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Junos<sup>®</sup> OS

Overview for Routing Devices



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## Documentation and Release Notes

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

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

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## Supported Platforms

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

- [ACX Series](#)
- [M Series](#)
- [MX Series](#)
- [T Series](#)
- [PTX Series](#)

## Using the Examples in This Manual

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If you want to use the examples in this manual, you can use the **load merge** or the **load merge relative** command. These commands cause the software to merge the incoming

configuration into the current candidate configuration. The example does not become active until you commit the candidate configuration.

If the example configuration contains the top level of the hierarchy (or multiple hierarchies), the example is a *full example*. In this case, use the **load merge** command.

If the example configuration does not start at the top level of the hierarchy, the example is a *snippet*. In this case, use the **load merge relative** command. These procedures are described in the following sections.

## Merging a Full Example

To merge a full example, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration example into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following configuration to a file and name the file **ex-script.conf**. Copy the **ex-script.conf** file to the **/var/tmp** directory on your routing platform.

```
system {
  scripts {
    commit {
      file ex-script.xsl;
    }
  }
}
interfaces {
  fxp0 {
    disable;
    unit 0 {
      family inet {
        address 10.0.0.1/24;
      }
    }
  }
}
```

2. Merge the contents of the file into your routing platform configuration by issuing the **load merge** configuration mode command:

```
[edit]
user@host# load merge /var/tmp/ex-script.conf
load complete
```

## Merging a Snippet

To merge a snippet, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration snippet into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following snippet to a file and name the file **ex-script-snippet.conf**. Copy the **ex-script-snippet.conf** file to the **/var/tmp** directory on your routing platform.

```
commit {
  file ex-script-snippet.xml; }
```

2. Move to the hierarchy level that is relevant for this snippet by issuing the following configuration mode command:

```
[edit]
user@host# edit system scripts
[edit system scripts]
```

3. Merge the contents of the file into your routing platform configuration by issuing the **load merge relative** configuration mode command:







```
[edit system scripts]
user@host# load merge relative /var/tmp/ex-script-snippet.conf
load complete
```

For more information about the **load** command, see [CLI Explorer](#).

## Documentation Conventions

[Table 1 on page xv](#) 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.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

[Table 2 on page xvi](#) defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
<b>Bold text like this</b>	Represents text that you type.	To enter configuration mode, type the <b>configure</b> command:  user@host> <b>configure</b>
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> <b>show chassis alarms</b>  No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"> <li>Introduces or emphasizes important new terms.</li> <li>Identifies guide names.</li> <li>Identifies RFC and Internet draft titles.</li> </ul>	<ul style="list-style-type: none"> <li>A policy <i>term</i> is a named structure that defines match conditions and actions.</li> <li><i>Junos OS CLI User Guide</i></li> <li>RFC 1997, <i>BGP Communities Attribute</i></li> </ul>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name:  [edit] root@# <b>set system domain-name</b> <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> <li>To configure a stub area, include the <b>stub</b> statement at the [edit protocols ospf area area-id] hierarchy level.</li> <li>The console port is labeled <b>CONSOLE</b>.</li> </ul>
< > (angle brackets)	Encloses optional keywords or variables.	<b>stub &lt;default-metric metric&gt;;</b>
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	<b>broadcast   multicast</b>  <b>(string1   string2   string3)</b>
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	<b>rsvp { # Required for dynamic MPLS only</b>
[ ] (square brackets)	Encloses a variable for which you can substitute one or more values.	<b>community name members [ community-ids ]</b>
Indentation and braces ( { } )	Identifies a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	

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## GUI Conventions

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

Convention	Description	Examples
<b>Bold text like this</b>	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"> <li>In the Logical Interfaces box, select <b>All Interfaces</b>.</li> <li>To cancel the configuration, click <b>Cancel</b>.</li> </ul>
<b>&gt;</b> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select <b>Protocols&gt;Ospf</b> .

## Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can provide feedback by using either of the following methods:

- Online feedback rating system—On any page of the Juniper Networks TechLibrary site at <http://www.juniper.net/techpubs/index.html>, simply click the stars to rate the content, and use the pop-up form to provide us with information about your experience. Alternately, you can use the online feedback form at <http://www.juniper.net/techpubs/feedback/>.
- E-mail—Send your comments to [techpubs-comments@juniper.net](mailto:techpubs-comments@juniper.net). Include the document or topic name, URL or page number, and software 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 Partner Support Service support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

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

## Self-Help Online Tools and Resources

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

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

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

## Opening a Case with JTAC

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

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

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

## PART 1

# Junos OS Overview

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## CHAPTER 1

# Junos OS Software Overview

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## Junos OS Overview

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Juniper Networks provides high-performance network routers that create a responsive and trusted environment for accelerating the deployment of services and applications over a single network. The Junos operating system (Junos OS) is the foundation of these high-performance networks. Unlike other complex, monolithic software architectures, Junos OS incorporates key design and developmental differences to deliver increased network availability, operational efficiency, and flexibility. These key advantages are:

- One operating system
- One software release
- One modular software architecture

### *One Operating System*

Unlike other network operating systems that share a common name but splinter into many different programs, Junos OS is a single, cohesive operating system that is shared across all routers and product lines. This enables Juniper Networks engineers to develop software features once and share the features across product lines simultaneously. Because features are common to a single source, generally these features are implemented the same way for all of the product lines, reducing the training required to

learn different tools and methods for each product. Furthermore, because all Juniper Networks products use the same code base, interoperability among products is not an issue.

