	4166	0
xe-14/1/2	0	1250000	0	4166	0
xe-14/1/3	0	1250000	0	4166	0
xe-25/0/0	0	1250000	0	4166	0
xe-25/0/1	0	1250000	0	4166	0
xe-25/0/2	0	1250000	0	4166	0
xe-25/0/3	0	1250000	0	4166	0
xe-25/1/0	0	1250000	0	4166	0
xe-25/1/1	0	1250000	0	4166	0
xe-25/1/2	0	1250000	0	4166	0
xe-25/1/3	0	1250000	0	4166	0
so-22/0/0	0	125000	0	416	0
so-22/0/1	0	125000	0	416	0
so-22/0/2	0	125000	0	416	0
so-22/0/3	0	125000	0	416	0
xe-22/1/0	0	1250000	0	4166	0
xe-22/1/1	0	1250000	0	4166	0

xe-22/1/2	0	1250000	0	4166	0
xe-22/1/3	0	1250000	0	4166	0
xe-6/0/0	0	1250000	0	4166	0
xe-6/0/1	0	1250000	0	4166	0
xe-6/0/2	0	1250000	0	4166	0
xe-6/0/3	0	1250000	0	4166	0
xe-6/1/0	0	1250000	0	4166	0
xe-6/1/1	0	1250000	0	4166	0
xe-6/1/2	0	1250000	0	4166	0
xe-6/1/3	0	1250000	0	4166	0
xe-26/0/0	0	1250000	0	4166	0
xe-26/0/1	0	1250000	0	4166	0
xe-26/0/2	0	1250000	0	4166	0
xe-26/0/3	0	1250000	0	4166	0
xe-26/1/0	0	1250000	0	4166	0
xe-26/1/1	0	1250000	0	4166	0
xe-26/1/2	0	1250000	0	4166	0
xe-26/1/3	0	1250000	0	4166	0
ge-31/0/0	0	1250000	0	4166	0
ge-31/0/1	0	1250000	0	4166	0
ge-31/0/2	0	1250000	0	4166	0
ge-31/0/3	0	1250000	0	4166	0
ge-31/0/4	0	1250000	0	4166	75
ge-31/0/5	0	1250000	0	4166	0
ge-31/0/6	0	1250000	0	4166	75
ge-31/0/7	0	1250000	0	4166	0
ge-31/0/8	0	1250000	0	4166	0
ge-31/0/9	0	1250000	0	4166	0
pd-31/1/0	0	12500	0	41	0
pe-31/1/0	0	12500	0	41	0
gr-31/1/0	0	12500	0	41	0
ip-31/1/0	0	12500	0	41	0
vt-31/1/0	0	12500	0	41	0
mt-31/1/0	0	12500	0	41	0
lt-31/1/0	0	12500	0	41	0
so-29/0/0	0	125000	0	416	0
so-29/0/1	0	125000	0	416	0
so-29/0/2	0	125000	0	416	0
so-29/0/3	0	125000	0	416	0
xe-29/1/0	0	1250000	0	4166	0
xe-29/1/1	0	1250000	0	4166	0
xe-29/1/2	0	1250000	0	4166	0
xe-29/1/3	0	1250000	0	4166	0
so-28/0/0	0	125000	0	416	0
so-28/0/1	0	125000	0	416	0
so-28/0/2	0	125000	0	416	0
so-28/0/3	0	125000	0	416	0
ge-23/0/0	0	1250000	0	4166	0
ge-23/0/1	0	1250000	0	4166	0
ge-23/0/2	0	1250000	0	4166	0
ge-23/0/3	0	1250000	0	4166	0
ge-23/0/4	0	1250000	0	4166	0
ge-23/0/5	0	1250000	0	4166	0
ge-23/0/6	0	1250000	0	4166	0
ge-23/0/7	0	1250000	0	4166	0
ge-23/0/8	0	1250000	0	4166	0
ge-23/0/9	0	1250000	0	4166	0
input protocol	bytes	max	packets	max	drops
sp1fwdq	0	1000000	0	1000	0
sp1netq	0	1000000	0	1000	0
arpintrq	0	1000	0	50	0

optionq	0	200000	0	200	0
icmpq	0	50000	0	50	0
frlmiq	0	0	0	0	0
spppintrq	0	25000	0	250	0
atmctlpktq	0	0	0	0	0
atmoamq	0	0	0	0	0
tnpintrq	0	1250000	0	4166	0
tagintrq	0	200000	0	200	0
tagfragq	0	200000	0	200	0

show system reboot

Syntax	show system reboot <both-routing-engines>
Syntax (EX Series Switch)	show system reboot <all-members> <both-routing-engines> <local> <member <i>member-id</i> >
Syntax (TX Matrix Router)	show system reboot <all-chassis all-lcc lcc <i>number</i> scc> <both-routing-engines>
Syntax (TX Matrix Plus Router)	show system reboot <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> > <both-routing-engines>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display pending system reboots or halts.
Options	<p>none—Display pending reboots or halts on the active Routing Engine.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display halt or reboot request information for all the T640 routers in the chassis that are connected to the TX Matrix router. On a TX Matrix Plus router, display halt or reboot request information for all the T1600 routers in the chassis that are connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display halt or reboot request information for all members of the Virtual Chassis configuration.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system halt or reboot request information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display halt or reboot request information for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>both-routing-engines—(Systems with multiple Routing Engines) (Optional) Display halt or reboot request information on both Routing Engines.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display halt or reboot request information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display halt or reboot request information for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p>

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 787
show system reboot all-lcc (TX Matrix Router) on page 788
show system reboot sfc (TX Matrix Plus Router) on page 788

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)	<pre>user@host> show system reboot all-lcc lcc0-re0: ----- No shutdown/reboot scheduled. lcc2-re0: ----- No shutdown/reboot scheduled.</pre>
show system reboot sfc (TX Matrix Plus Router)	<pre>user@host> show system sfc 0 No shutdown/reboot scheduled.</pre>

show system rollback

Syntax	<code>show system rollback <i>number</i></code> <code><compare <i>number</i>></code>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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	<i>number</i> —Number of a configuration to view. The output displays the configuration. The range of values is 0 through 49. <i>compare number</i> —(Optional) Number of another previously committed (rollback) configuration to compare to rollback <i>number</i> . The output displays the differences between the two configurations. The range of values is 0 through 49.

Required Privilege Level view

List of Sample Output show system rollback compare on page 789

```

show system rollback user@host> show system rollback 3 compare 1
compare [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 Release 7.4.
Description	(J Series routers only) Display Dynamic Host Configuration Protocol (DHCP) server client binding information.
Options	<p>none—Display brief information about all active client bindings.</p> <p>detail—(Optional) Display detailed information about all active client bindings.</p> <p>address—(Optional) Display detailed client binding information for the specified IP address only.</p>
Required Privilege Level	view and system
Related Topics	■ clear system services dhcp binding
List of Sample Output	<p>show system services dhcp binding on page 791</p> <p>show system services dhcp binding address on page 791</p> <p>show system services dhcp binding address detail on page 791</p>
Output Fields	Table 140 on page 790 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 140: 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	(<i>address</i> 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	(<i>address</i> option only) Time the client obtained the lease from the DHCP server.	detail
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

Table 140: show system services dhcp binding Output Fields (continued)

Field Name	Field Description	Level of Output
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 addressBinding TypeLease expires at
192.168.1.200:a0:12:00:12:abstatic      never
192.168.1.300:a0:12:00:13:02dynamic 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 address192.168.1.3
Mac address00: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 onfe-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
Stateactive

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 Release 7.4.
Description	(J Series routers only) Display Dynamic Host Configuration Protocol (DHCP) client-detected conflicts for IP addresses.
Options	This command has no options.
Additional Information	When a conflict is detected, the DHCP server removes the address from the address pool.
Required Privilege Level	view and system
Related Topics	■ clear system services dhcp conflict
List of Sample Output	show system services dhcp conflict on page 792
Output Fields	Table 141 on page 792 describes the output fields for the <code>show system services dhcp conflict</code> command. Output fields are listed in the approximate order in which they appear.

Table 141: 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 <code>clear system services dhcp conflict</code> command to manually clear the list.

```

show system services      user@host> show system services dhcp conflict
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 Release 7.4.
Description	(J Series routers 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 794
Output Fields	Table 142 on page 793 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 142: 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 user@host> show system services dhcp global  
dhcp global  
Global settings:  
    BOOTP lease length      infinite  
  
DHCP lease times:  
    Default lease time      1 hour  
    Minimum lease time      2 hours  
    Maximum lease time      infinite  
  
DHCP options:  
    Name: name-server, Value: { 6.6.6.6, 6.6.6.7 }  
    Name: domain-name, Value: mydomain.tld  
    Code: 19, Type: flag, Value: off  
    Code: 40, Type: string, Value: domain.tld  
    Code: 32, Type: ip-address, Value: 3.3.3.33
```

show system services dhcp pool

Syntax	show system services dhcp pool <detail> <subnet-address>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(J Series routers 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 796 show system services dhcp pool subnet-address on page 796 show system services dhcp pool subnet-address detail on page 796
Output Fields	Table 143 on page 795 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 143: 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
Minimum lease time	Minimum time a client can retain an IP address lease on the server.	detail

Table 143: show system services dhcp pool Output Fields (continued)

Field Name	Field Description	Level of Output
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      user@host> show system services dhcp pool 3.3.3.0/24
subnet-address                     Pool information:
                                     Subnet                        3.3.3.0/24
                                     Address range                3.3.3.2 - 3.3.3.254
                                     Addresses assigned            2/253

show system services dhcp pool      user@host> show system services dhcp pool 3.3.3.0/24 detail
subnet-address detail              Pool information:
                                     Subnet                        3.3.3.0/24
                                     Address range                3.3.3.2 - 3.3.3.254
                                     Addresses assigned            2/253
                                     Active: 1, Excluded: 1

                                     DHCP lease times:
                                     Default lease time          1 hour
                                     Minimum lease time           2 hours
                                     Maximum lease time           infinite

                                     DHCP options:
                                     Name: name-server, Value: { 6.6.6.6, 6.6.6.7 }
                                     Name: domain-name, Value: mydomain.tld
                                     Name: router, Value: { 3.3.3.1 }
                                     Name: server-identifier, Value: 3.3.3.1
                                     Code: 19, Type: flag, Value: off
                                     Code: 40, Type: string, Value: domain.tld
                                     Code: 32, Type: ip-address, Value: 3.3.3.333.3.3.254 3.3.3.1

```

show system services dhcp statistics

Syntax	show system services dhcp statistics
Release Information	Command introduced before JUNOS Release 7.4.
Description	(J Series routers only) Display Dynamic Host Configuration Protocol (DHCP) server statistics.
Options	This command has no options.
Required Privilege Level	view and system
Related Topics	<ul style="list-style-type: none"> ■ clear system services dhcp statistics
List of Sample Output	show system services dhcp statistics on page 798
Output Fields	Table 144 on page 797 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 144: 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: <ul style="list-style-type: none"> ■ 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 144: show system services dhcp statistics Output Fields *(continued)*

Field Name	Field Description
Messages received	<p>Number of the following message types sent from DHCP clients and received by the DHCP server:</p> <ul style="list-style-type: none"> ■ BOOTREQUEST ■ DHCPDECLINE ■ DHCPDISCOVER ■ DHCPINFORM ■ DHCPRELEASE ■ DHCPREQUEST
Messages sent	<p>Number of the following message types sent from the DHCP server to DHCP clients:</p> <ul style="list-style-type: none"> ■ 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 Release 7.4. Command introduced in JUNOS 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 799
show system services service-deployment	<pre>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</pre>

show system snapshot

Syntax	show system snapshot
Syntax (EX Series Switch)	show system snapshot <all-members> <local> <member <i>member-id</i> >
Release Information	Command introduced in JUNOS Release 7.6. Command introduced in JUNOS 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	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 <i>member-id</i> —(EX4200 switches only) (Optional) Display information about the backup software for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.
Required Privilege Level	view
Related Topics	■ request system snapshot
List of Sample Output	show system snapshot on page 800
show system snapshot	<pre> 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 </pre>

show system software

Syntax	show system software <detail>
Syntax (EX Series Switch)	show system software <detail> <all-members> <local> <member <i>member-id</i> >
Syntax (TX Matrix Router)	show system software <detail> <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system software <detail> <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Syntax (J Series Routers)	show system software <detail> <backup>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display the JUNOS extensions loaded on your router or switch.
Options	<p>none—Display standard information about all loaded JUNOS extensions.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system software information for all the T640 routers (TX Matrix Router) or all the T1600 routers (TX Matrix Plus Router) in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system software information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system software information for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router</p> <p>all-members—(EX4200 switches only) (Optional) Display the system software running on all members of the Virtual Chassis configuration.</p> <p>backup—(J Series routers only) (Optional) Display the status of old system software packages only.</p> <p>detail—(Optional) Display detailed information about available JUNOS extensions.</p> <p>lcc <i>number</i>—(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</p>

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 802
show system software (TX Matrix Plus Router) on page 803

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 user@host> show system software
(TX Matrix Plus Router) sfc0-re0:
-----
Information for jbase:

Comment:
JUNOS Base OS Software Suite [9.6-20090515.0]

Information for jcrypto:

Comment:
JUNOS Crypto Software Suite [9.6-20090515.0]

Information for jdocs:

Comment:
JUNOS Online Documentation [9.6-20090515.0]
Information for jkernel:

Comment:
JUNOS Kernel Software Suite [9.6-20090515.0]

Information for jpfe:

Comment:
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090515.0]

Information for jpfe-common:

Comment:
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090515.0]

Information for jroute:Comment:
JUNOS Routing Software Suite [9.6-20090515.0]

Information for jservices-aacl:

Comment:
JUNOS Services ACL Container package [9.6-20090515.0]

Information for jservices-appid:

Comment:
JUNOS AppId Services [9.6-20090515.0]

```

Information for jservices-bgf:

Comment:

JUNOS Border Gateway Function package [9.6-20090515.0]

Information for jservices-idp:

Comment:

JUNOS IDP Services [9.6-20090515.0]

Information for jservices-llpdf:

Comment:

JUNOS Services LL-PDF Container package [9.6-20090515.0]

Information for jservices-sfw:

Comment:

JUNOS Services Stateful Firewall [9.6-20090515.0]

Information for jservices-voice:

Comment:

JUNOS Voice Services Container package [9.6-20090515.0]

Information for junos:

Comment:

JUNOS Base OS boot [9.6-20090515.0]

...

lcc0-re0:

Information for jbase:

Comment:

JUNOS Base OS Software Suite [9.6-20090515.0]

Information for jcrypto:

Comment:

JUNOS Crypto Software Suite [9.6-20090515.0]

Information for jdocs:

Comment:

JUNOS Online Documentation [9.6-20090515.0]

Information for jkernel:

Comment:
JUNOS Kernel Software Suite [9.6-20090515.0]

Information for jpfe:

Comment:
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090515.0]

Information for jpfe-common:

Comment:
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090515.0]

Information for jroute:

Comment:
JUNOS Routing Software Suite [9.6-20090515.0]

Information for jservices-aac1:

Comment:
JUNOS Services ACL Container package [9.6-20090515.0]

Information for jservices-appid:

Comment:
JUNOS AppId Services [9.6-20090515.0]

Information for jservices-bgf:

Comment:
JUNOS Border Gateway Function package [9.6-20090515.0]

Information for jservices-idp:

Comment:
JUNOS IDP Services [9.6-20090515.0]

Information for jservices-llpdf:

Comment:
JUNOS Services LL-PDF Container package [9.6-20090515.0]

Information for jservices-sfw:

Comment:

JUNOS Services Stateful Firewall [9.6-20090515.0]

Information for jservices-voice:

Comment:

JUNOS Voice Services Container package [9.6-20090515.0]

Information for junos:

Comment:

JUNOS Base OS boot [9.6-20090515.0]

lcc1-re0:

Information for jbase:

Comment:

JUNOS Base OS Software Suite [9.6-20090515.0]

Information for jcrypto:

Comment:

JUNOS Crypto Software Suite [9.6-20090515.0]

...

show system statistics

Syntax	show system statistics
Syntax (EX Series Switch)	show system statistics <all-members> <local> <member <i>member-id</i> >
Syntax (TX Matrix Router)	show system statistics <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide protocol-related statistics.
Options	<p>none —Display system statistics for all the following protocols:</p> <ul style="list-style-type: none"> ■ 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 <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for a protocol for all the routers in the chassis.</p>

all-icc—(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.

icc *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 808
show system statistics (EX Series Switch) on page 815
show system statistics (TX Matrix Router) on page 824

show system statistics

```
user@host> show system statistics
ip:
    3682087 total packets received
    0 bad header checksums
    0 with size smaller than minimum
    0 with data size < data length
    0 with header length < data size
    0 with data length < header length
    0 with incorrect version number
    0 packets destined to dead next hop
    0 fragments received
    0 fragments dropped (dup or out of space)
```

```

0 fragments dropped (queue overflow)
0 fragments dropped after timeout
0 fragments dropped due to over limit
0 packets reassembled ok
3664774 packets for this host
17316 packets for unknown/unsupported protocol
0 packets forwarded
0 packets not forwardable
0 redirects sent
6528 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets with bad options
1123 packets with options handled without error
0 strict source and record route options
0 loose source and record route options
0 record route options
0 timestamp options
0 timestamp and address options
0 timestamp and prespecified address options
0 option packets dropped due to rate limit
1123 router alert options
0 multicast packets dropped (no iflist)
0 packets dropped (src and int don't match)
icmp:
0 drops due to rate limit
0 calls to icmp_error
0 errors not generated because old message was icmp
Output histogram:
    echo reply: 75
0 messages with bad code fields
0 messages less than the minimum length
0 messages with bad checksum
0 messages with bad source address
0 messages with bad length
0 echo drops with broadcast or multicast destination address
0 timestamp drops with broadcast or multicast destination address
Input histogram:
    echo: 75
    router advertisement: 130
75 message responses generated
tcp:
3844 packets sent
    3618 data packets (1055596 bytes)
    0 data packets (0 bytes) retransmitted
    0 resends initiated by MTU discovery
    205 ack-only packets (148 packets delayed)
    0 URG only packets
    0 window probe packets
    0 window update packets
    1079 control packets
5815 packets received
    3377 acks (for 1055657 bytes)
    24 duplicate acks
    0 acks for unsent data
    2655 packets (15004 bytes) received in-sequence
    1 completely duplicate packet (0 bytes)

```

```

    0 old duplicate packets
    0 packets with some dup. data (0 bytes duped)
    0 out-of-order packets (0 bytes)
    0 packets (0 bytes) of data after window
    0 window probes
    7 window update packets
    0 packets received after close
    0 discarded for bad checksums
    0 discarded for bad header offset fields
    0 discarded because packet too short
1 connection request
32 connection accepts
0 bad connection attempts
0 listen queue overflows
33 connections established (including accepts)
30 connections closed (including 0 drops)
    27 connections updated cached RTT on close
    27 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
0 embryonic connections dropped
3374 segments updated rtt (of 3220 attempts)
0 retransmit timeouts
    0 connections dropped by rexmit timeout
0 persist timeouts
    0 connections dropped by persist timeout
344 keepalive timeouts
    0 keepalive probes sent
    0 connections dropped by keepalive
1096 correct ACK header predictions
1314 correct data packet header predictions
32 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped
    32 completed
    0 bucket overflow
    0 cache overflow
    0 reset
    0 stale
    0 aborted
    0 badack
    0 unreach
    0 zone failures
0 cookies sent
0 cookies received
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
1058 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors

udp:
3658884 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
3657342 dropped due to no socket
3657342 broadcast/multicast datagrams dropped due to no socket
0 dropped due to full socket buffers

```

```

0 not for hashed pcb
4291311496 delivered
1551 datagrams output
ipsec:
0 inbound packets processed successfully
0 inbound packets violated process security policy
0 inbound packets with no SA available
0 invalid inbound packets
0 inbound packets failed due to insufficient memory
0 inbound packets failed getting SPI
0 inbound packets failed on AH replay check
0 inbound packets failed on ESP replay check
0 inbound AH packets considered authentic
0 inbound AH packets failed on authentication
0 inbound ESP packets considered authentic
0 inbound ESP packets failed on authentication
0 outbound packets processed successfully
0 outbound packets violated process security policy
0 outbound packets with no SA available
0 invalid outbound packets
0 outbound packets failed due to insufficient memory
0 outbound packets with no route
igmp:
17186 messages received
0 messages received with too few bytes
0 messages received with bad checksum
0 membership queries received
0 membership queries received with invalid field(s)
0 membership reports received
0 membership reports received with invalid field(s)
0 membership reports received for groups to which we belong
0 membership reports sent
arp:
44181302 datagrams received
2 ARP requests received
2028 ARP replies received
3156 resolution requests received
0 unrestricted proxy requests
0 received proxy requests
0 proxy requests not proxied
0 with bogus interface
787 with incorrect length
712 for non-IP protocol
0 with unsupported op code
0 with bad protocol address length
0 with bad hardware address length
0 with multicast source address
7611 with multicast target address
0 with my own hardware address
14241699 for an address not on the interface
0 with a broadcast source address
0 with source address duplicate to mine
29929250 which were not for me
0 packets discarded waiting for resolution
6 packets sent after waiting for resolution
17812 ARP requests sent
2 ARP replies sent
0 requests for memory denied
0 requests dropped on entry
0 requests dropped during retry
ip6:

```

```

0 total packets received
0 with size smaller than minimum
0 with data size < data length
0 with bad options
0 with incorrect version number
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped after timeout
0 fragments that exceeded limit
0 packets reassembled ok
0 packets for this host
0 packets forwarded
0 packets not forwardable
0 redirects sent
0 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs, etc.
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets that violated scope rules
0 multicast packets which we don't join
Mbuf statistics:
0 packets whose headers are not continuous
0 tunneling packets that can't find gif
0 packets discarded due to too many headers
0 failures of source address selection
0 forward cache hit
0 forward cache miss
0 packets destined to dead next hop
0 option packets dropped due to rate limit
0 packets dropped (src and int don't match)
0 packets dropped due to bad protocol

icmp6:
0 calls to icmp_error
0 errors not generated because old message was icmp error or so
0 errors not generated because rate limitation
0 messages with bad code fields
0 messages < minimum length
0 bad checksums
0 messages with bad length
Histogram of error messages to be generated:
    0 no route
      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

cInl:
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 user@host> **show system statistics**
(EX Series Switch) Tcp:

```

571779 packets sent
21517 data packets (1797102 bytes)
2 data packets retransmitted (20 bytes)
0 resends initiated by MTU discovery
3708 ack only packets (531 packets delayed)

```

```

0 URG only packets
1 window probe packets
1 window update packets
1093063 control packets
1132541 packets received
20961 acks(for 1796102 bytes)
5861 duplicate acks
0 acks for unsent data
19556 packets received in-sequence(232079 bytes)
3018 completely duplicate packets(0 bytes)
0 old duplicate packets
4 packets with some duplicate data(4 bytes duped)
2 out-of-order packets(2 bytes)
0 packets of data after window(0 bytes)
0 window probes
39 window update packets
0 packets received after close
0 discarded for bad checksums
0 discarded for bad header offset fields
0 discarded because packet too short
546519 connection requests
78 connection accepts
0 bad connection attempts
0 listen queue overflows
100 connections established (including accepts)
546596 connections closed (including 6 drops)
    47 connections updated cached RTT on close
    47 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
546497 embryonic connections dropped
20453 segments updated rtt(of 566914 attempts)
2 retransmit timeouts
    0 connections dropped by retransmit timeout
0 persist timeouts
    0 connections dropped by persist timeout
3028 keepalive timeouts
    3027 keepalive probes sent
    1 connections dropped by keepalive
7515 correct ACK header predictions
12258 correct data packet header predictions
78 syncache entries added
    0 retransmitted
    0 dupsyn
    4 dropped
    78 completed
    0 bucket overflow
    0 cache overflow
    0 reset
    0 stale
    0 aborted
    0 badack
    0 unreach
    0 zone failures
0 cookies sent
0 cookies received
1 SACK recovery episodes
1 segment retransmits in SACK recovery episodes
1 byte retransmits in SACK recovery episodes
71 SACK options (SACK blocks) received
1 SACK options (SACK blocks) sent
0 SACK scoreboard overflow

```

```

0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
546544 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
0 outgoing segments dropped due to policing

udp:
147 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
9 dropped due to no socket
0 broadcast/multicast datagrams dropped due to no socket
0 dropped due to full socket buffers
0 not for hashed pcb
138 delivered
0 datagrams output

ip:
73704 total packets received
0 bad header checksums
0 with size smaller than minimum
0 with data size < data length
0 with header length < data size
0 with data length < header length
0 with incorrect version number
0 packets destined to dead next hop
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped (queue overflow)
0 fragments dropped after timeout
0 fragments dropped due to over limit
0 packets reassembled ok
1133057 packets for this host
0 packets for unknown/unsupported protocol
40146 packets forwarded
0 packets not forwardable
40146 redirects sent
1121700 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets with bad options
0 packets with options handled without error
0 strict source and record route options
0 loose source and record route options
0 record route options
0 timestamp options
0 timestamp and address options
0 timestamp and prespecified address options
0 option packets dropped due to rate limit
0 router alert options
0 multicast packets dropped (no iflist)
0 packets dropped (src and int don't match)
0 transit re packets dropped on mgmt i/f
0 packets used first nexthop in ecmp unilist

```

```

0 incoming ttpoip packets received
0 incoming ttpoip packets dropped
0 outgoing TTPoIP packets sent
0 outgoing TTPoIP packets dropped
icmp:
0 drops due to rate limit
9 calls to icmp_error
0 errors not generated because old message was icmp
Output histogram:
    295 echo reply
    9 destination unreachable
0 messages with bad code fields
0 messages less than the minimum length
0 messages with bad checksum
0 messages with bad source address
0 messages with bad length
0 echo drops with broadcast or multicast destination address
0 timestamp drops with broadcast or multicast destination address
Input histogram:
    295 echo
295 message responses generated
igmp:
0 messages received
0 messages received with too few bytes
0 messages received with bad checksum
0 membership queries received
0 membership queries received with invalid fields
0 membership reports received
0 membership reports received with invalid fields
0 membership reports received for groups to which we belong
0 Membership reports sent
raw_if:
0 RAW packets transmitted
0 PPPOE packets transmitted
0 ISDN packets transmitted
0 DIALER packets transmitted
0 PPP packets transmitted to pppd
0 PPP packets transmitted to jppd
0 IGMPv2 packets transmitted
13 output drops due to tx error
0 MPU packets transmitted
0 PPPOE packets received
0 ISDN packets received
0 DIALER packets received
0 PPP packets received from pppd
0 MPU packets received
0 PPP packets received from jppd
0 IGMPv2 packets received
0 Input drops due to bogus protocol
0 input drops due to no mbufs available
0 input drops due to no space in socket
0 input drops due to no socket
arp:
186413 datagrams received
88 ARP requests received
88 ARP replies received
0 resolution request received
0 unrestricted proxy requests
0 restricted proxy requests
0 received proxy requests
0 proxy requests not proxied

```

```

0 restricted proxy requests not proxied
0 datagrams with bogus interface
0 datagrams with incorrect length
0 datagrams for non-IP protocol
0 datagrams with unsupported op code
0 datagrams with bad protocol address length
  0 datagrams with bad hardware address length
0 datagrams with multicast source address
0 datagrams with multicast source address
0 datagrams with my own hardware address
164 datagrams for an address not on the interface
0 datagrams with a broadcast source address
0 datagrams with source address duplicate to mine
186065 datagrams which were not for me
0 packets discarded waiting for resolution
0 packets sent after waiting for resolution
50 ARP requests sent
88 ARP replies sent
0 requests for memory denied
0 requests dropped on entry
0 requests dropped during retry
0 requests dropped due to interface deletion
0 requests on unnumbered interfaces
0 new requests on unnumbered interfaces
0 replies for from unnumbered interfaces
0 requests on unnumbered interface with non-subnetted donor
0 replies from unnumbered interface with non-subnetted donor
ip6:
0 total packets received
0 packets with size smaller than minimum
0 packets with data size < data length
0 packets with bad options
0 packets with incorrect version number
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped after timeout
0 fragments that exceeded limit
0 packets reassembled ok
0 packets for this host
0 packets forwarded
0 packets not forwardable
0 redirects sent
0 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs, etc.
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets that violated scope rules
0 multicast packets which we don't join
0 packets whose headers are not continuous
0 tunneling packets that can't find gif
0 packets discarded due to too many headers
0 failures of source address selection
0 forward cache hit
0 forward cache miss
0 Packets destined to dead next hop
0 option packets dropped due to rate limit
0 Packets dropped (src and int don't match)
0 packets dropped due to bad protocol
0 transit re packet(null) dropped on mgmt i/f

```

```

icmp6:
  0 Calls to icmp_error
  0 Errors not generated because old message was icmp error
  0 Errors not generated because rate limitation
  0 Messages with bad code fields
  0 Messages < minimum length
  0 Bad checksums
  0 Messages with bad length
    0 No route
    0 Administratively prohibited
    0 Beyond scope
    0 Address unreachable
    0 Port unreachable
    0 packet too big
    0 Time exceed transit
    0 Time exceed reassembly
    0 Erroneous header field
    0 Unrecognized next header
    0 Unrecognized option
    0 redirect
    0 Unknown
  0 Message responses generated
  0 Messages with too many ND options

pfkey:
  0 Requests sent from userland
  0 Bytes sent from userland
  histogram by message type:
    0 reserved
    0 dump
  0 Messages with invalid length field
  0 Messages with invalid version field
  0 Messages with invalid message type field
  0 Messages too short
  0 Messages with memory allocation failure
  0 Messages with duplicate extension
  0 Messages with invalid extension type
  0 Messages with invalid sa type
  0 Messages with invalid address extension
  0 Requests sent to userland
  0 Bytes sent to userland
  histogram by message type:
    0 reserved
    0 dump
  0 Messages toward single socket
  0 Messages toward all sockets
  0 Messages toward registered sockets
  0 Messages with memory allocation failure

c1nl:
  0 Total packets received
  0 Packets delivered
  0 Too small packets
  0 Packets with bad header length
  0 Packets with bad checksum
  0 Bad version packets
  0 Unknown or unsupported protocol packets
  0 Packets with bogus sdl size
  0 No free memory in socket buffer
  0 Send packets discarded
  0 Sbappend failure
  0 Mcopy failure
  0 Address fields were not reasonable

```

```

0 Segment information forgotten
0 Forwarded packets
0 Total packets sent
0 Output packets discarded
0 Non-forwarded packets
0 Packets fragmented
0 Fragments sent
0 Fragments discarded
0 Fragments timed out
0 Fragmentation prohibited
0 Packets reconstructed
0 Packets destined to dead nexthop
0 Packets discarded due to no route
0 Error pdu rate drops
0 ER pdu generation failure
esis:
0 Total pkts received
0 Total packets consumed by protocol
0 Pdus received with bad checksum
0 Pdus received with bad version number
0 Pdus received with bad type field
0 Short pdus received
0 Pdus with bogus sdl size
0 Pdus with bad header length
0 Pdus with unknown or unsupported protocol
0 No free memory in socket buffer
0 Send packets discarded
0 Sbappend failure
0 Mcopy failure
0 ISO family not configured
tnp:
0 Unicast packets received
0 Broadcast packets received
0 Fragmented packets received
0 Hello packets dropped
0 Fragments dropped
0 Fragment reassembly queue flushes
0 Packets with tnp src address collision received
0 Hello packets received
0 Control packets received
0 Rdp packets received
0 Udp packets received
0 Tunnel packets received
0 Input packets discarded with no protocol
0 Packets of version unspecified received
0 Packets of version 1 received
0 Packets of version 2 received
0 Packets of version 3 received
0 Unicast packets sent
0 Broadcast packets sent
0 Fragmented packets sent
0 Hello packets dropped
0 Fragments dropped
0 Hello packets sent
0 Control packets sent
0 Rdp packets sent
0 Udp packets sent
0 Tunnel packets sent
0 Packets sent with unknown protocol
0 Packets of version unspecified sent
0 Packets of version 1 sent

```

```

0 Packets of version 2 sent
0 Packets of version 3 sent
rdp:
0 Input packets
0 Packets discarded for bad checksum
0 Packets discarded due to bad sequence number
0 Refused connections
0 Acks received
0 Packets dropped due to full socket buffers
0 Retransmits
0 Output packets
0 Acks sent
0 Connects
0 Closes
0 Keepalives received
0 Keepalives sent
tudp:
67 Datagrams received
0 Datagrams with incomplete header
0 Datagrams with bad data length field
0 Datagrams with bad checksum
0 Datagrams dropped due to no socket
0 Broadcast/multicast datagrams dropped due to no socket
0 Datagrams dropped due to full socket buffers
67 Delivered
68 Datagrams output
ttp:
0 Packets sent
0 Packets sent while unconnected
0 Packets sent while interface down
0 Packets sent couldn't get buffer
0 Packets sent couldn't find neighbor
0 L2 packets received
0 Unknown L3 packets received
0 IPv4 L3 packets received
0 MPLS L3 packets received
0 MPLS->IPv4 L3 packets received
0 IPv4->MPLS L3 packets received
0 IPv6 L3 packets received
0 ARP L3 packets received
0 CLNP L3 packets received
0 TNP L3 packets received
0 NULL L3 packets received
0 Cyclotron cycle L3 packets received
0 Cyclotron send L3 packets received
0 Packets received while unconnected
0 Packets received from unknown ifl
0 Input packets couldn't get buffer
0 Input packets with bad type
0 Input packets with discard type
0 Input packets for which rt lookup is bypassed
mpls:
0 Total MPLS packets received
0 Packets forwarded
0 Packets dropped
0 Packets with header too small
0 After tagging, packets can't fit link MTU
0 Packets with IPv4 explicit NULL tag
0 Packets with IPv4 explicit NULL cksum errors
0 Packets with router alert tag
0 LSP ping packets (ttl-expired/router alert)

```

```

0 Packets with ttl expired
0 Packets with tag encoding error
0 Packets discarded due to no route
0 Packets used first nexthop in ecmp unilist
vpls:
0 Total packets received
0 Packets with size smaller than minimum
0 Packets with incorrect version number
0 Packets for this host
0 Packets with no logical interface
0 Packets with no family
0 Packets with no route table
0 Packets with no auxiliary table
0 Packets with no corefacing entry
0 packets with no CE-facing entry
0 MAC route learning requests
0 MAC routes learnt
0 Requests to learn an existing route
0 Learning requests while learning disabled on interface
0 Learning requests over capacity
0 MAC routes moved
0 Requests to move static route
0 MAC route aging requests
0 MAC routes aged
0 Bogus address in aging requests
0 Requests to age static route
0 Requests to re-ageout aged route
0 Requests involving multiple peer FEs
0 Aging acks from PFE
0 Aging non-acks from PFE
0 Aging requests timed out waiting on FEs
0 Aging requests over max-rate
0 Errors finding peer FEs
0 Unsupported platform
0 Packets dropped due to no l3 route table
0 Packets dropped due to no local ifl
0 Packets punted
0 Packets dropped due to no socket
bridge:
Input:
0 packets received
0 packets forwarded
0 packets failed to forward
0 packets dropped
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with stp state lookup failures
0 packets dropped due to stp blocked/listening
0 packets dropped due to stp learning
0 packets with src MAC learning failures
0 packets with input control processing failures
Forward:
0 packets sent successfully
0 packets with send failures
0 packets forwarded to l3 interface
0 packets with l3 send failures
0 packets discarded
0 packets with l2ifl store failures
0 packets with ifl mismatch failures
0 packets with packet duplication failures
0 packets with tag lookup failures

```

```

0 packets with no route for DMAC
0 packets with no route table
0 packets with no nexthop
0 packets with dead nexthop
0 packets with eof reached error
Learning:
0 MACs learned
0 packets sent to l3 interface
0 packets with l3 send failures
0 packets hit holdq while learning
0 MAC moves
0 packets discarded
0 packets with no route for SMAC
0 packets with no nexthop
0 packets with dead nexthop
0 packets dropped due to no resolve route
0 packets with l3 ifd lookup failures
0 packets with l3 ifl lookup failures
0 packets with l3 invalid rnh
0 packets with no route for SMAC in clone learning
0 packets with no nexthop in clone learning
0 packets with dead nexthop in clone learning
0 packets dropped due to no resolve nh in clone learning
Output:
0 packets forwarded
0 packets failed to forward
0 packets with vmember lookup failures
  0 packets with vlan lookup failures
0 packets with input control processing failures
Send:
0 packets sent successfully
0 packets with send failures
0 packets dropped due to interface down
0 packets with dev output failures
0 blocked ifl discards
0 packets with tag lookup failures
0 packets with stp state lookup failures
0 packets with tag insertion failures
0 packets with tag removal failures
Flood:
0 packets flooded
0 flood failures
IGMP:
0 packets sent successfully
0 packets with send failures
0 packets forwarded
0 packets failed to forward
0 packets with mpull failures
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with ifl lookup failures
0 packets with tag lookup failures
Misc:
0 packets with size smaller than minimum
0 packets with double tags
0 packets with no ifl
0 packets with no family
0 packets with no route table

```

show system statistics user@host> **show system statistics**
(TX Matrix Router)

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 <i>member-id</i> >
Syntax (TX Matrix Router)	show system statistics arp <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics arp <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide Address Resolution Protocol (ARP) statistics.
Options	<p>none—Display system-wide ARP statistics.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display ARP statistics for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system-wide ARP statistics for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system-wide ARP statistics for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router</p> <p>all-members—(EX4200 switches only) (Optional) Display ARP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display ARP statistics for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display ARP statistics for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display ARP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display ARP statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display ARP statistics for the TX Matrix router (or switch-card chassis).</p>

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

Additional Information By default, when you issue the **show system statistics arp** command on a TX Matrix or TX Matrix Plus master Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on the TX Matrix router) or T1600 (in a routing matrix based on the TX Matrix Plus router) master Routing Engines connected to it. Likewise, if you issue the same command on the TX Matrix or TX Matrix Plus backup Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on the TX Matrix router) or T1600 (in a routing matrix based on the TX Matrix Plus router) backup Routing Engines that are connected to it.

Required Privilege Level view

List of Sample Output show system statistics arp on page 833
 show system statistics arp (EX Series Switch) on page 833
 show system statistics arp (TX Matrix Plus Router) on page 834

```

show system statistics 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 user@host> show system statistics arp
arp (EX Series Switch)
    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 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

```

```
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 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

```

```
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 <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics clns <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide Connectionless Network Service (CLNS) statistics.
Options	<p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for CLNS for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for CLNS for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for CLNS for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for CLNS for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for CLNS for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for CLNS for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display system statistics for CLNS for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
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	<p>show system statistics clns on page 839</p> <p>show system statistics clns (EX Series Switch) on page 839</p> <p>show system statistics clns (TX Matrix Plus Router) on page 840</p>

```

show system statistics  user@host> show system statistics clns
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  user@host> show system statistics clns
clns (EX Series Switch) 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:
```

```
-----
c1n1:
```

```
0 total packets received
0 packets delivered
0 too small
0 bad header length
0 bad checksum
0 bad version
0 unknown or unsupport protocol
0 bogus sdl size
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 address fields were not reasonable
0 segment information forgotten
0 forwarded packets
0 total packets sent
0 output packets discarded
0 non-forwarded packets
0 packets fragmented
0 fragments sent
0 fragments discarded
0 fragments timed out
0 fragmentation prohibited
0 packets reconstructed
0 packets destined to dead nexthop
0 packets discarded due to no route
0 Error pdu rate drops
0 ER pdu generation failure
```

```
lcc0-re1:
```

```
-----
c1n1:
```

```
0 total packets received
0 packets delivered
0 too small
0 bad header length
0 bad checksum
0 bad version
0 unknown or unsupport protocol
0 bogus sdl size
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 address fields were not reasonable
0 segment information forgotten
0 forwarded packets
0 total packets sent
0 output packets discarded
0 non-forwarded packets
0 packets fragmented
0 fragments sent
0 fragments discarded
0 fragments timed out
0 fragmentation prohibited
0 packets reconstructed
0 packets destined to dead nexthop
```

```

0 packets discarded due to no route
0 Error pdu rate drops
0 ER pdu generation failure

```

```
lcc1-re1:
```

```
-----
c1n1:
```

```

0 total packets received
0 packets delivered
0 too small
0 bad header length
0 bad checksum
0 bad version
0 unknown or unsupport protocol
0 bogus sdl size
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 address fields were not reasonable
0 segment information forgotten
0 forwarded packets
0 total packets sent
0 output packets discarded
0 non-forwarded packets
0 packets fragmented
0 fragments sent
0 fragments discarded
0 fragments timed out
0 fragmentation prohibited
0 packets reconstructed
0 packets destined to dead nexthop
0 packets discarded due to no route
0 Error pdu rate drops
0 ER pdu generation failure

```

```
lcc2-re1:
```

```
-----
c1n1:
```

```

0 total packets received
0 packets delivered
0 too small
0 bad header length
0 bad checksum
0 bad version
0 unknown or unsupport protocol
0 bogus sdl size
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 address fields were not reasonable
0 segment information forgotten
0 forwarded packets
0 total packets sent
0 output packets discarded
0 non-forwarded packets
0 packets fragmented
0 fragments sent
0 fragments discarded
0 fragments timed out

```

```

0 fragmentation prohibited
0 packets reconstructed
0 packets destined to dead nexthop
0 packets discarded due to no route
0 Error pdu rate drops
0 ER pdu generation failure

```

```
lcc3-re1:
```

```
-----
c1n1:
```

```

0 total packets received
0 packets delivered
0 too small
0 bad header length
0 bad checksum
0 bad version
0 unknown or unsupport protocol
0 bogus sdl size
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 address fields were not reasonable
0 segment information forgotten
0 forwarded packets
0 total packets sent
0 output packets discarded
0 non-forwarded packets
0 packets fragmented
0 fragments sent
0 fragments discarded
0 fragments timed out
0 fragmentation prohibited
0 packets reconstructed
0 packets destined to dead nexthop
0 packets discarded due to no route
0 Error pdu rate drops
0 ER pdu generation failure

```

show system statistics esis

Syntax	show system statistics esis
Syntax (EX Series Switch)	show system statistics esis <all-members> <local> <member <i>member-id</i> >
Syntax (TX Matrix Router)	show system statistics esis <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics esis <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide End System-to-Intermediate System (ES-IS) statistics.
Options	<p>none—Display system statistics for ES-IS.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for ES-IS for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for ES-IS for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for ES-IS for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display ES-IS statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for ES-IS for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for ES-IS for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display ES-IS statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display ES-IS statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for ES-IS for the TX Matrix router (or switch-card chassis).</p>

sfc *number*—(TX Matrix Plus routers only) (Optional) Display system statistics for ES-IS for the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

Additional Information

By default, when you issue the **show system statistics esis** command on a TX Matrix or TX Matrix Plus master Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on the TX Matrix router) or T1600 (in a routing matrix based on the TX Matrix Plus router) master Routing Engines connected to it. Likewise, if you issue the same command on the TX Matrix or TX Matrix Plus backup Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on the TX Matrix router) or T1600 (in a routing matrix based on the TX Matrix Plus router) backup Routing Engines that are connected to it.

Required Privilege Level

view

List of Sample Output

show system statistics esis on page 844
show system statistics esis (EX Series Switch) on page 844
show system statistics esis (TX Matrix Plus Router) on page 844

**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 unsupported 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 unsupported 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 unsupported 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 unsupported protocol

```

```

0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 ISO family not configured

```

```
lcc3-re0:
```

```
-----
esis:
```

```

0 total pkts received
0 total packets consumed by protocol
0 pdus received with bad checksum
0 pdus received with bad version number
0 pdus received with bad type field
0 short pdus received
0 bogus sdl size
0 bad header length
0 unknown or unsupported protocol
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 ISO family not configured

```

show system statistics icmp

Syntax	show system statistics icmp
Syntax (EX Series Switch)	show system statistics icmp <all-members> <local> <member <i>member-id</i> >
Syntax (TX Matrix Router)	show system statistics icmp <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics icmp <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide Internet Control Message Protocol (ICMP) statistics.
Options	<p>none—Display system statistics for ICMP.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for ICMP for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for ICMP for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for ICMP for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display ICMP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for ICMP for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for ICMP for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display ICMP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display ICMP statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for ICMP for the TX Matrix router (or switch-card chassis).</p>

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

Additional Information	By default, when you issue the <code>show system statistics icmp</code> 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	<p><code>show system statistics icmp</code> on page 848</p> <p><code>show system statistics icmp</code> (EX Series Switch) on page 848</p> <p><code>show system statistics icmp</code> (TX Matrix Plus Router) on page 849</p>
show system statistics icmp	<pre> 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 </pre>
show system statistics icmp (EX Series Switch)	<pre> user@host> show system statistics icmp icmp: 0 drops due to rate limit 12 calls to icmp_error 0 errors not generated because old message was icmp Output histogram: 297 echo reply 12 destination unreachable 0 messages with bad code fields 0 messages less than the minimum length 0 messages with bad checksum 0 messages with bad source address 0 messages with bad length 0 echo drops with broadcast or multicast destination address 0 timestamp drops with broadcast or multicast destination address Input histogram: 297 echo 297 message responses generated </pre>

**show system statistics
icmp (TX Matrix Plus
Router)**

```

user@host> show system statistics icmp
sfc0-re0:
-----
icmp:
    0 drops due to rate limit
    0 calls to icmp_error
    0 errors not generated because old message was icmp
    Output histogram:
        echo reply: 21
    0 messages with bad code fields
    0 messages less than the minimum length
    0 messages with bad checksum
    0 messages with bad source address
    0 messages with bad length
    0 echo drops with broadcast or multicast destination address
    0 timestamp drops with broadcast or multicast destination address
    Input histogram:
        echo: 21
    21 message responses generated

lcc0-re0:
-----
icmp:
    0 drops due to rate limit
    1 call to icmp_error
    0 errors not generated because old message was icmp
    Output histogram:
        echo reply: 24
        destination unreachable: 1
    0 messages with bad code fields
    0 messages less than the minimum length
    0 messages with bad checksum
    0 messages with bad source address
    0 messages with bad length
    0 echo drops with broadcast or multicast destination address
    0 timestamp drops with broadcast or multicast destination address
    Input histogram:
        echo: 24
    24 message responses generated

lcc1-re0:
-----
icmp:
    0 drops due to rate limit
    0 calls to icmp_error
    0 errors not generated because old message was icmp
    Output histogram:
        echo reply: 23
    0 messages with bad code fields
    0 messages less than the minimum length
    0 messages with bad checksum
    0 messages with bad source address
    0 messages with bad length
    0 echo drops with broadcast or multicast destination address
    0 timestamp drops with broadcast or multicast destination address
    Input histogram:
        echo: 23
    23 message responses generated

lcc2-re0:
-----

```

```

icmp:
    0 drops due to rate limit
    0 calls to icmp_error
    0 errors not generated because old message was icmp
    Output histogram:
        echo reply: 22
    0 messages with bad code fields
    0 messages less than the minimum length
    0 messages with bad checksum
    0 messages with bad source address
    0 messages with bad length
    0 echo drops with broadcast or multicast destination address
    0 timestamp drops with broadcast or multicast destination address
    Input histogram:
        echo: 22
    22 message responses generated

```

```
lcc3-re0:
```

```

-----
icmp:
    0 drops due to rate limit
    0 calls to icmp_error
    0 errors not generated because old message was icmp
    Output histogram:
        echo reply: 22
    0 messages with bad code fields
    0 messages less than the minimum length
    0 messages with bad checksum
    0 messages with bad source address
    0 messages with bad length
    0 echo drops with broadcast or multicast destination address
    0 timestamp drops with broadcast or multicast destination address
    Input histogram:
        echo: 22
    22 message responses generated

```

show system statistics icmp6

Syntax	show system statistics icmp6
Syntax (EX Series Switch)	show system statistics icmp6 <all-members> <local> <member <i>member-id</i> >
Syntax (TX Matrix Router)	show system statistics icmp6 <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics icmp6 <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide Internet Control Message Protocol for IPv6 (ICMPv6) statistics.
Options	<p>none—Display system statistics for ICMPv6.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for ICMPv6 for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for ICMPv6 for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for ICMPv6 for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display ICMPv6 statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for ICMPv6 for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for ICMPv6 for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display ICMPv6 statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display ICMPv6 statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for ICMPv6 for the TX Matrix router (or switch-card chassis).</p>

sfc number—(TX Matrix Plus routers only) (Optional) Display system statistics for ICMPv6 for the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

Additional Information By default, when you issue the **show system statistics icmp6** command on a TX Matrix or TX Matrix Plus master Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) master Routing Engines connected to it. Likewise, if you issue the same command on the TX Matrix or TX Matrix Plus backup Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) backup Routing Engines that are connected to it.

Required Privilege Level view

List of Sample Output **show system statistics icmp6** on page 852
show system statistics icmp6 (EX Series Switch) on page 852
show system statistics icmp6 (TX Matrix Plus Router) on page 853

```

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 advertisement: 4
0 messages with bad code fields
0 messages < minimum length
0 bad checksums
0 messages with bad length
Histogram of error messages to be generated:
  0 no route
  0 administratively prohibited
  0 beyond scope
  0 address unreachable
  0 port unreachable
  0 packet too big
  0 time exceed transit
  0 time exceed reassembly
  0 erroneous header field
  0 unrecognized next header
  0 unrecognized option
  0 redirect
  0 unknown
0 message responses generated
0 messages with too many ND options

```

```

lcc0-re0:

```

```

-----
icmp6:
0 calls to icmp_error
0 errors not generated because old message was icmp error or so
0 errors not generated because rate limitation
Output histogram:
  neighbor solicitation: 12
  neighbor advertisement: 4
0 messages with bad code fields
0 messages < minimum length
0 bad checksums
0 messages with bad length
Histogram of error messages to be generated:
  0 no route
  0 administratively prohibited
  0 beyond scope
  0 address unreachable
  0 port unreachable
  0 packet too big

```

```

0 time exceed transit
0 time exceed reassembly
0 erroneous header field
0 unrecognized next header
0 unrecognized option
0 redirect
0 unknown
0 message responses generated
0 messages with too many ND options

```

lcc1-re0:

icmp6:

```

0 calls to icmp_error
0 errors not generated because old message was icmp error or so
0 errors not generated because rate limitation
Output histogram:
    neighbor solicitation: 12
    neighbor advertisement: 4
0 messages with bad code fields
0 messages < minimum length
0 bad checksums
0 messages with bad length
Input histogram:
    neighbor advertisement: 2
Histogram of error messages to be generated:
0 no route
0 administratively prohibited
0 beyond scope
0 address unreachable
0 port unreachable
0 packet too big
0 time exceed transit
0 time exceed reassembly
0 erroneous header field
0 unrecognized next header
0 unrecognized option
0 redirect
0 unknown
0 message responses generated
0 messages with too many ND options

```

lcc2-re0:

icmp6:

```

0 calls to icmp_error
0 errors not generated because old message was icmp error or so
0 errors not generated because rate limitation
Output histogram:
    neighbor solicitation: 12
    neighbor advertisement: 4
0 messages with bad code fields
0 messages < minimum length
0 bad checksums
0 messages with bad length
Input histogram:
    neighbor advertisement: 2
Histogram of error messages to be generated:
0 no route
0 administratively prohibited
0 beyond scope

```

```

0 address unreachable
0 port unreachable
0 packet too big
0 time exceed transit
0 time exceed reassembly
0 erroneous header field
0 unrecognized next header
0 unrecognized option
0 redirect
0 unknown
0 message responses generated
0 messages with too many ND options

```

lcc3-re0:

icmp6:

```

0 calls to icmp_error
0 errors not generated because old message was icmp error or so
0 errors not generated because rate limitation
Output histogram:
    neighbor solicitation: 12
    neighbor advertisement: 4
0 messages with bad code fields
0 messages < minimum length
0 bad checksums
0 messages with bad length
Input histogram:
    neighbor advertisement: 2
Histogram of error messages to be generated:
0 no route
0 administratively prohibited
0 beyond scope
0 address unreachable
0 port unreachable
0 packet too big
0 time exceed transit
0 time exceed reassembly
0 erroneous header field
0 unrecognized next header
0 unrecognized option
0 redirect
0 unknown
0 message responses generated
0 messages with too many ND options

```

show system statistics igmp

Syntax	show system statistics igmp
Syntax (EX Series Switch)	show system statistics igmp <all-members> <local> <member <i>member-id</i> >
Syntax (TX Matrix Router)	show system statistics igmp <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics igmp <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide Internet Group Management Protocol (IGMP) statistics.
Options	<p>none—Display system statistics for IGMP.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for IGMP for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for IGMP for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for IGMP for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display IGMP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for IGMP for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for IGMP for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display IGMP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display IGMP statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for IGMP for the TX Matrix router (or switch-card chassis).</p>

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

Additional Information	By default, when you issue the show system statistics igmp command on a TX Matrix or TX Matrix Plus master Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) master Routing Engines connected to it. Likewise, if you issue the same command on the TX Matrix or TX Matrix Plus backup Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) backup Routing Engines that are connected to it.
Required Privilege Level	view
List of Sample Output	show system statistics igmp on page 857 show system statistics igmp (EX Series Switch) on page 857 show system statistics igmp (TX Matrix Plus Router) on page 857
show system statistics igmp	<pre> 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 </pre>
show system statistics igmp (EX Series Switch)	<pre> 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 </pre>
show system statistics igmp (TX Matrix Plus Router)	<pre> 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: ----- </pre>

```
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 <i>member-id</i> >
Syntax (TX Matrix Router)	show system statistics ip <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics ip <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide IPv4 statistics.
Options	<p>none—Display system statistics for IPv4.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for IPv4 for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for IPv4 for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for IPv4 for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display IPv4 statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for IPv4 for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for IPv4 for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display IPv4 statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display IPv4 statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for IPv4 for the TX Matrix router (or switch-card chassis).</p>

sfc *number*—(TX Matrix Plus routers only) (Optional) Display system statistics for IPv4 for the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

Additional Information By default, when you issue the **show system statistics ip** command on a TX Matrix or TX Matrix Plus master Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) master Routing Engines connected to it. Likewise, if you issue the same command on the TX Matrix or TX Matrix Plus backup Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) backup Routing Engines that are connected to it.

Required Privilege Level view

List of Sample Output show system statistics ip on page 860
 show system statistics ip (EX Series Switch) on page 861
 show system statistics ip (TX Matrix Plus Router) on page 861

```

show system statistics user@host> show system statistics ip
ip:
    3680538 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
    3663232 packets for this host
    17309 packets for unknown/unsupported protocol
    0 packets forwarded
    0 packets not forwardable
    0 redirects sent
    6279 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)
  
```

**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:

```

```

15960 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
15994 packets for this host
0 packets for unknown/unsupported protocol
0 packets forwarded
0 packets not forwardable
0 redirects sent
21078 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

```

lcc0-re0:

ip:

```

1476 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
1476 packets for this host
0 packets for unknown/unsupported protocol
0 packets forwarded
0 packets not forwardable
0 redirects sent
4994 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

```

lcc1-re0:

ip:

```

1289 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
1289 packets for this host
0 packets for unknown/unsupported protocol
0 packets forwarded
0 packets not forwardable
0 redirects sent
4608 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

```

lcc2-re0:

ip:

```

1329 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
1329 packets for this host
0 packets for unknown/unsupported protocol
0 packets forwarded
0 packets not forwardable
0 redirects sent
4777 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

```

lcc3-re0:

ip:

```

1234 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
1234 packets for this host
0 packets for unknown/unsupported protocol
0 packets forwarded
0 packets not forwardable
0 redirects sent
4579 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 ip6

Syntax	show system statistics ip6
Syntax (EX Series Switch)	show system statistics ip6 <all-members> <local> <member <i>member-id</i> >
Syntax (TX Matrix Router)	show system statistics ip6 <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics ip <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide IPv6 statistics.
Options	<p>none—Display system statistics for IPv6.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for IPv6 for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for IPv6 for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for IPv6 for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display IPv6 statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for IPv6 for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for IPv6 for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display IPv6 statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display IPv6 statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for IPv6 for the TX Matrix router (or switch-card chassis).</p>

sfc number—(TX Matrix Plus routers only) (Optional) Display system statistics for IPv6 for the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

Additional Information By default, when you issue the **show system statistics ip6** command on a TX Matrix or TX Matrix Plus master Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) master Routing Engines connected to it. Likewise, if you issue the same command on the TX Matrix or TX Matrix Plus backup Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) backup Routing Engines that are connected to it.

Required Privilege Level view

List of Sample Output **show system statistics ip6** on page 867
show system statistics ip6 (EX Series Switch) on page 867
show system statistics ip6 (TX Matrix Router) on page 868

```
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
```

```
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 many headers
0 failures of source address selection
0 forward cache hit
0 forward cache miss
0 Packets destined to dead next hop
0 option packets dropped due to rate limit
0 Packets dropped (src and int don't match)
0 packets dropped due to bad protocol
0 transit re packet(null) dropped on mgmt i/f

```

**show system statistics
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 many headers
0 failures of source address selection
source addresses on an outgoing I/F
    4 link-locals
source addresses of same scope
    4 link-locals
0 forward cache hit
0 forward cache miss
0 packets destined to dead next hop
0 option packets dropped due to rate limit
0 packets dropped (src and int don't match)
0 packets dropped due to bad protocol
0 transit re packet(null) dropped on mgmt i/f
0 packet(null) used first nexthop in ecmp unilist

```

1cc2-re0:

ip6:

```

2 total packets received
0 with size smaller than minimum
0 with data size < data length
0 with bad options
0 with incorrect version number
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped after timeout
0 fragments that exceeded limit
0 packets reassembled ok
0 packets for this host
0 packets forwarded
0 packets not forwardable

```

```

0 redirects sent
0 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs, etc.
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets that violated scope rules
0 multicast packets which we don't join
Input histogram:
    ICMP6: 2
Mbuf statistics:
0 packets whose headers are not continuous
0 tunneling packets that can't find gif
0 packets discarded due to too many headers
0 failures of source address selection
source addresses on an outgoing I/F
    4 link-locals
source addresses of same scope
    4 link-locals
0 forward cache hit
0 forward cache miss
0 packets destined to dead next hop
0 option packets dropped due to rate limit
0 packets dropped (src and int don't match)
0 packets dropped due to bad protocol
0 transit re packet(null) dropped on mgmt i/f
0 packet(null) used first nexthop in ecmp unilist

```

```
lcc3-re0:
```

```
-----
ip6:
```

```

2 total packets received
0 with size smaller than minimum
0 with data size < data length
0 with bad options
0 with incorrect version number
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped after timeout
0 fragments that exceeded limit
0 packets reassembled ok
0 packets for this host
0 packets forwarded
0 packets not forwardable
0 redirects sent
0 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs, etc.
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets that violated scope rules
0 multicast packets which we don't join
Input histogram:
    ICMP6: 2
Mbuf statistics:
0 packets whose headers are not continuous
0 tunneling packets that can't find gif

```

```
0 packets discarded due to too may headers
0 failures of source address selection
source addresses on an outgoing I/F
    4 link-locals
source addresses of same scope
    4 link-locals
0 forward cache hit
0 forward cache miss
0 packets destined to dead next hop
0 option packets dropped due to rate limit
0 packets dropped (src and int don't match)
0 packets dropped due to bad protocol
0 transit re packet(null) dropped on mgmt i/f
0 packet(null) used first nexthop in ecmp unilist
```

show system statistics mpls

Syntax	show system statistics mpls
Syntax (EX Series Switch)	show system statistics mpls <all-members> <local> <member <i>member-id</i> >
Syntax (TX Matrix Router)	show system statistics mpls <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics mpls <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide Multiprotocol Label Switching (MPLS) statistics.
Options	<p>none—Display system statistics for MPLS.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for MPLS for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for MPLS for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for MPLS for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display MPLS statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for MPLS for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for MPLS for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display MPLS statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display MPLS statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for MPLS for the TX Matrix router (or switch-card chassis).</p>

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

Additional Information	By default, when you issue the <code>show system statistics mpls</code> 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	<p><code>show system statistics mpls</code> on page 874</p> <p><code>show system statistics mpls</code> (EX Series Switch) on page 874</p> <p><code>show system statistics mpls</code> (TX Matrix Plus Router) on page 874</p>
show system statistics mpls	<pre> 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 </pre>
show system statistics mpls (EX Series Switch)	<pre> 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 </pre>
show system statistics mpls (TX Matrix Plus Router)	<pre> 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 </pre>

```

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 <i>member-id</i> >
Syntax (TX Matrix Router)	show system statistics rdp <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics rdp <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide Reliable Datagram Protocol (RDP) statistics.
Options	<p>none—Display system statistics for RDP.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for RDP for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for RDP for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for RDP for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display RDP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for RDP for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for RDP for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display RDP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display RDP statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for RDP for the TX Matrix router (or switch-card chassis).</p>

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

Additional Information

By default, when you issue the **show system statistics rdp** command on a TX Matrix or TX Matrix Plus master Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) master Routing Engines connected to it. Likewise, if you issue the same command on the TX Matrix or TX Matrix Plus backup Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) backup Routing Engines that are connected to it.

Required Privilege Level

view

List of Sample Output

show system statistics rdp on page 878
show system statistics rdp (EX Series Switch) on page 878
show system statistics rdp (TX Matrix Plus Router) on page 878

**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 <i>member-id</i> >
Syntax (TX Matrix Router)	show system statistics tcp <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics tcp <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide Transmission Control Protocol (TCP) statistics.
Options	<p>none—Display system statistics for TCP.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for TCP for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TCP for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TCP for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display TCP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TCP for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TCP for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display TCP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display TCP statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for TCP for the TX Matrix router (or switch-card chassis).</p>

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

Additional Information By default, when you issue the `show system statistics tcp` command on a TX Matrix or TX Matrix Plus master Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) master Routing Engines connected to it. Likewise, if you issue the same command on the TX Matrix or TX Matrix Plus backup Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) backup Routing Engines that are connected to it.

Required Privilege Level view

List of Sample Output `show system statistics tcp` on page 882
`show system statistics tcp` (EX Series Switch) on page 883
`show system statistics tcp lcc` (TX Matrix Router) on page 885
`show system statistics tcp` (TX Matrix Plus Router) on page 885

```

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      user@host> show system statistics tcp lcc 2
tcp lcc (TX Matrix        lcc2-re0:
Router)                  -----
tcp:
    21271 packets sent
        11069 data packets (12044 bytes)
        0 data packets (0 bytes) retransmitted
        0 resends initiated by MTU discovery
        10198 ack-only packets (10194 packets delayed)
        0 URG only packets
        0 window probe packets
        0 window update packets
        4 control packets
    13363 packets received
        11073 acks (for 12044 bytes)
        0 duplicate acks
        0 acks for unsent data
        12895 packets (2400874 bytes) received in-sequence
        0 completely duplicate packets (0 bytes)
        0 old duplicate packets
        0 packets with some dup. data (0 bytes duped)
        0 out-of-order packets (0 bytes)
        0 packets (0 bytes) of data after window
        0 window probes
        0 window update packets
        0 packets received after close
        0 discarded for bad checksums
        0 discarded for bad header offset fields
        0 discarded because packet too short
    4 connection requests
    0 connection accepts
    0 bad connection attempts
    0 listen queue overflows
    4 connections established (including accepts)
    33 connections closed (including 0 drops)
        0 connections updated cached RTT on close
        0 connections updated cached RTT variance on close
        0 connections updated cached ssthresh on close
    0 embryonic connections dropped
    11073 segments updated rtt (of 11073 attempts)
    0 retransmit timeouts
        0 connections dropped by rexmit timeout
    0 persist timeouts
        0 connections dropped by persist timeout
    0 keepalive timeouts
        0 keepalive probes sent
        0 connections dropped by keepalive
    464 correct ACK header predictions
    2172 correct data packet header predictions
    0 ACKs sent in response to in-window but not exact RSTs
    0 ACKs sent in response to in-window SYNs on established connections
    0 out-of-sequence segment drops due to insufficient memory
    0 RST packets
    0 ICMP packets ignored by TCP

```

```

show system statistics      user@host> show system statistics tcp
tcp (TX Matrix Plus        sfc0-re0:
Router)                  -----
Tcp:
    10420 packets sent
        10203 data packets (2374613 bytes)

```

```

    0 data packets retransmitted (0 bytes)
    0 resends initiated by MTU discovery
    202 ack only packets (120 packets delayed)
    0 URG only packets
    0 window probe packets
    0 window update packets
    30 control packets
16635 packets received
    9468 acks(for 2374674 bytes)
    32 duplicate acks
    0 acks for unsent data
    7764 packets received in-sequence(38286 bytes)
    20 completely duplicate packets(0 bytes)
    0 old duplicate packets
    0 packets with some duplicate data(0 bytes duped)
    0 out-of-order packets(0 bytes)
    0 packets of data after window(0 bytes)
    0 window probes
    356 window update packets
    0 packets received after close
    0 discarded for bad checksums
    0 discarded for bad header offset fields
    0 discarded because packet too short
10 connection requests
33 connection accepts
0 bad connection attempts
0 listen queue overflows
34 connections established (including accepts)
50 connections closed (including 0 drops)
    24 connections updated cached RTT on close
    24 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
9 embryonic connections dropped
9468 segments updated rtt(of 9256 attempts)
0 retransmit timeouts
    0 connections dropped by retransmit timeout
0 persist timeouts
    0 connections dropped by persist timeout
14 keepalive timeouts
    14 keepalive probes sent
    0 connections dropped by keepalive
6220 correct ACK header predictions
6625 correct data packet header predictions
33 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped
    33 completed
    0 bucket overflow
    0 cache overflow
    0 reset
    0 stale
    0 aborted
    0 badack
    0 unreach
    0 zone failures
0 cookies sent
0 cookies received
0 SACK recovery episodes
0 segment retransmits in SACK recovery episodes
0 byte retransmits in SACK recovery episodes

```

```

0 SACK options (SACK blocks) received
0 SACK options (SACK blocks) sent
0 SACK scoreboard overflow
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
15 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
0 outgoing segments dropped due to policing

```

1cc0-re0:

Tcp:

```

1306 packets sent
    1251 data packets (161855 bytes)
    0 data packets retransmitted (0 bytes)
    0 resends initiated by MTU discovery
    51 ack only packets (1 packets delayed)
    0 URG only packets
    0 window probe packets
    0 window update packets
    6 control packets
1397 packets received
    1218 acks(for 161904 bytes)
    2 duplicate acks
    0 acks for unsent data
    612 packets received in-sequence(12495 bytes)
    0 completely duplicate packets(0 bytes)
    0 old duplicate packets
    0 packets with some duplicate data(0 bytes duped)
    0 out-of-order packets(0 bytes)
    0 packets of data after window(0 bytes)
    0 window probes
    22 window update packets
    0 packets received after close
    0 discarded for bad checksums
    0 discarded for bad header offset fields
    0 discarded because packet too short
1 connection requests
24 connection accepts
0 bad connection attempts
0 listen queue overflows
25 connections established (including accepts)
27 connections closed (including 0 drops)
    24 connections updated cached RTT on close
    24 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
0 embryonic connections dropped
1218 segments updated rtt(of 1192 attempts)
0 retransmit timeouts
    0 connections dropped by retransmit timeout
0 persist timeouts
    0 connections dropped by persist timeout
0 keepalive timeouts
    0 keepalive probes sent
    0 connections dropped by keepalive
196 correct ACK header predictions
119 correct data packet header predictions

```

```

24 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped
    24 completed
    0 bucket overflow
    0 cache overflow
    0 reset
    0 stale
    0 aborted
    0 badack
    0 unreach
    0 zone failures
0 cookies sent
0 cookies received
0 SACK recovery episodes
0 segment retransmits in SACK recovery episodes
0 byte retransmits in SACK recovery episodes
0 SACK options (SACK blocks) received
0 SACK options (SACK blocks) sent
0 SACK scoreboard overflow
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
2 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
0 outgoing segments dropped due to policing

```

```
lcc1-re0:
```

```
-----
Tcp:
```

```

1118 packets sent
    1066 data packets (131896 bytes)
    0 data packets retransmitted (0 bytes)
    0 resends initiated by MTU discovery
    48 ack only packets (2 packets delayed)
    0 URG only packets
    0 window probe packets
    0 window update packets
    6 control packets
1215 packets received

```

show system statistics tnp

Syntax	show system statistics tnp
Syntax (EX Series Switch)	show system statistics tnp <all-members> <local> <member <i>member-id</i> >
Syntax (TX Matrix Router)	show system statistics tnp <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics tcp <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide Trivial Network Protocol (TNP) statistics.
Options	<p>none—Display system statistics for TNP.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for TNP for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TNP for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TNP for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display TNP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TNP for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TNP for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display TNP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display TNP statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for TNP for the TX Matrix router (or switch-card chassis).</p>

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

Additional Information By default, when you issue the **show system statistics tnp** command on a TX Matrix or TX Matrix Plus master Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) master Routing Engines connected to it. Likewise, if you issue the same command on the TX Matrix or TX Matrix Plus backup Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) backup Routing Engines that are connected to it.

Required Privilege Level view

List of Sample Output show system statistics tnp on page 890
 show system statistics tnp (EX Series Switch) on page 890
 show system statistics tnp (TX Matrix Plus Router) on page 891

```

show system statistics user@host> show system statistics tnp
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 user@host> show system statistics tnp
tnp (EX Series Switch) 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 <i>member-id</i> >
Syntax (TX Matrix Router)	show system statistics tudp <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics tudp <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide Trivial User Datagram Protocol (TUDP) statistics.
Options	<p>none—Display system statistics for TUDP.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for TUDP for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TUDP for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TUDP for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display TUDP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for TUDP for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for TUDP for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display TUDP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display TUDP statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for TUDP for the TX Matrix router (or switch-card chassis).</p>

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

Additional Information

By default, when you issue the **show system statistics tudp** command on a TX Matrix or TX Matrix Plus master Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) master Routing Engines connected to it. Likewise, if you issue the same command on the TX Matrix or TX Matrix Plus backup Routing Engine, the command is broadcast to all the T640 (in a routing matrix based on a TX Matrix router) or T1600 (in a routing matrix based on a TX Matrix Plus router) backup Routing Engines that are connected to it.

Required Privilege Level

view

List of Sample Output

show system statistics tudp on page 896
show system statistics tudp (TX Matrix Plus Router) on page 896

**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 <i>member-id</i> >
Syntax (TX Matrix Router)	show system statistics udp <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics udp <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide User Datagram Protocol (UDP) statistics.
Options	<p>none—Display system statistics for UDP.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for UDP for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for 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.</p> <p>all-members—(EX4200 switches only) (Optional) Display UDP statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for 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 <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display UDP statistics for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display TUDP statistics for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for UDP for the TX Matrix router (or switch-card chassis).</p>

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 899
show system statistics udp (TX Matrix Plus Router) on page 899

```

show system statistics user@host> show system statistics udp
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 user@host> show system statistics udp
udp (TX Matrix Plus   sfc0-re0:
Router)              -----
                    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

                    1cc0-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 <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system statistics vpls <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display system-wide Virtual Private LAN Service (VPLS) statistics.
Options	<p>none—Display system statistics for VPLS.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for VPLS for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for VPLS for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for VPLS for all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for VPLS for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for VPLS for a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display system statistics for VPLS for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display system statistics for VPLS for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
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 on page 902
 show system statistics vpls (TX Matrix Plus Router) on page 902

```

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 <i>member-id</i> >
Syntax (TX Matrix Router)	show system storage <detail> <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system storage <detail> <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display statistics about the amount of free disk space in the router's or switch's file systems.
Options	<p>none—Display standard information about the amount of free disk space in the router's or switch's file systems.</p> <p>detail—(Optional) Display detailed output.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system storage statistics for all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system 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.</p> <p>all-members—(EX4200 switches only) (Optional) Display system storage statistics for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system 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 <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display system storage statistics for the local Virtual Chassis member.</p>

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 907
show system storage (TX Matrix Plus Router) on page 908

Output Fields Table 145 on page 907 describes the output fields for the **show system storage** command. Output fields are listed in the approximate order in which they appear.

Table 145: 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 user@host> **show system storage**
(TX Matrix Plus Router) 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 <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system switchover <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
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.

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 913
show system switchover all-lcc (Routing Matrix) on page 913

Output Fields Table 146 on page 912 describes the output fields for the **show system switchover** command. Output fields are listed in the approximate order in which they appear.

Table 146: show system switchover Output Fields

Field Name	Field Description
Graceful switchover	Display graceful Routing Engine switchover status: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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.
Kernel database	State of the kernel database: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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 invoke-on
Syntax (EX Series Switch)	show system uptime <all-members> <local> <member <i>member-id</i> >
Syntax (TX Matrix Router)	show system uptime <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system uptime <detail> <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
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	<p>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.</p> <p>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.</p> <p>all-members—(EX4200 switches only) (Optional) Show time since the system rebooted and processes started on all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, 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 <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Show time since the system rebooted and processes started on the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Show time since the system rebooted and processes started on the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p>

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 915
 show system uptime all-lcc (TX Matrix Router) on page 915
 show system uptime all-lcc (TX Matrix Plus Router) on page 916

Output Fields Table 147 on page 915 describes the output fields for the **show system uptime** command. Output fields are listed in the approximate order in which they appear.

Table 147: show system uptime Output Fields

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

```

show system uptime  user@host> show system uptime
Current time:      1998-10-13 19:45:47 UTC
System booted:    1998-10-12 20:51:41 UTC (22:54:06 ago)
Protocols started: 1998-10-13 19:33:45 UTC (00:12:02 ago)
Last configured:  1998-10-13 19:33:45 UTC (00:12:02 ago) by abc
12:45PM up 22:54, 2 users, load averages: 0.07, 0.02, 0.01
  
```

```

show system uptime  user@host> show system uptime all-lcc
all-lcc (TX Matrix  lcc0-re0:
Router)           -----
  
```

show system uptime
all-icc (TX Matrix Plus
Router)

```

Current time: 2004-09-13 09:55:35 PDT
System booted: 2004-09-13 03:13:55 PDT (06:41:40 ago)
Last configured: 2004-09-13 03:17:48 PDT (06:37:47 ago) by root
9:55AM PDT up 6:42, 1 user, load averages: 0.02, 0.03, 0.00
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

user@host> show system uptime all-icc
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 <i>number</i> scc> <no-resolve>
Syntax (TX Matrix Plus Router)	show system users <detail> <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> > <no-resolve>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	List information about the users who are currently logged in to the router.



NOTE: The **show system users** command does not list information about the automated users that are currently logged in to the router from a JUNOScript API or NETCONF API client application. It shows only details of administrative users that are logged in to a router using the CLI, J-Web, or an SSH client.

Options	<p>none—List information about the users who are currently logged in to the router.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Show users currently logged on to all the routers in the chassis.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, show users currently logged on to all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, show users currently logged on to all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, show users currently logged on to a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, show users currently logged on to a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>no-resolve—(Optional) Do not attempt to resolve IP addresses to hostnames.</p> <p>scc—(TX Matrix routers only) (Optional) Show users currently logged on to the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Show users currently logged on to the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p>
----------------	---

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 918
show system users lcc no-resolve (TX Matrix and TX Matrix Plus Router) on page 918
show system users (TX Matrix Plus Router) on page 919

Output Fields Table 148 on page 918 describes the output fields for the **show system users** command. Output fields are listed in the approximate order in which they appear.

Table 148: show system users Output Fields

Field Name	Field Description
<i>time and up</i>	Current time, in the local time zone, and how long the router has been operational.
<i>users</i>	Number of users logged in to the router.
<i>load averages</i>	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 and TX Matrix Plus Router)
user@host> show system users lcc 2 no-resolve
lcc2-re0:
-----
10:34AM PDT up 1 day, 7:11, 5 users, load averages: 0.03, 0.01, 0.00
USER      TTY FROM      LOGIN@  IDLE WHAT
root      d0  -          3:21AM  7:12 /bin/csh
regress   p0  scc-re0    10:15AM  - telnet hostA

```

```

regress p1      scc-re0      10:16AM      - telnet hostA
regress p2      scc-re0      10:19AM      - telnet hostA
regress p3      scc-re0      10:24AM      - telnet hostA

```

**show system users (TX
Matrix Plus Router)**

```
user@host> show system users
```

```
sfc0-re0:
```

```

-----
1:41AM up 26 mins, 3 users, load averages: 0.08, 0.04, 0.03
USER   TTY   FROM                               LOGIN@  IDLE WHAT
regress p0    10.209.208.123                    1:18AM   21 cli
regress p1    172.17.29.207                    1:37AM    2 cli
regress p2    172.17.28.19                     1:40AM    - cli

```

```
lcc0-re0:
```

```

-----
1:41AM up 26 mins, 0 users, load averages: 0.00, 0.00, 0.03

```

```
lcc1-re0:
```

```

-----
1:41AM up 26 mins, 0 users, load averages: 0.00, 0.02, 0.03

```

```
lcc2-re0:
```

```

-----
1:41AM up 26 mins, 0 users, load averages: 0.16, 0.06, 0.02

```

```
lcc3-re0:
```

```

-----
1:41AM up 26 mins, 0 users, load averages: 0.12, 0.04, 0.04

```

```
regress@aj> show system users
```

```
sfc0-re0:
```

```

-----
1:42AM up 28 mins, 4 users, load averages: 0.02, 0.03, 0.02
USER   TTY   FROM                               LOGIN@  IDLE WHAT
regress p0    pssraj-t61.jnpr.net              1:18AM   22 cli
regress p1    eng-shell14.juniper.net          1:37AM    - cli
regress p2    bigpink.juniper.net              1:40AM    - cli
regress p3    sv-cutty-01.englab.juniper.net    1:42AM    - csh (csh)

```

```
lcc0-re0:
```

```

-----
1:42AM up 28 mins, 0 users, load averages: 0.02, 0.01, 0.03

```

```
lcc1-re0:
```

```

-----
1:42AM up 28 mins, 0 users, load averages: 0.07, 0.04, 0.03

```

```
lcc2-re0:
```

```

-----
1:42AM up 27 mins, 0 users, load averages: 0.07, 0.06, 0.02

```

```
lcc3-re0:
```

```

-----
1:42AM up 28 mins, 0 users, load averages: 0.05, 0.04, 0.04

```

show system virtual-memory

Syntax	show system virtual-memory
Syntax (EX Series Switch)	show system virtual-memory <all-members> <local> <member <i>member-id</i> >
Syntax (TX Matrix Router)	show system virtual-memory <all-chassis all-lcc lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show system virtual-memory <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
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	<p>none—Display kernel dynamic memory usage information.</p> <p>all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Display kernel dynamic memory usage information for all chassis.</p> <p>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.</p> <p>all-members—(EX4200 switches only) (Optional) Display kernel dynamic memory usage information for all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display 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 <i>number</i> with a value from 0 through 3.</p> <p>local—(EX4200 switches only) (Optional) Display kernel dynamic memory usage information for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(EX4200 switches only) (Optional) Display kernel dynamic memory usage information for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value from 0 through 9.</p>

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 T1 600 (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 T1 600 (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 virtual-memory** on page 923
show system virtual-memory scc (TX Matrix Router) on page 927
show system virtual-memory sfc (TX Matrix Plus Router) on page 927

Output Fields Table 149 on page 922 lists the output fields for the **show system virtual-memory** command. Output fields are listed in the approximate order in which they appear.