#### *One Software Release*

Each new version of Junos OS is released concurrently for all product lines following a preset schedule. Each new version of software includes working features released in previous versions of the software and must achieve zero critical regression errors. This discipline ensures reliable operations for the entire release.

#### *One Modular Software*

Although individual architecture modules of Junos OS communicate through well-defined interfaces, each module runs in its own protected memory space, preventing one module from disrupting another. It also enables the independent restart of each module as necessary. This is in contrast to monolithic operating systems for which a malfunction in one module can ripple to other modules, possibly causing a full system crash or restart. This modular Junos OS architecture provides a high level of performance, high availability, security, and device scalability not found in other operating systems.

Junos OS is preinstalled on your Juniper Networks router when you receive it from the factory. When you first power on the router, all software starts automatically. You then configure the software so that the router can participate in your network.

You can upgrade the router software as new features are added or software problems are fixed. You obtain new software by downloading images from the Juniper Networks Support Web page onto your router or another system on your local network, then install the software upgrade onto the router.

Juniper Networks routers run only binaries supplied by Juniper Networks. Each Junos OS image includes a digitally signed manifest of executables, which are registered with the system only if the signature can be validated. Junos OS will not execute any binary without a registered fingerprint. This feature protects the system against unauthorized software and activity that might compromise the integrity of your router.

#### **Related Documentation**

- [Junos OS Configuration Basics on page 31](#)
- [Junos OS Architecture Overview on page 5](#)
- [Router Hardware Components on page 7](#)
- [Junos OS Commit Model for Router or Switch Configuration on page 35](#)
- [Junos OS Routing Engine Components and Processes on page 8](#)
- [Junos OS Support for IPv4 Routing Protocols on page 19](#)
- [Junos OS Support for IPv6 Routing Protocols on page 20](#)
- [Junos OS Routing and Forwarding Tables on page 21](#)
- [Routing Policy Overview on page 22](#)
- [Junos OS Support for VPNs on page 23](#)

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## Junos OS Architecture Overview

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This topic provides an overview of the Junos OS product and routing process architecture:

- [Product Architecture on page 5](#)
- [Routing Process Architecture on page 5](#)

### Product Architecture

Junos OS provides IP routing software as well as software for interface, network, and chassis management. Junos OS runs on all Juniper Networks

J Series, M Series, MX Series, and T Series routers, as well as on other Juniper Networks products.

- J Series Services Routers are deployed at the remote edge of distributed networks.
- M Series Multiservice Edge routers are mostly deployed in small and medium cores in peering, route reflector, data center applications, or at the IP or MPLS edge to support high-performance Layer 2 and Layer 3 services. All M Series routers have redundant power and cooling, and the M10i, M20, M40e, M120, M160, and M320 routers have fully redundant hardware, including Routing Engines, switch interface components, and packet forwarding components. The M120 router also supports Forwarding Engine Board (FEB) failover. In the event of a FEB failure, a backup FEB can quickly take over packet forwarding.
- MX Series 3D Universal Edge Routers are Ethernet-optimized edge routers that provide both switching and carrier-class Ethernet routing. The MX Series routers support Dense Port Concentrators (DPCs), Modular Port Concentrator (MPCs) and Modular Interface Cards, and FPCs and PICs. For a detailed list of supported line cards see the [MX Series Interface Module Reference](#).
- T Series Core routers (T320, T640, T1600, T4000, TX Matrix, and TX Matrix Plus routers) are deployed at the core of provider networks. These routers have fully redundant hardware, including power and cooling, Routing Engines, and Switch Interface Boards (SIBs).

A *routing matrix* is a multichassis architecture composed of multiple routers, for example, one TX Matrix router connected to one to four T640 routers, or one TX Matrix Plus router connected to one to four T1600 routers. From the perspective of the user interface, the routing matrix appears as a single router. On a routing matrix composed of a TX Matrix router and T640 routers, the TX Matrix router controls all of the T640 routers. On a routing matrix composed of a TX Matrix Plus router and T1600 or T4000 routers, the TX Matrix Plus router controls all the T1600 or T4000 routers.