Table 149: 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).
Requests	Total number of memory allocation requests.
ITEM	Kernel module that is using memory.
Size	Memory block size (bytes).

Table 149: show system virtual-memory Output Fields (continued)

Field Name	Field Description
Llimit	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 user@host> show system virtual-memory
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, iffamilly
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	InUse	MemUse	HighUse	Limit	Requests	Type Limit	Kern Limit	Size(s)
isadev	13	1K	1K	127753K	13	0	0	64
atkbddev	2	1K	1K	127753K	2	0	0	32
uc_devlist	24	3K	3K	127753K	24	0	0	16,2K
nexusdev	3	1K	1K	127753K	3	0	0	16
memdesc	1	4K	4K	127753K	1	0	0	4K
mbuf	1	152K	152K	127753K	1	0	0	256K
iflogical	6	2K	2K	127753K	6	0	0	256
iftable	17	9K	9K	127753K	18	0	0	16,64,256,1K,4K
ZONE	15	2K	2K	127753K	15	0	0	128
VM pgdata	1	64K	64K	127753K	1	0	0	64K
UFS mount	12	26K	26K	127753K	12	0	0	512,2K,4K
UFS ihash	1	128K	128K	127753K	1	0	0	128K
MFS node	6	2K	3K	127753K	35	0	0	64,256
FFS node	906	227K	227K	127753K	1352	0	0	256
dirrem	0	0K	4K	127753K	500	0	0	32
mkdir	0	0K	1K	127753K	38	0	0	32
diradd	0	0K	6K	127753K	521	0	0	32
freefile	0	0K	4K	127753K	374	0	0	32
freeblks	0	0K	8K	127753K	219	0	0	128
freefrag	0	0K	1K	127753K	193	0	0	32
allocindir	0	0K	25K	127753K	1518	0	0	64
indirdep	0	0K	17K	127753K	76	0	0	32,16K
allocdirect	0	0K	10K	127753K	760	0	0	64
bmsafemap	0	0K	1K	127753K	72	0	0	32
newblk	1	1K	1K	127753K	2279	0	0	32,256
inodedep	1	128K	175K	127753K	2367	0	0	128,128K
pagedep	1	32K	33K	127753K	47	0	0	64,32K
temp	1239	92K	96K	127753K	8364	0	0	16,32,64K
devbuf	1413	5527K	5527K	127753K	1535	0	0	16,32,64,128,256
lockf	38	3K	3K	127753K	2906	0	0	64
atexit	1	1K	1K	127753K	1	0	0	16
zombie	0	0K	2K	127753K	3850	0	0	128
NFS hash	1	128K	128K	127753K	1	0	0	128K
NQNFS Lease	1	1K	1K	127753K	1	0	0	1K
NFS daemon	1	1K	1K	127753K	1	0	0	256
syncache	1	8K	8K	127753K	1	0	0	8K
COS	353	44K	44K	127753K	353	0	0	16,32,64,128

BPF	189	3K	3K127753K	189	0	0	16
MSDOSFS mount	1	64K	64K127753K	1	0	0	64K
NULLFS hash	1	1K	1K127753K	1	0	0	64
DEVFS mount	2	1K	1K127753K	2	0	0	16
DEVFS name	487	31K	31K127753K	487	0	0	64
DEVFS node	471	58K	58K127753K	479	0	0	16,128
vnodes	28	7K	7K127753K	429	0	0	16,32,64,128,256
mount	15	8K	8K127753K	18	0	0	16,128,512
cluster_save buffer	0	0K	1K127753K	55	0	0	32,64
vfscache	1898	376K	376K127753K	3228	0	0	64,128,256K
BIO buffer	49	98K	398K127753K	495	0	0	512,2K
pcb	159	16K	17K127753K	399	0	0	16,32,64,128,2K
soname	82	10K	10K127753K	42847	0	0	16,32,64,128
proc-args	57	2K	3K127753K	2105	0	0	16,32,64,128,256
ptys	32	16K	16K127753K	32	0	0	512
ttys	254	33K	33K127753K	522	0	0	128,512
kqueue	5	3K	4K127753K	23	0	0	256,1K
sigio	1	1K	1K127753K	27	0	0	32
file	383	24K	24K127753K	16060	0	0	64
file desc	76	19K	20K127753K	3968	0	0	256
shm	1	12K	12K127753K	1	0	0	16K
dev_t	286	36K	36K127753K	286	0	0	128
timecounter	10	2K	2K127753K	10	0	0	128
kld	11	117K	122K127753K	34	0	0	16,32,128,1K,4K
AR driver	1	1K	3K127753K	5	0	0	64,512,2K
AD driver	2	2K	3K127753K	2755	0	0	64,1K
Gzip trees	0	0K	46K127753K	133848	0	0	32,64,128,256
ISOFS node	1136	142K	142K127753K	1189	0	0	128
ISOFS mount	9	132K	132K127753K	10	0	0	512,128K
sem	3	6K	6K127753K	3	0	0	1K,4K
MD disk	2	2K	2K127753K	2	0	0	16,1K
msg	4	25K	25K127753K	4	0	0	512,4K,16K
rman	59	4K	4K127753K	461	0	0	16,64
ioctlops	0	0K	2K127753K	992	0	0	512,2K
taskqueue	2	1K	1K127753K	2	0	0	32
SWAP	2	413K	413K127753K	2	0	0	32,512K
ATA generic	6	3K	3K127753K	6	0	0	16,512
eventhandler	17	1K	1K127753K	17	0	0	32,64
bus	340	30K	31K127753K	794	0	0	16,32,64,128,256
sysctl	0	0K	1K127753K	130262	0	0	16,32,64
uidinfo	4	1K	1K127753K	10	0	0	32,128
cred	22	3K	3K127753K	3450	0	0	128
subproc	156	10K	10K127753K	7882	0	0	32,64,256
proc	2	1K	1K127753K	2	0	0	512
session	12	2K	2K127753K	34	0	0	128
pgrp	16	1K	1K127753K	45	0	0	32
ippool	1	1K	1K127753K	1	0	0	16
pfestat	0	0K	1K127753K	47349	0	0	16,32,64,512
pic	5	1K	1K127753K	5	0	0	64,128
lr	1	1K	1K127753K	1	0	0	512
itable32	110	4K	4K127753K	110	0	0	32
itable16	161	26K	26K127753K	161	0	0	128,256
ifstate	694	159K	160K127753K	1735	0	0	16,32,64,128,1K
pfe_ipc	0	0K	1K127753K	56218	0	0	16,32,64,128,1K
mkey	250	4K	4K127753K	824	0	0	16,32,64
ifaddr	9	1K	1K127753K	9	0	0	64
sysctl	0	0K	1K127753K	30	0	0	256
rtable	49	6K	6K127753K	307	0	0	16,32,64,128,512
ifmaddr	22	1K	1K127753K	22	0	0	16,32
ipfw	23	10K	10K127753K	48	0	0	16,32,64,512,2K
ifstat	698	805K	805K127753K	698	0	0	128,512,2K

rcache	4	8K	8K127753K	4	0	0	2K
rnode	27	1K	1K127753K	285	0	0	16,32
metrics	1	1K	1K127753K	3	0	0	128
rtnexthop	57	9K	9K127753K	312	0	0	32,128,256,512
iffamily	12	2K	2K127753K	12	0	0	128

Memory Totals:	In Use	Free	Requests
	9311K	54K	489068

ITEM	SIZE	LIMIT	USED	FREE	REQUESTS
PIPE:	192,	0,	4,	81,	4422
SWAPMETA:	160,	95814,	0,	0,	0
unpcb:	160,	0,	114,	36,	279
ripcb:	192,	25330,	5,	37,	5
syncache:	128,	15359,	0,	64,	5
tcpcb:	576,	25330,	23,	12,	32
udpcb:	192,	25330,	14,	28,	255
socket:	256,	25330,	246,	26,	819
KNOTE:	96,	0,	27,	57,	71
NFSNODE:	352,	0,	0,	0,	0
NFSMOUNT:	544,	0,	0,	0,	0
VNODE:	224,	0,	2778,	43,	2778
NAMEI:	1024,	0,	0,	8,	40725
VMSPACE:	192,	0,	57,	71,	3906
PROC:	448,	0,	73,	17,	3923
DP fakepg:	64,	0,	0,	0,	0
PV ENTRY:	28,	499566,	44530,	152053,	1525141
MAP ENTRY:	48,	0,	1439,	134,	351075
KMAP ENTRY:	48,	35645,	179,	119,	10904
MAP:	108,	0,	7,	3,	7
VM OBJECT:	92,	0,	2575,	109,	66912

```

792644 cpu context switches
9863474 device interrupts
286510 software interrupts
390851 traps
3596829 system calls
    16 kernel threads created
    3880 fork() calls
    27 vfork() calls
    0 rfork() calls
    0 swap pager pageins
    0 swap pager pages paged in
    0 swap pager pageouts
    0 swap pager pages paged out
    380 vnode pager pageins
    395 vnode pager pages paged in
    122 vnode pager pageouts
    1476 vnode pager pages paged out
    0 page daemon wakeups
    0 pages examined by the page daemon
    101 pages reactivated
161722 copy-on-write faults
    0 copy-on-write optimized faults
84623 zero fill pages zeroed
83063 zero fill pages prezeroed
    7 intransit blocking page faults
535606 total VM faults taken
    0 pages affected by kernel thread creation
238254 pages affected by fork()
2535 pages affected by vfork()

```

```

    0 pages affected by rfork()
283379 pages freed
    0 pages freed by daemon
190091 pages freed by exiting processes
17458 pages active
29166 pages inactive
    0 pages in VM cache
10395 pages wired down
134610 pages free
    4096 bytes per page
183419 total name lookups
    cache hits (90% pos + 7% neg) system 0% per-directory
    deletions 0%, falsehits 0%, toolong 0%

```

interrupt	total	rate
ata0 irq14	113338	3
mux irq7	727643	21
fxp1 irq10	1178671	34
sio0 irq4	833	0
clk irq0	3439769	99
rtc irq8	4403221	127
Total	9863475	286

**show system
virtual-memory scc (TX
Matrix Router)**

```
user@host> show system virtual-memory scc
```

```

Memory statistics by bucket size
Size  In Use   Free   Requests  HighWater  Couldfree
  16      898    126    749493    1280        0
  32     2018    1310   980643     640       632
  64     3490   13342   935420     320      5365
...

```

```

Memory usage type by bucket size
Size  Type(s)
  16  uc_devlist, COS, BPF, DEVFS mount, DEVFS node, vnodes, mount, pcb,
      soname, rman, bus, sysctl, ifstate, pfe_ipc, mkey, socket, rtable,
      ifmaddr, ipfw, rnode, iftable, temp, devbuf, atexit, proc-args, kld,
      MD disk
  32  atkbddev, Gzip trees, dirrem, mkdir, diradd, freefile, freefrag,
      indirdep, bmsafemap, newblk, tseg_qent, COS, vnodes,
...

```

```

Memory statistics by type
Type  InUse MemUse HighUse Limit Requests 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:
```

```

-----
Hostname: aj
Model: txp
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]

```

```

JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```

tcc0-re0:
-----

```

```

Hostname: lj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```

tcc1-re0:
-----

```

```

Hostname: mj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```

tcc2-re0:
-----

```

```

Hostname: pj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]

```

```

JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```

tcc3-re0:
-----

```

```

Hostname: tj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

show task

Syntax show task
 <logical-system (all | *logical-system-name*)>
 <summary>
 <task-name>

Release Information Command introduced before JUNOS 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 Topics

- show task io
- show task memory

List of Sample Output show task on page 931

Output Fields Table 150 on page 930 describes the output fields for the **show task** command. Output fields are listed in the approximate order in which they appear.

Table 150: 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 150: show task Output Fields (*continued*)

Field Name	Field Description
Flags	Flags for the task: <ul style="list-style-type: none"> ■ 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 <i>logical-system-name</i>)>
Syntax (EX Series Switch)	show task io
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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 <i>logical-system-name</i>)—(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 932
Output Fields	Table 151 on page 932 describes the output fields for the show task io command. Output fields are listed in the approximate order in which they appear.

Table 151: 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 <i>logical-system-name</i>)>
Syntax (EX Series Switch)	show task memory <brief detail history summary>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
Description	Display memory utilization for routing protocol tasks on the Routing Engine.
Options	<p>none—Display standard information about memory utilization for routing protocol tasks on the Routing Engine on all logical systems.</p> <p>brief detail history summary—(Optional) Display the specified level of output. Use the history option to display a history of memory utilization information.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	view
List of Sample Output	show task memory on page 935 show task memory detail on page 936
Output Fields	Table 152 on page 934 describes the output fields for the command. Output fields are listed in the approximate order in which they appear.

Table 152: 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, logical-system
Memory Available	Memory currently available.	none specified, brief, logical-system
Size (kB)	Memory capacity in 1000-byte kilobytes.	none specified, brief, history, logical-system, summary
%Available	Percentage of memory currently available.	none specified, brief, logical-system
When	Timestamp.	none specified, brief, history, logical-system

Table 152: show task memory Output Fields (continued)

Field Name	Field Description	Level of Output
Overall Memory Report	Memory utilization by memory size: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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 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      Alloc      MaxAlloc      MaxAlloc
                               Size      Size      Blocks      Bytes      Blocks      Bytes
patroot                           8      12      84      1008      87      1044
sockaddr_un.i802                   8      12       2       24       2       24
cos_nhm_nh                         8      12       1       12       1       12
sockaddr_un.tag                     8      12       3       36       4       48
gw_entry_list                      8      12       1       12       1       12
bgp_riblist_01                     8      12       1       12       2       24
ospf_intf_ev                       8      12      -        -        6       72
krt_remnant_rt                     8      12 T      -        -        5       60
...
-----
                                164108                                221552

----- Malloc Usage Report -----
  Name                               Allocs      Bytes      MaxAllocs      MaxBytes      FuncCalls
MGMT.local                          1           8           1           8           1
BGP.0.0.0.0+179                     -           -           1           8           2
BGP RT Background                    4       74748         4       74748         4
SNMP Subagent./var/run/              -          52           1       9172         56
OSPFv2 I/O./var/run/ppm              1      66536         2      66552       4551
OSPF                                 6      67655         7      67703         68
KRT                                  -           -           1       3784         18
ASPaths                             3          80           3          80           3
-- sockaddr --                      183        2100        184        2108       1645
BFD I/O./var/run/bfdd_c              1      65535         2      65551       4555
RT                                    48          872         48          872         48
Scheduler                           42          628         43          628         88
--Anonymous--                       56        1100         58        1140        112
--System--                          82      58364        114       60044       4654
...
-----
                                337678                                352398

Dynamically allocated memory:      765952      Maximum:      765952
Program data+BSS memory:          1568768      Maximum:      1568768
Page data overhead:                53248      Maximum:      53248
Page directory size:               4096      Maximum:      4096
-----
Total bytes in use:      2392064 (0% of available memory)

```

show task replication

Syntax	show task replication
Release Information	Command introduced in JUNOS Release 8.5. Command introduced in JUNOS 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 937 show task replication (Issued on the backup Routing Engine) on page 937
Output Fields	Table 153 on page 937 lists the output fields for the show task replication command. Output fields are listed in the approximate order in which they appear.

Table 153: 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> invoke-on
Syntax (EX Series Switch)	show version <all-members> <brief detail> invoke-on <local> <member <i>member-id</i> >
Syntax (TX Matrix Router)	show version <brief detail> <all-chassis all-lcc lcc <i>number</i> scc> invoke-on
Syntax (TX Matrix Plus Router)	show version <brief detail> <all-chassis all-lcc lcc <i>number</i> sfc <i>number</i> > invoke-on
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6.
Description	Display the hostname and version information about the software running on the router or switch.
Options	<p>none—Display standard information about the hostname and version of the software running on the router or switch.</p> <p>brief detail—(Optional) Display the specified level of output.</p> <p>all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the hostname and version information about the software running on all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display the hostname and version information about the software running on all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.</p> <p>all-members—(EX4200 switches only) (Optional) Display standard information about the hostname and version of the software running on all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the hostname and version information about the software running on a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display the hostname and version information about the</p>

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.

invoke-on—Display the hostname and version information about the software running on a router or switch with two Routing Engines. The **invoke-on** option has the following two suboptions:

all-routing-engines—Display the hostnames and version information about the software running on all master and backup Routing Engines on a routing matrix, on a router, or on a switch that has dual Routing Engines.

other-routing-engine—Display the hostnames and version information about the software running on the other Routing Engine. For example, if you issue this command on the master Routing Engine on an M320 router, the JUNOS Software displays the hostname and version information on the backup Routing Engine. On a TX Matrix or TX Matrix Plus router, if you issue this command on the router master Routing Engine, the JUNOS Software displays all the hostnames and version information on all the backup Routing Engines.

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 940
show version (TX Matrix Plus Router) on page 940

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
in6greentry   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
 ingreentry    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					
rtsmmsg	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
sysctluid	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
vnodemark	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
```

show version invoke-on

Syntax	show version invoke-on (all-routing-engines other-routing-engine)
Release Information	Command introduced before JUNOS Release 7.4.
Description	Display the hostname and version information about the software running on a router with two Routing Engines.
Options	<p>all-routing-engines—Display the hostnames and version information about the software running on all master and backup Routing Engines on a routing matrix based on the TX Matrix or TX Matrix Plus router or on a router that has dual Routing Engines.</p> <p>other-routing-engine—Display the hostnames and version information about the software running on the other Routing Engine. For example, if you issue this command on the master Routing Engine on an M320 router, the JUNOS Software displays the hostname and version information on the backup Routing Engine. On a routing matrix based on the TX Matrix or TX Matrix Plus router, if you issue this command on the TX Matrix or TX Matrix Plus router's master Routing Engine, the JUNOS Software displays all the hostnames and version information on all the backup Routing Engines.</p>
Required Privilege Level	view
List of Sample Output	<p>show version invoke-on all-routing-engines (TX Matrix Router) on page 946</p> <p>show version invoke-on other-routing-engine (TX Matrix Router) on page 948</p> <p>show version invoke-on all-routing-engines (TX Matrix Plus Router) on page 949</p> <p>show version invoke-on other-routing-engine (TX Matrix Plus Router) on page 955</p>
show version invoke-on all-routing-engines (TX Matrix Router)	<pre> user@host> show version invoke-on all-routing-engines scc-re0: ----- Hostname: bob Model: TX Matrix JUNOS Base OS boot [7.1-20041024.0] JUNOS Base OS Software Suite [7.1-20041024.0] JUNOS Kernel Software Suite [7.1-20041024.0] JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0] JUNOS Routing Software Suite [7.1-20041024.0] JUNOS Online Documentation [7.1-20041024.0] JUNOS Crypto Software Suite [7.1-20041024.0] JUNOS Support Tools Package [7.1-20041025.1] scc-re1: ----- Hostname: bob1 Model: TX Matrix JUNOS Base OS boot [7.1-20041024.0] JUNOS Base OS Software Suite [7.1-20041024.0] JUNOS Kernel Software Suite [7.1-20041024.0] JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0] JUNOS Routing Software Suite [7.1-20041024.0] JUNOS Online Documentation [7.1-20041024.0] JUNOS Crypto Software Suite [7.1-20041024.0] JUNOS Support Tools Package [7.1-20041025.1] </pre>

```
lcc0-re0:
```

```
-----
Hostname: cas
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

```
lcc0-re1:
```

```
-----
Hostname: cas1-lcc0
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

```
lcc1-re0:
```

```
-----
Hostname: jas
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

```
lcc1-re1:
```

```
-----
Hostname: jas1
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

```
lcc2-re0:
```

```
-----
Hostname: dew
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

```
lcc2-re1:
```

```
-----
Hostname: dew1
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

```
lcc3-re0:
```

```
-----
Hostname: wa
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

```
lcc3-re1:
```

```
-----
Hostname: wa1
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041025.1]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

**show version invoke-on
other-routing-engine (TX
Matrix Router)**

```
user@host> show version invoke-on other-routing-engine
scc-re1:
```

```
-----
Hostname: bob1
Model: TX Matrix
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
JUNOS Support Tools Package [7.1-20041025.1]
```

```
lcc0-re1:
```

```
-----
Hostname: cas1-lcc0
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

```
lcc1-re1:
```

```
-----
Hostname: jas1
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

```
lcc2-re1:
```

```
-----
Hostname: dew1
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041024.0]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

```
lcc3-re1:
```

```
-----
Hostname: wa1
Model: t640
JUNOS Base OS boot [7.1-20041024.0]
JUNOS Base OS Software Suite [7.1-20041025.1]
JUNOS Kernel Software Suite [7.1-20041024.0]
JUNOS Packet Forwarding Engine Support (T-Series) [7.1-20041024.0]
JUNOS Routing Software Suite [7.1-20041024.0]
JUNOS Online Documentation [7.1-20041024.0]
JUNOS Crypto Software Suite [7.1-20041024.0]
```

**show version invoke-on
all-routing-engines (TX
Matrix Plus Router)**

```
user@host> show version invoke-on all-routing-engines
sfc0-re0:
```

```
-----
Hostname: aj
Model: txp
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]
```

```
lcc0-re0:
```

```
-----
Hostname: lj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
```

```

JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```

tcc1-re0:
-----

```

```

Hostname: mj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```

tcc2-re0:
-----

```

```

Hostname: pj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```

tcc3-re0:
-----

```

```

Hostname: tj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]

```

```

JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
sfc0-re1:
```

```

-----
Hostname: aj1
Model: txp
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc0-re1:
```

```

-----
Hostname: lj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc1-re1:
```

```

-----
Hostname: mj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]

```

```

JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc2-re1:
```

```

-----
Hostname: pj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc3-re1:
```

```

-----
Hostname: tj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc0-re0:
```

```

-----
Hostname: lj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]

```

```

JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc0-re1:
```

```

-----
Hostname: ljl
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc1-re0:
```

```

-----
Hostname: mj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc1-re1:
```

```

-----
Hostname: mj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]

```

```

JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc2-re0:
```

```

-----
Hostname: pj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc2-re1:
```

```

-----
Hostname: pj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc3-re0:
```

```

-----
Hostname: tj
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]

```

```
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]
```

```
lcc3-re1:
```

```
-----
Hostname: tj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]
```

**show version invoke-on
other-routing-engine (TX
Matrix Plus Router)**

```
user@host> show version invoke-on other-routing-engine
sfc0-re1:
```

```
-----
Hostname: aj1
Model: txp
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]
```

```
lcc0-re1:
```

```
-----
Hostname: lj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
```

```

JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc1-re1:
```

```

-----
Hostname: mj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc2-re1:
```

```

-----
Hostname: pj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services AACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]

```

```
lcc3-re1:
```

```

-----
Hostname: tj1
Model: t1600
JUNOS Base OS boot [9.6-20090519.0]
JUNOS Base OS Software Suite [9.6-20090519.0]
JUNOS Kernel Software Suite [9.6-20090519.0]
JUNOS Crypto Software Suite [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090519.0]
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090519.0]
JUNOS Online Documentation [9.6-20090519.0]

```

```
JUNOS Voice Services Container package [9.6-20090519.0]
JUNOS Border Gateway Function package [9.6-20090519.0]
JUNOS Services ACL Container package [9.6-20090519.0]
JUNOS Services LL-PDF Container package [9.6-20090519.0]
JUNOS Services Stateful Firewall [9.6-20090519.0]
JUNOS AppId Services [9.6-20090519.0]
JUNOS IDP Services [9.6-20090519.0]
JUNOS Routing Software Suite [9.6-20090519.0]
```

start shell

Syntax	start shell (csh sh) <user username>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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 <code>exit</code> from the shell.
Options	<p>csh—Create a UNIX C shell.</p> <p>sh—Create a UNIX Bourne shell.</p> <p>user username—(Optional) Start the shell as another user.</p>
Additional Information	<p>When you are in the shell, the shell prompt has the following format:</p> <p style="padding-left: 40px;"><i>username@hostname%</i></p> <p>An example of the prompt is:</p> <p style="padding-left: 40px;">root@router%</p>
Required Privilege Level	shell and maintenance
List of Sample Output	start shell csh on page 958
Output Fields	When you enter this command, you are provided feedback on the status of your request.
start shell csh	<pre> user@host> start shell csh % exit % username@hostname% start shell sh % exit user@host> </pre>

test configuration

Syntax	<code>test configuration <i>filename</i></code>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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	<i>filename</i> —Name of the configuration file.
Required Privilege Level	view
List of Sample Output	test configuration on page 959
Output Fields	When you enter this command, you are provided feedback on the status of your request.
test configuration	<pre> 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 </pre>

Part 3

Class of Service

- Class-of-Service Operational Mode Commands on page 963

Chapter 14

Class-of-Service Operational Mode Commands

Table 154 on page 963 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 154: Class-of-Service (CoS) Operational Mode Commands

Task	Command
Display the entire CoS configuration, including system-chosen defaults.	<code>show class-of-service</code>
(J Series routers only) Display trigger points and associated rates for CoS adaptive shapers.	<code>show class-of-service adaptive-shaper</code>
For each CoS classifier, display the mapping of code point value to forwarding class and loss priority.	<code>show class-of-service classifier</code>
Display the mapping of CoS code point aliases to corresponding bit patterns.	<code>show class-of-service code-point-aliases</code>
Display data points for each CoS random early detection (RED) drop profile.	<code>show class-of-service drop-profile</code>
(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.	<code>show class-of-service fabric scheduler-map</code>
(M320 routers and T Series routers only) Display CoS switch fabric queue statistics.	<code>show class-of-service fabric statistics</code>
Display the mapping of forwarding class names to queue numbers.	<code>show class-of-service forwarding-class</code>
Display entire CoS configuration as it exists in the forwarding table.	<code>show class-of-service forwarding-table</code>
Display the mapping of code point value to queue number and loss priority for each classifier as it exists in the forwarding table.	<code>show class-of-service forwarding-table classifier</code>

Table 154: Class-of-Service (CoS) Operational Mode Commands *(continued)*

Task	Command
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.	<code>show class-of-service forwarding-table classifier mapping</code>
Display the data points of all random early detection (RED) drop profiles as they exist in the forwarding table.	<code>show class-of-service forwarding-table drop-profile</code>
(M320 routers and T Series routers only) Display the scheduler map information as it exists in the forwarding table for switch fabric.	<code>show class-of-service forwarding-table fabric scheduler-map</code>
(J Series routers only) Display the mapping of code point value to loss priority as it exists in the forwarding table.	<code>show class-of-service forwarding-table loss-priority-map</code>
(J Series routers only) For each logical interface, display the loss priority table index.	<code>show class-of-service forwarding-table loss-priority-map mapping</code>
Display mapping of queue number and loss priority to code point value for each rewrite rule as it exists in the forwarding table.	<code>show class-of-service forwarding-table rewrite-rule</code>
For each logical interface, display the table identifier of the rewrite rule map for each code point type.	<code>show class-of-service forwarding-table rewrite-rule mapping</code>
For each physical interface, display the scheduler map information as it exists in the forwarding table.	<code>show class-of-service forwarding-table scheduler-map</code>
For Adaptive Services (AS) PIC link services IQ interfaces (lsq) only, display fragmentation properties for specific forwarding classes.	<code>show class-of-service fragmentation-map</code>
Display the logical and physical interface associations for the classifier, rewrite rules, and scheduler map objects.	<code>show class-of-service interface</code>
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).	<code>show class-of-service interface-set</code>
(J Series routers only) Display mapping of code point value to loss priority.	<code>show class-of-service loss-priority-map</code>
Display the mapping of forwarding classes and loss priority to code point values.	<code>show class-of-service rewrite-rule</code>
(M Series and T Series routers only) Display mapping of CoS objects to routing instances.	<code>show class-of-service routing-instance</code>

Table 154: Class-of-Service (CoS) Operational Mode Commands (*continued*)

Task	Command
Display mapping of schedulers to forwarding classes and a summary of scheduler parameters for each entry.	<code>show class-of-service scheduler-map</code>
For Gigabit Ethernet IQ and Channelized IQ PICs only, display traffic shaping and scheduling profiles.	<code>show class-of-service traffic-control-profile</code>
For IQE PICs only, display translation table information.	<code>show class-of-service translation-table</code>
(J Series routers only) Display virtual channel information.	<code>show class-of-service virtual-channel</code>
(J Series routers only) Display virtual channel group information.	<code>show class-of-service virtual-channel-group</code>



NOTE: For information about how to configure CoS, see the *JUNOS Class of Service Configuration Guide*. For information about the related `show interfaces queue` command, see the *JUNOS Interfaces Command Reference*.

show class-of-service

Syntax	show class-of-service
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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 966
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 <i><adaptive-shaper-name></i>
Release Information	Introduced before JUNOS 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. <i>adaptive-shaper-name</i> —(Optional) Display information for the named adaptive shaper.
Required Privilege Level	view
List of Sample Output	show class-of-service adaptive-shaper on page 968
Output Fields	Table 155 on page 968 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 155: 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 <i>name</i> > <type dscp type dscp-ipv6 type exp type ieee-802.1 type inet-precedence>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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 <i>name</i> —(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 970
Output Fields	Table 156 on page 969 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 156: show class-of-service classifier Output Fields

Field Name	Field Description
Classifier	Name of the classifier.
Code point type	Type of the classifier: exp, dscp, dscp-ipv6, 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.
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
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 Release 7.4. Command introduced in JUNOS 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 972
Output Fields	Table 157 on page 971 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 157: 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, exp, 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 user@host> **show class-of-service code-point-aliases exp**
code-point-aliases exp Code point type: exp

Alias	Bit pattern
af11	100
af12	101
be	000
be1	001
cs6	110
cs7	111
ef	010
ef1	011
nc1	110
nc2	111

show class-of-service drop-profile

Syntax	show class-of-service drop-profile <profile-name <i>profile-name</i> >
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS 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 <i>profile-name</i> —(Optional) Display the specified profile only.
Required Privilege Level	view
List of Sample Output	show class-of-service drop-profile on page 974
Output Fields	Table 158 on page 973 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 158: 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 user@host> show class-of-service drop-profile
drop-profile Drop profile: <default-drop-profile>, Type: discrete, Index: 1
                Fill level      Drop probability
                  100             100
Drop profile: user-drop-profile, Type: interpolated, Index: 2989
                Fill level      Drop probability
                   0              0
                   1              1
                   2              2
                   4              4
                   5              5
                   6              6
                   8              8
                  10             10
                  12             15
                  14             20
                  15             23
                ... 64 entries total
                   90             96
                   92             96
                   94             97
                   95             98
                   96             98
                   98             99
                   99             99
                  100            100

```

show class-of-service fabric scheduler-map

Syntax	show class-of-service fabric scheduler-map
Release Information	Command introduced before JUNOS 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 975
Output Fields	Table 159 on page 975 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 159: 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: <ul style="list-style-type: none"> ■ 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 <i>fpc-number</i> > <source <i>fpc-number</i> > <summary>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(M320 routers and T Series routers only) Display class-of-service (CoS) switch fabric queue statistics.
Options	<p>none—Same as summary.</p> <p><i>destination fpc-number</i>—(Optional) Display details for the specified destination Flexible PIC Concentrator (FPC). The FPC number is a value from 0 through 7.</p> <p><i>source fpc-number</i>—(Optional) Display details for the specified source FPC. The FPC number is a value from 0 through 7.</p> <p><i>summary</i>—(Optional) Display all switch fabric statistics.</p>
Required Privilege Level	view
List of Sample Output	show class-of-service fabric statistics on page 978
Output Fields	Table 160 on page 977 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 160: 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	<p>Fabric queue statistic totals:</p> <ul style="list-style-type: none"> ■ 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	<p>Fabric queue statistics for transmitted traffic:</p> <ul style="list-style-type: none"> ■ 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 160: show class-of-service fabric statistics Output Fields *(continued)*

Field Name	Field Description
Drop statistics	<p>Fabric queue statistics for dropped traffic:</p> <ul style="list-style-type: none"> ■ 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 Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. forwarding-class-map option added in JUNOS Release 9.4.
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 979 show class-of-service forwarding-class forwarding-class-map-name on page 980
Output Fields	Table 161 on page 979 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 161: 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 or switch.
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 user@host> show class-of-service forwarding-class FCMAP1
forwarding-class Forwarding class map FCMAP1
forwarding-class-map-name 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 <fcc number>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
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	fcc 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 <i>number</i> with a value from 0 through 3.
Required Privilege Level	view
List of Sample Output	show class-of-service forwarding-table on page 981 show class-of-service forwarding-table fcc (TX Matrix Plus Router) on page 982
Output Fields	See the output field descriptions for the remaining show class-of-service forwarding-table commands.

```

user@host> show class-of-service forwarding-table
Classifier table index: 9, # entries: 8, Table type: EXP
Entry #   Code point   Forwarding-class #   PLP
  0         000         0                   0
  1         001         0                   1
  2         010         1                   0
  3         011         1                   1
  4         100         2                   0
  5         101         2                   1
  6         110         3                   0
  7         111         3                   1

Interface      Index      Table Index/      Q num      Table type
sp-0/0/0.1001   66         11                11         IPv4 precedence
sp-0/0/0.2001   67         11                11         IPv4 precedence
sp-0/0/0.16383  68         11                11         IPv4 precedence
fe-0/0/0.0      69         11                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

Entry	Fullness(%)	Drop Probability(%)
0	100	100

**show class-of-service
forwarding-table lcc (TX
Matrix Plus Router)**

```

user@host> show class-of-service forwarding-table lcc 0
lcc0-re0:

```

Classifier table index: 9, # entries: 64, Table type: IPv6 DSCP

Entry #	Code point	Forwarding-class #	PLP
0	000000	0	0
1	000001	0	0
2	000010	0	0
3	000011	0	0
4	000100	0	0
5	000101	0	0
6	000110	0	0
7	000111	0	0
8	001000	0	0
9	001001	0	0
10	001010	0	0
11	001011	0	0
12	001100	0	0
13	001101	0	0
14	001110	0	0
15	001111	0	0
16	010000	0	0
17	010001	0	0
18	010010	0	0
19	010011	0	0
20	010100	0	0
21	010101	0	0
22	010110	0	0

23	010111	0	0
24	011000	0	0
25	011001	0	0
26	011010	0	0
27	011011	0	0
28	011100	0	0
29	011101	0	0
30	011110	0	0
31	011111	0	0
32	100000	0	0
33	100001	0	0
34	100010	0	0
35	100011	0	0
36	100100	0	0
37	100101	0	0
38	100110	0	0
39	100111	0	0
40	101000	0	0
41	101001	0	0
42	101010	0	0
43	101011	0	0
44	101100	0	0
45	101101	0	0
46	101110	0	0
...			

show class-of-service forwarding-table classifier

Syntax	show class-of-service forwarding-table classifier
Release Information	Command introduced before JUNOS 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 984
Output Fields	Table 162 on page 984 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 162: 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 user@host> show class-of-service forwarding-table classifier
forwarding-table Classifier table index: 62436, # entries: 64, Table type: DSCP
classifier
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 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 986
Output Fields	Table 163 on page 986 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 163: 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 Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches.
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 987
Output Fields	Table 164 on page 987 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 164: 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

Entry	Fullness(%)	Drop 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 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 <i>JUNOS Class of Service Configuration Guide</i> .
Required Privilege Level	view
List of Sample Output	show class-of-service forwarding-table fabric scheduler-map on page 989
Output Fields	Table 165 on page 989 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 165: 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 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 990
Output Fields	Table 166 on page 990 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 166: 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 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 991
Output Fields	Table 167 on page 991 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 167: 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 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 992
Output Fields	Table 168 on page 992 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 168: 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 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 993
Output Fields	Table 169 on page 993 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 169: 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 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 995
Output Fields	Table 170 on page 994 describes the output fields for the <code>show class-of-service forwarding-table scheduler-map</code> command. Output fields are listed in the approximate order in which they appear.

Table 170: 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.
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.

Table 170: show class-of-service forwarding-table scheduler-map Output Fields *(continued)*

Field Name	Field Description
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 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 996
Output Fields	Table 171 on page 996 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 171: 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 <i><interface-name></i>
Release Information	Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. Forwarding class map information added in JUNOS 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. <i>interface-name</i> —(Optional) Display CoS associations for the specified interface.
Required Privilege Level	view
List of Sample Output	show class-of-service interface (physical) on page 999 show class-of-service interface (logical) on page 999 show class-of-service interface (Gigabit Ethernet IQ) on page 999
Output Fields	Table 172 on page 998 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 172: 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.
Queues supported	Number of queues you can configure on the interface.
Queues in use	Number of queues currently configured.
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.
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.
Forwarding-class-map	Name of the forwarding map associated with this interface.

Table 172: show class-of-service interface Output Fields (continued)

Field Name	Field Description
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
Scheduler map: <default>, Index: 2032638653

Logical interface: fe-0/0/1.0, Index: 68
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
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 IQ) 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 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. <i>interface-set-name</i> —(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 1002
Output Fields	Table 173 on page 1001 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 173: 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	<p>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:</p> <p>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.</p>

Table 173: 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 user@host> show class-of-service interface-set example-ifset-ge-4/0/0-7
interface-set      Interface-set: example-ifset-ge-4/0/0-7, Index: 8
                    Physical interface: ge-4/0/0, Index: 270
                    Queues supported: 8, Queues in use: 8
                    Output traffic control profile: example-tcp-basic-rate, Index: 11395
                    Adjusting application: ancp LS-0
                    Adjustment type: absolute
                    Configured shaping rate: 50000000
                    Adjustment value: 888000

```

show class-of-service loss-priority-map

- Syntax

show class-of-service loss-priority-map
<name *name*>
<type frame-relay-de>
- Release Information

Command introduced before JUNOS 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 1003
- Output Fields

Table 174 on page 1003 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 174: 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 <i>name</i> > <type <i>type</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	Display the mapping of forwarding classes and loss priority to code point values.
Options	<p>none—Display all rewrite rules.</p> <p>name <i>name</i>—(Optional) Display the specified rewrite rule.</p> <p>type <i>type</i>—(Optional) Display the rewrite rule of specified type. The rewrite rule type can be one of the following:</p> <ul style="list-style-type: none"> ■ 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 1006
Output Fields	Table 175 on page 1005 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 175: 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 user@host> show class-of-service rewrite-rule type dscp
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 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 1007
- Output Fields

Table 176 on page 1007 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 176: 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 Release 7.4.
Description	Display the mapping of schedulers to forwarding classes and a summary of scheduler parameters for each entry.
Options	<p>none—Display all scheduler maps.</p> <p>name—(Optional) Display a summary of scheduler parameters for each forwarding class to which the named scheduler is assigned.</p>
Required Privilege Level	view
List of Sample Output	show class-of-service scheduler-map on page 1009
Output Fields	Table 177 on page 1008 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 177: 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 .
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.

Table 177: show class-of-service scheduler-map Output Fields *(continued)*

Field Name	Field Description
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 Release 7.4.
Description	For Gigabit Ethernet IQ and Channelized IQ PICs 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 1010
Output Fields	Table 178 on page 1010 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 178: 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.
Scheduler map	Name of the associated scheduler map.
Delay Buffer rate	Configured delay-buffer rate, in bps.
Guaranteed rate	Configured guaranteed rate, in bps.