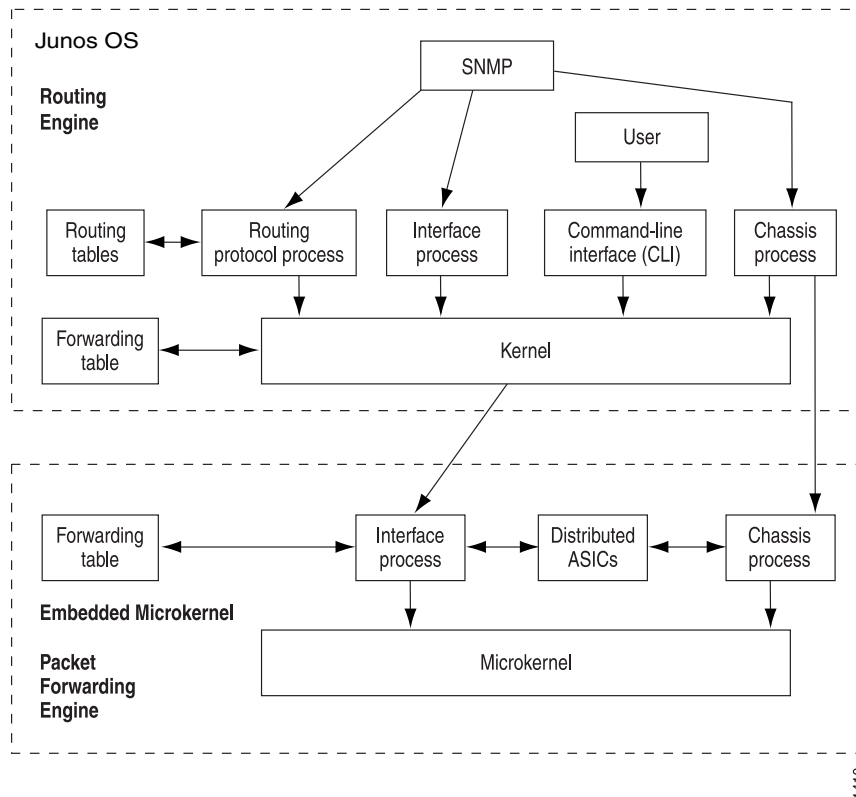
### Routing Process Architecture

The routing process is handled by the following two components (see [Figure 1 on page 6](#)):

- Routing Engine
- Packet Forwarding Engine

Because this architecture separates control operations such as routing updates and system management from packet forwarding, the router can deliver superior performance and highly reliable Internet operation.

**Figure 1: Product Architecture**



### Packet Forwarding Engine

The Packet Forwarding Engine uses application-specific integrated circuits (ASICs) to perform Layer 2 and Layer 3 packet switching, route lookups, and packet forwarding. The Packet Forwarding Engine forwards packets between input and output interfaces. The M Series routers (except the M7i, M40, and M320) have redundant Packet Forwarding Engines. The J Series Routers have a software-based Packet Forwarding Engine.

### Routing Engine

The Routing Engine controls the routing updates and the system management. The Routing Engine consists of routing protocol software processes running inside a protected memory environment on a general-purpose computer platform. The Routing Engine handles all of the routing protocol processes and other software processes that control the routers' interfaces, some of the chassis components, system management, and user access to the router. These routers and software processes run on top of a kernel that interacts with the Packet Forwarding Engine. All M Series (except the M7i and M40) routers and T Series routers have redundant Routing Engines.



The Routing Engine has these features:

- Routing protocol packets processing—All routing protocol packets from the network are directed to the Routing Engine, and therefore do not unnecessarily delay the Packet Forwarding Engine.
- Software modularity—Software functions are in separate processes, so a failure of one process has little or no effect on other software processes.
- In-depth IP functionality—Each routing protocol is implemented with a complete set of IP features and provides full flexibility for advertising, filtering, and modifying routes. Routing policies are set according to route parameters, such as prefix, prefix lengths, and Border Gateway Protocol (BGP) attributes.
- Scalability—Junos OS routing tables are designed to hold all the routes used in current and near-future networks. Additionally, Junos OS can efficiently support large numbers of interfaces and virtual circuits.
- Management interfaces—System management is implemented with a command-line interface (CLI), a craft interface, and Simple Network Management Protocol (SNMP).
- Storage and change management—Configuration files, system images, and microcode are held and maintained in one primary and two secondary storage systems, permitting local or remote upgrades.
- Monitoring efficiency and flexibility—Alarms are generated and packets are counted without adversely affecting packet forwarding performance.

The Routing Engine constructs and maintains one or more routing tables. From the routing tables, the Routing Engine derives a table of active routes, called the *forwarding table*, which is then copied into the Packet Forwarding Engine. The forwarding table in the Packet Forwarding Engine can be updated without interrupting the router's forwarding.

In a Junos-FIPS environment, hardware configurations with two Routing Engines must use IPsec and a private routing instance for all communications between the Routing Engines. IPsec communication between the Routing Engines and Adaptive Services (AS) II FIPS PICs is also required.