```

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 virtual-channel

Syntax	show class-of-service virtual channel <i><virtual-channel-name></i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(J Series Services Router only) Display virtual channel information.
Options	none—Display all virtual channels. <i>virtual-channel-name</i> —(Optional) Display the specified virtual channel only.
Required Privilege Level	view
List of Sample Output	show class-of-service virtual-channel on page 1012
Output Fields	Table 179 on page 1012 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 179: 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 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 1013
Output Fields	Table 180 on page 1013 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 180: 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

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- Compressed Real-Time Transport Protocol Operational Mode Commands on page 1037
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Chapter 15

Border Signaling Gateway Operational Mode Commands

Table 181 on page 1017 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot border signaling gateway operations.

Table 181: Border Signaling Gateway Operational Mode Commands

Task	Command
Clear entries in the denied messages log.	<code>clear services border-signaling-gateway denied-messages</code>
Clear entries in the name resolution cache.	<code>clear services border-signaling-gateway name-resolution-cache</code>
Clear border signaling gateway statistical counters.	<code>clear services border-signaling-gateway statistics</code>
Display border signaling gateway processing statistics for a given contact.	<code>show services border-signaling-gateway by-contact</code>
Display border signaling gateway processing statistics for a given request Uniform Resource Identifier (URI).	<code>show services border-signaling-gateway by-request-uri</code>
Display border signaling gateway processing statistics for all calls.	<code>show services border-signaling-gateway calls</code>
Display a histogram of call durations for the border signaling gateway.	<code>show services border-signaling-gateway calls-duration</code>
Display border signaling gateway processing statistics for failed calls.	<code>show services border-signaling-gateway calls-failed</code>
Display border signaling gateway denied messages information.	<code>show services border-signaling-gateway denied-messages</code>
Display entries in the border signaling gateway name resolution cache.	<code>show services border-signaling-gateway name-resolution-cache</code>
Display border signaling gateway high availability, B2BUA, and SIP stack status.	<code>show services border-signaling-gateway status</code>

clear services border-signaling-gateway denied-messages

Syntax	clear services border-signaling-gateway gateway <i>gateway</i> denied-messages <backup master>
Release Information	Command introduced in JUNOS 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	<p><i>gateway-name</i>—The BSG for which denied messages information is to be cleared.</p> <p>backup—(Optional) Clear denied messages information for the backup BSG.</p> <p>master—(Optional) Clear denied messages information for the master BSG. If you do not specify the master or backup options, the master option is the default.</p>
Required Privilege Level	view
List of Sample Output	clear services border-signaling-gateway gateway statistics on page 1018
Output Fields	When you enter this command, you are provided feedback on the status of your request.
clear services border-signaling-gateway gateway statistics	<pre>user@host> clear services border-signaling-gateway statistics Last Reset 2008 12 18 06:00</pre>

clear services border-signaling-gateway name-resolution-cache

Syntax	clear services border-signaling-gateway name-resolution-cache (all by-fqdn <i>fqdn</i>) gateway <i>gateway-name</i> <backup master>
Release Information	Command introduced in JUNOS Release 10.0.
Description	Clear entries in the Domain Name System (DNS) name resolution cache.
Options	<p>all—Clear all entries in the name resolution cache.</p> <p>by-fqdn <i>fqdn</i>—Clear cache entries for a specific fully qualified domain name (FQDN).</p> <p>gateway <i>gateway-name</i>—Clear cache entries associated with this border signalling gateway (BSG).</p> <p>backup—(Optional) Clear cache entries for the backup BSG.</p> <p>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.</p>
Required Privilege Level	view
Related Topics	■ show services border-signaling-gateway name-resolution-cache
List of Sample Output	clear services border-signaling-gateway name-resolution-cache on page 1019
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	<pre>user@host> clear services border-signaling-gateway name-resolution-cache all gateway bsg-1</pre>

clear services border-signaling-gateway statistics

Syntax	clear services border-signaling-gateway gateway <i>gateway</i> statistics <backup master>
Release Information	Command introduced in JUNOS Release 9.4.
Description	This command clears a border signaling gateway (BSG) statistics for the specified gateway.
Options	<p><i>gateway-name</i>—The BSG for which statistics are to be cleared.</p> <p>backup—(Optional) Clear statistics for the backup BSG.</p> <p>master—(Optional) Clear statistics for the master BSG. If you do not specify the master or backup option, the master option is the default.</p>
Required Privilege Level	view
List of Sample Output	clear services border-signaling-gateway gateway statistics on page 1020
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 by-contact

Syntax	show services border-signaling-gateway by-contact <contact> (brief detailed summary) gateway <i>gateway-name</i> <backup master>
Release Information	Command introduced in JUNOS 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 <i>contact</i> .
Options	<p><i>contact</i>—(Optional) Display information for this contact. When <i>contact</i> is omitted, information is displayed for all calls.</p> <p><i>brief</i>—Display abbreviated information for the specified contact.</p> <p><i>detailed</i>—Display a detailed listing of BSG statistics for the specified contact.</p> <p><i>summary</i>—Display only the number of active calls for the contact.</p> <p><i>gateway-name</i>—Display information about statistics associated with this BSG.</p> <p><i>backup</i>—(Optional) Show statistics for the backup BSG.</p> <p><i>master</i>—(Optional) Show statistics for the master BSG. If you do not specify the <i>master</i> or <i>backup</i> option, the <i>master</i> option is the default.</p>
Required Privilege Level	view
List of Sample Output	<p>show services border-signaling-gateway by-contact brief on page 1022</p> <p>show services border-signaling-gateway by-contact detailed on page 1022</p>
Output Fields	Table 182 on page 1021 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 182: 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.	detailed
Remote URI	Remote URI for the displayed call ID.	detailed
Local Tag	Local tag for the displayed call ID.	detailed

Table 182: 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.	detailed
Next Hop	Next hop address for the displayed call ID.	detailed
Media IP	The IP through which the Real-Time Transport Protocol (RTP) is passed.	detailed
Media Port	The port through which the RTP is passed.	detailed
Media Status	The status of the media (Enabled or Disabled).	detailed
Admission Control Profile	Admission control profiles for this BSG.	detailed
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.	detailed

```

show services      user@host> show services border-signaling-gateway by-contact juniper.net brief
border-signaling-gateway gateway bsg1
by-contact brief    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      user@host> show services border-signaling-gateway by-contact juniper.net detailed
border-signaling-gateway gateway bsg1
by-contact detailed
                      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 <i><request-uri></i> (brief detailed summary) gateway <i>gateway-name</i> <i><backup master></i>
Release Information	Command introduced in JUNOS 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 <i>contact</i> .
Options	<p><i>request-uri</i>—(Optional) Display information for this request URI. When <i>contact</i> is omitted, information is displayed for all calls.</p> <p>brief—Display abbreviated information for the request URI.</p> <p>detailed—Display a detailed listing of BSG statistics for the request URI.</p> <p>summary—Display only the number of active calls for the request URI.</p> <p><i>gateway-name</i>—Display information about statistics associated with this VBGF.</p> <p>backup—(Optional) Show statistics for the backup BSG.</p> <p>master—(Optional) Show statistics for the master BSG. If you do not specify the master or backup option, the master option is the default.</p>
Required Privilege Level	view
List of Sample Output	<p>show services border-signaling-gateway by-request-uri brief on page 1024</p> <p>show services border-signaling-gateway by-request-uri sip:juniper.net detailed on page 1024</p>
Output Fields	Table 183 on page 1023 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 183: 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.	detailed
Remote URI	Remote URI for the displayed call ID.	detailed
Local Tag	Local tag for the displayed call ID.	detailed

Table 183: show services border-signaling-gateway by-request-uri Output Fields (continued)

Field Name	Field Description	Level of Output
Remote Tag	Remote tag for the displayed call ID.	detailed
Next Hop	Next hop address for the displayed call ID.	detailed
Media IP	The IP through which the RTP is passed.	detailed
Media Port	The port through which the RTP is passed.	detailed
Media Status	The status of the media (Enabled or Disabled).	detailed
Admission Controller	Admission controllers for this BSG.	detailed
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.	detailed

```

show services          user@host> show services border-signaling-gateway by-request-uri sip:juniper.net
border-signaling-gateway brief gateway bsg1
by-request-uri brief
    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          user@host> show services border-signaling-gateway by-request-uri sip:juniper.net
border-signaling-gateway detailed gateway bsg1
by-request-uri
sip:juniper.net detailed
    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

Syntax	show services border-signaling-gateway calls gateway <i>gateway-name</i> <backup master>
Release Information	Command introduced in JUNOS Release 9.4.
Description	Display border signaling gateway (BSG) call statistics.
Options	<p><i>gateway-name</i>—Name of the gateway for which call statistics are displayed.</p> <p>backup—(Optional) Show statistics for the backup BSG.</p> <p>master—(Optional) Show statistics for the master BSG. If you do not specify the master or backup option, the master option is the default.</p>
Required Privilege Level	view
List of Sample Output	show services border-signaling-gateway calls on page 1025
Output Fields	Table 184 on page 1025 lists the output fields for the show services border-signaling-gateway statistics calls command. Output fields are listed in the approximate order in which they appear.

Table 184: show services border-signaling-gateway calls Output Fields

Field Name	Field Description
Statistics Start	Date and time when accumulation of the current set of statistics began.
Service Point	Service point identifier.
Direction	Direction of calls on this service point. Possible values: <ul style="list-style-type: none"> ■ 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      user@host> show services border-signaling-gateway calls gateway bsg1
border-signaling-gateway Statistics Start      : 22/4/2008 13:24
calls              Service Point          : xxxx
                      Direction            : Egress

```

```
Failed Calls      : 100
Completed Calls   : 320000
Active Calls      : 23344

Service Point     : xxxx
Direction         : Ingress
Failed Calls      : 100
Completed Calls   : 320000
Active Calls      : 23344
```

show services border-signaling-gateway calls-duration

Syntax	show services border-signaling-gateway calls-duration gateway <i>gateway-name</i> <backup master>
Release Information	Command introduced in JUNOS Release 10.0.
Description	Display a histogram showing the number of calls, by duration, for a specific BSG since the last time statistics were cleared.
Options	<p><i>gateway-name</i>—Display information about statistics associated with this BSG.</p> <p>backup—(Optional) Show statistics for the backup BSG.</p> <p>master—(Optional) Show statistics for the primary BSG. If you do not specify the master or backup options, the master option is the default.</p>
Required Privilege Level	view
List of Sample Output	show services border-signaling-gateway calls-duration on page 1027
Output Fields	Table 185 on page 1027 lists the output fields for the show services border-signaling-gateway calls-duration command. Output fields are listed in the approximate order in which they appear.

Table 185: show services border-signaling-gateway call-duration Output Fields

Field Name	Field Description	Level of Output
Service Point	Service point 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      user@host> show services border-signaling-gateway calls-duration gateway bsg1
border-signaling-gateway Statistics Start      : 06-01-2009  14:38:38.
calls-duration
Service Point       : sip-5060-udp
Direction           : Egress

Duration[Min]      Number of calls
0 - 1              0
1 - 2              0
2 - 3              0
3 - 4              0
4 - 5              93
5 - 6              4906
6 - 7              0
7 - 8              0
8 - 9              0

```

9 - 10	0
10 - 11	155
11 - 12	0
12 - 13	0
13 - 14	0
14 - 15	0
15 - 16	1822
16 - 17	44
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	190
29 - INF	0

show services border-signaling-gateway calls-failed

Syntax	show services border-signaling-gateway calls-failed gateway <i>gateway-name</i> <backup master>
Release Information	Command introduced in JUNOS Release 9.4.
Description	Display border signaling gateway (BSG) failed call statistics.
Options	<p><i>gateway-name</i>—The gateway for which statistics are displayed.</p> <p>backup—(Optional) Show statistics for the backup BSG.</p> <p>master—(Optional) Show statistics for the master BSG. If you do not specify the master or backup options, the master option is the default.</p>
Required Privilege Level	view
List of Sample Output	show services border-signaling-gateway calls-failed on page 1029
Output Fields	Table 186 on page 1029 lists the output fields for the show services border-signaling-gateway calls-failed command. Output fields are listed in the approximate order in which they appear.

Table 186: show services border-signaling-gateway calls-failed Output Fields

Field Name	Field Description
Statistics Start	Date and time when accumulation of the current set of statistics began.
Service Point	Service point identifier.
Direction	Direction of calls on this service point. Possible values: <ul style="list-style-type: none"> ■ 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.
Timeout	Number of calls that failed due to timeouts.
Configured Behavior Policy Rejection	Number of calls that failed due to policy rejection.
4/5/6XX Response	Number of calls that failed because the call setup failed for reasons other than timeout.

```

show services      user@host> show services border-signaling-gateway calls-failed gateway bsg1
border-signaling-gateway
calls-failed      Statistics Start      : 05-06-2009 12:22:03.

                    Service Point          : sip-5060-udp
                    Direction              : Egress

```

```

Protocol Error                : 0
Inactive Timeout              : 0
Configured Behavior Policy Rejection : 0
4/5/6XX Response              : 0

Service Point                 : sip-5060-udp
Direction                     : Ingress
Protocol Error                : 0
Inactive Timeout              : 0
Configured Behavior Policy Rejection : 0
4/5/6XX Response              : 0

Service Point                 : sip-5060-tcp
Direction                     : Egress
Protocol Error                : 0
Inactive Timeout              : 0
Configured Behavior Policy Rejection : 0
4/5/6XX Response              : 0

Service Point                 : sip-5060-tcp
Direction                     : Ingress
Protocol Error                : 0
Inactive Timeout              : 0
Configured Behavior Policy Rejection : 0
4/5/6XX Response              : 0

```

show services border-signaling-gateway denied-messages

Syntax	show services border-signaling-gateway denied-messages gateway <i>gateway-name</i> <backup master>
Release Information	Command introduced in JUNOS Release 9.4.
Description	Display border signaling gateway (BSG) statistics for messages denied due to an overload condition.
Options	<p><i>gateway-name</i>—Display information about statistics associated with this BSG.</p> <p>backup—(Optional) Show statistics for the backup BSG.</p> <p>master—(Optional) Show statistics for the master BSG. If you do not specify the master or backup options, the master option is the default.</p>
Required Privilege Level	view
List of Sample Output	show services border-signaling-gateway denied-messages on page 1031
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	<pre> 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 </pre>

show services border-signaling-gateway name-resolution-cache

Syntax	show services border-signaling-gateway name-resolution-cache (all fqdn <i>fqdn</i>) gateway <i>gateway-name</i> <backup master>
Release Information	Command introduced in JUNOS Release 10.0.
Description	Display entries in the name resolution cache.
Options	<p>all—Display all entries in the name resolution cache.</p> <p>fqdn <i>fqdn</i>—Display entries for a specific fully qualified domain name (FQDN).</p> <p>gateway <i>gateway-name</i>—Display information about the name resolution cache associated with this border signaling gateway (BSG).</p> <p>backup—(Optional) Display information about the name resolution cache associated with the backup BSG.</p> <p>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.</p>
Required Privilege Level	view
Related Topics	<ul style="list-style-type: none"> ■ clear services border-signaling-gateway name-resolution-cache
List of Sample Output	show services border-signaling-gateway name-resolution-cache on page 1033
Output Fields	Table 187 on page 1032 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 187: 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: <ul style="list-style-type: none"> ■ A—Address records ■ NAPTR—Name authority pointer (NAPTR) records ■ SRV—Service records

Table 187: 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      user@host> show services border-signaling-gateway name-resolution-cache by-fqdn
border-signaling-gateway example.com gateway bsg-1
name-resolution-cache

```

Name	Type	RData	TTL Expiry	Blacklist Expiry
sip._udp.example.com	SRV	server1.example.com.	86400	
		server2.example.com.	86400	
		server3.example.com.	86400	
server1.example.com	A	192.168.1.10	43200	
server2.example.com	A	192.168.2.20	86400	300
		192.168.2.21	86400	
server3.example.com	A	192.168.3.30	86400	280

show services border-signaling-gateway status

Syntax	show services border-signaling-gateway status gateway <i>gateway-name</i> <backup master>
Release Information	Command introduced in JUNOS Release 9.10.
Description	Displays status information for the master or backup BSG, B2BUA connection, and SIP stack connection.
Options	<p><i>gateway-name</i>—Name of the gateway for which status is displayed.</p> <p>backup—(Optional) Show status information for the backup BSG.</p> <p>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.</p>
Required Privilege Level	view
List of Sample Output	<p>show services border-signaling-gateway status on page 1035</p> <p>show services border-signaling-gateway status backup (primary as backup) on page 1035</p>
Output Fields	Table 188 on page 1034 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 188: show services border-signaling-gateway status Output Fields

Field Name	Field Description
State	<p>Redundancy state of the BSG being displayed. Possible values:</p> <ul style="list-style-type: none"> ■ 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. <p>The state displayed is backup only if you specified the backup option in the command.</p>
Local	<p>Information about the local BSG, initially configured as the Master in a partnered pair, including:</p> <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ Primary—The BSG is configured as primary. ■ Secondary—The BSG is configured as secondary.

Table 188: 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ Primary—The BSG is configured as primary. ■ Primary—The BSG is configured as secondary.
B2BUA Connection	Information about the B2BUA connection, including: <ul style="list-style-type: none"> ■ Status—The connection status. Possible values: <ul style="list-style-type: none"> ■ Connected ■ Disconnected ■ TCP—Internal routing interface address.
SIP Stack	Information about the SIP stack connection, including: <ul style="list-style-type: none"> ■ Status—The connection status. Possible values: <ul style="list-style-type: none"> ■ 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 189 on page 1037 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 189: CRTP Operational Mode Commands

Task	Command
Clear CRTP flows statistics.	<code>clear services crtp statistics</code>
Display CRTP output.	<code>show services crtp</code>
Display CRTP flows.	<code>show services crtp flows</code>



NOTE: CRTP is supported on the following interfaces:

- M Series and T Series routers—Link services intelligent queuing (IQ) (`lsq-fpc/pic/port`)
- J Series router—Link services (`ls-pim/0/port`)



NOTE: For information about how to configure CRTP services, see the *JUNOS Services Interfaces Configuration Guide*.

clear services crtp statistics

Syntax	clear services crtp statistics <interface <i>interface-name</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	Clear Compressed Real-Time Transport Protocol (CRTP) flow statistics.
Options	<p>none—Clear CRTP flow statistics on all interfaces.</p> <p>interface <i>interface-name</i>—(Optional) Clear CRTP flow statistics for the specified interface:</p> <ul style="list-style-type: none"> ■ On M Series and T Series routers, a link services IQ (<i>lsq-fpc/pic/port</i>) or redundant link services IQ (<i>rlsq-fpc/pic/port</i>) interface ■ On the J Series router, a link services (<i>ls-pim/0/port</i>) interface
Required Privilege Level	view
List of Sample Output	clear services crtp statistics on page 1038
Output Fields	When you enter this command, you are provided feedback on the status of your request.
clear services crtp statistics	<pre>user@host> clear services crtp statistics</pre>

show services crtp

Syntax	show services crtp <extensive> <interface <i>interface-name</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	Display Compressed Real-Time Transport Protocol (CRTP) extensive output.
Options	<p>none—Display CRTP extensive output for all interfaces.</p> <p>extensive—(Optional) Display extensive CRTP information.</p> <p>interface <i>interface-name</i>—(Optional) Display CRTP flow statistics for the specified interface:</p> <ul style="list-style-type: none"> ■ On M Series and T Series routers, a link services IQ (<i>lsq-fpc/pic/port</i>) or redundant link services IQ (<i>rlsq-fpc/pic/port</i>) interface ■ On the J Series router, a link services (<i>ls-pim/0/port</i>) interface
Required Privilege Level	view
List of Sample Output	show services crtp extensive on page 1040
Output Fields	Table 190 on page 1039 lists the output fields for the show services crtp command. Output fields are listed in the approximate order in which they appear.

Table 190: show services crtp Output Fields

Field Name	Field Description
Interface	Name of the physical interface.
Port minimum	Compression is applied to UDP packets with even ports in the specified range.
Port maximum	
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 $100 \div 40 / 100 * 100 = 60\%$.

Table 190: 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 $100 \div 40/100 * 100 = 60\%$.
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 <i>interface-name</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	Display Compressed Real-Time Transport Protocol (CRTP) flows.
Options	<p>none—Display CRTP flows for all interfaces.</p> <p>interface <i>interface-name</i>—(Optional) Display CRTP flows for the specified interface:</p> <ul style="list-style-type: none"> ■ On M Series and T Series routers, a link services IQ (<i>lsq-fpc/pic/port</i>) or redundant link services IQ (<i>rlsq-fpc/pic/port</i>) interface ■ On the J Series router, a link services (<i>ls-pim/0/port</i>) interface
Required Privilege Level	view
List of Sample Output	show services crtp flows on page 1042
Output Fields	Table 191 on page 1042 lists the output fields for the show services crtp flows command. Output fields are listed in the approximate order in which they appear.

Table 191: 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 192 on page 1043 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 192: CoS Services Operational Mode Commands

Task	Command
Clear CoS statistics.	<code>clear services cos statistics</code>
Display CoS statistics.	<code>show services cos statistics</code>



NOTE: CoS services are supported on the adaptive services interface on the following routers:

- J Series—`sp-pim/0/slot`
- M Series and T Series—`sp-fpc/pic/port`

CoS services are also supported on the redundant adaptive services interface (`rspnumber`) on M Series and T Series routers.



NOTE: For information about how to configure CoS services, see the *JUNOS Services Interfaces Configuration Guide*.

clear services cos statistics

Syntax	clear services cos statistics <interface <i>interface-name</i> > <service-set <i>service-set-name</i> >
Release Information	Command introduced in JUNOS 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	<p>none—Clear all services CoS statistics.</p> <p>interface <i>interface-name</i>—(Optional) Clear statistics for the specified interface only.</p> <p>service-set <i>service-set-name</i>—(Optional) Clear statistics for the specified service set only.</p>
Required Privilege Level	view
List of Sample Output	clear services cos statistics on page 1044
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 <i>interface-name</i> > <service-set <i>service-set-name</i> > <summary>
Release Information	Command introduced in JUNOS 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	<p>none—Display all services CoS statistics.</p> <p>brief detail extensive—(Optional) Display the specified level of output.</p> <p>diffserv forwarding-class—(Optional) Display only the selected information, either DiffServ codepoints or forwarding classes.</p> <p>interface <i>interface-name</i>—(Optional) Display statistics for the specified interface only.</p> <p>service-set <i>service-set-name</i>—(Optional) Display statistics for the specified service set only.</p> <p>summary—(Optional) Display summary of statistics on a per-interface basis.</p>
Required Privilege Level	view
List of Sample Output	<p>show services cos statistics on page 1046</p> <p>show services cos statistics brief on page 1047</p> <p>show services cos statistics detail on page 1047</p> <p>show services cos statistics extensive on page 1047</p>
Output Fields	Table 193 on page 1045 describes the output fields for the show services cos statistics command. Output fields are listed in the approximate order in which they appear.

Table 193: 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
Packets out	Number of packets transmitted.	All levels

Table 193: show services cos statistics Output Fields *(continued)*

Field Name	Field Description	Level of Output
Forwarding class	Forwarding class queue number.	All levels

```

show services cos      user@host> show services cos statistics
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 194 on page 1049 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 194: DLSw Operational Mode Commands

Task	Command
Clear DLSw reachability.	<code>clear dlsw reachability</code>
Display DLSw peer capability.	<code>show dlsw capabilities</code>
Display information about configured DLSw circuits.	<code>show dlsw circuits</code>
Display DLSw peer information.	<code>show dlsw peers</code>
Display information about the cached media access control (MAC) entries.	<code>show dlsw reachability</code>
Display logical link control type 2 (LLC2) redundancy information for DLSw.	<code>show llc2 redundancy</code>
Display LLC2 redundancy statistics.	<code>show llc2 redundancy interface statistics</code>
Display LLC2 redundancy MAC translation information.	<code>show llc2 redundancy mac-translation</code>
Display LLC2 redundancy tracking information.	<code>show llc2 redundancy track</code>



NOTE: DLSw is supported only on the J Series router.



NOTE: For information about how to configure DLSw, see the *JUNOS 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 Release 8.0.
Description	Clear the data-link switching (DLSw) reachability cache.
Options	This command has no options.
Required Privilege Level	view
Related Topics	■ show dlsw reachability
List of Sample Output	clear dlsw reachability on page 1050
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 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 1051
Output Fields	Table 195 on page 1051 describes the output fields for the show dlsw capabilities command. Output fields are listed in the approximate order in which they appear.

Table 195: 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 Software 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 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 1053 show dlsw circuits detail on page 1053
Output Fields	Table 196 on page 1052 describes the output fields for the show dlsw circuits command. Output fields are listed in the approximate order in which they appear.

Table 196: 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 196: show dlsw circuits Output Fields (continued)

Field Name	Field Description	Level of Output
Statistics	Statistics: <ul style="list-style-type: none"> ■ 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 <i>ip-address</i> >
Release Information	Command introduced in JUNOS 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 <i>ip-address</i> —(Optional) Display information about only the specified DLSw peer.
Required Privilege Level	view
List of Sample Output	show dlsw peers brief on page 1055 show dlsw peers detail on page 1055
Output Fields	Table 197 on page 1054 describes the output fields for the show dlsw peers command. Output fields are listed in the approximate order in which they appear.

Table 197: 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
Circuit weight	Extent to which this peer should participate in establishing circuits.	detail

Table 197: show dlsw peers Output Fields (continued)

Field Name	Field Description	Level of Output
Statistics	Statistics: <ul style="list-style-type: none"> ■ 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 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 1056
Output Fields	Table 198 on page 1056 describes the output fields for the show dlsw reachability command. Output fields are listed in the approximate order in which they appear.

Table 198: 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 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 1058 show llc2 redundancy detail on page 1058
Output Fields	Table 199 on page 1057 describes the output fields for the show llc2 redundancy command. Output fields are listed in the approximate order in which they appear.

Table 199: 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
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 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 1059
Output Fields	Table 200 on page 1059 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 200: 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 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 1060
Output Fields	Table 201 on page 1060 lists the output fields for the show llc2 redundancy mac-translation command. Output fields are listed in the approximate order in which they appear.

Table 201: 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 44:44:44:44:10:25 fe-0/0/1.0     5
44:44:44:44:44 44:44:44:44:10:16 fe-0/0/1.0     5
44:44:44:44:44 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 Release 7.5.
Description	(J Series router only) Display logical link control type 2 (LLC2) redundancy tracking information for data link switching (DLSw).
Options	<p>brief detail—(Optional) Display the specified level of output.</p> <p>dlsw-remote-destination—(Optional) Display LLC2 remote destination tracking information.</p> <p>dlsw-remote-peer—(Optional) Display LLC2 remote peer tracking information.</p> <p>interfaces—(Optional) Display LLC2 interface tracking information.</p>
Required Privilege Level	view
List of Sample Output	<p>show llc2 redundancy track dlsw-remote-destination on page 1062</p> <p>show llc2 redundancy track dlsw-remote-peer on page 1062</p> <p>show llc2 redundancy track interfaces on page 1062</p>
Output Fields	Table 202 on page 1061 lists the output fields for the show llc2 redundancy track command. Output fields are listed in the approximate order in which they appear.

Table 202: 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.
ER state	Status of the router: master or backup.

```

show llc2 redundancy      user@host> show llc2 redundancy track dlsw-remote-destination
track                    Remote dest      Reachability Cost  Interface  Group  Cfg  Run  ER state
dlsw-remote-destination  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      user@host> show llc2 redundancy track dlsw-remote-peer
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      user@host> show llc2 redundancy track interfaces
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 203 on page 1063 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot Diameter base protocol services.

Table 203: 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 Subscriber Access Configuration Guide*.

clear diameter function statistics

Syntax	clear diameter function <i><function-name></i> statistics
Release Information	Command introduced in JUNOS Release 9.6.
Description	Clear current statistics accumulated for a specified function (application) or for all functions associated with the Diameter instance.
Options	<i>function-name</i> —(Optional) Clear statistics for the specified function. Currently, JSRC is the only supported function.
Required Privilege Level	clear
Related Topics	<ul style="list-style-type: none"> ■ show diameter ■ show diameter function ■ show diameter function statistics
List of Sample Output	clear diameter function statistics on page 1064
Output Fields	When you enter this command, you are provided feedback on the status of your request.
clear diameter function statistics	<pre>user@host> clear diameter function jsrsrc statistics</pre>

clear diameter peer

Syntax	clear diameter peer <i>peer-name</i> <connection statistics>
Release Information	Command introduced in JUNOS Release 9.6.
Description	Delete the specified Diameter peer and clear all statistics or only current statistics for the specified peer.
Options	<p><i>peer-name</i>—Delete the Diameter peer.</p> <p><i>connection</i>—(Optional) Clear all peer statistics and restart the peer state machine for the specified Diameter peer. This is the default action.</p> <p><i>statistics</i>—(Optional) Clear current statistics for the specified Diameter peer.</p>
Required Privilege Level	clear
Related Topics	<ul style="list-style-type: none"> ■ show diameter ■ show diameter peer ■ show diameter peer map ■ show diameter peer statistics
List of Sample Output	clear diameter peer on page 1065
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 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 Topics	<ul style="list-style-type: none"> ■ clear diameter function statistics ■ clear diameter peer
List of Sample Output	show diameter on page 1067
Output Fields	Table 204 on page 1066 lists the output fields for the show diameter command. Output fields are listed in the approximate order in which they appear.

Table 204: 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
Requests queued for network transmit	Number of requests waiting to be sent to the Diameter peers.	All levels

Table 204: show diameter Output Fields (continued)

Field Name	Field Description	Level of Output
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 Release 9.6.
Description	Display information about all functions associated with Diameter instances or only the specified function.
Options	<p>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.</p> <p>function-name—(Optional) Display information for only the specified function.</p>
Required Privilege Level	view
Related Topics	■ clear diameter function statistics
List of Sample Output	<p>show diameter function on page 1069</p> <p>show diameter function brief on page 1070</p> <p>show diameter function detail on page 1070</p>
Output Fields	Table 205 on page 1068 lists the output fields for the show diameter function command. Output fields are listed in the approximate order in which they appear.

Table 205: 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
Routed destinations	Number of destinations that have this function associated with their routes.	All levels

Table 205: show diameter function Output Fields *(continued)*

Field Name	Field Description	Level of Output
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:

Function	State	Upstream Transaction Utilization %	Downstream Transaction Utilization %	Net Queue Buffer Utilization %	Func Queue Buffer Utilization %	Routed Dests
----------	-------	------------------------------------	--------------------------------------	--------------------------------	---------------------------------	--------------

```
jsrc      Disconnec  0          0          0          0          0
```

show diameter function brief user@host> **show diameter function brief**

```
Diameter function:
  Function name           : jsrc
  State                   : Disconnected
  Upstream transaction utilization : 0 %
  Downstream transaction utilization : 0 %
  Network transmit buffer utilization : 0 %
  Function transmit buffer utilization : 0 %
  Routed destinations     : 0
```

show diameter function detail user@host> **show diameter function detail**

```
Diameter function:
  Function name           : jsrc
  State                   : Disconnected
  Upstream transaction utilization : 0 %
  Downstream transaction utilization : 0 %
  Network transmit buffer utilization : 0 %
  Function transmit buffer utilization : 0 %
  Routed destinations     : 0
  Requests queued for network tx : 0
  Pending answers from network : 0
  Answers queued for function tx : 0
  Total upstream transactions pending : 0
  Upstream transactions limit : 1024
  Requests queued for function tx : 0
  Pending answers from function : 0
  Answers queued for network tx : 0
  Total downstream transactions pending : 0
  Downstream transactions limit : 1024
  Buffers used by network tx queue : 0
  Limit on network tx queue buffers : 10485760
  Buffers used by function tx queue : 0
  Limit on function tx queue buffers : 10485760
```

show diameter function statistics

Syntax	show diameter function statistics <brief detail summary> <function-name>
Release Information	Command introduced in JUNOS Release 9.6.
Description	Display statistics about all functions associated with Diameter instances or only the specified function.
Options	<p>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.</p> <p>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.</p>
Required Privilege Level	view
Related Topics	■ clear diameter function statistics
List of Sample Output	<p>show diameter function statistics on page 1072</p> <p>show diameter function statistics brief on page 1072</p> <p>show diameter function statistics detail on page 1073</p>
Output Fields	Table 206 on page 1071 lists the output fields for the show diameter function statistics command. Output fields are listed in the approximate order in which they appear.

Table 206: 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
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

Table 206: show diameter function statistics Output Fields (continued)

Field Name	Field Description	Level of Output
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 Release 9.6.
Description	Display information about all Diameter instances or only the specified instance.
Options	<p>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.</p> <p><i>instance-name</i>—(Optional) Display information for only the specified Diameter instance.</p>
Required Privilege Level	view
List of Sample Output	<p>show diameter instance on page 1075</p> <p>show diameter instance detail on page 1075</p>
Output Fields	Table 207 on page 1074 lists the output fields for the show diameter instance command. Output fields are listed in the approximate order in which they appear.

Table 207: 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 Release 9.6.
Description	Display information about all Diameter network elements or only the specified network element.
Options	<p>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.</p> <p><i>element-name</i>—(Optional) Display information for only the specified network element.</p>
Required Privilege Level	view
List of Sample Output	<p>show diameter network-element on page 1077</p> <p>show diameter network-element detail on page 1077</p>
Output Fields	Table 208 on page 1076 lists the output fields for the show diameter network-element command. Output fields are listed in the approximate order in which they appear.

Table 208: 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: <ul style="list-style-type: none"> ■ 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
NE name	Name of the Diameter network element.	brief detail

Table 208: show diameter network-element Output Fields (continued)

Field Name	Field Description	Level of Output
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:
```

Name	Instance	State	Primary Peer	Secondary 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 Release 9.6.
Description	Display network-element-to-peer mapping information for all Diameter network elements or only the specified network element.
Options	<p>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.</p> <p>element-name—(Optional) Display information for only the specified network element.</p>
Required Privilege Level	view
List of Sample Output	<p>show diameter network-element map on page 1079</p> <p>show diameter network-element map detail on page 1079</p>
Output Fields	Table 209 on page 1078 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 209: 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: <ul style="list-style-type: none"> ■ 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 209: show diameter network-element map Output Fields (continued)

Field Name	Field Description	Level of Output
Usage	<p>State of the peer:</p> <ul style="list-style-type: none"> ■ 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 Release 9.6.
Description	Display information about all peers associated with Diameter instances or only the specified peer.
Options	<p>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.</p> <p>peer-name—(Optional) Display information for only the specified peer.</p>
Required Privilege Level	view
Related Topics	■ clear diameter peer
List of Sample Output	<p>show diameter peer on page 1083</p> <p>show diameter peer detail on page 1083</p>
Output Fields	Table 210 on page 1081 lists the output fields for the show diameter peer command. Output fields are listed in the approximate order in which they appear.

Table 210: 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 210: show diameter peer Output Fields (*continued*)

Field Name	Field Description	Level of Output
State	State of the peer: <ul style="list-style-type: none"> ■ Disabled—Peer is administratively disabled. ■ 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 doesw 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 delted 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: <ul style="list-style-type: none"> ■ 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
Time since last enable	Period since peer was enabled in <i>hh:mm:ss</i> format.	brief detail
In state time	Period that peer has been in present state in <i>hh:mm:ss</i> format.	brief detail

Table 210: show diameter peer Output Fields (continued)

Field Name	Field Description	Level of Output
Remaining in state time	Period that peer will remain in present state in <i>hh:mm:ss</i> format.	brief detail
Missing wd events	Number of missed watchdog events.	brief detail
Tx queue length	Number of messages in the transmit queue.	brief detail
Answer waiting count	Number of answers on which the peer is waiting.	brief detail
Time since last rx	Number of milliseconds since the last message was received by the peer.	brief detail
Time until wd timeout	Time remaining until next watchdog event.	brief detail
Operation timeout	Watchdog timeout period.	brief detail
Suspended timeout base	Base timeout period in suspended states (suspended, rejected, bad-remonte, bad-config). This timeout doubles after each consecutive suspension, until the maximum value of 600 seconds is reached.	brief detail
Closed timeout	Timeout period in normal closed state, such as when an external peer requested a disconnect.	brief detail
Connection timeout	Timeout period for establishing a connection.	brief detail

show diameter peer user@host> **show diameter peer**

Diameter peer list:

Peer	Instance	State	NE-Count	Activated Count	Primary Count	Secondary Count
p0	master	I-Open	1	1	1	0
p1	master	I-Open	1	1	0	1
p288	master	Suspended	1	1	0	0
pA	master	Suspended	1	1	0	0
pB	master	No-Activation	1	0	0	0
pc	master	No-Activation	0	0	0	0
pd	master	No-Activation	0	0	0	0

show diameter peer detail user@host> **show diameter peer detail**

Diameter peer:

```

Peer name       : p0
State           : I-Open
NEs             : 1
Activated count  : 1
Primary count    : 1
Secondary count  : 0
Vrf             : default:master
Remote address   : 10.10.5.28
Remote port      : 62917
Remote end origin realm : rrrrA

```

```

Remote end origin host : hhhhA
Local address          : 10.6.128.155
Local port             : 57095
Time since last enable : 08:56.200
In state time          : 08:56.200
Remaining in state time : no limit
Missed wd events       : 0
Tx queue length        : 0
Answer waiting count   : 0
Time since last rx     : 2200 ms
Time until wd timeout  : 3800 ms
Operation timeout      : 6000 ms
Suspended timeout base : 30000 ms
Closed timeout         : 30000 ms
Connection timeout     : 6000 ms

Peer name              : p1
State                  : I-Open
NEs                    : 1
Activated count        : 1
Primary count          : 0
Secondary count        : 1
Vrf                    : default:master
Remote address         : 10.10.5.28
Remote port            : 58490
Remote end origin realm : rrrrA
Remote end origin host : hhhhB
Local address          : 10.6.128.155
Local port             : 49293
Time since last enable : 08:56.200
In state time          : 08:36.000
Remaining in state time : no limit
Missed wd events       : 0
Tx queue length        : 0
Answer waiting count   : 0
Time since last rx     : 0 ms
Time until wd timeout  : 6000 ms
Operation timeout      : 6000 ms
Suspended timeout base : 30000 ms
Closed timeout         : 30000 ms
Connection timeout     : 6000 ms

```

show diameter peer map

Syntax	show diameter peer map <brief detail summary> <peer-name>
Release Information	Command introduced in JUNOS Release 9.6.
Description	Display peer-to-network-element mapping information for all peers associated with Diameter instances or with the specified peer.
Options	<p>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.</p> <p>peer-name—(Optional) Display mapping information for only the specified peer.</p>
Required Privilege Level	view
Related Topics	■ clear diameter peer
List of Sample Output	<p>show diameter peer map on page 1086</p> <p>show diameter peer map detail on page 1086</p>
Output Fields	Table 211 on page 1085 lists the output fields for the show diameter peer map command. Output fields are listed in the approximate order in which they appear.

Table 211: 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: <ul style="list-style-type: none"> ■ 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
NE name	Name of the Diameter network element.	brief detail

Table 211: show diameter peer map Output Fields (continued)

Field Name	Field Description	Level of Output
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 Release 9.6.
Description	Display statistics about all peers associated with Diameter instances or only the specified peer.
Options	<p>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.</p> <p>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.</p>
Required Privilege Level	view
Related Topics	■ clear diameter peer
List of Sample Output	<p>show diameter peer statistics on page 1089</p> <p>show diameter peer statistics detail on page 1089</p>
Output Fields	Table 212 on page 1088 lists the output fields for the show diameter peer statistics command. Output fields are listed in the approximate order in which they appear.

Table 212: 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
Tx	Total number of transmitted messages.	summary brief
Peer name	Name of the peer.	detail

Table 212: show diameter peer statistics Output Fields (continued)

Field Name	Field Description	Level of Output
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 terminations : 0          0
```

```

Active terminations      :          0          0
Passive disconnects      :          0          0
Active disconnects       :          0          0
Rx block requests        :          0          0
Rx block timeoutss       :          0          0
Connection management messages
      Rx current          Rx since      Tx current      Tx since
                        last enable
CER                      :          0          0          1          1
CEA                      :          1          1          0          0
DWR                      :          0          0         113         113
DWA                      :         113         113          0          0
DPR                      :          0          0          0          0
DPA                      :          0          0          0          0

Peer name                : p1
Instance name            : master
      Current            Since last enable
Rx errors                :          0          0
Rx messages              :         110         110
Rx handled by peer       :         110         110
Rx dropped msgs          :          0          0
Rx unmatched answers     :          0          0
Rx answers               :          0          0
Rx requests              :          0          0
Rx total                 :          0          0
Forw to connection       :          0          0
Forw to peer             :          0          0
Forw to routed dest      :          0          0
Total forwarding          :          0          0
Forwarding failures      :          0          0
Forwarding success       :          0          0
Moved-in messages        :          0          0
Moved-out messages       :          0          0
Rerouted messages        :          0          0
Dropped tx messages      :          0          0
Tx by peer               :         110         110
Tx errors                :          0          0
Tx total                 :         110         110
Connection attempts      :          0          1
Connection fails         :          0          0
Connections              :          0          1
Passive 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
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 Release 9.6.
Description	Display information about all routes associated with Diameter instances or only the specified route.
Options	<p>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.</p> <p>route-name—(Optional) Display information for only the specified route.</p>
Required Privilege Level	view
List of Sample Output	<p>show diameter route on page 1092</p> <p>show diameter route detail on page 1092</p>
Output Fields	Table 213 on page 1091 lists the output fields for the show diameter route command. Output fields are listed in the approximate order in which they appear.

Table 213: 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
Dest-host	Destination hostname configured for the route.	brief detail
Metric	Metric associated with the destination and function to create the route.	brief detail

Table 213: show diameter route Output Fields *(continued)*

Field Name	Field Description	Level of Output
Score	<p>Value that represents how a route is configured. The basic score is 0. Points are added according to the following scheme:</p> <ul style="list-style-type: none"> ■ 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 name   : 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 214 on page 1093 summarizes the command line interface (CLI) commands you can use to monitor and troubleshoot services pertaining to Dynamic Application Awareness operations.

Table 214: Dynamic Application Awareness Operational mode Commands

Task	Command
Clear entries from application system cache.	<code>clear services application-identification application-system-cache</code>
Clear application aware access list (AACL) statistics.	<code>clear services application-aware-access-list statistics</code>
Clear application identification counters.	<code>clear services application-identification counter</code>
Clear IDP ip-action entries.	<code>clear services flows ip-action</code>
Clear local policy decision function (L-PDF) statistics.	<code>clear services local-policy-decision-function statistics</code>
Display application-aware-access-list (AACL) statistics.	<code>show services application-aware-access-list statistics</code>
Display the database of cached values stored by the application identification (APPID) system.	<code>show services application-identification application-system-cache</code>
Display application identification (APPID) counter statistics.	<code>show services application-identification counter</code>
Display local policy decision function (L-PDF) flows.	<code>show services local-policy-decision-function flows</code>
Display local policy decision function (L-PDF) statistics.	<code>show services local-policy-decision-function statistics</code>



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 Release 9.5.
Description	Clear entries from application system cache.
Options	This command has no options.
Required Privilege Level	clear
Related Topics	■ show services application-identification application-system-cache

clear services application-aware-access-list statistics

Syntax clear services application-aware-access-list statistics

Release Information Command introduced in JUNOS Release 9.5.

Description Clear application aware access list (AACL) statistics.

Options This command has no options.

Required Privilege Level clear

Related Topics ■ show services application-aware-access-list statistics

clear services application-identification counter

Syntax	clear services application-identification counter
Release Information	Command introduced in JUNOS Release 9.5.
Description	Clear application identification counters.
Options	This command has no options.
Required Privilege Level	clear
Related Topics	■ show services application-identification counter

clear services flows ip-action

Syntax	clear services flows ip-action		
Release Information	Command introduced in JUNOS 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 <i>policy-name</i> rulebase-ips rule <i>rule-name</i> 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	<pre>user@host> clear services flows ip-action Interface Service set ms-4/0/0 idp-service Flows removed 1</pre>		

clear services local-policy-decision-function statistics

Syntax	clear services local-policy-decision-function statistics
Release Information	Command introduced in JUNOS Release 9.5.
Description	Clear local policy decision function (L-PDF) statistics.
Options	This command has no options.
Required Privilege Level	view
Related Topics	■ show services local-policy-decision-function statistics

show services application-aware-access-list statistics

Syntax	show services application-aware-access-list statistics <interface <i>interface-name</i> > <subscriber <i>subscriber-name</i> >
Release Information	Command introduced in JUNOS Release 9.5.
Description	Display application-aware-access-list (AACL) statistics.
Options	<p>interface <i>interface-name</i>—(Optional) Displays AACL statistics for the specified interface(s) only.</p> <p>subscriber <i>subscriber-name</i>—(Optional) Displays AACL statistics for the specified subscriber(s) only.</p>
Required Privilege Level	view
List of Sample Output	<p>show services application-aware-access-list statistics by interface on page 1100</p> <p>show services application-aware-access-list statistics by subscriber on page 1101</p>
Output Fields	Table 215 on page 1100 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 215: 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          user@host> show services application-aware-access-list statistics interface
application-aware-access-list ge-0/0/0.100
statistics by interface      Subscriber: user@juniper.net

                                service-set: IDP

```

```
service-set interface: ms-2/0/0
```

Application group	Application	Packets in	Bytes in
Packets out	Bytes out		
6	junos:ftp [63] 346	5	334

```
show services user@host> show services application-aware-access-list statistics subscriber  
application-aware-access-list user@juniper.net  
statistics by subscriber Interface: ge-1/1/0.0
```

```
Service-set-interface: ms-1/3/0
```

```
Service set: aacl-svc-set
```

```
Application-aware-access-list statistics
```

Application group	Packets in	Bytes in	Packets out	Bytes
P2P	16284	400	32025	200
FTP	8700	20000	5231000	100

show services application-identification application-system-cache

Syntax	show application-identification application-system-cache
Release Information	Command introduced in JUNOS Release 9.5.
Description	Display the database of cached values stored by the application identification (APPID) system.
Options	This command has no options.
Required Privilege Level	view
List of Sample Output	show application-identification application-system-cache on page 1102
Output Fields	Table 216 on page 1102 lists the output fields for the command-name command. Output fields are listed in the approximate order in which they appear.

Table 216: 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 user@host> show application-identification application-system-cache
application-identification pic: 2/0
application-system-cache
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
Release Information	Command introduced in JUNOS Release 9.5.
Description	Display application identification (APPID) counter statistics.
Options	This command has no options.
Required Privilege Level	view
List of Sample Output	show services application-identification counter on page 1104
Output Fields	Table 217 on page 1103 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 217: 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-protocol sessions	Number of sessions identified by protocol.
Total unidentified-by-protocol sessions	Number of sessions not identified by protocol.
Total identified-by-signature sessions	Number of sessions identified by signature.
Total unidentified-by-signature sessions	Number of sessions not identified by signature.
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.

```
show services application-identification counter
user@host> show services application-identification counter
Counter Statistics:
  pic: 1/1
  Total sessions: 11
  Total identified sessions: 11
  Total un-identified sessions: 0
Address Method
  Total identified-by-address sessions: 0
  Total un-identified-by-address sessions: 11
Port Method
  Total identified-by-port sessions: 1
  Total un-identified-by-port sessions: 0
  Total identified-by-icmp sessions: 0
  Total un-identified-by-icmp sessions: 0
  Total identified-by-ip-protocol sessions: 0
  Total un-identified-by-ip-protocol sessions: 0
Signature Method
  Total identified-by-signature sessions: 11
  Total un-identified-by-signature sessions: 0
  Total application system cache hits: 10
  Total application system cache misses: 1
```

show services local-policy-decision-function flows

Syntax	show services local-policy-decision-function flows (interface <i>interface-name</i> subscriber <i>subscriber-name</i>)
Release Information	Command introduced in JUNOS Release 9.5.
Description	Display local policy decision function (L-PDF) flows.
Options	interface <i>interface-name</i> —Display L-PDF flows for the specified interfaces only. subscribers <i>subscriber-name</i> —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 1106 show services local-policy-decision-function flows by subscriber on page 1106
Output Fields	Table 218 on page 1105 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 218: 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      user@host> show services local-policy-decision-function flows subscriber
local-policy-      user@juniper.net
decision-function flows
by interface      Interface: ge-0/0/5.26

                    service-set: aac1_ms30
                    service-set interface: ms-3/0/0

                    Currently active flows: 0
                    High watermark flows: 0

show services      user@host> show services local-policy-decision-function flows interface ge-1/1/0
local-policy-      Interface: ge-1/1/0.0
decision-function flows
by subscriber      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 <i>interface-name</i> subscriber <i>subscriber-name</i>)
Release Information	Command introduced in JUNOS Release 9.5.
Description	Display local-policy-decision-function (L-PDF) statistics.
Options	<p>interface <i>interface-name</i>—Display L-PDF statistics for the specified interface(s) only.</p> <p>subscribersubscriber-name—Display L-PDF statistics for the specified subscriber(s) only.</p>
Required Privilege Level	view
List of Sample Output	<p>show services local-policy-decision-function statistics by interface on page 1107</p> <p>show services local-policy-decision-function statistics by subscriber on page 1108</p>
Output Fields	Table 219 on page 1107 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 219: 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      user@host> show services local-policy-decision-function statistics interface
local-policy-decision-function ge-1/1/0
statistics by interface 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		
6	junos:ftp [63] 346	5	334

show services user@host> **show services local-policy-decision-function statistics subscriber**
local-policy- user@juniper.net
decision-function Service-set-interface: ms-1/3/0
statistics by subscriber Service set: aacl-svc-set

Application-aware-access-list statistics

Application group	Packets in	Bytes in	Packets out	Bytes
out				
P2P		400	32025	200
	16284			
FTP		20000	5231000	100
	8700			

Chapter 21

Flow Collection and Monitoring Operational Mode Commands

Table 220 on page 1109 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 220: 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
Dynamic Flow Capture	
Clear dynamic flow capture information.	clear services dynamic-flow-capture

Table 220: Flow Collection and Monitoring Operational Commands *(continued)*

Task	Command
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
Display the CPU usage of the PIC.	show passive-monitoring usage



NOTE: Active flow monitoring is supported on the adaptive services interface (**sp-fpc/pic/port**) on J Series, M Series, and T Series routers, and on the flow monitoring (**mo-fpc/pic/port**) interface on the M Series and T Series routers.

Flow collection is supported on the flow collector interface (**cp-fpc/pic/ /port**) on M40e, M160, and M320 routers and on the T Series routers.

Passive flow monitoring is supported on the flow monitoring interface (**mo-fpc/pic/port**) on the M40e, M160, and M320 routers and on the T Series routers.



NOTE: For information about how to configure flow collection and monitoring services, see the *JUNOS 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 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 1112

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 <i>interface-name</i>)
Release Information	Command introduced in JUNOS 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	<p>all—Clear statistics for all configured passive monitoring interfaces.</p> <p>interface <i>interface-name</i>—Clear statistics for the specified passive monitoring interface (<i>mo-fpc/pic/port</i>).</p>
Required Privilege Level	network
List of Sample Output	clear passive-monitoring statistics on page 1113
Output Fields	When you enter this command, you are provided feedback on the status of your request.
clear passive-monitoring statistics	<pre>user@host> clear passive-monitoring statistics interface mo-5/0/0</pre>

clear services flow-collector statistics

Syntax	clear services flow-collector statistics (all interface <i>interface-name</i>)
Release Information	Command introduced before JUNOS 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 <i>interface-name</i> —Clear statistics for the specified flow collector interface (<i>cp-fpc/pic/port</i>).
Required Privilege Level	network
List of Sample Output	clear services flow-collector statistics on page 1114
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 <i>cp-fpc/pic/port</i> <clear-files> <clear-logs> <immediately gracefully>
Release Information	Command introduced before JUNOS 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	<p>none—Switch to the primary FTP server.</p> <p><i>cp-fpc/pic/port</i>—Specify the flow collector interface name for the primary destination.</p> <p>clear-files—(Optional) Request clearing of existing data files in the FTP wait queue when the switch takes place.</p> <p>clear-logs—(Optional) Request clearing of existing logs when the switch takes place.</p> <p>immediately gracefully—(Optional) Specify whether you want the switch to take place immediately, or to affect only newly created files.</p>
Required Privilege Level	maintenance
List of Sample Output	request services flow-collector change-destination primary interface on page 1115
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	<pre> 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 </pre>

request services flow-collector change-destination secondary interface

Syntax	request services flow-collector change-destination secondary interface <i>cp-fpc/pic/port</i> <clear-files> <clear-logs> <immediately gracefully>
Release Information	Command introduced before JUNOS 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	<p>none—Switch to the secondary FTP server.</p> <p><i>cp-fpc/pic/port</i>—Specify the flow collector interface name (<i>cp-fpc/pic/port</i>) for the secondary destination.</p> <p>clear-files—(Optional) Request clearing of existing data files in the FTP wait queue when the switch takes place.</p> <p>clear-logs—(Optional) Request clearing of existing logs when the switch takes place.</p> <p>immediately gracefully—(Optional) Specify whether you want the switch to take place immediately, or to affect only newly created files.</p>
Required Privilege Level	maintenance
List of Sample Output	request services flow-collector change-destination secondary interface on page 1116
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	<pre>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</pre>

request services flow-collector test-file-transfer

Syntax	<code>request services flow-collector test-file-transfer <i>filename</i> interface (all <i>cp-fpc/pic/port</i>) (channel-zero channel-one) (primary secondary)</code>
Release Information	Command introduced before JUNOS 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	<p><i>filename</i>—Name of the test file to transfer.</p> <p><code>interface all <i>cp-fpc/pic/port</i></code>—Transfer a test file of flows from all configured flow collector interfaces or from only the specified interface.</p> <p><code>channel-zero channel-one</code>—Transfer a file from export channel 0 (unit 0) or channel 1 (unit 1) of the PIC.</p> <p><code>primary secondary</code>—Transfer a file to the primary or secondary server configured as a flow collector.</p>
Required Privilege Level	network
List of Sample Output	request services flow-collector test-file-transfer on page 1117
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request services flow-collector test-file-transfer	<pre> 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 </pre>

show forwarding-options next-hop-group

Syntax	show forwarding-options next-hop-group <terse brief detail> <group-name>
Release Information	Command introduced in JUNOS 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 Topics	■ show forwarding-options port-mirroring
List of Sample Output	show forwarding-options next-hop-group terse on page 1119 show forwarding-options next-hop-group brief on page 1119 show forwarding-options next-hop-group detail on page 1119
Output Fields	Table 221 on page 1118 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 221: 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
Number of subgroups configured	Number of subgroups configured.	detail

Table 221: show forwarding-options next-hop-group Output Fields (continued)

Field Name	Field Description	Level of Output
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 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 Topics	■ show forwarding-options next-hop-group
List of Sample Output	show forwarding-options port-mirroring terse on page 1122 show forwarding-options port-mirroring detail on page 1122
Output Fields	Table 222 on page 1121 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 222: 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      user@host> show forwarding-options port-mirroring terse
port-mirroring terse
Instance Name      Instance Id  State
&global_instance  1          up
inst1              2          up

show forwarding-options      user@host> show forwarding-options port-mirroring detail
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 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 1124
Output Fields	Table 223 on page 1123 lists the output fields for the show passive-monitoring error command. Output fields are listed in the approximate order in which they appear.

Table 223: show passive-monitoring error Output Fields

Field Name	Field Description
Passive monitoring interface	Name of the passive monitoring interface.
Local interface index	Index counter of the local interface.
Interface state	State of the passive monitoring interface: <ul style="list-style-type: none"> ■ 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.
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 223: show passive-monitoring error Output Fields (continued)

Field Name	Field Description
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 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 1126
Output Fields	Table 224 on page 1125 lists the output fields for the show passive-monitoring flow command. Output fields are listed in the approximate order in which they appear.

Table 224: show passive-monitoring flow Output Fields

Field Name	Field Description
Passive monitoring interface	Name of the passive monitoring interface.
Local interface index	Index counter of the local interface.
Interface state	State of the passive monitoring interface: <ul style="list-style-type: none"> ■ 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 224: 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 user@host> show passive-monitoring flow all
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 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 1127
Output Fields	Table 225 on page 1127 lists the output fields for the show passive-monitoring memory command. Output fields are listed in the approximate order in which they appear.

Table 225: 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 user@host> show passive-monitoring memory all
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 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 1129
Output Fields	Table 226 on page 1128 lists the output fields for the show passive-monitoring status command. Output fields are listed in the approximate order in which they appear.

Table 226: show passive-monitoring status Output Fields

Output Field	Output Field Description
Passive monitoring interface	Name of the passive monitoring interface.
Local interface index	Index counter of the local interface.
Interface state	Monitoring state of the passive monitoring interface. <ul style="list-style-type: none"> ■ 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 user@host> show passive-monitoring status all  
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 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 1130
Output Fields	Table 227 on page 1130 lists the output fields for the show passive-monitoring usage command. Output fields are listed in the approximate order in which they appear.

Table 227: 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 user@host> show passive-monitoring usage
usage all      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 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 Services Interfaces Configuration Guide*.

Required Privilege Level view

List of Sample Output show services accounting aggregation protocol-port detail on page 1134
 show services accounting aggregation source-destination-prefix on page 1134
 show services accounting aggregation source-destination- prefix order packet detail on page 1134

show services accounting aggregation source-destination- prefix extensive
limit on page 1135

show services accounting aggregation source-destination-prefix name
terse on page 1135

Output Fields Table 228 on page 1133 lists the output fields for the `show services accounting aggregation` command. Output fields are listed in the approximate order in which they appear.

Table 228: 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.
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.

Table 228: show services accounting aggregation Output Fields (continued)

Field Name	Field Description
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          interface        interface      count      count
prefix          count
11.1.0.0/20      40.0.0.0/24    ge-5/0/1.0     ge-5/0/0.0       256       491761
31472704
11.1.0.0/20      40.0.1.36/32   ge-5/0/1.0     ge-5/0/0.0        1
1926            123264
11.1.0.0/20      40.0.1.59/32   ge-5/0/1.0     ge-5/0/0.0        1
1926            123264
11.1.0.0/20      40.0.3.63/32   ge-5/0/1.0     ge-5/0/0.0        1
1925            123200
11.1.0.0/20      40.0.3.32/32   ge-5/0/1.0     ge-5/0/0.0        1
1925

```

**show services
accounting aggregation
source-destination-
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          user@host> show service accounting aggregation source-destination-prefix name t2
accounting aggregation extensive limit 3
source-destination-    Service Accounting interface: mo-2/0/0, Local interface index: 542
prefix extensive limit 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          user@host> show service accounting aggregation source-destination-prefix name T3
accounting aggregation terse
source-destination-prefix Service Accounting interface: rsp0, Local interface index: 171
name terse              Service name: T3
                          Interface state: Accounting
                          Source      Destination      Input      Output      Flow      Packet
                          Byte      prefix      interface  interface  count      count
                          count
11.1.0.0/20      50.0.0.0/24      ge-5/0/1.0      ge-5/0/0.0      256      639822
40948608
11.1.0.0/20      50.0.2.67/32      ge-5/0/1.0      ge-5/0/0.0      1
2485      159040
11.1.0.0/20      50.0.2.92/32      ge-5/0/1.0      ge-5/0/0.0      1
2485

```

show services accounting aggregation template

Syntax	show services accounting aggregation template <template-name <i>template-name</i> >
Release Information	Command introduced in JUNOS Release 8.3.
Description	Display information for flow aggregation version 9 templates.
Options	<template-name <i>template-name</i> >—(Optional) Display information for specified template only.
Required Privilege Level	view
List of Sample Output	show services accounting aggregation template on page 1136
Output Fields	Table 229 on page 1136 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 229: 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.
Packet Count	Number of packets sent.

show services accounting aggregation template	<pre> user@host> show services accounting aggregation template template-name mpls MPLS MPLS MPLS Packet Label 1 Label 2 Label 3 Count 10001 10002 10003 1597 </pre>
--	---

show services accounting errors

Syntax	show services accounting errors <name (* all <i>service-name</i>)>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Display active flow error statistics.
Options	<p>none—Display error statistics for all services accounting instances.</p> <p>name (* all <i>service-name</i>)—(Optional) Display active flow error statistics. Use a wildcard character, specify all services, or provide a specific service name.</p>
Required Privilege Level	view
List of Sample Output	show services accounting errors on page 1138
Output Fields	Table 230 on page 1137 lists the output fields for the show services accounting errors command. Output fields are listed in the approximate order in which they appear.

Table 230: 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.
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.

Table 230: show services accounting errors Output Fields (*continued*)

Field	Field Description
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 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 flow

Syntax	show services accounting flow <name (* all <i>service-name</i>)>
Release Information	Command introduced before JUNOS Release 7.4. JUNOS 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 <i>service-name</i>)—(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 1140 show services accounting flow (flow aggregation v9 configuration) on page 1140 show services accounting flow name on page 1140 show services accounting flow name all on page 1140 show services accounting flow (multiple sampling instances) on page 1141
Output Fields	Table 231 on page 1139 lists the output fields for the show services accounting flow command. Output fields are listed in the approximate order in which they appear.

Table 231: 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.
Active flows	Number of currently active flows tracked by the PIC.

Table 231: show services accounting flow Output Fields (*continued*)

Output Field	Output Field Description
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      user@host> show services accounting flow
accounting flow (flow Service Accounting interface: rsp0, Local interface index: 171
aggregation v5/v8  Service name: (default sampling)
configuration)    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      user@host> show services accounting flow
accounting flow (flow Flow information
aggregation v9     Service Accounting interface: sp-7/1/0, Local interface index: 149
configuration)    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      user@host> show services accounting flow count2
accounting flow name 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      user@host> show services accounting flow name all
accounting flow name Service Accounting interface: rsp0, Local interface index: 171
all                 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 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 1144
 show services accounting flow-detail limit on page 1144
 show services accounting flow-detail name extensive on page 1145
 show services accounting flow-detail limit order bytes on page 1145
 show services accounting flow-detail source-port on page 1145

Output Fields Table 232 on page 1143 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 232: 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
Source prefix length	Source prefix length.	extensive

Table 232: show services accounting flow-detail Output Fields (continued)

Field Name	Field Description	Output Level
Destination address	Address where the flow is sent.	All levels
Destination prefix length	Destination prefix length.	extensive
Destination port	Name of the destination port.	All levels
Start time	Actual time when the packet in this aggregation was first seen.	detail extensive
End time	Actual time when the packet in this aggregation was last seen.	detail extensive
Packet count	Number of packets in the aggregation.	All levels
Byte count	Number of bytes in the aggregation.	All levels
Time since last active timeout	Amount of time elapsed since the last active timeout, in the format <i>hh:mm:ss</i> .	None specified
Packet count for last active timeout	Number of packets in the aggregation since the last active timeout.	None specified
Byte count for last active timeout	Number of bytes in the aggregation since the last active timeout.	None specified

**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
              interface address      port      interface...
Protocol      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.
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 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 on page 1146
Output Fields	Table 233 on page 1146 lists the output fields for the show services accounting memory command. Output fields are listed in the approximate order in which they appear.

Table 233: 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      user@host> show services accounting memory
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 packet-size-distribution

Syntax	show services accounting packet-size-distribution <name (* all <i>service-name</i>)>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Display a packet size distribution histogram.
Options	<p>none—Display a packet size distribution histogram of all accounting services.</p> <p>name (* all <i>service-name</i>)—(Optional) Display a packet size distribution histogram. Use a wildcard character, specify all services, or provide a specific services name.</p>
Required Privilege Level	view
List of Sample Output	show services accounting packet-size-distribution name on page 1147
Output Fields	Table 234 on page 1147 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 234: 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      user@host> show services accounting packet-size-distribution name test3
accounting        Service Accounting interface: mo-0/2/0, Local interface index: 163
packet-size-distribution Service name: test3
name              Range start      Range end      Number of packets      Percentage packets
                               32             64             2924                   100

```

show services accounting status

Syntax	show services accounting status <name (* all <i>service-name</i>)>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Display available Physical Interface Cards (PICs) for accounting services.
Options	<p>none—Display available PICs for all accounting services.</p> <p>name (* all <i>service-name</i>)—(Optional) Display available PICs. Use a wildcard character, specify all services, or provide a specific services name.</p>
Required Privilege Level	view
List of Sample Output	show services accounting status name on page 1149
Output Fields	Table 235 on page 1148 lists the output fields for the show services accounting status command. Output fields are listed in the approximate order in which they appear.

Table 235: 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	<p>Accounting state of the passive monitoring interface.</p> <ul style="list-style-type: none"> ■ 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).
Protocol	Protocol the PIC is configured to monitor (only IPv4 is supported).
Engine type	Configured engine type that is inserted in output cflowd packets.

Table 235: show services accounting status Output Fields (*continued*)

Field	Field Description
Engine ID	Configured engine ID that is inserted in output cflowd packets.

```
show services user@host> show services accounting status name count1
accounting status name 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 usage

Syntax	show services accounting usage <name <i>service-name</i> >
Release Information	Command introduced before JUNOS 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 <i>service-name</i> —(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 on page 1151
Output Fields	Table 236 on page 1150 lists the output fields for the <code>show services accounting usage</code> command. Output fields are listed in the approximate order in which they appear.

Table 236: 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      user@host> show services accounting usage  
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 dynamic-flow-capture content-destination

Syntax	show services dynamic-flow-capture content-destination capture-group <i>group-name</i> destination-identifier <i>identifier</i> <terse>
Release Information	Command introduced in JUNOS 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 <i>group-name</i> —Capture-group identifier. destination-identifier <i>identifier</i> —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 1153
Output Fields	Table 237 on page 1152 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 237: 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      user@host> show services dynamic-flow-capture content-destination capture-group  
dynamic-flow-capture g1 destination-identifier cd1 terse  
content-destination   Capture group: g1, Content destination: cd1, Criteria: 0, Bandwidth: 0, Matched  
                        packets: 0, Matched bytes: 0, Congestion notifications: 0
```

show services dynamic-flow-capture control-source

Syntax	show services dynamic-flow-capture control-source capture-group <i>group-name</i> control-source <i>identifier</i> <detail terse>
Release Information	Command introduced in JUNOS 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 <i>group-name</i> —Capture group identifier. control-source <i>identifier</i> —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 1155 show services dynamic-flow-capture control-source detail on page 1155
Output Fields	Table 238 on page 1154 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 238: 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 238: 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 <i>group-name</i>
Release Information	Command introduced in JUNOS 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 <i>group-name</i> —Capture group identifier.
Required Privilege Level	view
List of Sample Output	show services dynamic-flow-capture statistics on page 1157
Output Fields	Table 239 on page 1156 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 239: show services dynamic-flow-capture statistics Output Fields

Output Field	Output Field Description
Input	<p>Incoming dynamic flow capture packet statistics:</p> <ul style="list-style-type: none"> ■ 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	<p>Control protocol packets dropped for the following reasons:</p> <ul style="list-style-type: none"> ■ 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 239: show services dynamic-flow-capture statistics Output Fields (*continued*)

Output Field	Output Field Description
Input drops	<p>Incoming dynamic flow capture packets dropped for the following reasons:</p> <ul style="list-style-type: none"> ■ 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	<p>Outgoing dynamic flow capture packet statistics:</p> <ul style="list-style-type: none"> ■ Control protocol packets—Number of control protocol packets sent. ■ Captured data packets—Number of captured data packets sent.
Output drops	<p>Outgoing packets dropped:</p> <ul style="list-style-type: none"> ■ Control protocol drops—Number of control protocol packets dropped. ■ Captured data drops—Number of captured data packets dropped.
Flow Statistics	<p>DFC flow statistics:</p> <ul style="list-style-type: none"> ■ 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 <i>cp-fpc/pic/port</i>) <detail extensive terse>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(M40e, M160, and M320 routers and T Series routers only) Display information about flow collector files.
Options	all <i>cp-fpc/pic/port</i> —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 1160
Output Fields	Table 240 on page 1159 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 240: 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: <ul style="list-style-type: none"> ■ Flow records—Number of flow records in the file. <ul style="list-style-type: none"> ■ 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. <ul style="list-style-type: none"> ■ 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. <ul style="list-style-type: none"> ■ per second—Average number of compressed bytes per second. ■ peak per second—Peak number of compressed bytes per second. 	extensive

Table 240: show services flow-collector file interface Output Fields (continued)

Output Field	Output Field Description	Level of Output
Status	<p>File statistics:</p> <ul style="list-style-type: none"> ■ 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. <ul style="list-style-type: none"> ■ 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 <i>cp-fpc/pic/port</i>) <detail extensive terse>
Release Information	Command introduced before JUNOS 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 <i>cp-fpc/pic/port</i> —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 1161 show services flow-collector input interface all on page 1161
Output Fields	Table 241 on page 1161 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 241: 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 <i>cp-fpc/pic/port</i>) <detail extensive terse>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(M40e, M160, and M320 routers and T Series routers only) Display overall statistics for the flow collector application.
Options	all <i>cp-fpc/pic/port</i> —Display statistics for flow collector applications on all interfaces or for the specified interface. detail extensive terse—(Optional) Display the specified level of output.
Required Privilege Level	view
List of Sample Output	show services flow-collector interface all detail on page 1166 show services flow-collector interface all extensive on page 1166 show services flow-collector interface all terse on page 1168 show services flow-collector interface extensive on page 1168
Output Fields	Table 242 on page 1163 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 242: 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 242: show services flow-collector interface Output Fields (continued)

Output Field	Output Field Description	Level of Output
Input	Incoming flow collector packet statistics: <ul style="list-style-type: none"> ■ Packets—Number of packets received on the unit. <ul style="list-style-type: none"> ■ 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. <ul style="list-style-type: none"> ■ 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. <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ Blocks allocated—Total number of data blocks (containing flow records) allocated to the files created on this PIC. <ul style="list-style-type: none"> ■ 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. <ul style="list-style-type: none"> ■ 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. <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ Uncompressed bytes—Total uncompressed data size for all files created on this PIC. <ul style="list-style-type: none"> ■ 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. <ul style="list-style-type: none"> ■ per second—Average number of compressed bytes per second. ■ peak per second—Peak number of compressed bytes per second. 	detail extensive

Table 242: show services flow-collector interface Output Fields (continued)

Output Field	Output Field Description	Level of Output
Packet drops	<p>Number of packets dropped for the following causes:</p> <ul style="list-style-type: none"> ■ 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 Software. The JUNOS Software interprets only IPv4, UDP cflowd version 5 packets. 	extensive
File transfer	<p>File transfer statistics:</p> <ul style="list-style-type: none"> ■ 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	<p>Export channel 0 is unit 0. Export channel 1 is unit 1. Flow receive channel is unit 2. Server status statistics are the following:</p> <ul style="list-style-type: none"> ■ Current server Primary or Secondary—Current FTP server being used. Value is ■ Primary server state—State of the server: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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      user@host> show services flow-collector interface all detail
flow-collector interface Flow collector interface: cp-6/1/0
all detail           Interface state: Collecting flows
                       Memory:
                           Used: 51452732, Free: 440329088
                       Input:
                           Packets: 4384, per second: 0, peak per second: 156
                           Bytes: 6659616, per second: 0, peak per second: 249695
                           Flow records processed: 131070, per second: 0, peak per second: 4914
                       Files:
                           Files created: 1, per second: 0, peak per second: 0
                           Files exported: 1, per second: 0, peak per second: 0
                       Throughput:
                           Uncompressed bytes: 13742307, per second: 0, peak per second: 593564
                           Compressed bytes: 3786177, per second: 0, peak per second: 162826
                       File Transfer:
                           FTP bytes: 3786247, per second: 0, peak per second: 378620
                           FTP files: 1, per second: 0, peak per second: 0
                           FTP failure: 0
                       Export channel: 0
                           Current server: Primary
                           Primary server state: OK, Secondary server state: OK
                       Export channel: 1
                           Current server: Primary
                           Primary server state: Unknown, Secondary server state: OK

Flow collector interface: cp-6/3/0
Interface state: Collecting flows
Memory:
    Used: 51452732, Free: 440329088
Input:
    Packets: 0, per second: 0, peak per second: 0
    Bytes: 0, per second: 0, peak per second: 0
    Flow records processed: 0, per second: 0, peak per second: 0
Files:
    Files created: 0, per second: 0, peak per second: 0
    Files exported: 0, per second: 0, peak per second: 0
Throughput:
    Uncompressed bytes: 0, per second: 0, peak per second: 0
    Compressed bytes: 0, per second: 0, peak per second: 0
File Transfer:
    FTP bytes: 70, per second: 0, peak per second: 6
    FTP files: 0, per second: 0, peak per second: 0
    FTP failure: 0
Export channel: 0
    Current server: Primary
    Primary server state: Unknown, Secondary server state: OK
Export channel: 1
    Current server: Primary
    Primary server state: Unknown, Secondary server state: OK

show services      user@host> show services flow-collector interface all extensive
flow-collector interface Flow collector interface: cp-6/1/0
all extensive         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      user@host> show services flow-collector interface all terse
flow-collector interface Flow collector interface: cp-6/1/0
all terse           Interface state: Collecting flows
                    Packets      Bytes      Flows Uncompressed   Compressed   FTP bytes FTP files
                               Bytes      Bytes      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      Bytes      Bytes
                    0          0          0          0          0          70          0

show services      user@host> show services flow-collector interface cp-5/2/0 extensive
flow-collector interface Flow collector interface: cp-5/2/0
extensive           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 243 on page 1169 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 243: IDS Operational Mode Commands

Task	Command
Clear (set to zero) IDS events and event information.	<code>clear services ids</code>
Clear the IDS events for a particular address that might be under attack.	<code>clear services ids destination-table</code>
Clear the IDS attack source and destination address pair table.	<code>clear services ids pair-table</code>
Clear all IDS events for addresses that are suspected attackers.	<code>clear services ids source-table</code>
Display IDS event information.	<code>show services ids</code>



NOTE: IDS is supported on the adaptive services interface on the following routers:

- J Series routers—`sp-pim/O/slot`
- M Series and T Series routers—`sp-fpc/pic/port`

IDS is also supported on the redundant adaptive services interface (`rspnumber`) on M Series and T Series routers.



NOTE: For information about how to configure IDS, see the *JUNOS Services Interfaces Configuration Guide*.

clear services ids

Syntax	clear services ids <interface <i>interface-name</i> > <service-set <i>service-set-name</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	Clear intrusion detection service (IDS) events.
Options	<p>none—Clear all IDS events for all adaptive services interfaces for all service sets, and clear and reset IDS.</p> <p>interface <i>interface-name</i>—(Optional) On M Series and T Series routers, the <i>interface-name</i> can be <i>sp-fpc/pic/port</i> or <i>rspnumber</i>. On the J Series, the <i>interface-name</i> is <i>sp-pim/0/port</i>.</p> <p>service-set <i>service-set-name</i>—(Optional) Clear all IDS events for a particular service set.</p>
Required Privilege Level	view
List of Sample Output	clear services ids on page 1170
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 <i>destination-prefix-name</i> > <interface <i>interface-name</i> > <service-set <i>service-set-name</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	Clear the intrusion detection service (IDS) events for a particular address that might be under attack.
Options	<p>none—Clear the attack destination address table.</p> <p>destination-prefix <i>destination-prefix-name</i>—(Optional) Clear the attack destination table for a particular destination prefix.</p> <p>interface <i>interface-name</i>—(Optional) Clear the attack destination table for a particular interface. On M Series and T Series routers, the <i>interface-name</i> can be <i>sp-fpc/pic/port</i> or <i>rspnumber</i>. On the J Series routers, the <i>interface-name</i> is <i>sp-pim/0/port</i>.</p> <p>service-set <i>service-set-name</i>—(Optional) Clear the attack destination table for a particular service set.</p>
Required Privilege Level	view
List of Sample Output	clear services ids destination-table on page 1171
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 <i>destination-prefix-name</i> > <interface <i>interface-name</i> > <service-set <i>service-set-name</i> > <source-prefix <i>source-prefix-name</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	Clear the intrusion detection service (IDS) attack source and destination address pair table.
Options	<p>none—Clear the attack source and destination address pair table.</p> <p>destination-prefix <i>destination-prefix-name</i>—(Optional) Clear the attack source and destination address pair table for a particular destination prefix.</p> <p>interface <i>interface-name</i>—(Optional) Clear the attack destination table for a particular interface. On M Series and T Series routers, the <i>interface-name</i> can be <i>sp-fpc/pic/port</i> or <i>rspnumber</i>. On the J Series routers, the <i>interface-name</i> is <i>sp-pim/0/port</i>.</p> <p>service-set <i>service-set-name</i>—(Optional) Clear the attack source and destination address pair table for a particular service set.</p> <p>source-prefix <i>source-prefix-name</i>—(Optional) Clear the attack source and destination address pair table for a particular source prefix.</p>
Required Privilege Level	view
List of Sample Output	clear services ids pair-table on page 1172
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 <i>interface-name</i> > <service-set <i>service-set-name</i> > <source-prefix <i>source-prefix-name</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	Clear all intrusion detection service (IDS) events for addresses that are suspected attackers.
Options	<p>none—Clear the attack source address table.</p> <p>interface <i>interface-name</i>—(Optional) On M Series and T Series routers, the <i>interface-name</i> can be <i>sp-fpc/pic/port</i> or <i>rspnumber</i>. On the J Series routers, the <i>interface-name</i> is <i>sp-pim/0/port</i>.</p> <p>service-set <i>service-set-name</i>—(Optional) Clear the attack source address table for a particular service set.</p> <p>source-prefix <i>source-prefix-name</i>—(Optional) Clear the attack source address table for a particular source prefix.</p>
Required Privilege Level	view
List of Sample Output	clear services ids source-table on page 1173
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 Release 7.4.

Description Display information about intrusion detection service (IDS) events. All events gathered by IDS are reported as anomalies. For example, events such as **create forward** or **watch flow**, **FTP passive**, and **FTP active** are genuinely allowed by the stateful firewall but are logged as anomalies to track the rates and number for these events.

Options destination-table—Display information for an address under possible attack.

pair-table—Display information for a particular suspected attack source and destination address pair.

source-table—Display information for an address that is a suspected attacker.

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

destination-prefix *destination-prefix-name*—(Optional) Display information for a particular destination prefix.

interface *interface-name*—(Optional) On M Series and T Series routers, the *interface-name* can be *sp-fpc/pic/port* or *rspnumber*. On J Series routers, the *interface-name* is *sp-pim/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 1178
- `show services ids destination-table extensive` on page 1178
- `show services ids destination-table extensive order anomalies` on page 1178
- `show services ids pair-table extensive` on page 1179
- `show services ids pair-table extensive limit` on page 1179
- `show services ids source-table extensive` on page 1180
- `show services ids source-table extensive limit` on page 1180

Output Fields Table 244 on page 1175 lists the output fields for the `show services ids` command. Output fields are listed in the approximate order in which they appear.