**Related Documentation**

- [Junos OS Overview on page 3](#)

## Router Hardware Components

Junos OS runs on Juniper Networks routers and Packet Transport Routers, including: ACX Series, J Series, M Series, MX Series, T Series, and PTX Series Packet Transport Routers. Each network device consists of the major hardware components as shown in [Table 3 on page 8](#). One or more of the major hardware components shown is used in each system.



**NOTE:** The ACX Series router is a single-board router with a built-in Routing Engine and one Packet Forwarding Engine. The “pseudo” FPCs and PICs are described in *ACX2000 and ACX2100 Routers Hardware and CLI Terminology Mapping*.

**Table 3: Major Router Hardware Components**

	M Series	MX Series	T Series	PTX Series	J Series
Routing Engines	X	X	X	X	X
Control Board	X		X	X	
Switch Interface Board (SIB)	X		X	X	
Forwarding Engine Board (FEB)	X				
Power Supply	X	X	X	X	X
Cooling System	X	X	X	X	X
Dense Port Concentrators (DPC)		X			
Switch Control Board (SCB)		X			
Flexible PIC Concentrators (FPC)	X	X	X	X	
Physical Interface Module (PIM)					X
Physical Interface Card (PIC)	X	X	X	X	

Flexible PIC Concentrators (FPCs) are each populated by PICs for various interface types. On some routers, the PICs are installed directly in the chassis.

For information about specific components in your router, see the hardware guide for your router.

**Related Documentation**

- [Junos OS Architecture Overview on page 5](#)

## Junos OS Routing Engine Components and Processes

Junos OS runs on the Routing Engine. Junos OS consists of software processes that support Internet routing protocols, control router interfaces and the router chassis, and enable router system management. Junos OS processes run on top of a kernel, which enables communication between processes and provides a direct link to the Packet Forwarding Engine software. Junos OS can be used to configure routing protocols and

router interface properties, as well as to monitor and troubleshoot protocol and network connectivity problems.

The Routing Engine software consists of several software processes that control router functionality and a kernel that provides the communication among all the processes.

## Routing Engine Kernel

The Routing Engine kernel provides the underlying infrastructure for all Junos OS processes, including providing the link between the routing tables and the Routing Engine's forwarding table. The kernel is also responsible for all communication with the Packet Forwarding Engine, which includes keeping the Packet Forwarding Engine's copy of the forwarding table synchronized with the master copy in the Routing Engine.

## Initialization Process

When the router boots, an initialization process (init) starts and monitors all the other software processes.

If a software process terminates or fails to start when called, the init process attempts to restart it a limited number of times and logs any failure information for further investigation.

## Management Process

The management process (mgd) manages the configuration of the router and all user commands. The management process is responsible for notifying other processes when a new configuration is committed. A dedicated management process handles Junos XML protocol XML requests from its client, which might be the CLI or any Junos XML protocol client.

## Process Limits

There are limits to the total number of Junos OS processes that can run simultaneously on a system. There are also limits set for the maximum number of iterations of any single process. The limit for iterations of any single process can only be reached if the limit of overall system processes is not exceeded.

Access methods such as telnet and SSH spawn multiple system processes for each session created. For this reason, it might not be possible to simultaneously support the maximum number of access sessions for multiple services.

## Routing Protocol Process

Within Junos OS, the routing protocol process (rpd) controls the routing protocols that run on the router. The rpd process starts all configured routing protocols and handles all routing messages. It maintains one or more routing tables, which consolidate the routing information learned from all routing protocols. From this routing information, the routing protocol process determines the active routes to network destinations and installs these routes into the Routing Engine's forwarding table. Finally, rpd implements routing policy, which enables you to control the routing information that is transferred between the routing protocols and the routing table. Using routing policy, you can filter and limit the transfer of information as well as set properties associated with specific routes.

## Interface Process

The Junos OS interface process enables you to configure and control the physical interface devices and logical interfaces present in a router. You can configure interface properties such as the interface location, for example, in which slot the Flexible PIC Concentrator (FPC) is installed and in which location on the FPC the Physical Interface Card (PIC) is installed, as well as the interface encapsulation and interface-specific properties. You can configure the interfaces currently present in the router, as well as interfaces that are not present but that you might add later.

The Junos OS interface process communicates through the Junos OS kernel with the interface process in the Packet Forwarding Engine, enabling Junos OS to track the status and condition of the router's interfaces.

## Chassis Process

The Junos OS chassis process (chassisd) enables you to configure and control the properties of the router, including conditions that trigger alarms. The chassisd on the Routing Engine communicates directly with its peer processes running on the Packet Forwarding Engine.

## SNMP and MIB II Processes

Junos OS supports the Simple Network Management Protocol (SNMP), which helps administrators monitor the state of a router. The software supports SNMP version 1 (SNMPv1), version 2 (SNMPv2, also known as version 2c, or v2c), and version 3 (SNMPv3). The Junos OS implementation of SNMP does not include any of the security features that were originally included in the IETF SNMP drafts but were later dropped. The SNMP software is controlled by the Junos OS SNMP and Management Information Base II (MIB II) processes, which consist of an SNMP master agent and various subagents.