Table 244: 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
Anomalies	Total number of packets in the anomaly table, in thousands (k) or millions (m).	All levels

Table 244: show services ids Output Fields (*continued*)

Field Name	Field Description	Output Level
Anomaly description	<p>One or more of the following types of anomalies. For more information, see the detailed descriptions in the stateful firewall section of the <i>JUNOS System Log Messages Reference</i>.</p> <ul style="list-style-type: none"> ■ 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 244: show services ids Output Fields (continued)

Field Name	Field Description	Output Level
Anomaly description (continued)	<ul style="list-style-type: none"> ■ 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 244: 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 <code>show ids services</code> 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
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 245 on page 1183 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 (*rspnumber*).
- Encryption Interfaces (M Series and T Series routers only) *es-fpc/pic/port*.

Table 245: IPSec Services Operational Mode Commands

Task	Command
Adaptive Services Interface	
Delete certificate authority (CA) digital certificates from the router.	<code>clear security pki ca-certificate</code>
Delete manually generated local digital certificate requests from the router.	<code>clear security pki certificate-request</code>
Delete all CRLs from the router.	<code>clear security pki crl</code>
Delete local digital certificates, certificate requests, and the corresponding public/private key pairs from the router.	<code>clear security pki local-certificate</code>
Delete local and remote certificates from the IPSec configuration memory cache.	<code>clear services ipsec-vpn certificates</code>
Clear IPSec statistics.	<code>clear services ipsec-vpn ipsec statistics</code>
Clear either Internet Key Exchange (IKE) or IPSec VPN security associations.	<code>clear services ipsec-vpn ike security-associations</code> <code>clear services ipsec-vpn ipsec security-associations</code>
Request a digital certificate from a CA online by using the Simple Certificate Enrollment Protocol (SCEP).	<code>request security pki ca-certificate enroll</code>

Table 245: IPSec Services Operational Mode Commands *(continued)*

Task	Command
Manually load a CA digital certificate from a specified location.	<code>request security pki ca-certificate load</code>
Manually install a CRL on the router.	<code>request security pki crl load</code>
Manually generate a local digital certificate request in the Public-Key Cryptography Standards #10 (PKCS-10) format.	<code>request security pki generate-certificate-request</code>
Generate a Public Key Infrastructure (PKI) public and private key pair for a local digital certificate.	<code>request security pki generate-key-pair</code>
Request a CA to enroll and install a local digital certificate online by using the SCEP.	<code>request security pki local-certificate enroll</code>
Manually load a local digital certificate from a specified location.	<code>request security pki local-certificate load</code>
Switch between the primary and backup IPSec VPN tunnels.	<code>request services ipsec-vpn ipsec switch tunnel</code>
Display information about certificate authority (CA) digital certificates installed in the router.	<code>show security pki ca-certificate</code>
Display information about manually generated local digital certificate requests that are stored in the router.	<code>show security pki certificate-request</code>
Display information about the local digital certificates and the corresponding public keys installed in the router.	<code>show security pki local-certificate</code>
Display local and remote certificates installed in the IPSec configuration memory cache that are used for the IKE negotiation.	<code>show services ipsec-vpn certificates</code>
Display IKE VPN security associations for service sets.	<code>show services ipsec-vpn ike security-associations</code>
Display IPSec VPN security associations for service sets.	<code>show services ipsec-vpn ipsec security-associations</code>
Display IPSec VPN statistics for service sets.	<code>show services ipsec-vpn ipsec statistics</code>
Encryption Interface	
Clear Internet Key Exchange (IKE) security associations.	<code>clear ike security-associations</code>
Clear IPSec security associations.	<code>clear ipsec security-associations</code>
Switch between primary and backup interfaces and tunnels.	<code>request ipsec switch</code>

Table 245: IPSec Services Operational Mode Commands *(continued)*

Task	Command
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 Services Interfaces Configuration Guide* for adaptive services interfaces and the *JUNOS 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 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	<p>none—Clear all IKE security associations.</p> <p><i>destination-ip-address</i>—(Optional) Clear the IKE security association at the specified destination address.</p>
Required Privilege Level	view
Related Topics	■ show ike security-associations
List of Sample Output	clear ike security-associations on page 1186
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 <i><sa-name></i>
Release Information	Command introduced before JUNOS 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. <i>sa-name</i> —(Optional) Clear the specified security association.
Required Privilege Level	view
Related Topics	■ show ipsec security-associations
List of Sample Output	clear ipsec security-associations on page 1187
Output Fields	See the show ipsec security-associations for an explanation of output fields.
clear ipsec security-associations	<p>The following output from the show ipsec security-associations detail command is displayed before and after the clear ipsec security-associations command is issued:</p> <pre> 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 </pre>

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 <i>ca-profile-name</i>)
Release Information	Command introduced in JUNOS Release 7.5.
Description	(Adaptive services interfaces only) Delete certificate authority (CA) digital certificates from the router.
Options	<p>all—Delete all CA digital certificates from the router.</p> <p>ca-profile <i>ca-profile-name</i>—Delete the specified CA profile.</p>
Required Privilege Level	clear
Related Topics	<ul style="list-style-type: none"> ■ request security pki ca-certificate enroll ■ request security pki ca-certificate load ■ show security pki ca-certificate
List of Sample Output	clear security pki ca-certificate all on page 1189
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 <i>certificate-id-name</i>)
Release Information	Command introduced in JUNOS Release 7.5.
Description	(Adaptive services interfaces only) Delete manually generated local digital certificate requests from the router.
Options	<p>all—Delete all local digital certificate requests from the router.</p> <p>certificate-id <i>certificate-id-name</i>—Delete the specified local digital certificate and corresponding public/private key pair.</p>
Required Privilege Level	clear
Related Topics	■ show security pki certificate-request
List of Sample Output	clear security pki certificate-request all on page 1190
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 <i>ca-profile-name</i>)
Release Information	Command introduced in JUNOS 8.1
Description	(Adaptive services interfaces only) Delete certificate revocation lists (CRLs) from the router.
Options	<p>all—Delete all CRLs from the router.</p> <p>ca-profile <i>ca-profile-name</i>—Delete CRLs associated with the specified CA profile.</p>
Required Privilege Level	clear
List of Sample Output	clear security pki crl ca-profile all on page 1191
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 <i>certificate-id-name</i>)
Release Information	Command introduced in JUNOS 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	<p>all—Delete all local digital certificates, certificate requests, and the corresponding public/private key pairs from the router.</p> <p>certificate-id <i>certificate-id-name</i>—Delete the specified local digital certificate and corresponding public/private key pair.</p>
Required Privilege Level	clear
Related Topics	<ul style="list-style-type: none"> ■ request security pki local-certificate enroll ■ show security pki local-certificate
List of Sample Output	clear security pki local-certificate all on page 1192
Output Fields	When you enter this command, you are provided feedback on the status of your request.
clear security pki local-certificate all	<pre>user@host> clear security pki local-certificate all</pre>

clear services ipsec-vpn certificates

Syntax	clear services ipsec-vpn certificates (all service-set <i>service-set</i>) <certificate-cache-entry <i>number</i> >
Release Information	Command introduced in JUNOS 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	<p>all—Delete digital certificates for all service sets.</p> <p>service-set <i>service-set</i>—Delete digital certificates for the specified service set.</p> <p>certificate-cache-entry <i>number</i>—(Optional) Delete digital certificates matching a specified cache entry number. To view the certificate cache entry numbers, issue the show services ipsec-vpn certificates command.</p>
Required Privilege Level	clear
Related Topics	■ show services ipsec-vpn certificates
List of Sample Output	clear services ipsec-vpn certificates all on page 1193
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 Release 7.4.
 service-set option added in JUNOS 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 Topics ■ show services ipsec-vpn ike security-associations

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 <i>address</i> > <service-set <i>service-set-name</i> >
Release Information	Command introduced in JUNOS Release 8.1.
Description	(Adaptive services interface only) Clear IP Security (IPSec) statistics.
Options	remote-gateway <i>address</i> —(Optional) Clear statistics for the specified remote system. service-set <i>service-set-name</i> —(Optional) Clear statistics for the specified service set.
Required Privilege Level	view
Related Topics	■ show services ipsec-vpn ipsec statistics
List of Sample Output	clear services ipsec-vpn ipsec statistics on page 1195
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 Release 7.4. remote-gateway, service-set-name, and tunnel-index options added in JUNOS Release 8.4.
Description	(Adaptive services interfaces only) Clear IP Security (IPSec) security associations. You can combine the options for greater specificity.
Options	<p>peer-address-name—(Optional) Clear only the security association specified by the peer address.</p> <p>remote-gateway remote-gateway-address—(Optional) Clear only the security association specified by the remote gateway address.</p> <p>service-set-name—(Optional) Clear only the security association specified by the service-set name.</p> <p>tunnel-index tunnel-index-number—(Optional) Clear only the security association specified by the tunnel index number.</p>
Required Privilege Level	view
Related Topics	■ show services ipsec-vpn ipsec security-associations
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 <i>filename</i> subject <i>subject</i> alternative-subject <i>alternative-subject</i> certification-authority <i>certification-authority</i> encoding (binary pem) key-file <i>key-file</i> domain-name <i>domain-name</i>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(Encryption interface on M Series and T Series routers only) Obtain a signed certificate from a certificate authority (CA). The signed certificate validates the CA and the owner of the certificate. The results are saved in a specified file to the <code>/var/etc/ikecert</code> directory.
Options	<p>filename <i>filename</i>—File that stores the certificate.</p> <p>subject <i>subject</i>—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).</p> <p>alternative-subject <i>alternative-subject</i>—Tunnel source address.</p> <p>certification-authority <i>certification-authority</i>—Name of the certificate authority profile in the configuration.</p> <p>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.</p> <p>key-file <i>key-file</i>—File containing a local private key.</p> <p>domain-name <i>domain-name</i>—Fully qualified domain name.</p>
Required Privilege Level	maintenance
List of Sample Output	request security certificate (signed) on page 1197
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request security certificate (signed)	<pre> 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. <----- </pre>

request security certificate (unsigned)

Syntax	<code>request security certificate enroll filename <i>filename</i> ca-file <i>ca-file</i> ca-name <i>ca-name</i> encoding (binary perm) url <i>url</i></code>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(Encryption interface on M Series and T Series routers only) Obtain a certificate from a certificate authority (CA). The results are saved in a specified file to the <code>/var/etc/ikecert</code> directory.
Options	<p><code>filename <i>filename</i></code>—File that stores the public key certificate.</p> <p><code>ca-file <i>ca-file</i></code>—Name of the certificate authority profile in the configuration.</p> <p><code>ca-name <i>ca-name</i></code>—Name of the certificate authority.</p> <p><code>encoding (binary pem)</code>—File format used for the certificate. The format can be a binary file or privacy-enhanced mail (PEM), an ASCII base64-encoded format. The default value is <code>binary</code>.</p> <p><code>url <i>url</i></code>—Certificate authority URL.</p>
Required Privilege Level	<code>maintenance</code>
List of Sample Output	<code>request security certificate (unsigned)</code> on page 1198
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request security certificate (unsigned)	<pre> 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. <----- </pre>

request security key-pair

Syntax	request security key-pair <i>filename</i> <size <i>key-size</i> > <type (rsa dsa)>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(Encryption interface on M Series and T Series routers only) Generate a public and private key pair for a digital certificate.
Options	<p><i>filename</i>—Name of a file in which to store the key pair.</p> <p>size <i>key-size</i>—(Optional) Key size, in bits. The key size can be 512, 1024, or 2048. The default value is 1024.</p> <p>type—(Optional) Algorithm used to encrypt the key:</p> <ul style="list-style-type: none"> ■ 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 1199
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 <i>ca-profile-name</i>
Release Information	Command introduced in JUNOS 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 <i>ca-profile-name</i> —CA profile name.
Required Privilege Level	maintenance
Related Topics	<ul style="list-style-type: none"> ■ clear security pki ca-certificate ■ show security pki ca-certificate
List of Sample Output	request security pki ca-certificate enroll on page 1200
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request security pki ca-certificate enroll	<pre> 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 </pre>

request security pki ca-certificate load

Syntax	request security pki ca-certificate load ca-profile <i>ca-profile-name</i> filename <i>path/filename</i>
Release Information	Command introduced in JUNOS Release 7.5.
Description	(Adaptive services interfaces only) Manually load a certificate authority (CA) digital certificate from a specified location.
Options	<p>ca-profile <i>ca-profile-name</i>—Load the specified CA profile.</p> <p>filename <i>path/filename</i>—Directory location and filename of the CA digital certificate.</p>
Required Privilege Level	maintenance
Related Topics	<ul style="list-style-type: none"> ■ clear security pki ca-certificate ■ show security pki ca-certificate
List of Sample Output	request security pki ca-certificate load on page 1201
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	<code>request security pki crl load ca-profile <i>ca-profile-name</i> filename <i>path/filename</i></code>
Release Information	Command introduced in JUNOS Release 8.1.
Description	(Adaptive services interfaces only) Manually install a certificate revocation list (CRL) on the router from a specified location.
Options	<p><code>ca-profile <i>ca-profile-name</i></code> —Load the specified certificate authority (CA) profile.</p> <p><code>filename <i>path/filename</i></code> —Directory location and filename of the CRL.</p>
Required Privilege Level	maintenance
List of Sample Output	request security pki crl load on page 1202
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request security pki crl load	<code>user@host> request security pki crl load ca-profile ca-private filename pki-file</code>

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 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-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 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)

Required Privilege Level maintenance

- Related Topics**
- clear security pki certificate-request
 - show security pki certificate-request

List of Sample Output request security pki generate-certificate-request on page 1204

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-----
MIIBoTCCAQoCAQAwGjEYMBYGA1UEAxMPdHxLmp1bm1wZXIubmV0MIGfMA0GCSqG
SIb3DQEBAQUAA4GNADCBiQKBgQCiUFklQws1Ud+AqN5DDxRs2kVyKEhh9qoVFnz+
Hz4c9vsy3B8E1wTJlkmIt2cB3yifB6zePd+6WYpf57Crwre7YqPkiXM31F6z3YjX
H+1BPNbCxNwYvyrnSyVYDbFj8o0Xyqog8ACDfVL2JBWrPNBYy7imq/K9soDBbAs6
5hZqqwIDAQABoEcwRQYJKoZIhvcNAQkOMTgwNjA0BgNVHQ8BAf8EBAMCB4AwJAYD
VR0RAQH/BBowGIIWdHxLmVuZ2xhYi5qdW5pcGVyLm5ldANBgkqhkiG9w0BAQQF
AA0BgQBc2rq1v5S0QXH7LCb/FdqAL8ZM6GoaN5d6cGwq4bB6a7UQFgtoH406gQ3G
3iH0Zfz4xMIBpJYuGd1dkqgvcDoH3AgTsLkfn7Wi3x5H2qeQVs9bvL4P5nvEZLND
EIMUHwteo1ZCiZ70f09Fer9cXWHSQs1UtXtgPqQJy2xIeImLgw==
-----END CERTIFICATE REQUEST-----
Fingerprint:
0d:90:b8:d2:56:74:fc:84:59:62:b9:78:71:9c:e4:9c:54:ba:16:97 (sha1)
1b:08:d4:f7:90:f1:c4:39:08:c9:de:76:00:86:62:b8 (md5)
```

request security pki generate-key-pair

Syntax	request security pki generate-key-pair certificate-id <i>certificate-id-name</i> <size (512 1024 2048)>
Release Information	Command introduced in JUNOS 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 <i>certificate-id-name</i> —Name of the local digital certificate and the public/private key pair. size—(Optional) Key pair size. The key pair size can be 512, 1024, or 2048 bits.
Required Privilege Level	maintenance
List of Sample Output	request security pki generate-key-pair on page 1205
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 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 Topics ■ `show security pki local-certificate`

List of Sample Output request security pki local-certificate enroll on page 1207

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	<code>request security pki local-certificate load certificate-id <i>certificate-id-name</i> filename <i>path</i></code>
Release Information	Command introduced in JUNOS Release 7.5.
Description	(Adaptive services interfaces only) Manually load a local digital certificate from a specified location.
Options	<p><code>certificate-id <i>certificate-id-name</i></code>—Name of the public/private key pair mapped to the local digital certificate.</p> <p><code>filename <i>path/filename</i></code>—Directory location and filename of the local digital certificate provided by the CA.</p>
Required Privilege Level	maintenance
List of Sample Output	request security pki local-certificate load on page 1208
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request security pki local-certificate load	<pre>user@host> request security pki local-certificate load filename /tmp/router2-cert certificate-id local-entrust2 Local certificate local-entrust2 loaded successfully</pre>

request ipsec switch

Syntax	<code>request ipsec switch (interface <es-fpc/pic/port> security-associations <sa-name>)</code>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(Encryption interface on M Series and T Series routers 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	<p><code>interface <es-fpc/pic/port></code>—Switch to the backup encryption interface.</p> <p><code>security-associations <sa-name></code>—Switch to the backup tunnel.</p>
Required Privilege Level	view
Related Topics	■ show ipsec redundancy
List of Sample Output	request ipsec switch on page 1209
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request ipsec switch	<code>user@host> request ipsec switch security-associations sa-private</code>

request services ipsec-vpn ipsec switch tunnel

Syntax	request services ipsec-vpn ipsec switch tunnel local-gateway <i>address</i> remote-gateway <i>address</i> <routing-instance <i>instance-name</i> >
Release Information	Command introduced before JUNOS 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 <i>address</i> —Gateway address of the local system. remote-gateway <i>address</i> —Gateway address of the remote system. routing-instance <i>instance-name</i> —(Optional) VRF instance associated with local gateway address.
Required Privilege Level	view
Related Topics	■ show services ipsec-vpn ipsec security-associations
List of Sample Output	request services ipsec-vpn ipsec switch tunnel on page 1210
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	<code>request system certificate add (<i>filename</i> terminal)</code>
Release Information	Command introduced before JUNOS 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	<p><i>filename</i>—Filename (URL, local, or remote).</p> <p>terminal—Use login terminal.</p>
Required Privilege Level	maintenance
List of Sample Output	request system certificate add on page 1211
Output Fields	When you enter this command, you are provided feedback on the status of your request.
request system certificate add	<pre>user@host> request system certificate add terminal</pre>

show ike security-associations

Syntax	show ike security-associations <brief detail> <peer-address>
Release Information	Command introduced before JUNOS 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 Topics	■ clear ike security-associations
List of Sample Output	show ike security-associations on page 1215 show ike security-associations detail on page 1215
Output Fields	Table 246 on page 1212 lists the output fields for the show ike security-associations command. Output fields are listed in the approximate order in which they appear.

Table 246: 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 246: show ike security-associations Output Fields (continued)

Field Name	Field Description	Level of Output
Responder cookie	<p>The remote node generates its own random number and sends it back to the initiator as a verification that the packets were received.</p> <p>Of the numerous security services available, protection against denial of service (DoS) is one of the most difficult to address. A “cookie” or anticlogging token (ACT) is aimed at protecting the computing resources from attack without spending excessive CPU resources to determine the cookie's authenticity. An exchange prior to CPU-intensive public key operations can thwart some DoS attempts (such as simple flooding with invalid IP source addresses).</p>	All levels
Exchange type	<p>Specifies the number of messages in an IKE exchange, and the payload types that are contained in each message. Each exchange type provides a particular set of security services, such as anonymity of the participants, perfect forward secrecy of the keying material, and authentication of the participants. JUNOS Software supports two types of exchanges:</p> <ul style="list-style-type: none"> ■ 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 Software 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	<p>Header for the IKE algorithms output.</p> <ul style="list-style-type: none"> ■ 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	<p>Number of bytes and packets received and transmitted on the IKE security association.</p> <ul style="list-style-type: none"> ■ 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 246: show ike security-associations Output Fields (*continued*)

Field Name	Field Description	Level of Output
Flags	<p>Notification to the key management process of the status of the IKE negotiation:</p> <ul style="list-style-type: none"> ■ 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	<p>Number of phase 2 IKE negotiations in progress and status information:</p> <ul style="list-style-type: none"> ■ Negotiation type—Type of phase 2 negotiation. The JUNOS Software 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 <i>id-type-name (proto-name:port-number,[0..id-data-len] = iddata-presentation)</i> ■ Remote identity—Identity of the remote phase 2 negotiation. The format is <i>id-type-name (proto-name:port-number,[0..id-data-len] = iddata-presentation)</i> ■ Flags—Notification to the key management process of the status of the IKE negotiation: <ul style="list-style-type: none"> ■ 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          user@host> show ike security-associations
security-associations
Remote Address  State      Initiator cookie  Responder cookie  Exchange type
4.4.4.4        Matured    93870456fa000011 723a20713700003e Main

show ike          user@host> show ike security-associations detail
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 <i>crl-name</i> <i>serial-number</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	(Encryption interface on M Series and T Series routers only) Display information about the IPsec certificate database.
Options	<p>none—Display standard information about all of the entries in the IPsec certificate database.</p> <p>brief detail—(Optional) Display the specified level of output.</p> <p>crl <i>crl-name</i> <i>serial-number</i>—(Optional) Display information about the entries on the certificate revocation list (CRL) or for the specified serial number. A CRL is a timestamped list identifying revoked certificates. The CRL is signed by a certificate authority (CA) or CRL issuer and made freely available in a public repository. Each revoked certificate is identified in a CRL by its certificate serial number.</p>
Required Privilege Level	view
Related Topics	■ clear ipsec security-associations
List of Sample Output	show ipsec certificates detail on page 1217
Output Fields	Table 247 on page 1216 lists the output fields for the show ipsec certificates command. Output fields are listed in the approximate order in which they appear.

Table 247: show ipsec certificates Output Fields

Field Name	Field Description	Level of Output
Database	Display information about the IPsec certificate database. <ul style="list-style-type: none"> ■ 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, <i>Internet x.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile</i> .	All levels
ID	Identification number of the database entry. ID is generated by the internal certificate database.	All levels
References	Reference number the certificate manager has for the particular entry.	detail

Table 247: show ipsec certificates Output Fields (continued)

Field Name	Field Description	Level of Output
Serial	Unique serial number assigned to each certificate by the CA.	All levels
Flags	State of the certificate. <ul style="list-style-type: none"> ■ 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. ■ CrI-issuer—Entity issues CRLs. ■ Non-crI-issuer—Entity does not issue CRLs. 	detail
Validity period starts	Start time that the certificate is valid, in the format <i>yyy mon dd, hh:mm:ss GMT</i> .	detail
Validity period ends	End time that the certificate is valid, in the format <i>yyy mon dd, hh:mm:ss GMT</i> .	detail
Alternative name information	Auxiliary identity for the certificate: <i>dns-name</i> , <i>email-address</i> , <i>ip-address</i> , or <i>uri</i> (uniform resource identifier).	detail
Issuer	Information about the entity that has signed and issued the CRL as described in RFC 2459, <i>Internet X.509 Public Key Infrastructure Certificate and CRL Profile</i> .	detail

```

show ipsec certificates user@host> show ipsec certificates detail
detail Database: Total entries: 3 Active entries: 4 Locked entries: 1
Subject: C=us, O=x
ID: 5, References: 0, Serial: 22314868
Flags: Trusted Non-root CrI-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 CrI-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-crI-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 <i><es-fpc/pic/port></i> security association <i><sa-name></i>)
Release Information	Command introduced before JUNOS Release 7.4.
Description	(Encryption interface on M Series and T Series routers only) Display information about IPSec redundancy.
Options	<p>interface <i><es-fpc/pic/port></i>—Display information about all encryption interfaces, or optionally, about a particular encryption interface.</p> <p>security association <i><sa-name></i>—Display information about all remote tunnels, or optionally, about a particular remote tunnel.</p>
Required Privilege Level	view
Related Topics	■ request ipsec switch
List of Sample Output	<p>show ipsec redundancy interface on page 1219</p> <p>show ipsec redundancy security-associations on page 1219</p>
Output Fields	Table 248 on page 1218 lists the output fields for the show ipsec redundancy command. Output fields are listed in the approximate order in which they appear.

Table 248: 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 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 1222 show ipsec security-associations sa-name detail on page 1222
Output Fields	Table 249 on page 1220 lists the output fields for the show ipsec security-associations command. Output fields are listed in the approximate order in which they appear.

Table 249: 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: <ul style="list-style-type: none"> ■ 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 249: show ipsec security-associations Output Fields (continued)

Field Name	Field Description	Level of Output
AUX-SPI	Value of the auxiliary security parameter index. <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ transport—Protects single host-to-host protections. ■ tunnel—Protects connections between security gateways. 	All levels
Type	Type of security association: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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. <ul style="list-style-type: none"> ■ 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
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 <i>ca-profile-name</i> >
Release Information	Command introduced in JUNOS Release 7.5.
Description	(Adaptive services interfaces only) Display information about certificate authority (CA) digital certificates installed in the router.
Options	<p>none—(Same as brief) Display information about all CA digital certificates.</p> <p>brief detail—(Optional) Display the specified level of output.</p> <p>ca-profile <i>ca-profile-name</i>—(Optional) Display information about only the specified CA profile.</p>
Required Privilege Level	view
List of Sample Output	<p>show security pki ca-certificate on page 1224</p> <p>show security pki ca-certificate detail on page 1225</p>
Output Fields	Table 250 on page 1223 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 250: 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	<p>Authority that issued the digital certificate, including details of the authority organized using the distinguished name format. Possible subfields are:</p> <ul style="list-style-type: none"> ■ 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 250: 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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 <code>rsaEncryption(1024 bits)</code> .	All levels
Signature algorithm	Encryption algorithm that the CA used to sign the digital certificate, such as <code>sha1WithRSAEncryption</code> .	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      user@host> show security pki ca-certificate
ca-certificate      Certificate identifier: entrust
                        Issued to: juniper, Issued by: juniper
                        Validity:
                          Not before: 2005 Oct 18th, 23:54:22 GMT
                          Not after: 2025 Oct 19th, 00:24:22 GMT
                        Public key algorithm: rsaEncryption(1024 bits)

                        Certificate identifier: entrust
                        Issued to: First Officer, Issued by: juniper
                        Validity:
                          Not before: 2005 Oct 18th, 23:55:59 GMT
                          Not after: 2008 Oct 19th, 00:25:59 GMT
                        Public key algorithm: rsaEncryption(1024 bits)

                        Certificate identifier: entrust
                        Issued to: First Officer, Issued by: juniper
                        Validity:
                          Not before: 2005 Oct 18th, 23:55:59 GMT
                          Not after: 2008 Oct 19th, 00:25:59 GMT
                        Public key algorithm: rsaEncryption(1024 bits)

```

```

show security pki      user@host> show security pki ca-certificate detail
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 <i>certificate-id-name</i> >
Release Information	Command introduced in JUNOS 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 <i>certificate-id-name</i> —(Optional) Display information about only the specified local digital certificate request
Required Privilege Level	view
Related Topics	■ clear security pki certificate-request
List of Sample Output	show security pki certificate-request on page 1228 show security pki certificate-request detail on page 1228
Output Fields	Table 251 on page 1227 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 251: 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 251: show security pki certificate-request Output Fields (continued)

Field Name	Field Description	Level of Output
Validity	Time period when the digital certificate is valid. Values are: <ul style="list-style-type: none"> ■ 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      user@host> show security pki certificate-request
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      user@host> show security pki certificate-request detail
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 <i>ca-profile-name</i> >
Release Information	Command introduced in JUNOS Release 8.1.
Description	(Adaptive services interfaces only) Display information about the certificate revocation lists (CRLs) that are stored in the router.
Options	<p>none—(same as brief) Display information about all CRLs.</p> <p>brief detail—(Optional) Display the specified level of output.</p> <p>ca-profile <i>ca-profile-name</i>—(Optional) Display CRL information about only the specified CA profile.</p>
Required Privilege Level	view
Related Topics	<ul style="list-style-type: none"> ■ clear security pki crl ■ show security pki crl
List of Sample Output	<p>show security pki crl on page 1230</p> <p>show security pki crl detail on page 1230</p>
Output Fields	Table 252 on page 1229 shows the output fields for the <code>show security pki crl</code> command. Output fields are listed in the approximate order in which they appear.

Table 252: 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	<p>Details of the digital certificate holder organized using the distinguished name format. Possible subfields are:</p> <ul style="list-style-type: none"> ■ 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
Effective date	Date and time the certificate revocation list becomes valid.	All levels

Table 252: show security pki crl Output Fields *(continued)*

Field Name	Field Description	Level of Output
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: <ul style="list-style-type: none"> ■ 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 CA profile: entrust
detail                CRL version: V2
                        CRL number: 24
                        Issuer:
                        Organization: juniper, Country: ca
                        Validity:
                        Effective date: 2006 May 31st, 05:35:25 GMT
                        Next update: 2006 Jun 1st, 06:35:25 GMT
                        Revocation List:
                        Serial number    Revocation date
                        4451aca3 2006    May 25th, 09:13:38 GMT
                        4451aca4 2006    May 25th, 10:11:33 GMT
                        4451acb4 2006    May 29th, 11:28:54 GMT
                        4451aceb 2006    May 29th, 11:29:01 GMT
                        4451acfe 2006    May 29th, 11:29:17 GMT
                        4451acff 2006    May 31st, 05:29:55 GMT

```

show security pki local-certificate

Syntax	show security pki local-certificate <brief detail> <certificate-id <i>certificate-id-name</i> >
Release Information	Command introduced in JUNOS 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	<p>none—(same as brief) Display information about all local digital certificates and corresponding public keys.</p> <p>brief detail—(Optional) Display the specified level of output.</p> <p>certificate-id <i>certificate-id-name</i>—(Optional) Display information about only the specified the local digital certificate and corresponding public keys.</p>
Required Privilege Level	view
Related Topics	■ clear security pki local-certificate
List of Sample Output	<p>show security pki local-certificate on page 1232</p> <p>show security pki local-certificate detail on page 1233</p>
Output Fields	Table 253 on page 1231 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 253: 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
Issuer	<p>Authority that issued the digital certificate, including details of the authority organized using the distinguished name format. Possible subfields are:</p> <ul style="list-style-type: none"> ■ 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 253: show security pki local-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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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 <code>rsaEncryption (1024 bits)</code> .	All levels
Public key verification status	Public key verification status: <code>Failed</code> or <code>Passed</code> . The <code>detail</code> output also provides the verification hash.	All levels
Signature algorithm	Encryption algorithm that the CA used to sign the digital certificate, such as <code>sha1WithRSAEncryption</code> .	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 <code>Certificate signing</code> , <code>CRL signing</code> , <code>Digital signature</code> , or <code>Key encipherment</code> .	detail

```

show security pki      user@host> show security pki local-certificate
local-certificate      Certificate identifier: local-entrust2
                          Issued to: router2.juniper.net, Issued by: juniper
                          Validity:
                            Not before: 2005 Nov 21st, 23:28:22 GMT
                            Not after:  2008 Nov 21st, 23:58:22 GMT
                          Public key algorithm: rsaEncryption(1024 bits)
                          Public key verification status: Passed

```

```

show security pki      user@host> show security pki local-certificate detail
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 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	<p>none—(same as brief) Display information about local and remote certificates associated with all service sets.</p> <p>brief detail—(Optional) Display the specified level of output.</p> <p>service-set service-set—(Optional) Display information about local and remote certificates associated with only the specified service set.</p>
Required Privilege Level	view
List of Sample Output	<p>show security ipsec-vpn certificates on page 1235</p> <p>show security ipsec-vpn certificates detail on page 1236</p>
Output Fields	Table 254 on page 1234 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 254: 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 254: show services ipsec-vpn certificates Output Fields (*continued*)

Field Name	Field Description	Level of Output
Validity	Time period when the digital certificate is valid. Values are: <ul style="list-style-type: none"> ■ 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
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 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	<p>none—(same as brief) Display standard information for all IPSec security associations.</p> <p>brief detail—(Optional) Display the specified level of output.</p> <p>peer-address—(Optional) Display information about a particular security association address.</p>
Required Privilege Level	view
List of Sample Output	<p>show services ipsec-vpn ike security-associations on page 1239</p> <p>show services ipsec-vpn ike security-associations detail on page 1239</p>
Output Fields	Table 255 on page 1237 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 255: 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: <ul style="list-style-type: none"> ■ 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 255: show services ipsec-vpn ike security-associations Output Fields (continued)

Field Name	Field Description	Level of Output
Responder cookie	<p>The remote node generates its own random number and sends it back to the initiator as a verification that the packets were received.</p> <p>Of the numerous security services available, protection against denial of service (DoS) is one of the most difficult to address. A “cookie” or anticlogging token (ACT) is aimed at protecting the computing resources from attack without spending excessive CPU resources to determine the cookie's authenticity. An exchange prior to CPU-intensive public key operations can thwart some DoS attempts (such as simple flooding with invalid IP source addresses).</p>	All levels
Exchange type	<p>Specifies the number of messages in an IKE exchange, and the payload types that are contained in each message. Each exchange type provides a particular set of security services, such as anonymity of the participants, perfect forward secrecy of the keying material, and authentication of the participants. JUNOS Software supports two types of exchanges:</p> <ul style="list-style-type: none"> ■ 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 Software 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	<p>Header for the IKE algorithms output.</p> <ul style="list-style-type: none"> ■ 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	<p>Number of bytes and packets received and transmitted on the IKE security association.</p> <ul style="list-style-type: none"> ■ 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 255: 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ Negotiation type—Type of phase 2 negotiation. The JUNOS Software 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 <i>id-type-name (proto-name:port-number,[0..id-data-len] = iddata-presentation)</i>. ■ Remote identity—Identity of the remote phase 2 negotiation. The format is <i>id-type-name (proto-name:port-number,[0..id-data-len] = iddata-presentation)</i>. ■ Flags—Notification to the key management process of the status of the IKE negotiation: <ul style="list-style-type: none"> ■ 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 <i>service-set-name</i> >
Release Information	Command introduced before JUNOS 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	<p>none—Display standard information about IPSec security associations for all service sets.</p> <p>brief detail extensive—(Optional) Display the specified level of output.</p> <p>service-set <i>service-set-name</i>—(Optional) Display information about a particular service set.</p>
Required Privilege Level	view
List of Sample Output	show services ipsec-vpn ipsec security associations extensive on page 1243
Output Fields	Table 256 on page 1241 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 256: 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
Primary remote gateway	IP address of the configured primary remote peer.	All levels

Table 256: show services ipsec-vpn ipsec security-associations Output Fields (continued)

Field Name	Field Description	Level of Output
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. <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ transport—Protects single host-to-host protections. ■ tunnel—Protects connections between security gateways. 	detail extensive
Type	Type of security association: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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
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

Table 256: show services ipsec-vpn ipsec security-associations Output Fields (continued)

Field Name	Field Description	Level of Output
Soft 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.	detail extensive
Hard lifetime		
	<ul style="list-style-type: none"> ■ Expires in <i>seconds</i> seconds—Number of seconds left until the security association expires. ■ Expires in <i>kilobytes</i> kilobytes—Number of kilobytes left until the security association expires. 	
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      user@host> show services ipsec-vpn ipsec security-associations extensive
ipsec security              Service set: service-set-1
associations extensive      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 Release 7.4. New fields added in JUNOS 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 1246 show services ipsec-vpn ipsec statistics remote-gw on page 1246
Output Fields	Table 257 on page 1244 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 257: 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 257: show services ipsec-vpn ipsec statistics Output Fields (continued)

Field Name	Field Description	Level of Output
ESP statistics	Encapsulation Security Payload (ESP) statistics: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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 <i><certificate-id></i>
Release Information	Command introduced before JUNOS 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	<p>none—Display all installed certificates signed by the Juniper Networks certificate authority.</p> <p><i>certificate-id</i>—(Optional) Display the details of a particular certificate.</p>
Required Privilege Level	maintenance
List of Sample Output	show system certificate on page 1247
Output Fields	Table 258 on page 1247 lists the output fields for the show system certificate command. Output fields are listed in the approximate order in which they appear.

Table 258: 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	Information about the certificate issuer and the distinguished name (DN) of the issuer, respectively:
Subject	<ul style="list-style-type: none"> ■ 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 259 on page 1249 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 259: L2TP Services Operational Mode Commands

Task	Command
Clear L2TP multilink bundles.	clear services l2tp multilink
Clear L2TP sessions.	clear services l2tp session
Clear L2TP tunnels.	clear services l2tp tunnel statistics
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 Services Interfaces Configuration Guide*.

clear services l2tp multilink

Syntax	clear services l2tp multilink (all <statistics> bundle-id <i>number</i> <statistics> statistics (all bundle-id <i>number</i>))
Release Information	Command introduced before JUNOS Release 7.4.
Description	(M10i and M7i routers only) Close Layer 2 Tunneling Protocol (L2TP) multilink sessions or clear session statistics.
Options	<p>all <statistics>—Close all L2TP multilink sessions or clear statistics for all L2TP multilink sessions.</p> <p>bundle-id <i>number</i> <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.</p> <p>statistics (all bundle-id <i>number</i>)—Clear all session statistics or clear statistics for the specified multilink bundle ID.</p>
Required Privilege Level	view
Related Topics	■ show services l2tp multilink
List of Sample Output	clear services l2tp multilink statistics all on page 1250
Output Fields	When you enter this command, you are provided feedback on the status of your request.
clear services l2tp multilink statistics all	<pre>user@host> clear services l2tp multilink statistics all Multilink 1 statistics cleared</pre>

clear services l2tp session

Syntax clear services l2tp session (all statistics | interface *sp-fpc/pic/port* | local-gateway *gateway-address* | local-gateway-name *gateway-name* | local-session-id *session-id* <statistics> | local-tunnel-id *tunnel-id* | peer-gateway *gateway-address* | peer-gateway-name *gateway-name* | statistics (all | local-session-id *session-id* | user *username*) | tunnel-group *group-name* | user *username* <statistics>)

Release Information Command introduced before JUNOS Release 7.4.

Description (M10i and M7i routers only) Close Layer 2 Tunneling Protocol (L2TP) sessions, or clear session statistics.

Options all statistics—Clear statistics for all L2TP sessions.

interface *sp-fpc/pic/port*—Clear statistics for only the L2TP tunnels using the specified adaptive services interface.

local-gateway *gateway-address*—Clear statistics for only the L2TP tunnels that have the specified local gateway address.

local-gateway-name *gateway-name*—Clear statistics for only the L2TP tunnels that have the specified local gateway name.

local-session-id *session-id* <statistics>—Identifier for the local endpoint of the L2TP session. Close the specified L2TP session, or, using the **statistics** keyword with this option, clear statistics for the specified session.

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 that have the specified peer gateway address.

peer-gateway-name *gateway-name*—Clear statistics for only the L2TP tunnels that have the specified peer gateway name.

statistics (all | local-session-id *session-id* | user *username*)—Clear all session statistics, clear statistics for the session using a specific local endpoint, or clear statistics for the session with a specific username.

tunnel-group *group-name*—Clear statistics for only the L2TP tunnels that have the specified tunnel group.

user *username* <statistics>—Username. Close the session for the specified username, or using the **statistics** keyword with this option, clear statistics for the session.