**Related Documentation**

- [Junos OS Architecture Overview on page 5](#)

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## List of Junos OS Processes

Junos OS consists of multiple processes that run on different platforms and have unique functions. The separation of functions provides operational stability, because each process accesses its own protected memory space.

[Table 4 on page 11](#) describes the processes that run only on MX Series 3D Universal Edge Routers.

Table 4: Junos OS Processes on MX Series Platform Only

Process	Name	Description
Clksync process (RE)	clksyncd	<p>Defines the operation of synchronous Ethernet and Precision Time Protocol (PTP) on a Juniper Networks MX Series router. The operation includes communication with the Packet Forwarding Engine (clock-sync module) to program and process clock events from the EEC clock.</p> <p>Operates the PTP stack, exchanges packets, and handles the configuration changes for the modular MX Series (MX80).</p> <p>Controls the configuration and monitoring of the overall operation of the PTP functionality for chassis-based MX Series platforms (MX240, MX480, and so on).</p>
Clock-sync process (PFE)	clock-sync	<p>Programs and monitors the modular interface card (MIC), the CPLD, and the EEC clock. Peer of the clksyncd process module.</p> <p>Captures all PTP and Synchronous Ethernet statistics on the Packet Forwarding Engine and provides them to the Routing Engine.</p>
Interchassis communication process	iccpd	Exchanges proprietary Junos OS messages between two Juniper Networks MX Series routers that take part in a multichassis link aggregation group (LAG).
Statistics agent process	stats-agentd	<p>Acts as a relay process to collect interface statistics for all software development kit (SDK) applications.</p> <p>Interacts with the pfed process to collect the logical interface statistics for SDK applications.</p>

Table 5 on page 11 lists all the other processes that are common across platforms.

Table 5: Junos OS Processes

Name	Process	Description
Adaptive services process	adaptive-services	Manages the configuration for stateful firewall, Network Address Translation (NAT), intrusion detection service (IDS), and IP Security (IPsec) services on the Adaptive Services PIC.
Alarm control process	alarm-control	Configures the system alarm.

Table 5: Junos OS Processes (*continued*)

Name	Process	Description
Access Node Control Protocol (ANCP) process	ancpd-service	Works with a special Internet Group Management Protocol (IGMP) session to collect outgoing interface mapping events in a scalable manner.
Application identification process	application-identification	Identifies an application using intrusion detection and prevention (IDP) to allow or deny traffic based on applications running on standard or nonstandard ports.
RADIUS accounting process	audit-process	Gathers statistical data that can be used for general network monitoring, analyzing, and tracking usage patterns, for billing a user based upon the amount of time or type of services accessed.
Auto-configuration process	auto-configuration	Configures interfaces automatically.
Boot process	bootp	Enables a router, switch, or interface to act as a Dynamic Host Configuration Protocol (DHCP) or bootstrap protocol (BOOTP) relay agent. DHCP relaying is disabled.
Captive portal content delivery process	captive-portal-content-delivery	Specifies the location to which a subscriber's initial Web browser session is redirected, enabling initial provisioning and service selection for the subscriber.
Universal Edge Layer 2 Tunneling Protocol process	ce-l2tp-service	(M10, M10i, M7i, and MX Series routers only) Establishes L2TP tunnels and Point-to-Point Protocol (PPP) sessions through L2TP tunnels.
Ethernet OAM connectivity fault management process	cfm	Monitors the physical link between two switches.
Chassis control process	chassis-control	Manages the chassis.
Class of service process	class-of-service	Controls the router's or switch's CoS configuration.
Ethernet clock synchronization process	clksyncd-service	Uses Synchronous Ethernet (SyncE) for external clock synchronization .
Craft interface I/O control process	craft-control	Controls the I/O of the craft interface.
Database replication process	database-replication	(EX Series switches and MX Series routers only) Manages the replication of updates from the master to the slave in the database management system.
Datapath trace process	datapath-trace-service	Traces the path taken by the packet through the network.

Table 5: Junos OS Processes (*continued*)

Name	Process	Description
Dynamic Host Configuration Protocol process	dhcp-service	(EX Series switches and MX Series routers only) Enables a DHCP server to allocate network IP addresses and deliver configuration settings to client hosts without user intervention.
Diameter process	diameter-service	Implements the Diameter protocol which uses the Transmission Control Protocol (TCP) and Stream Control Transmission Protocol (SCTP) instead of User Datagram Protocol (UDP), for monitoring the network.
Disk monitoring process	disk-monitoring	Checks the health of the hard disk drive on the Routing Engine.
Dynamic flow capture (DFC) process	dynamic-flow-capture	Controls the DFC configurations on Monitoring Services III PICs.
ECC parity errors logging process	ecc-error-logging	Logs the ECC parity errors into the memory on the Routing Engine.
Connectivity fault management (CFM) process	<del>ethernet-connectivity-fault-management</del> ethernet-cfm	Provides IEEE 802.1ag OAM CFM database information for CFM maintenance association end points (MEPs) in a CFM session.
Ethernet OAM Link-Fault-Management process	ethernet-link-fault-management	(EX Series switches and MX Series routers only) Provides the OAM link fault management (LFM) information for Ethernet interfaces.
Event processing process	event-processing or eventd	Configures the application to handle all generated events.
Firewall process	firewall	Manages the firewall configuration and enables accepting or rejecting packets that are transiting an interface on a router or switch.
General authentication process	general-authentication-service	(EX Series switches and MX Series routers only) Manages general authentication of a user.
Inter-Chassis Communication Protocol (ICCP) process	iccp-service	Synchronizes data within a set of two (or more) PEs that form a redundancy group (RG).
IDP policy process	idp-policy	Enables various attack detection and prevention techniques on traffic traversing the network.
Integrated Local Management Interface process	ilmi	Provides bidirectional exchange of management information between two Asynchronous Transfer Mode (ATM) interfaces across a physical connection.

Table 5: Junos OS Processes (*continued*)

Name	Process	Description
Inet process	inet-process	Configures the IP multicast family.
Init process	init	Initializes the USB modem.
Interface control process	interface-control	Controls the router's or switch's physical interface devices and logical interfaces.
Kernel replication process	kernel-replication	Replicates the state of the backup Routing Engine when graceful Routing Engine switchover (GRES) is configured.
Layer 2 address flooding and learning process	l2-learning	Enables a router to: <ul style="list-style-type: none"> <li>Learn unicast media access control (MAC) addresses to avoid flooding the packets to all the ports in a bridge domain.</li> <li>Create a source MAC entry in its source and destination MAC tables for each MAC address learned from packets received on ports that belong to the bridge domain.</li> </ul>
Layer 2 Control Protocol process	l2cpd-service	Enables features such as Layer 2 protocol tunneling and nonstop bridging.
Link Aggregation Control Protocol process	lACP	The process: <ul style="list-style-type: none"> <li>Provides a standardized means for exchanging information between partner systems on a link.</li> <li>Allows the link aggregation control instances to reach agreement on the identity of the Link Aggregation Group (LAG) to which the link belongs, and then to move the link to that LAG.</li> <li>Enables the transmission and reception processes for the link to function in an orderly manner.</li> </ul>
Link management process	link-management	Manages traffic engineering links.
Local policy decision function process	local-policy-decision-function	Regulates the collection of statistics related to applications and application groups and tracking of information about dynamic subscribers and static interfaces.
Logical system multiplexer process	logical-system-mux or lrmuxd	Manages multiple instances of the routing protocols process (rpd) on a machine running logical routers.
MAC validation process	mac-validation	Configures MAC address validation that enables a router to validate if received packets contain a trusted IP source and an Ethernet MAC source address.



Table 5: Junos OS Processes (*continued*)

Name	Process	Description
Management Information Base II process	mib-process	Provides the router's MIB II agent.
Mobile IP process	mobile-ip	Configures Junos OS Mobile IP features.
NFS mount requests process	mountd-service	(EX Series switches and MX Series routers only) Completes NFS mount requests.
MPLS Periodic Traceroute process	mpls-traceroute	Enables tracing of forwarding equivalence classes (FECs) for LDP Layered Service Providers (LSPs).
Multiservice process	mspd	Configures multiservice edge routers.
Multicast Snooping process	multicast-snooping	(EX Series switches and MX Series routers only) Makes Layer 3 information, such as the MAC addresses of members of a multicast group, known to Layer 2 devices, such as VLAN switches.
DNS server process	named-service	Enables a router or a switch to resolve hostnames into addresses.
Bidirectional Forwarding Detection (BFD) process	neighbor-liveness	Displays the process that specifies the maximum length of time that the router waits for its neighbor to re-establish an LDP session.
Remote NFS server process	nfsd-service	Provides remote file access for applications that need NFS-based transport.
Network time process	ntp	Provides the mechanisms to synchronize time and coordinate time distribution in a large, diverse network.
Packet-triggered dynamic subscribers and policy control (PTCP) process	packet-triggered-subscribers	Enables the application of policies to dynamic subscribers that are controlled by a subscriber termination device.
Peer selection service process	peer-selection-service	Enables peer selection.
Periodic packet management process	periodic-packet-services	Processes a variety of time-sensitive periodic tasks so that other processes can more optimally direct their resources.
Packet Forwarding Engine process	pfed	Gathers and reports Packet Forwarding Engine statistics.
Packet gateway service process	pgcp-service or pgcpd	Configures the Packet Gateway Control Protocol (PGCP) that is required for the border gateway function (BGF) feature.