Required Privilege Level view

Related Topics ■ [show services l2tp session](#)

List of Sample Output [clear services l2tp session statistics all](#) on page 1252

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 statistics

Syntax	clear services l2tp tunnel statistics (all interface <i>sp-fpc/pic/port</i> local-gateway <i>gateway-address</i> local-gateway-name <i>gateway-name</i> local-tunnel-id <i>tunnel-id</i> peer-gateway <i>gateway-address</i> peer-gateway-name <i>gateway-name</i> tunnel-group <i>group-name</i>)
Release Information	Command introduced before JUNOS Release 7.4.
Description	(M10i and M7i routers only) Clear Layer 2 Tunneling Protocol (L2TP) statistics.
Options	<p>all—Clear statistics for all L2TP tunnels.</p> <p>interface <i>sp-fpc/pic/port</i>—Clear statistics for only the L2TP tunnels using the specified adaptive services interface.</p> <p>local-gateway <i>gateway-address</i>—Clear statistics for only the L2TP tunnels that have the specified local gateway address.</p> <p>local-gateway-name <i>gateway-name</i>—Clear statistics for only the L2TP tunnels that have the specified local gateway name.</p> <p>local-tunnel-id <i>tunnel-id</i>—Clear statistics for only the L2TP tunnels that have the specified local tunnel identifier.</p> <p>peer-gateway <i>gateway-address</i>—Clear statistics for only the L2TP tunnels that have the specified peer gateway address.</p> <p>peer-gateway-name <i>gateway-name</i>—Clear statistics for only the L2TP tunnels that have the specified peer gateway name.</p> <p>tunnel-group <i>group-name</i>—Clear statistics for only the L2TP tunnels that have the specified tunnel group.</p>
Required Privilege Level	view
Related Topics	■ show services l2tp tunnel
List of Sample Output	clear services l2tp tunnel statistics all on page 1253
Output Fields	When you enter this command, you are provided feedback on the status of your request.
clear services l2tp tunnel statistics all	<pre>user@host> clear services l2tp tunnel statistics all Tunnel 9933 statistics cleared</pre>

show services l2tp multilink

Syntax	show services l2tp multilink <brief detail extensive statistics> <bundle-id <i>number</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	(M10i and M7i routers only) Display L2TP output organized by multilink bundle.
Options	<p>none—Same as brief.</p> <p>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.</p> <p>bundle-id <i>number</i>—(Optional) Display L2TP multilink bundle information for only the specified bundle.</p>
Required Privilege Level	view
Related Topics	■ clear services l2tp multilink
List of Sample Output	show services l2tp multilink extensive on page 1256
Output Fields	Table 260 on page 1254 lists the output fields for the show services l2tp multilink command. Output fields are listed in the approximate order in which they appear.

Table 260: 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 260: show services l2tp multilink Output Fields (*continued*)

Field Name	Field Description
State	<p>Status of the L2TP session:</p> <ul style="list-style-type: none"> ■ 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. ■ Ins-ic-accept-new—A new session is being accepted. ■ Ins-ic-idle—The session has been created and is idle. ■ Ins-ic-reject-new—The new session is being rejected. ■ Ins-ic-wait-connect—The session is waiting for the peer's incoming call connected (IC)
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	<p>Date and time when collection of the following statistics began:</p> <ul style="list-style-type: none"> ■ 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
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 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	<p>You must include one of the following keywords to provide a valid completion for the command:</p> <p>accounting (servers statistics)—(Optional) Display RADIUS servers or statistical accounting information only.</p> <p>authentication (servers statistics)—(Optional) Display RADIUS servers or statistical authentication information only.</p> <p>servers—(Optional) Display RADIUS authentication and accounting server information only.</p> <p>statistics—(Optional) Display RADIUS authentication and accounting statistics information only.</p>
Required Privilege Level	view
List of Sample Output	<p>show services l2tp radius servers on page 1258</p> <p>show services l2tp radius statistics on page 1259</p>
Output Fields	Table 261 on page 1257 lists the output fields for the show services l2tp radius command. Output fields are listed in the approximate order in which they appear.

Table 261: 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 261: 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
```

IP Address	State	UDP Port	Retry Count	Timeout	Pending Requests	Maximum Sessions	Dead Time	Secret Type
17.1.1.1	Active	1812	2	25	0	2400	300	radius-key
133.122.1.1	Active	1812	5	35	0	2400	300	radius-key

134.141.1.1	Active	1812	2	25	0	2400	300	radius-key
172.28.30.174	Active	1812	7	75	0	2400	300	radius-key
172.28.30.175	Active	1812	7	75	0	2400	300	radius-key
172.28.30.176	Active	1812	4	55	0	2400	300	radius-key
172.128.30.176	Active	1812	3	3	0	2400	300	none-set
172.128.130.174	Active	1812	7	75	0	2400	300	radius-key

RADIUS Accounting Servers

IP Address	State	UDP Port	Retry Count	Timeout	Pending Requests	Maximum Sessions	Dead Time	Secret Type
17.1.1.1	Active	1813	2	25	0	2400	300	radius-key
133.122.1.1	Active	1813	5	35	0	2400	300	radius-key
134.141.1.1	Active	1813	2	25	0	2400	300	radius-key
172.28.30.174	Active	1813	7	75	0	2400	300	radius-key
172.28.30.175	Active	1813	7	75	0	2400	300	radius-key
172.28.30.176	Active	1813	4	55	0	2400	300	radius-key
172.128.30.176	Active	1813	3	3	0	2400	300	none-set
172.128.130.174	Active	1813	7	75	0	2400	300	radius-key

RADIUS Accounting Servers

Profile: user1

**show services l2tp
radius statistics**user@host> **show services l2tp radius statistics**
RADIUS Authentication Statistics

Authentication statistics:

Server 17.1.1.1, UDP port: 1812

```

Access requests      : 40
Rollover requests   : 5
Retransmissions     : 2
Access accepts      : 39
Access rejects      : 1
Access challenges   : 3
Malformed responses : 0
Bad authenticators  : 0
Requests pending    : 1
Request timeouts    : 0
Unknown responses   : 0
Packets dropped     : 0

```

RADIUS Accounting Statistics

Accounting statistics:

Server 172.128.130.174, UDP port: 1813

```

Total requests      : 9
Start requests      : 6
Interim requests    : 1

```

```
Stop requests      : 2
Rollover requests  : 0
Retransmissions    : 1
Total response     : 9
Start responses    : 6
Interim responses  : 1
Stop responses     : 2
Malformed responses : 0
Bad authenticators : 0
Requests pending   : 1
Request timeouts   : 0
Unknown responses  : 0
Packets dropped    : 0
```

show services l2tp session

Syntax show services l2tp session
 <brief | detail | extensive | statistics>
 <interface *sp-fpc/pic/port*>
 <local-gateway *gateway-address*>
 <local-gateway-name *gateway-name*>
 <local-session-id *session-id*>
 <local-tunnel-id *tunnel-id*>
 <peer-gateway *gateway-address*>
 <peer-gateway-name *gateway-name*>
 <tunnel-group *group-name*>
 <user *username*>

Release Information Command introduced before JUNOS Release 7.4.

Description (M10i and M7i routers 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.

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.

user *username*—(Optional) Display L2TP session information for only the specified username.

Required Privilege Level view

Related Topics ■ clear services flow-collector statistics

List of Sample Output show services l2tp session on page 1264
show services l2tp session extensive on page 1264

Output Fields Table 262 on page 1262 lists the output fields for the **show services l2tp session** command. Output fields are listed in the approximate order in which they appear.

Table 262: show services l2tp session Output Fields

Field Name	Field Description	Level of Output
Interface	Name of an adaptive services interface.	All levels
Tunnel group	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: <ul style="list-style-type: none"> ■ 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. ■ Ins-ic-accept-new—A new session is being accepted. ■ Ins-ic-idle—The session has been created and is idle. ■ Ins-ic-reject-new—The new session is being rejected. ■ Ins-ic-wait-connect—The session is waiting for the peer's incoming call connected (ICCN) message. 	All levels
Bundle ID	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
Mode	Mode of the interface representing the session: shared or exclusive .	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	Name of the user logged in to the session.	All levels
Assigned IP address	IP address assigned to remote client.	extensive
Local name	Name of the LNS instance in which the session was created.	extensive

Table 262: show services l2tp session Output Fields (continued)

Field Name	Field Description	Level of Output
Remote name	Name of the LAC from which the session was created.	extensive
Local MRU	Maximum receive unit (MRU) setting of the local device, in bytes.	extensive
Remote MRU	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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 1—Synchronous framing ■ 2—Asynchronous framing 	extensive
LCP renegotiation	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	Identifier used to look up the logical interface for this session.	extensive
Interface unit	Logical interface for this session.	All levels
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

Table 262: show services l2tp session Output Fields (continued)

Field Name	Field Description	Level of Output
Idle time	Length of time elapsed since the call became idle, in hours, minutes, and seconds.	extensive
Statistics since	Date and time when collection of the following statistics began: <ul style="list-style-type: none"> ■ 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      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 extensive
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 <i>sp-fpc/pic/port</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	(M10i and M7i routers only) Display Layer 2 Tunneling Protocol (L2TP) summary information.
Options	none—Display L2TP summary information for all adaptive services interfaces. interface <i>sp-fpc/pic/port</i> —(Optional) Display L2TP summary information for only the specified adaptive services interface.
Required Privilege Level	view
List of Sample Output	show services l2tp summary on page 1266
Output Fields	Table 263 on page 1266 lists the output fields for the show services l2tp summary command. Output fields are listed in the approximate order in which they appear.

Table 263: show services l2tp summary Output Fields

Field Name	Field Description
Tunnels	Number of tunnels established on the router.
Sessions	Number of sessions established on the router.
Errors	Number of errors.
Control	Amount of control information transmitted and received, in packets and bytes.
Data	Amount of data transmitted and received, in packets and bytes.

```

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	<pre>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></pre>
Release Information	Command introduced before JUNOS Release 7.4.
Description	(M10i and M7i routers only) Display a list of active Layer 2 Tunneling Protocol (L2TP) tunnels.
Options	<p>none—Display standard information about all active L2TP tunnels.</p> <p>brief detail extensive statistics—(Default) Display the specified level of output. Use the statistics option to display L2TP tunnel statistics.</p> <p>interface <i>sp-fpc/pic/port</i>—(Optional) Display L2TP tunnel information for only the specified adaptive services interface.</p> <p>local-gateway <i>gateway-address</i>—(Optional) Display L2TP tunnel information for only the specified local gateway address.</p> <p>local-gateway-name <i>gateway-name</i>—(Optional) Display L2TP tunnel information for only the specified local gateway name.</p> <p>local-tunnel-id <i>tunnel-id</i>—(Optional) Display L2TP tunnel information for only the specified local tunnel identifier.</p> <p>peer-gateway <i>gateway-address</i>—(Optional) Display L2TP tunnel information for only the specified peer gateway address.</p> <p>peer-gateway-name <i>gateway-name</i>—(Optional) Display L2TP tunnel information for only the specified peer gateway name.</p> <p>tunnel-group <i>group-name</i>—(Optional) Display L2TP tunnel information for only the specified tunnel group.</p>
Required Privilege Level	view
List of Sample Output	show services l2tp tunnel extensive on page 1269
Output Fields	Table 264 on page 1268 lists the output fields for the <code>show services l2tp tunnel</code> command. Output fields are listed in the approximate order in which they appear.

Table 264: show services l2tp tunnel Output Fields

Field Name	Field Description
Interface	Name of an adaptive services interface.
Tunnel group	Name of a tunnel group.
Local ID	Numeric identifier of the local endpoint of the tunnel, as assigned by the L2TP network server (LNS).
Remote ID	Numeric identifier of the remote endpoint of the tunnel, as assigned by the L2TP access concentrator (LAC).
Remote IP	IP address of the peer endpoint of the tunnel.
Sessions	Number of L2TP sessions established through the tunnel.
State	<p>State of the L2TP tunnel:</p> <ul style="list-style-type: none"> ■ 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. ■ 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.
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.

Table 264: show services l2tp tunnel Output Fields (continued)

Field Name	Field Description
Idle time	Amount of time elapsed since the tunnel became idle, in hours, minutes, and seconds.
Statistics since	<p>Date and time when collection of the following statistics began:</p> <ul style="list-style-type: none"> ■ 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 extensive
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 <i>username</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	(M10i and M7i routers only) Display a list of active Layer 2 Tunneling Protocol (L2TP) users.
Options	<p>none—Display all active L2TP users.</p> <p>brief detail extensive statistics—(Optional) Display the specified level of output. Use the statistics option to display L2TP user statistics.</p> <p>user <i>username</i>—(Optional) Display L2TP user information for only the specified username.</p>
Required Privilege Level	view
List of Sample Output	show services l2tp user extensive on page 1272
Output Fields	Table 265 on page 1270 lists the output fields for the show services l2tp user command. Output fields are listed in the approximate order in which they appear.

Table 265: 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	<p>State of the L2TP session:</p> <ul style="list-style-type: none"> ■ 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. ■ Ins-ic-accept-new—A new session is being accepted. ■ Ins-ic-idle—The session has been created and is idle. ■ Ins-ic-reject-new—The new session is being rejected. ■ Ins-ic-wait-connect—The session is waiting for the peer's incoming call connected (ICCN) message.

Table 265: 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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.
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.

Table 265: show services l2tp user Output Fields (continued)

Field Name	Field Description
Statistics sine	Date and time when collection of the following statistics began: <ul style="list-style-type: none"> ■ 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
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 266 on page 1273 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot Link Services IQ (LSQ) PICs.

Table 266: Link Services Operational Mode Commands

Task	Command
Display information about Link Services IQ (LSQ) PIC CPU usage.	<code>show services link-services cpu-usage</code>



NOTE: LSQ functionality is supported on the adaptive services interface on the following routers:

- J Series routers—`ls-pim/0/slot`
- M Series and T Series routers—`lsq-fpc/pic/port`



NOTE: For information about how to configure link services, see the *JUNOS Services Interfaces Configuration Guide*.

show services link-services cpu-usage

Syntax	show services link-services cpu-usage <brief detail> <interface <i>interface-name</i> >
Release Information	Command introduced in JUNOS 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 <i>interface-name</i> —(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 1276 show services link-services cpu-usage brief (MultiServices PIC) on page 1276 show services link-services cpu-usage detail (AS PIC) on page 1276 show services link-services cpu-usage detail (MultiServices PIC) on page 1276
Output Fields	Table 267 on page 1274 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 267: 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 267: 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
CPUnumber	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
Freeback (Load Balancer)	Handles freeback of credits from other CPUs.	detail

```

show services user@host> show services link-services cpu-usage interface lsq-0/0/0 brief
link-services cpu-usage
brief (AS PIC)
Role           1 Second Average      5 Second Average
QoS            1.0%
Sequencer      0.1%
Fragmenter     0.1%
Total          0.1%

```

```

show services user@host> show services link-services cpu-usage interface lsq-0/0/0 brief
link-services cpu-usage
brief (MultiServices PIC)
Role           1 Second Average      5 Second Average
QoS            0.1%
Fragmenter     0.1%
Load Balancer   0.0%
Total          0.1%

```

```

show services user@host> show services link-services cpu-usage interface lsq-0/0/0 detail
link-services cpu-usage
detail (AS PIC)
QoS           Idle  Timer  System  Input  Output  Output  Bypass  Free
              frame
              Frags

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 user@host> show services link-services cpu-usage interface lsq-0/0/0 detail
link-services cpu-usage
detail (MultiServices PIC)
QoS           Idle  Timer  System  Input  Output  Output  Bypass  Free
              frame
              Frags

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 Alloc	Input	Output	Free 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 268 on page 1279 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot Mobile IP services.

Table 268: 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 Subscriber Access Configuration Guide*.

clear mobile-ip binding

Syntax	clear mobile-ip binding (all ip-address <i>ip-address</i> nai <i>nai-string</i>) <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
Release Information	Command introduced in JUNOS Release 9.3.
Description	Clear the Mobile IP binding.
Options	<p>all—Clear all Mobile IP bindings.</p> <p>ip-address <i>ip-address</i>—Clear the Mobile IP bindings for the specified IP home address (HoA).</p> <p>nai <i>nai-string</i>—Clear the Mobile IP bindings for the specified network access identifier.</p> <p>logical-system <i>logical-system-name</i>—(Optional) Clear the Mobile IP bindings for the specified logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Clear the Mobile IP bindings for the specified routing instance.</p>
Required Privilege Level	clear
List of Sample Output	clear mobile-ip binding on page 1280
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 <i>ip-address</i> nai <i>nai-string</i> summary> <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
Release Information	Command introduced in JUNOS Release 9.3.
Description	Display information about Mobile IP home agent bindings.
Options	<p>ip-address <i>ip-address</i>—(Optional) Display information for the specified Mobile IP home address.</p> <p>logical-system <i>logical-system-name</i>—(Optional) Display information for the specified logical system.</p> <p>nai <i>nai-string</i>—(Optional) Display information for the specified Mobile IP network access identifier.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Display information for the specified routing instance.</p> <p>summary—(Optional) Display only summary (total bindings) information.</p>
Required Privilege Level	view
List of Sample Output	<p>show mobile-ip home-agent bindings on page 1282</p> <p>show mobile-ip home-agent bindings ip-address on page 1282</p> <p>show mobile-ip home-agent bindings nai on page 1282</p> <p>show mobile-ip home-agent bindings summary on page 1282</p>
Output Fields	Table 269 on page 1281 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 269: 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.
Tunnel Type	Type of tunnel requested by the mobile node.

Table 269: show mobile-ip home-agent bindings Output Fields (continued)

Field Name	Field Description
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 <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
Release Information	Command introduced in JUNOS Release 9.3.
Description	Display overview information for Mobile IP home agent.
Options	logical-system <i>logical-system-name</i> —(Optional) Display information for the specified logical system. routing-instance <i>routing-instance-name</i> —(Optional) Display information for the specified routing instance.
Required Privilege Level	view
List of Sample Output	show mobile-ip home-agent overview on page 1283
Output Fields	Table 270 on page 1283 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 270: 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 <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
Release Information	Command introduced in JUNOS Release 9.3.
Description	Display information about Mobile IP home agent protocol statistics.
Options	<p>logical-system <i>logical-system-name</i>—(Optional) Display information for the specified logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Display information for the specified routing instance.</p>
Required Privilege Level	view
List of Sample Output	show mobile-ip home-agent traffic on page 1285
Output Fields	Table 271 on page 1284 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 271: 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 271: 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 <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
Release Information	Command introduced in JUNOS Release 9.3.
Description	Display information about Mobile IP home agent virtual networks.
Options	<p>logical-system <i>logical-system-name</i>—(Optional) Display information for the specified logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Display information for the specified routing instance.</p>
Required Privilege Level	view
List of Sample Output	show mobile-ip home-agent virtual-network on page 1287
Output Fields	Table 272 on page 1286 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 272: 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      user@host> show mobile-ip home-agent virtual-network
home-agent          Home Agent Address      : 55.55.55.55
virtual-network     Registration Lifetime   : 1800
                       Time Tolerance         : 120
                       Address Pool           : 10.1.1.10 - 10.1.1.50
                       Total MN's             : 2

                       MN's :
                       Home address           : 60.60.60.1
                       NAI                    : abcde@def.com
                       Care-of-address         : 50.50.50.1
                       Reglifetime granted    : 120
                       Reglifetime remaining: 100

                       Home address           : 70.70.70.1
                       NAI                    : def@def.com
                       Care-of-address         : 80.80.80.1
                       Reglifetime granted    : 120
                       Reglifetime remaining: 100

```

show mobile-ip wimax release

Syntax	show mobile-ip wimax release <logical-system <i>logical-system-name</i> > <routing-instance <i>routing-instance-name</i> >
Release Information	Command introduced in JUNOS Release 9.5.
Description	Display the WiMAX Forum Network Architecture release that is supported by the current Mobile IP implementation.
Options	<p>logical-system <i>logical-system-name</i>—(Optional) Display information for the specified logical system.</p> <p>routing-instance <i>routing-instance-name</i>—(Optional) Display information for the specified routing instance.</p>
Required Privilege Level	view
List of Sample Output	show mobile-ip wimax release on page 1288
Output Fields	Table 273 on page 1288 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 273: 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 274 on page 1289 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot Network Address Translation (NAT) services.

Table 274: NAT Operational Mode Commands

Task	Command
Display information about NAT pools.	<code>show services nat pool</code>



NOTE: NAT is supported on the adaptive services interface on the following routers:

- J Series routers—`sp-pim/O/slot`
- M Series and T Series routers—`sp-fpc/pic/port`

NAT is also supported on the redundant adaptive services interface (`rspnumber`) on M Series and T Series routers.



NOTE: For information about how to configure NAT services, see the *JUNOS Services Interfaces Configuration Guide*.

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 Release 7.4. pgcp option added in JUNOS Release 8.5.
Description	Display information about Network Address Translation (NAT) pools.
Options	<p>none—Display standard information about all NAT pools.</p> <p>brief detail—(Optional) Display the specified level of output.</p> <p>pool-name—(Optional) Display information about the specified NAT pool.</p> <p>pgcp—(Optional) Display information about a NAT pool that is exclusive to the BGF.</p> <p>ports-per-session—(Optional) Display the number of ports allocated per session from the NAT pool.</p> <p>remotely-controlled—(Optional) Display if the NAT pool is explicitly specified by the gateway controller.</p>
Required Privilege Level	view
List of Sample Output	<p>show services nat pool brief on page 1291</p> <p>show services nat pool detail on page 1291</p>
Output Fields	Table 275 on page 1290 lists the output fields for the show services nat pool command. Output fields are listed in the approximate order in which they appear.

Table 275: 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 or IPv6 address range of the pool.	All levels

Table 275: 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: set1
  NAT pool: pool1, Translation type: static
    Address range: 100.100.100.100-100.100.100.100
  NAT pool: pool2, Translation type: static
    Address range: 200.200.200.200-200.200.200.200
  NAT pool: pool3, Translation type: dynamic
    Address range: 210.210.210.210-210.210.210.230, Port range: 65530-65535,
    Ports in use: 0, Out of port errors: 0, Max ports used: 0, Addresses in use:
0

```


Chapter 28

PGCP Operational Mode Commands for the BGF Feature

Table 276 on page 1293 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 276: PGCP Services Operational Mode Commands

Task	Command
Clear gates on a virtual BGF.	<code>clear services pgcp gates</code>
Clear statistical information.	<code>clear services pgcp statistics</code>
Display information about the configuration for a virtual BGF.	<code>show services pgcp active-configuration</code>
Display in-depth information about a particular gate on a virtual BGF.	<code>show services pgcp gate</code>
Display summary information about all gates on a virtual BGF.	<code>show services pgcp gates</code>
Display information about H.248 root terminations.	<code>show services pgcp root-termination</code>
Display information about BGF statistics.	<code>show services pgcp statistics</code>
Display information about conversations.	<code>show services pgcp conversations</code>
Display information about flows.	<code>show services pgcp flows</code>
Display summary information about terminations.	<code>show services pgcp terminations</code>

**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 <i>gateway-name</i>
Release Information	Command introduced in JUNOS Release 8.5.
Description	<p>Clear all gates on a virtual border gateway function (BGF). Use this command only for debugging and testing purposes. The recommended way to clear the state of gates is to use the set services-state out-of-service-graceful statement at the [edit services pgcp gateway <<i>gateway-name</i>>] hierarchy.</p> <p>When you enter this command, the virtual BGF sends an H.248 FO/905 message to the gateway controller. The status of the virtual BGF then changes to In-Service (Disconnected). The virtual BGF then reregisters with the gateway controller by sending an RE/901 message, and the status of the virtual BGF changes to In-Service (Registered).</p>
Options	<p>gates—Clear gate information.</p> <p>gateway <i>gateway-name</i>—Clear statistics associated with this virtual BGF.</p>
Required Privilege Level	view
List of Sample Output	clear services pgcp gates on page 1295
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 <i>gateway-name</i>
Release Information	Command introduced in JUNOS Release 9.3. gateway option added in JUNOS Release 9.5.
Description	Clear statistics for a virtual border gateway function (BGF).
Options	<i>gateway-name</i> —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 1296
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 <i>gateway-name</i>

show services pgcp active-configuration

Syntax	show services pgcp active-configuration gateway <i>gateway-name</i> <backup> <master>
Release Information	Command introduced in JUNOS Release 8.4. gateway option introduced in JUNOS Release 9.5. backup option introduced in JUNOS Release 9.6 master option introduced in JUNOS 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	<p>gateway <i>gateway-name</i>—Display information about the active configuration associated with this virtual border gateway function (BGF).</p> <p>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.</p> <p>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.</p>
Required Privilege Level	view
List of Sample Output	show services pgcp active-configuration on page 1301
Output Fields	Table 277 on page 1297 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 277: show services pgcp active-configuration Output Fields

Field Name	Field Description
BGF media service configuration	<p>Information about the media service configuration.</p> <ul style="list-style-type: none"> Media service name—Name of the media service applied to the packets. Nat pool—Name of the Network Address Translation (NAT) pool used on a virtual interface.
BGF virtual interface configuration	<p>Information about the virtual interface configuration.</p> <ul style="list-style-type: none"> Virtual interface name—Name of the virtual interface. Status—Service status of the virtual interface: In-Service, In-Service (Graceful Shutdown), Out-of-Service, Out-of-Service (Physical Interface). Media Service name—Name of the media service configured for the virtual interface.

Table 277: show services pgcp active-configuration Output Fields (continued)

Field Name	Field Description
Virtual BGF configuration	<p>Information about the active virtual BGF configuration.</p> <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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 <ul style="list-style-type: none"> ■ 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. ■ Cleanup timeout—Time to wait before the virtual BGF removes gates following a disconnection from the gateway controller. ■ 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. ■ Latching Deadlock duration—Time to wait before packet inactivity detection begins on a gate for which there is a latching event. <p>NOTE: This field contains delay information, even though the caption suggests it contains duration information.</p>
H248 timers configuration	<p>Information about the H.248 timers configuration.</p> <ul style="list-style-type: none"> ■ 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 (IAAD)—Average network propagation delay time. ■ Maximum net propagation delay (M-NPD)—Maximum network propagation delay time.

Table 277: show services pgcp active-configuration Output Fields (continued)

Field Name	Field Description
H248 options configuration	<p>Information about the H.248 options configuration.</p> <ul style="list-style-type: none"> ■ 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. ■ DSCP bit mirroring is off—Whether or not DSCP bit mirroring has been disabled.
H248 diffserv configuration	<p>Information about the H.248 Diffserv configuration.</p> <ul style="list-style-type: none"> ■ DSCP—DSCP value set in the Diffserv configuration. If there is no configured value, the default value is shown.
Notification Behavior	<p>Information about the regulation of media inactivity notifications sent to the gateway controller.</p> <ul style="list-style-type: none"> ■ 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	<p>Information about the reporting of media inactivity events.</p> <ul style="list-style-type: none"> ■ IP flow stop detection—Default method for reporting media inactivity.
Event timestamp Notification	<p>Information about the availability of event timestamp information.</p> <ul style="list-style-type: none"> ■ Requested timestamp—Whether or not the virtual BGF has enabled timestamp information for events to be viewed by the gateway controller.
H248 segmentation	<p>Information about the H.248 segmentation configuration.</p> <ul style="list-style-type: none"> ■ 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 277: show services pgcp active-configuration Output Fields (continued)

Field Name	Field Description
H248 base root	<p>Information about the H.248 base root configuration.</p> <ul style="list-style-type: none"> ■ 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.
Fast update filters	<p>Information about the fast update filter (FUF) configuration.</p> <ul style="list-style-type: none"> ■ 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.
Inactivity Timer	<p>Information about inactivity timer configuration.</p> <ul style="list-style-type: none"> ■ 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.
Overload control configuration	<p>Information about the overload control configuration.</p> <ul style="list-style-type: none"> ■ 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	<p>Information about the gateway controller configuration.</p> <ul style="list-style-type: none"> ■ Controller name—Name of the gateway controller. ■ Controller IP address—IP address of the gateway controller. ■ Controller port—Listening port of the gateway controller to which the virtual BGF sends messages.

Table 277: show services pgcp active-configuration Output Fields *(continued)*

Field Name	Field Description
BGF rule configuration	Information about the rule configuration. <ul style="list-style-type: none"> ■ Rule name—Name of the rule set. ■ BGF name—Name of the virtual BGF that processes the rule set.
BGF service set configuration	Information about the service set configuration. <ul style="list-style-type: none"> ■ 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. <ul style="list-style-type: none"> ■ Name—Name of the services interface. ■ Status—Status of the services interface: Connected.
Firewall	Information about firewall filter status for the virtual BGF. <ul style="list-style-type: none"> ■ 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

```

user@host> show services pgcp active-configuration gateway bgf-1
BGF media service configuration:
  Media service name: ac_rtp_ms
  Nat pool           : ac_rtp_nat_pool

BGF media service configuration:
  Media service name: bb_rtp_ms
  Nat pool           : bb_rtp_nat_pool

BGF virtual interface configuration:
  Virtual Interface name: 0
  Status                 : In-Service
  Media Service Name     : bb_rtp_ms

BGF virtual interface configuration:
  Virtual Interface name: 2
  Status                 : In-Service
  Media Service Name     : ac_rtp_ms

Virtual BGF configuration:
  Name                   : bgf-1
  IP address             : 3.0.0.3
  Port                  : 2944
  Platform              : ms-1/0/0
  Status                : In-Service (Registered)
  Active gateway controller : gc1
  Replication socket     : Disconnected
  Synchronization state  : Disabled

```

```

Cleanup timeout [secs]                : 0
Gate inactivity delay [secs]          : 0
Gate inactivity duration (Q-MI ) [secs] : 15

H248 timers configuration:
  Max waiting delay (MWD) [millisec]   : 10000
  Max retransmission delay (T-MAX) [millisec] : 25000
  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
  DSCP bit mirroring is off              : 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

```

```
Overload control configuration:
  Queue limit percentage      : 80
  Reject new calls threshold  : 90
  Reject all commands threshold : 95

Gateway controller configuration:
  Controller name             : gc1
  Controller IP address       : 3.0.0.101
  Controller port             : 2944

BGF rule configuration:
  Rule name                   : bgf-rule-1
  Virtual BGF                 : bgf-1

BGF service set configuration:
  Service set name            : bgf-svc-set-1
  Service set id              : 1
  Rule name                   : bgf-rule-1

BGF MultiServices PIC status:
  Name      : sp-2/0/0
  Status    : Connected
```

show services pgcp gate

Syntax	show services pgcp gates gateway-name <i>gateway-name</i> gate-id <i>gate-id</i> < brief extensive session-mirroring statistics> <master backup>
Release Information	Command introduced in JUNOS Release 9.5. statistics option introduced in JUNOS Release 9.1. session-mirroring option introduced in JUNOS Release 9.2. gateway option introduced in JUNOS Release 9.5. master option introduced in JUNOS Release 9.6 backup option introduced in JUNOS Release 9.6
Description	Display in-depth information about a Packet Gateway Control Protocol (PGCP) gate.
Options	<p>gateway <i>gateway-name</i>—(Optional) Display information about gates associated with this virtual border gateway function (BGF).</p> <p>gate-id <i>gate-id</i>—(Optional) Display information about a particular gate.</p> <p>brief—(Optional) Display brief output.</p> <p>extensive—(Optional) Display extensive output.</p> <p>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 <i>class-name</i> permissions pgcp-session-mirroring command grants this permission.</p> <p>statistics—(Optional) Display statistics for gates.</p> <p>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.</p> <p>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.</p>
Required Privilege Level	view pgcp-session-mirroring—To view session mirroring fields.
Related Topics	■ show services pgcp gates
List of Sample Output	<p>show services pgcp gate on page 1305</p> <p>show services pgcp gate extensive on page 1306</p> <p>show services pgcp gate gate-id statistics on page 1306</p> <p>show services pgcp gate session-mirroring on page 1307</p>

Output Fields Table 278 on page 1305 lists the output fields for the `show services pgcp gate` command. Output fields are listed in the approximate order in which they appear.

Table 278: show services pgcp gate Output Fields

Field Name	Field Description
Gate information	Information about the gate.
Direction	Direction of the gate.
State	State of the gate: active , disabled , or closed .
remote source address	IP address of the remote source of the gate.
remote source port	Port of the remote source of the gate.
remote dest address	IP address of the remote destination of the gate.
remote dest port	Port of the remote destination of the gate.
local source address	IP address of the local source of the gate.
local source port	Port of the local source of the gate.
local dest address	IP address of the local destination of the gate.
local dest port	Port of the local destination of the gate.
transport	Transport protocol.
gate version	Numeric identifier for the version of the gate.
latch	Latch status: latch or none .
yellow action	Action to take in this state.
red action	Action to take in this state.
notifications	Number of notifications.
User Data	Numeric identifier for the user data.

```

show services pgcp gate user@host> show services pgcp gate 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      user@host> show services pgcp gate gateway pgl gate-id 2817498611968 extensive
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      user@host> show services pgcp gate gate-id 98784313601 statistics
gate-id statistics          Gate Statistics:
                               =====

```

```

Output packets: 582
Input packets: 582
Dropped packets: 0
Lost RTP packets: 0

RTCP statistics:

SSRC                : 32270

```

Sender octets : 7500
 Sender packets : 375
 Invalid packets: 9

RTCP Receiver statistics:

SSRC	Lost packets	Lost fraction	Jitter
13043	0	0.000	0
16487	0	0.000	0
5655	0	0.000	0

Rate limiting statistics:

Mark Color	Number of Packets	Number of Bytes
Green	582	34920
Yellow	0	0
Red	0	0

FUF statistics:
 Drop count: 0

**show services pgcp gate
 session-mirroring**

```
user@host> show services pgcp gate gateway pgl session-mirroring
Gate information:
Gate id: 4295033088
Session mirroring status: On
Session mirroring correlation number: 0x8040c020a060e010
Session mirroring target ID list: [008040c0, ffffffff80]
Session mirroring direction: Egress
```

show services pgcp gates

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 Release 8.4.
 brief | extensive | count options introduced in JUNOS Release 8.5.
 gateway option introduced in JUNOS Release 9.1
 destination-routing-instance option introduced in JUNOS Release 9.3.
 source-routing-instance option introduced in JUNOS Release 9.3.
 gateway option was revised in JUNOS Release 9.5.
 master option introduced in JUNOS Release 9.6
 backup option introduced in JUNOS 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 1311
 show services pgcp gates gateway count on page 1311
 show services pgcp gates gateway extensive on page 1312

Output Fields Table 279 on page 1309 lists the output fields for the `show services pgcp gates` command. Output fields are listed in the approximate order in which they appear.

Table 279: show services pgcp gates Output Fields

Field Name	Field Description	Level of Output
Virtual BGF configuration	Information about the virtual BGF configuration.	All levels
	■ 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.	

Table 279: show services pgcp gates Output Fields (continued)

Field Name	Field Description	Level of Output
Gate information	<p>Information about gates that are currently installed.</p> <ul style="list-style-type: none"> ■ Gate id—Numeric identifier of the gate. ■ Direction—Direction of the gate. <ul style="list-style-type: none"> ■ 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 279: show services pgcp gates Output Fields (continued)

Field Name	Field Description	Level of Output
	<ul style="list-style-type: none"> ■ 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 user@host> show services pgcp gates gateway bgf-1
gates Virtual BGF configuration:
          Name                               : bgf-1
          IP address                         : 3.0.0.2
          Port                              : 2944
          Status                            : Connected

```

```

Gate information:
Gate id: 4295033088
Gate state: Active
Service set id: 1
Media card: sp-0/3/0
Media handler: pgcp-svc-set-1
Termination-id-string: ip/0/r1mvi2/1

```

```

Gate id: 4295033089
Gate state: Active
Service set id: 1
Media card: sp-0/3/0
Media handler: pgcp-svc-set-1
Termination-id-string: ip/0/r1mvi0/2

```

```

Gate id: 8590000384
Gate state: Active
Service set id: 1
Media card: sp-0/3/0
Media handler: pgcp-svc-set-1
Termination-id-string: ip/0/r1mvi2/3

```

```

Gate id: 8590000385
Gate state: Active
Service set id: 1
Media card: sp-0/3/0
Media handler: pgcp-svc-set-1
Termination-id-string: ip/0/r1mvi0/4

```

```

show services pgcp user@host> show services pgcp gates gateway bgf-1 count
gates gateway count Virtual BGF           Gate count
bgf-1                                4

```

```

show services pgcp   user@host> show services pgcp gates gateway bgf-1 extensive
gates gateway
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 Release 8.5.
gateway option introduced in JUNOS Release 9.5.
master option introduced in JUNOS Release 9.6
backup option introduced in JUNOS 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 1314

Output Fields Table 280 on page 1314 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 280: 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      user@host> show services pgcp root-termination bgf-1
root-termination      Root termination information:

                          ROOT {

```

```

MEDIA {
    TERMINATIONSTATE { SERVICESTATES = INSERVICE,
        ROOT/MAXNUMBEROFCONTEXTS = 20000,
        ROOT/MAXTERMINATIONSPERCONTEXT = 2,
        ROOT/MGCMORIGINATEDPENDINGLIMIT = 15,
        ROOT/MGCPROVISIONALRESPONSETIMERVALUE = 2000,
        ROOT/MGCMORIGINATEDPENDINGLIMIT = 15,
        ROOT/MGCPROVISIONALRESPONSETIMERVALUE = 2000,
        ROOT/NORMALMGCEXECUTIONTIME = 1000,
        ROOT/NORMALMGCEXECUTIONTIME = 1000,
        SEG/MGCMAXPDUSIZE = 500,
        SEG/MGCSEGMENTATIONTIMERVALUE = 6000,
        SEG/MGCMAXPDUSIZE = 500,
        SEG/MGCSEGMENTATIONTIMERVALUE = 6000 }
},

```

show services pgcp statistics

Syntax `show services pgcp statistics gateway gateway-name`
 `<brief | extensive>`
 `<backup | master>`

Release Information Command introduced in JUNOS Release 8.4.
 `brief | extensive` option introduced in JUNOS Release 9.3.
 `gateway` option introduced in JUNOS Release 9.5.
 `master` option introduced in JUNOS Release 9.6
 `backup` option introduced in JUNOS Release 9.6

Description Display information about statistics associated with the virtual border gateway function (BGF).



NOTE: This command is not applicable when the gateway controller for the BGF is a border signalling gateway (BSG).

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 1319
 `show services pgcp statistics extensive` on page 1319

Output Fields Table 281 on page 1317 lists the output fields for the `show services pgcp statistics` command. Output fields are listed in the approximate order in which they appear.