Table 5: Junos OS Processes (*continued*)

Name	Process	Description
Pragmatic General Multicast process	pgm	Enables a reliable transport layer for multicast applications.
PIC services logging process	pic-services-logging or fsad (the file system access daemon)	Enables PICs to send special logging information to the Routing Engine for archiving on the hard disk.
Point-to-Point Protocol (PPP) process	ppp	Enables transporting IP traffic across point-to-point links.
Universal edge PPP process	ppp-service	Enables transporting IP traffic across universal edge routers.
Point-to-Point Protocol over Ethernet process	pppoe	Allows users to connect to a network of hosts over a bridge or access concentrator.
Process health monitor process	process-monitor or pmond	<p>Extends the SNMP RMON alarm infrastructure to provide predefined monitoring for a selected set of object instances (such as file system usage, CPU usage, and memory usage) and dynamic object instances (such as Junos OS processes).</p> <p><b>NOTE:</b> The process health monitor process is enabled by default on the Routing Engines of MX Series routers, even when no service interfaces are configured. To disable this process, include the <b>disable</b> statement at the <b>[edit system processes process-monitor]</b> hierarchy level.</p>
Redundancy interface management process	redundancy-interface-process	Serves as an active or backup process of an application server and can be configured to process traffic for more than one logical application server.
Remote operations process	remote-operations	Provides the ping and traceroute MIBs.
Resource cleanup process	resource-cleanup	Enables cleaning of resources by entities other than the application itself.
Routing process	routing	Directs forwarding on the basis of routing tables, which maintain a record of the routes to various network destinations.
Traffic sampling control process	sampling	Performs packet sampling based on particular input interfaces and various fields in the packet header.
Session Border Control (SBC) configuration process	sbc-configuration-process	Configures the session border controller functionality that enables delivery of voice, video, and other multimedia services with assured quality and security.

Table 5: Junos OS Processes (*continued*)

Name	Process	Description
SDK service process	sdk-service	Runs on the Routing Engine and enables communication between the SDK application and Junos OS. Although the SDK service process is present on the router, it is turned off by default.
Secure Neighbor Discovery (SND) protocol process	secure-neighbor-discovery or send	(EX Series switches and MX Series routers only) Provides support for protecting NDP messages.
Service Deployment System (SDX) process	service-deployment	Enables Junos OS to work with the Session and Resource Control (SRC) software.
Simple Network Management Protocol (SNMP) process	snmp	Enables the monitoring of network devices from a central location, and provides the router's or switch's SNMP master agent.
SONET Automatic Protection Switching (APS) process	sonet-aps	Monitors any SONET interface that participates in APS.
Static subscribers process	static-subscribers	Associates subscribers with statically configured interfaces, and provides dynamic service activation and activation for these subscribers.
Tunnel OAM process	tunnel-oamd	Enables the Operations, Administration, and Maintenance of Layer 2 tunneled networks.
Virtual Router Redundancy Protocol (VRRP) process	vrrp	(EX Series switches and MX Series routers only) Enables hosts on a LAN to make use of redundant routing platforms on that LAN without requiring more than the static configuration of a single default route on the hosts.
Watchdog timer process	watchdog	Enables the watchdog timer when Junos OS encounters a problem.

## Default Directories for Junos OS File Storage on the Router or Switch

Junos OS files are stored in the following directories on the router or switch:

- **/altconfig**—When you back up the currently running and active file system partitions on the router or switch to standby partitions using the **request system snapshot** command, the **/config** directory is backed up to **/altconfig**. Normally, the **/config** directory is on the CompactFlash card and **/altconfig** is on the hard disk.
- **/altroot**—When you back up the currently running and active file system partitions on the router to standby partitions using the **request system snapshot** command, the root file system (**/**) is backed up to **/altroot**. Normally, the root directory is on the CompactFlash card and **/altroot** is on the hard disk.

- **/config**—This directory is located on the primary boot device, that is, on the device from which the router or switch booted (generally the CompactFlash card (device **wd0**) or internal flash storage). This directory contains the current operational router or switch configuration and the last three committed configurations, in the files **juniper.conf**, **juniper.conf.1**, **juniper.conf.2**, and **juniper.conf.3**, respectively.
- **/var**—This directory is located either on the hard disk (device **wd2**) or internal flash storage. It contains the following subdirectories:
  - **/home**—Contains users' home directories, which are created when you create user access accounts. For users using SSH authentication, their **.ssh** file, which contains their SSH key, is placed in their home directory. When a user saves or loads a configuration file, that file is loaded from the user's home directory unless the user specifies a full pathname.
  - **/db/config**—Contains up to 46 additional previous versions of committed configurations, which are stored in the files **juniper.conf.4.gz** through **juniper.conf.49.gz**.
  - **/log**—Contains system log and tracing files.
  - **/tmp**—Contains core files. The software saves up to five core files, numbered from 0 through 4. File number 0 is the oldest core file and file number 4 is the newest core file. To preserve the oldest core files, the software overwrites the newest core file, number 4, with any subsequent core file.