Table 281: show services pgcp statistics Output Fields

Field Name	Field Description	Level of Output
Virtual BGF configuration	<p>Information about the virtual BGF configuration.</p> <ul style="list-style-type: none"> ■ Name—Name of the virtual BGF. ■ IP address—IP address of the virtual BGF. ■ Port—Port of the virtual BGF. ■ Status—Status of the virtual BGF: In-Service, Out-of-Service, 	all
H.248 statistics	<p>Information about H.248 statistics.</p> <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ Syntax errors detected in received messages. ■ Outgoing transactions that have failed for protocol reasons. 	all
Usage Counters	<p>Information about usage of contexts and emergency contexts.</p> <ul style="list-style-type: none"> ■ Contexts—The number of active contexts out of the total number of contexts. ■ Emergency contexts—The number of active contexts that are emergency contexts. 	
Received Commands	<p>Information about command requests received by the virtual BGF. The following information is shown for each possible command.</p> <ul style="list-style-type: none"> ■ 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. <p>Commands are not counted in the following cases:</p> <ul style="list-style-type: none"> ■ 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	<p>Information about command requests sent by the virtual BGF. The following information is shown for each possible command.</p> <ul style="list-style-type: none"> ■ 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. <p>Commands are not counted in the following cases:</p> <ul style="list-style-type: none"> ■ 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

Table 281: show services pgcp statistics Output Fields (continued)

Field Name	Field Description	Level of Output
ROOT SVC	<p>Information about ServiceChange requests sent by the virtual BGF on the root termination.</p> <ul style="list-style-type: none"> ■ 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. <p>Commands are not counted in the following cases:</p> <ul style="list-style-type: none"> ■ 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 SVC	<p>Information about ServiceChange requests sent by the virtual BGF on the IP termination.</p> <ul style="list-style-type: none"> ■ 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. <p>Commands are not counted in the following cases:</p> <ul style="list-style-type: none"> ■ 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	<p>Information about notifications sent by the virtual BGF on the root termination.</p> <ul style="list-style-type: none"> ■ ocp/mg overload—MG overload 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. <p>Commands are not counted in the following cases:</p> <ul style="list-style-type: none"> ■ 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 281: show services pgcp statistics Output Fields (continued)

Field Name	Field Description	Level of Output
Termination Notify	<p>Information about notifications sent by the virtual BGF on the IP termination.</p> <ul style="list-style-type: none"> ■ 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. <p>Commands are not counted in the following cases:</p> <ul style="list-style-type: none"> ■ 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
  IP address          : 3.0.0.2
  Port                : 2944
  Status              : Connected

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
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 BGP 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
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

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 Release 8.4.
gateway-name option added in JUNOS Release 9.2.
 master option introduced in JUNOS Release 9.6
 backup option introduced in JUNOS 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 1324
show services pgcp conversations extensive on page 1325

Output Fields Table 282 on page 1323 lists the output fields for the show services pgcp conversations command. Output fields are listed in the approximate order in which they appear.

Table 282: 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 282: show services pgcp conversations Output Fields (*continued*)

Field Name	Field Description	Level of Output
Conversation	Information about a group of related flows. <ul style="list-style-type: none"> ■ 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 <i>source-prefix-port</i> .	All levels
Destination	Destination prefix of the flow.	All levels
State	Status of the flow: <ul style="list-style-type: none"> ■ 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  user@host> show services pgcp conversations
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 Release 8.4.
 gate-id option added in Release 9.2.
 gateway-name option added in JUNOS Release 9.2.
 destination-routing-instance option added in JUNOS Release 9.3.
 source-routing-instance option added in JUNOS Release 9.3.
 master option introduced in JUNOS Release 9.6
 backup option introduced in JUNOS Release 9.6

Description Display information for Packet Gateway Control Protocol (PGCP) flows.

Options gateway *gateway-name*—Display information about statistics associated with this virtual border gateway function (BGF).

none—Display standard information about all PGCP flows.

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

backup—(Optional) Display information for the backup services PIC. This option applies if you are running the virtual BGF on a services PIC or MS-DPC, and you have a primary and backup PIC configured on a virtual redundant Multiservices PIC (rms) interface.

master—(Optional) Display information for the Routing Engine or primary services PIC. If the virtual BGF is running on the Routing Engine, the flows on the routing engine are displayed. If the virtual BGF is running on a services PIC, the flows on the primary services PIC are displayed. If you do not specify the master or backup options, the master option is the default.

count—(Optional) Display a count of the matching entries.

destination-port *destination-port*—(Optional) Display information for a particular destination port.

destination-prefix *destination-prefix*—(Optional) Display information for a particular destination prefix.

destination-routing-instance *vrf*—(Optional) Display information for a particular destination VPN routing and forwarding instance (VRF).

gate *gate-id*—(Optional) Display information about a particular gate.

gateway-name—(Optional) Display information about a particular virtual BGF.

protocol *protocol*—(Optional) Display information about one of the following IP protocol types:

- *number*—Numeric protocol value from 0 to 255
- *ah*—IPSec Authentication Header protocol
- *egp*—An exterior gateway protocol
- *esp*—IPSec Encapsulating Security Payload protocol
- *gre*—A generic routing encapsulation protocol
- *icmp*—Internet Control Message Protocol
- *igmp*—Internet Group Management Protocol
- *ipip*—IP-within-IP Encapsulation Protocol
- *ospf*—Open Shortest Path First protocol
- *pim*—Protocol Independent Multicast protocol
- *rsvp*—Resource Reservation Protocol
- *sctp*—Stream Control Protocol
- *tcp*—Transmission Control Protocol
- *udp*—User Datagram Protocol

service-set *service-set*—(Optional) Display information for a particular service set.

source-port *source-port*—(Optional) Display information for a particular source port.

source-prefix *source-prefix*—(Optional) Display information for a particular source prefix.

source-routing-instance *vrf*—(Optional) Display information for a particular source VPN routing and forwarding instance (VRF).

Required Privilege Level view

List of Sample Output show services pgcp flows on page 1330
show services pgcp flows extensive on page 1330

Output Fields Table 283 on page 1329 lists the output fields for the **show services pgcp flows** command. Output fields are listed in the approximate order in which they appear.

Table 283: 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 <i>source-prefix:port</i> .	All levels
Dest	Destination prefix of the flow.	All levels
State	Status of the flow: <ul style="list-style-type: none"> ■ 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 <i>gateway-name</i> <brief h248 count> <backup master> <termination-prefix <i>prefix</i> >
Release Information	Command introduced in JUNOS Release 8.4. brief h248 count option introduced in JUNOS Release 8.5. termination-prefix option introduced in JUNOS Release 8.5. gateway option revised in JUNOS Release 9.5. master option introduced in JUNOS Release 9.6 backup option introduced in JUNOS Release 9.6
Description	Display summary information about all Packet Gateway Control Protocol (PGCP) terminations.
Options	<p>gateway <i>gateway-name</i>—Display information about terminations associated with this virtual border gateway function (BGF).</p> <p>brief h248 count—(Optional) Display the specified level of output.</p> <p>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.</p> <p>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.</p> <p>termination-prefix <i>prefix</i>—(Optional) Display information based on the termination prefix.</p>
Required Privilege Level	view
List of Sample Output	<p>show services pgcp terminations on page 1333</p> <p>show services pgcp terminations brief on page 1334</p> <p>show services pgcp terminations count on page 1334</p> <p>show services pgcp terminations h248 on page 1334</p> <p>show services pgcp terminations termination-prefix brief on page 1335</p> <p>show services pgcp terminations termination-prefix h248 on page 1336</p>
Output Fields	Table 284 on page 1333 lists the output fields for the show services pgcp terminations command. Output fields are listed in the approximate order in which they appear.

Table 284: show services pgcp terminations Output Fields

Field Name	Field Description	Level of Output
virtual BGF configuration	Information about the virtual BGF configuration. <ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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	In-service	State	Duration(msecs)
ip/4/vif-0/2		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

Service Sets Operational Mode Commands

Table 285 on page 1337 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot service sets. Commands are listed in alphabetical order.

Table 285: Service Sets Operational Mode Commands

Task	Command
Clear service sets statistics.	<code>clear services service-sets statistics packet-drops</code>
Display service sets CPU utilization.	<code>show services service-sets cpu-usage</code>
Display services sets memory utilization.	<code>show services service-sets memory-usage</code>
Display service sets statistics.	<code>show services service-sets statistics packet-drops</code>
Display services sets TCP maximum segment size (MSS) statistics.	<code>show services service-sets statistics tcp-mss</code>
Display service sets summary information.	<code>show services service-sets summary</code>



NOTE: Service sets are supported on the adaptive services interface on the following routers:

- J Series routers—`sp-pim/0/slot`
- M Series and T Series routers—`ms-fpc/pic/port` or `sp-fpc/pic/port`

Service sets are also supported on the redundant adaptive services interface (`rspnumber`) on M Series and T Series routers.



NOTE: For information about how to configure service sets, see the *JUNOS Services Interfaces Configuration Guide*.

clear services service-sets statistics packet-drops

Syntax	clear services service-sets statistics packet-drops <interface <i>interface-name</i> >
Release Information	Command introduced in JUNOS 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 <i>interface-name</i> —(Optional) Clear dropped-packet statistics for the specified adaptive services interface. On M Series and T Series routers, the <i>interface-name</i> can be <i>ms-fpc/pic/port</i> , <i>sp-fpc/pic/port</i> or <i>rspnumber</i> . On J Series routers, the <i>interface-name</i> is <i>sp-pim/0/port</i> .
Required Privilege Level	network
Related Topics	■ show services service-sets statistics packet-drops
List of Sample Output	clear services service-sets statistics packet-drops on page 1339
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 <i>interface-name</i> > <service-set <i>service-set-name</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	Display service set CPU usage.
Options	<p>none—Display CPU usage for all adaptive services interfaces and service sets.</p> <p>interface <i>interface-name</i>—(Optional) Display CPU usage for a particular interface. On M Series and T Series routers, the <i>interface-name</i> can be <i>ms-fpc/pic/port</i>, <i>sp-fpc/pic/port</i>, or <i>rspnumber</i>. On J Series routers, the <i>interface-name</i> is <i>sp-pim/0/port</i>.</p> <p>service-set <i>service-set-name</i>—(Optional) Display CPU usage for a particular service set. For the Layer 2 Tunneling Protocol (L2TP), you can use a tunnel group to represent a service set.</p>
Required Privilege Level	view
List of Sample Output	show services service-sets cpu-usage on page 1340
Output Fields	Table 286 on page 1340 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 286: show services service-sets cpu-usage Output Fields

Field Name	Field Description
Interface	Name of an adaptive services interface.
Service set	Name of a service set.
CPU Utilization %	Percentage of the CPU resources being used.

show services	user@host> show services service-sets cpu-usage	
service-sets cpu-usage	Interface Service set	CPU utilization %
	sp-1/3/0 blue	0.00

show services service-sets memory-usage

Syntax	show services service-sets memory-usage <interface <i>interface-name</i> > <service-set <i>service-set-name</i> > <zone>
Release Information	Command introduced before JUNOS Release 7.4.
Description	Display service set memory usage.
Options	none—Display service set memory usage. interface <i>interface-name</i> —(Optional) Display memory usage for a particular interface. On M Series and T Series routers, the <i>interface-name</i> can be <i>ms-fpc/pic/port</i> , <i>sp-fpc/pic/port</i> , or <i>rspnumber</i> . On J Series routers, the <i>interface-name</i> is <i>sp-pim/0/port</i> . service-set <i>service-set-name</i> —(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 1342 show services service-sets memory-usage zone on page 1342
Output Fields	Table 287 on page 1341 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 287: 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.
Memory zone	Memory zone in which the adaptive services interface is currently operating: <ul style="list-style-type: none">■ 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 user@host> show services service-sets memory-usage
service-sets Interface Service set Bytes Used
memory-usage sp-1/3/0 blue 14817036
```



```
show services user@host> show services service-sets memory-usage zone
service-sets Interface Memory zone
memory-usage zone sp-1/3/0 Green
```

show services service-sets statistics packet-drops

- Syntax

show services service-sets statistics packet-drops
<interface *interface-name*>
- Release Information

Command introduced in JUNOS 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 *rspnumber*. On J Series routers, *interface-name* is *sp-pim/0/port*.
- Required Privilege Level

view
- Related Topics

■ clear services flow-collector statistics
- List of Sample Output

show services service-sets statistics packet-drops interface on page 1343
- Output Fields

Table 288 on page 1343 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 288: 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
	Drops	Drops	Drops
Interface	Service Set		
sp-1/0/0	sset1	0	0

show services service-sets statistics tcp-mss

Syntax	show services service-sets statistics tcp-mss <interface <i>interface-name</i> >
Release Information	Command introduced in JUNOS 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 <i>interface-name</i> —(Optional) Display TCP MSS statistics for a particular interface. The <i>interface-name</i> can be <i>ms-fpc/pic/port</i> , <i>sp-fpc/pic/port</i> , or <i>rsp number</i> .
Required Privilege Level	view
List of Sample Output	show services service-sets statistics tcp-mss on page 1344
Output Fields	Table 289 on page 1344 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 289: 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      user@host> show services service-sets statistics tcp-mss
service-sets      Interface  Service Set                SYN Received  SYN Modified
statistics         sp-1/2/0    asq_ipsec_svc_0           500           220
tcp-mss

```

show services service-sets summary

Syntax	show services service-sets summary <interface <i>interface-name</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	Display service set summary information.
Options	none—Display service set summary information for all adaptive services interfaces. interface <i>interface-name</i> —(Optional) Display service set summary information for a particular interface. On M Series and T Series routers, <i>interface-name</i> can be <i>ms-fpc/pic/port</i> , <i>sp-fpc/pic/port</i> , or <i>rspnumber</i> . On J Series routers, <i>interface-name</i> is <i>sp-pim/0/port</i> .
Required Privilege Level	view
List of Sample Output	show services service-sets summary on page 1345 show services service-sets summary interface on page 1346
Output Fields	Table 290 on page 1345 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 290: 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      user@host> show services service-sets summary interface sp-1/3/0
service-sets summary Interface: sp-1/3/0
interface

```

Service type	Service sets configured	Bytes used	CPU 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 30

Stateful Firewall Operational Mode Commands

Table 291 on page 1347 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot stateful firewall services. Commands are listed in alphabetical order.

Table 291: Stateful Firewall Services Operational Mode Commands

Task	Command
Clear stateful firewall flows.	<code>clear services stateful-firewall flows</code>
Clear stateful firewall Session Initiation Protocol (SIP) call information.	<code>clear services stateful-firewall sip-call</code>
Clear stateful firewall SIP register information.	<code>clear services stateful-firewall sip-register</code>
Clear stateful firewall statistics.	<code>clear services stateful-firewall statistics</code>
Display stateful firewall conversation information.	<code>show services stateful-firewall conversations</code>
Display stateful firewall flow information.	<code>show services stateful-firewall flows</code>
Display stateful firewall SIP call information.	<code>show services stateful-firewall sip-call</code>
Display stateful firewall SIP register information.	<code>show services stateful-firewall sip-register</code>
Display stateful firewall statistics.	<code>show services stateful-firewall statistics</code>
Display statistics information for the application protocol SIP.	<code>show services stateful-firewall statistics application-protocol sip</code>



NOTE: Stateful firewall services are supported on the adaptive services interface on the following routers:

- J Series routers—*sp-pim/0/slot*
- M Series and T Series routers—*ms-fpc/pic/port*, or *sp-fpc/pic/port*

Stateful firewall services are also supported on the redundant adaptive services interface (*rspnumber*) on M Series and T Series routers. For information about how to configure stateful firewall services, see the *JUNOS 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 Release 7.4.

Description Clear stateful firewall flows.

Options none—Clear all stateful firewall flows.

application-protocol—(Optional) Clear stateful firewall flows for 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) 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 *rspnumber*. 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 Topics ■ show services stateful-firewall flows

List of Sample Output clear services stateful-firewall flows on page 1351

Output Fields Table 292 on page 1351 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 292: 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 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 *rspnumber*. On J Series routers, the *interface-name* is *sp-pim/0/port*.

`protocol`—(Optional) Clear information about one of the following IP types:

- `ah`—IPSec Authentication Header protocol
- `egp`—An exterior gateway protocol
- `esp`—IPSec Encapsulating Security Payload protocol
- `gre`—A generic routing encapsulation protocol
- `icmp`—Internet Control Message Protocol
- `igmp`—Internet Group Management Protocol
- `ipip`—IP-within-IP Encapsulation Protocol
- `ipv6`—IPv6 within IP
- `ospf`—Open Shortest Path First protocol
- `pim`—Protocol Independent Multicast protocol
- `rsvp`—Resource Reservation Protocol
- `sctp`—Stream Control Protocol
- `tcp`—Transmission Control Protocol
- `udp`—User Datagram Protocol

`service-set` *service-set*—(Optional) Clear information for a particular service set.

`source-port` *source-port*—(Optional) Clear information for a particular source port. The range of values is 0 to 65535.

`source-prefix` *source-prefix*—(Optional) Clear information for a particular source prefix.

Required Privilege Level view

Related Topics ■ [show services stateful-firewall sip-call](#)

List of Sample Output [clear services stateful-firewall sip-call](#) on page 1354

Output Fields Table 293 on page 1354 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 293: 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 Release 7.4.

Description Clear Session Initiation Protocol (SIP) register information in stateful firewall flows.

Options application-protocol—(Optional) Clear information about one of the following application protocols:

- bootp—(SIP only) Bootstrap protocol
- dce-rpc—(SIP only) Distributed Computing Environment-Remote Procedure Call protocols
- dce-rpc-portmap—(SIP only) Distributed Computing Environment-Remote Procedure Call protocols portmap service
- dns—(SIP only) Domain Name System protocol
- exec—(SIP only) Exec
- ftp—(SIP only) File Transfer Protocol
- h323—H.323 standards
- icmp—Internet Control Message Protocol
- iiop—Internet Inter-ORB Protocol
- login—Login
- netbios—NetBIOS
- netshow—NetShow
- realaudio—RealAudio
- rpc—Remote Procedure Call protocol
- rpc-portmap—Remote Procedure Call protocol portmap service
- rtsp—Real-Time Streaming Protocol
- shell—Shell
- sip—Session Initiation Protocol
- snmp—Simple Network Management Protocol
- sqlnet—SQLNet

- **tftp**—Trivial File Transfer Protocol
- **traceroute**—Traceroute
- **winframe**—WinFrame

destination-port *destination-port*—(Optional) Clear information for a particular destination port. The range of values is 0 to 65535.

destination-prefix *destination-prefix*—(Optional) Clear information for a particular destination prefix.

interface *interface*—(Optional) Clear information about a particular interface. On M Series and T Series routers, the *interface-name* can be *sp-fpc/pic/port* or *rspnumber*. On the J Series routers, the *interface-name* is *sp-pim/0/port*.

protocol—(Optional) Clear information about one of the following IP types:

- **ah**—IPSec Authentication Header protocol
- **egp**—An exterior gateway protocol
- **esp**—IPSec Encapsulating Security Payload protocol
- **gre**—A generic routing encapsulation protocol
- **icmp**—Internet Control Message Protocol
- **igmp**—Internet Group Management Protocol
- **ipip**—IP-within-IP Encapsulation Protocol
- **ipv6**—IPv6 within IP
- **ospf**—Open Shortest Path First protocol
- **pim**—Protocol Independent Multicast protocol
- **rsvp**—Resource Reservation Protocol
- **sctp**—Stream Control Protocol
- **tcp**—Transmission Control Protocol
- **udp**—User Datagram Protocol

service-set *service-set*—(Optional) Clear information for a particular service set.

source-port *source-port*—(Optional) Clear information for a particular source port. The range of values is 0 through 65535.

source-prefix *source-prefix*—(Optional) Clear information for a particular source prefix.

Required Privilege Level view

Related Topics ■ **show services stateful-firewall sip-register**

List of Sample Output clear services stateful-firewall sip-register on page 1357

Output Fields Table 294 on page 1357 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 294: 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 <i>interface-name</i> > <service-set <i>service-set</i> >
Release Information	Command introduced before JUNOS Release 7.4.
Description	Clear stateful firewall statistics.
Options	<p>none—Clear stateful firewall statistics for all interfaces and all service sets.</p> <p>interface <i>interface-name</i>—(Optional) Clear stateful firewall statistics for the specified interface. On M Series and T Series routers, the <i>interface-name</i> can be <i>sp-fpc/pic/port</i> or <i>rspnumber</i>. On J Series routers, the <i>interface-name</i> is <i>sp-pim/0/port</i>.</p> <p>service-set <i>service-set</i>—(Optional) Clear stateful firewall statistics for the specified service set.</p>
Required Privilege Level	view
Related Topics	■ show services stateful-firewall statistics
List of Sample Output	clear services stateful-firewall statistics on page 1358
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 Release 7.4.
 pgcp option introduced in JUNOS Release 8.4.

Description Display information about stateful firewall conversations.

Options none—Display standard information about all stateful firewall conversations.

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

application-protocol *protocol*—(Optional) Display information about one of the following application protocols:

- bootp—Bootstrap protocol
- dce-rpc—Distributed Computing Environment-Remote Procedure Call protocols
- dce-rpc-portmap—Distributed Computing Environment-Remote Procedure Call protocols portmap service
- dns—Domain Name System protocol
- exec—Exec
- ftp—File Transfer Protocol
- h323—H.323 standards
- icmp—Internet Control Message Protocol
- iiop—Internet Inter-ORB Protocol
- login—Login
- netbios—NetBIOS
- netshow—NetShow
- realaudio—RealAudio
- rpc—Remote Procedure Call protocol
- rpc-portmap—Remote Procedure Call protocol portmap service

- **rtsp**—Real-Time Streaming Protocol
- **shell**—Shell
- **sip**—Session Initiation Protocol
- **snmp**—Simple Network Management Protocol
- **sqlnet**—SQLNet
- **tftp**—Trivial File Transfer Protocol
- **traceroute**—Traceroute
- **winframe**—WinFrame

destination-port *destination-port*—(Optional) Display information for a particular destination port. The range of values is 0 to 65535.

destination-prefix *destination-prefix*—(Optional) Display information for a particular destination prefix.

interface *interface-name*—(Optional) Display information about a particular interface. On M Series and T Series routers, the *interface-name* can be **sp-fpc/pic/port** or **rspnumber**. On J Series routers, the *interface-name* is **sp-pim/0/port**.

limit *number*—(Optional) Maximum number of entries to display.

pgcp—(Optional) Display information about stateful firewall conversations for Packet Gateway Control Protocol (PGCP) flows.

protocol *protocol*—(Optional) Display information about one of the following IP types:

- **number**—Numeric protocol value from 0 to 255
- **ah**—IPSec Authentication Header protocol
- **egp**—An exterior gateway protocol
- **esp**—IPSec Encapsulating Security Payload protocol
- **gre**—A generic routing encapsulation protocol
- **icmp**—Internet Control Message Protocol
- **igmp**—Internet Group Management Protocol
- **ipip**—IP-within-IP Encapsulation Protocol
- **ospf**—Open Shortest Path First protocol
- **pim**—Protocol Independent Multicast protocol
- **rsvp**—Resource Reservation Protocol
- **sctp**—Stream Control Protocol
- **tcp**—Transmission Control Protocol
- **udp**—User Datagram Protocol

service-set *service-set*—(Optional) Display information for the specific service set.

source-port *source-port*—(Optional) Display information for a particular source port. The range of values is 0 to 65535.

source-prefix *source-prefix*—(Optional) Display information for a particular source prefix.

Required Privilege Level view

List of Sample Output show services stateful-firewall conversations on page 1362
show services stateful-firewall conversations destination-port on page 1362

Output Fields Table 295 on page 1361 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 295: 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. <ul style="list-style-type: none"> ■ 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 <i>source-prefix-port</i> .
Destination	Destination prefix of the flow.
State	Status of the flow: <ul style="list-style-type: none"> ■ 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.
Byte count	Number of bytes forwarded in the flow.

Table 295: show services stateful-firewall conversations Output Fields (continued)

Field Name	Field Description
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      user@host> show services stateful-firewall conversations
stateful-firewall Interface: sp-1/3/0, Service set: green
conversations      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      user@host> show services stateful-firewall conversations destination-port 21
stateful-firewall Interface: sp-0/3/0, Service set: svc_set_trust
conversations
destination-port Interface: sp-0/3/0, Service set: svc_set_untrust
                     Conversation: ALG protocol: ftp
                     Number of initiators: 1, Number of responders: 1
                     Flow
                     TCP       10.50.10.2:2143 -> 10.50.20.2:21      Watch     0        0
                     TCP       10.50.20.2:21 -> 10.50.10.2:2143    Watch     I        0
                     TCP       10.50.20.2:21 -> 10.50.10.2:2143    Watch     I        0

```

show services stateful-firewall flows

Syntax show services stateful-firewall flows
 <brief | extensive | summary | terse>
 <application-protocol *protocol*>
 <count>
 <destination-port *destination-port*>
 <destination-prefix *destination-prefix*>
 <interface *interface-name*>
 <limit *number*>
 <pgcp>
 <protocol *protocol*>
 <service-set *service-set*>
 <source-port *source-port*>
 <source-prefix *source-prefix*>

Release Information Command introduced before JUNOS Release 7.4.
 pgcp option introduced in JUNOS 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.

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

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 *rspnumber*. On J Series routers, *interface-name* is *sp-pim/0/port*.

limit *number*—(Optional) Maximum number of entries to display.

pgcp —(Optional) Display stateful firewall information 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 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 Topics ■ clear services stateful-firewall flows

List of Sample Output show services stateful-firewall flows on page 1366
show services stateful-firewall flows brief on page 1366
show services stateful-firewall flows extensive on page 1366
show services stateful-firewall flows count on page 1366
show services stateful-firewall flows destination port on page 1366
show services stateful-firewall flows source port on page 1366
show services stateful-firewall flows (Twice NAT) on page 1366

Output Fields Table 296 on page 1365 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 296: 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 <i>source-prefix:port</i> . For ICMP flows, port information is not displayed.
Dest	Destination prefix of the flow. For ICMP flows, port information is not displayed.
State	Status of the flow: <ul style="list-style-type: none">■ 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  0
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 count                               State   Dir    Frm
TCP     16.1.0.1:2330 -> 16.49.0.1:21 Forward  I
8
NAT source 16.1.0.1:2330 -> 16.41.0.1:2330
NAT dest   16.49.0.1:21 -> 16.99.0.1:21
Byte count: 455, TCP established, TCP window size: 57344
TCP acknowledge: 3251737524, TCP tickle enabled, tcp_tickle: 0
Flow role: Master, Timeout: 720
TCP     16.99.0.1:21 -> 16.41.0.1:2330 Forward  0
5
NAT source 16.99.0.1:21 -> 16.49.0.1:21
NAT dest   16.41.0.1:2330 -> 16.1.0.1:2330
Byte count: 480, TCP established, TCP window size: 57344
TCP acknowledge: 463128048, TCP tickle enabled, tcp_tickle: 0
Flow role: Responder, Timeout: 720
```

show services stateful-firewall flows count user@host> **show services stateful-firewall flows count**
Interface Service set Flow Count
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
Interface: sp-0/3/0, Service set: svc_set_untrust
Flow
TCP     10.50.10.2:2143 -> 10.50.20.2:21 Watch  0
State   Dir    Frm count
Watch  0      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
Interface: sp-0/3/0, Service set: svc_set_untrust
Flow
TCP     10.50.10.2:2143 -> 10.50.20.2:21 Watch  0
State   Dir    Frm count
Watch  0      0
```

show services stateful-firewall flows (Twice NAT) user@router> **show services stateful-firewall flows**
Flow

```
UDP     40.0.0.8:23439 -> 80.0.0.1:16485 Watch  I      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
State   Dir    Frm count
Watch  I      20
```

```
UDP      192.16.1.10:22415 -> 172.16.1.10:1028    Watch    0          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 Release 7.4.

Description Display stateful firewall Session Initiation Protocol (SIP) call information.

Options count—(Optional) Display a count of the matching entries.

brief—(Optional) Display brief SIP call information.

extensive—(Optional) Display detailed SIP call information.

terse—(Optional) Display terse SIP call information.

application-protocol—(Optional) Display information about one of the following application protocols:

- bootp—(SIP only) Bootstrap protocol
- dce-rpc—(SIP only) Distributed Computing Environment-Remote Procedure Call protocols
- dce-rpc-portmap—(SIP only) Distributed Computing Environment-Remote Procedure Call protocols portmap service
- dns—(SIP only) Domain Name System protocol
- exec—(SIP only) Exec
- ftp—(SIP only) File Transfer Protocol
- h323—H.323 standards
- icmp—Internet Control Message Protocol
- iiop—Internet Inter-ORB Protocol
- login—Login
- netbios—NetBIOS
- netshow—NetShow
- realaudio—RealAudio
- rpc—Remote Procedure Call protocol

- **rpc-portmap**—Remote Procedure Call protocol portmap service
- **rtsp**—Real-Time Streaming Protocol
- **shell**—Shell
- **sip**—Session Initiation Protocol
- **snmp**—Simple Network Management Protocol
- **sqlnet**—SQLNet
- **tftp**—Trivial File Transfer Protocol
- **traceroute**—Traceroute
- **winframe**—WinFrame

destination-port *destination-port*—(Optional) Display information for a particular destination port. The range of values is from 0 to 65535.

destination-prefix *destination-prefix*—(Optional) Display information for a particular destination prefix.

interface *interface-name*—(Optional) Display information about a particular adaptive services interface. On M Series and T Series routers, *interface-name* can be *sp-fpc/pic/port* or *rspnumber*. On J Series routers, *interface-name* is *sp-pim/0/port*.

limit *number*—(Optional) Maximum number of entries to display.

protocol—(Optional) Display information about one of the following IP types:

- **ah**—IPSec Authentication Header protocol
- **egp**—An exterior gateway protocol
- **esp**—IPSec Encapsulating Security Payload protocol
- **gre**—A generic routing encapsulation protocol
- **icmp**—Internet Control Message Protocol
- **igmp**—Internet Group Management Protocol
- **ipip**—IP-within-IP Encapsulation Protocol
- **ipv6**—IPv6 within IP
- **ospf**—Open Shortest Path First protocol
- **pim**—Protocol Independent Multicast protocol
- **rsvp**—Resource Reservation Protocol
- **sctp**—Stream Control Protocol
- **tcp**—Transmission Control Protocol
- **udp**—User Datagram Protocol

service-set *service-set*—(Optional) Display information for a particular service set.

source-port *source-port*—(Optional) Display information for a particular source port. The range of values is from 0 to 65535.

source-prefix *source-prefix*—(Optional) Display information for a particular source prefix.

Required Privilege Level view

Related Topics ■ clear services stateful-firewall sip-call

List of Sample Output show services stateful-firewall sip-call extensive on page 1371

Output Fields Table 297 on page 1370 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 297: 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.
<i>protocol</i>	Protocol used for this flow.
<i>source-prefix</i>	Source prefix of the flow in the format <i>source-prefix</i> : <i>port</i> .
<i>destination-prefix</i>	Destination prefix of the flow.
<i>state</i>	Status of the flow: <ul style="list-style-type: none"> ■ 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.
<i>direction</i>	Direction of the flow: input (I), output (O), or unknown (U).
<i>frame-count</i>	Number of frames in the flow.
Byte count	Number of bytes forwarded in the flow.

Table 297: show services stateful-firewall sip-call Output Fields (continued)

Field Name	Field Description
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;0011bb65c2a3000777bd0fc-5748b749
Call ID: : 000ff73a-c8990004-0741adac-3e027c7e@10.20.70.2
Number of control initiator flows: : 1, Number of control responder flows:
: 1
UDP      10.20.70.2:50354 -> 10.200.100.1:5060 Watch I
2
  Byte count: 1112
  Flow role: Master, Timeout: 30
UDP      10.200.100.1:5060 -> 10.20.170.111:50354 Watch 0
0
  Byte count: 0
  Flow role: Responder, Timeout: 30
UDP      0.0.0.0:0 -> 10.20.170.111:5060 Watch 0
7
  Byte count: 2749
  Flow role: Responder, Timeout: 30
Number of contact initiator flows: 1, Number of contact responder flows: 1
UDP      0.0.0.0:0 -> 10.20.140.11:5060 Watch I
1
  Byte count: 409
  Flow role: Master, Timeout: 30
UDP      10.20.140.11:31864 -> 10.20.170.111:18808 Forward 0
622
  Byte count: 124400
  Flow role: Master, Timeout: 30
UDP      0.0.0.0:0 -> 10.20.170.111:18809 Forward 0
0
  Byte count: 0
  Flow role: Initiator, Timeout: 30
Number of media initiator flows: 4, Number of media responder flows: 0
UDP      10.20.70.2:18808 -> 10.20.140.11:31864 Forward I
628
  Byte count: 125600
  Flow role: Initiator, Timeout: 30
UDP      0.0.0.0:0 -> 10.20.140.11:31865 Forward I
0
  Byte count: 0
  Flow role: Initiator, Timeout: 30
0      0.0.0.0:0 -> 0.0.0.0:0 Unknown U
0
  Byte count: 0
  Flow role: Unknown, Timeout: 0
0      0.0.0.0:0 -> 0.0.0.0:0 Unknown U
Interface: sp-0/3/0, Service set: test_sip_888

```

show services stateful-firewall sip-register

Syntax show services stateful-firewall sip-register
 <brief | extensive | terse>
 <application-protocol *protocol*>
 <destination-port *destination-port*>
 <destination-prefix *destination-prefix*>
 <interface *interface-name*>
 <limit *number*>
 <protocol *protocol*>
 <service-set *service-set*>
 <source-port *source-port*>
 <source-prefix *source-prefix*>

Release Information Command introduced in JUNOS Release 7.4.

Description Display stateful firewall Session Initiation Protocol (SIP) register information.

Options count—(Optional) Display a count of the matching entries.

brief—(Optional) Display brief SIP register information.

extensive—(Optional) Display detailed SIP register information.

terse—(Optional) Display terse SIP register information.

application-protocol—(Optional) Display information about one of the following application protocols:

- bootp—(SIP only) Bootstrap protocol
- dce-rpc—(SIP only) Distributed Computing Environment-Remote Procedure Call protocols
- dce-rpc-portmap—(SIP only) Distributed Computing Environment-Remote Procedure Call protocols portmap service
- dns—(SIP only) Domain Name System protocol
- exec—(SIP only) Exec
- ftp—(SIP only) File Transfer Protocol
- h323—H.323 standards
- icmp—Internet Control Message Protocol
- iiop—Internet Inter-ORB Protocol
- login—Login
- netbios—NetBIOS
- netshow—NetShow
- realaudio—RealAudio
- rpc—Remote Procedure Call protocol

- `rpc-portmap`—Remote Procedure Call protocol portmap service
- `rtsp`—Real-Time Streaming Protocol
- `shell`—Shell
- `sip`—Session Initiation Protocol
- `snmp`—Simple Network Management Protocol
- `sqlnet`—SQLNet
- `tftp`—Trivial File Transfer Protocol
- `traceroute`—Traceroute
- `winframe`—WinFrame

`destination-port` *destination-port*—(Optional) Display information for a particular destination port.

`destination-prefix` *destination-prefix*—(Optional) Display information for a particular destination prefix. The range of values is from 0 to 65535.

`interface` *interface-name*—(Optional) Display information about a particular interface. On M Series and T Series routers, the *interface-name* can be `sp-fpc/pic/port` or `rspnumber`. On J Series routers, the *interface-name* is `sp-pim/0/port`.

`limit` *number*—(Optional) Maximum number of entries to display.

`protocol`—(Optional) Display information about one of the following IP types:

- `ah`—IPSec Authentication Header protocol
- `egp`—An exterior gateway protocol
- `esp`—IPSec Encapsulating Security Payload protocol
- `gre`—A generic routing encapsulation protocol
- `icmp`—Internet Control Message Protocol
- `igmp`—Internet Group Management Protocol
- `ipip`—IP-within-IP Encapsulation Protocol
- `ipv6`—IPv6 within IP
- `ospf`—Open Shortest Path First protocol
- `pim`—Protocol Independent Multicast protocol
- `rsvp`—Resource Reservation Protocol
- `sctp`—Stream Control Protocol
- `tcp`—Transmission Control Protocol
- `udp`—User Datagram Protocol

`service-set` *service-set*—(Optional) Display information for a particular service set.

`source-port source-port`—(Optional) Display information for a particular source port. The range of values is from 0 to 65535.

`source-prefix source-prefix`—(Optional) Display information for a particular source prefix.

Required Privilege Level view

Related Topics ■ [clear services stateful-firewall sip-register](#)

List of Sample Output [show services stateful-firewall sip-register extensive on page 1374](#)

Output Fields Table 298 on page 1374 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 298: 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
 <brief | detail | extensive | summary>
 <application-protocol *protocol*>
 <interface *interface-name*>
 <service-set *service-set*>

Release Information Command introduced before JUNOS 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.

application-protocol *protocol*—(Optional) Display stateful firewall statistics for 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

interface *interface-name*—(Optional) Display information about a particular interface. On M Series and T Series routers, the *interface-name* can be *sp-fpc/pic/port* or *rspnumber*. On J Series routers, the *interface-name* is *sp-pim/0/port*.

service-set *service-set*—(Optional) Display information about a particular service set.

Required Privilege Level view

Related Topics ■ clear services stateful-firewall statistics

List of Sample Output show services stateful-firewall statistics extensive on page 1381

Output Fields Table 299 on page 1377 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 299: 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: <ul style="list-style-type: none">■ Accept—New flows accepted.■ Discard—New flows discarded.■ Reject—New flows rejected.
Existing flows	Rule match counters for existing flows: <ul style="list-style-type: none">■ Accept—Match existing forward or watch flow.■ Discard—Match existing discard flow.■ Reject—Match existing reject flow.
Drops	Drop counters: <ul style="list-style-type: none">■ IP option—Packets dropped in IP options processing.■ 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.

Table 299: show services stateful-firewall statistics Output Fields (continued)

Field Name	Field Description
Errors	<p>Total errors, categorized by protocol:</p> <ul style="list-style-type: none"> ■ 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. ■ ALG—Total application-level gateway (ALG) errors.
IP Errors	<p>IPv4 errors:</p> <ul style="list-style-type: none"> ■ 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 299: show services stateful-firewall statistics Output Fields (continued)

Field Name	Field Description
TCP Errors	<p>TCP protocol errors:</p> <ul style="list-style-type: none"> ■ 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	<p>UDP protocol errors:</p> <ul style="list-style-type: none"> ■ 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	<p>ICMP protocol errors:</p> <ul style="list-style-type: none"> ■ 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.

Table 299: show services stateful-firewall statistics Output Fields (continued)

Field Name	Field Description
ALG drops	<p>Accumulation of all the application-level gateway protocol (ALG) drops counted separately in the ALG context:</p> <ul style="list-style-type: none"> ■ BOOTP—Bootstrap protocol errors ■ DCE-RPC—Distributed Computing Environment-Remote Procedure Call protocols errors ■ DCE-RPC portmap—Distributed Computing Environment-Remote Procedure Call protocols portmap service errors ■ DNS—Domain Name System protocol errors ■ Exec—Exec errors ■ FTP—File Transfer Protocol errors ■ H323—H.323 standards errors ■ ICMP—Internet Control Message Protocol errors ■ IIOP—Internet Inter-ORB Protocol errors ■ Login—Login errors ■ Netbios—NetBIOS errors ■ Netshow—NetShow errors ■ Realaudio—RealAudio errors ■ RPC—Remote Procedure Call protocol errors ■ RPC portmap—Remote Procedure Call protocol portmap service errors ■ RTSP—Real-Time Streaming Protocol errors ■ Shell—Shell errors ■ SNMP—Simple Network Management Protocol errors ■ Sqlnet—SQLNet errors ■ TFTP—Trivial File Transfer Protocol errors ■ Traceroute—Traceroute errors

```

show services      user@host> show services stateful-firewall statistics extensive
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 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 1383
Output Fields	Table 300 on page 1382 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 300: 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.
OPTIONS	Number of new, invalid, and retransmitted requests to query SIP capabilities.
INFO	Number of new, invalid, and retransmitted requests carrying application-level information.

Table 300: show services stateful-firewall statistics application-protocol-sip Output Fields (continued)

Field Name	Field Description
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      user@host> show services stateful-firewall statistics application-protocol sip
stateful-firewall Interface: sp-0/3/0
statistics        Service set: test_sip_777, ALG: SIP
application-protocol-sip Active SIP call count: 0, Active SIP registration count: 1
                                     New      Invalid    Retransmit
REGISTER                2
INVITE                   1                0
ReINVITE                1
ACK                      1                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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- Index of Statements and Commands on page 1405

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