Each router or switch ships with removable media (device **wfd0**) that contains a backup copy of Junos OS.

## Directories on the Logical System

In addition to saving the configuration of logical systems in the current **juniper.conf** file, each logical system has an individual directory structure created in the **/var/logical-systems/logical-system-name** directory.

The **/var/logical-systems/logical-system-name** directory contains the following subdirectories:

- **/config**—Contains the current operational configuration specific to the logical system.
- **/log**—Contains system log and tracing files specific to the logical system.

To maintain backward compatibility for the log files with previous versions of Junos OS, a symbolic link (symlink) from the **/var/logs/logical-system-name** directory to the **/var/logical-systems/logical-system-name** directory is created when a logical system is configured.

- **/tmp**—Contains temporary files specific to the logical system.

This file system for each logical system enables logical system users to view trace logs and modify logical system files. Logical system administrators have full access to view and modify all files specific to the logical system.

Logical system users and administrators can save and load configuration files at the logical-system hierarchy level using the **save** and **load** configuration mode commands.

In addition, they can also issue the **show log**, **monitor**, and **file** operational mode commands at the logical-system hierarchy level.

**Related  
Documentation**

- [Format for Specifying Filenames and URLs in Junos OS CLI Commands on page 52](#)

## Junos OS Support for IPv4 Routing Protocols

Junos OS implements full IP routing functionality, providing support for IP version 4 (IPv4). The routing protocols are fully interoperable with existing IP routing protocols, and they have been developed to provide the scale and control necessary for the Internet core.

Junos OS provides the following routing and Multiprotocol Label Switching (MPLS) applications protocols:

- Unicast routing protocols:
  - BGP—Border Gateway Protocol, version 4, is an exterior gateway protocol (EGP) that guarantees loop-free exchange of routing information between routing domains (also called autonomous systems). BGP, in conjunction with Junos routing policy, provides a system of administrative checks and balances that can be used to implement peering and transit agreements.
  - ICMP—Internet Control Message Protocol router discovery enables hosts to discover the addresses of operational routers on the subnet.
  - IS-IS—Intermediate System-to-Intermediate System is a link-state interior gateway protocol (IGP) for IP networks that uses the shortest-path-first (SPF) algorithm, which also is referred to as the Dijkstra algorithm, to determine routes. The Junos IS-IS software is a new and complete implementation of the protocol, addressing issues of scale, convergence, and resilience.
  - OSPF—Open Shortest Path First, version 2, is an IGP that was developed for IP networks by the Internet Engineering Task Force (IETF). OSPF is a link-state protocol that makes routing decisions based on the SPF algorithm. The Junos OSPF software is a new and complete implementation of the protocol, addressing issues of scale, convergence, and resilience.
  - RIP—Routing Information Protocol, version 2, is a distance-vector IGP for IP networks based on the Bellman-Ford algorithm. RIP dynamically routes packets between a subscriber and a service provider without the subscriber having to configure BGP or participate in the service provider's IGP discovery process.
- Multicast routing protocols:
  - DVMRP—Distance Vector Multicast Routing Protocol is a dense-mode (flood-and-prune) multicast routing protocol.
  - IGMP—Internet Group Management Protocol, versions 1 and 2, is used to manage membership in multicast groups.
  - MSDP—Multicast Source Discovery Protocol enables multiple Protocol Independent Multicast (PIM) sparse mode domains to be joined. A rendezvous point (RP) in a

PIM sparse mode domain has a peer relationship with an RP in another domain, enabling it to discover multicast sources from other domains.

- PIM sparse mode and dense mode—Protocol-Independent Multicast is a multicast routing protocol. PIM sparse mode routes to multicast groups that might span wide-area and interdomain internets. PIM dense mode is a flood-and-prune protocol.
- SAP/SDP—Session Announcement Protocol and Session Description Protocol handle conference session announcements.
- MPLS applications protocols:
  - LDP—The Label Distribution Protocol provides a mechanism for distributing labels in non-traffic-engineered applications. LDP enables routers to establish label-switched paths (LSPs) through a network by mapping network layer routing information directly to data-link layer switched paths. LSPs created by LDP can also traverse LSPs created by the Resource Reservation Protocol (RSVP).
  - MPLS—Multiprotocol Label Switching, formerly known as tag switching, enables you to manually or dynamically configure LSPs through a network. It lets you direct traffic through particular paths rather than rely on the IGP's least-cost algorithm to choose a path.
  - RSVP—The Resource Reservation Protocol, version 1, provides a mechanism for engineering network traffic patterns that is independent of the shortest path decided upon by a routing protocol. RSVP itself is not a routing protocol; it operates with current and future unicast and multicast routing protocols. The primary purpose of the Junos RSVP software is to support dynamic signaling for MPLS LSPs.

**Related  
Documentation**

- [Junos OS Overview on page 3](#)
- [Junos OS Support for IPv6 Routing Protocols on page 20](#)

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## Junos OS Support for IPv6 Routing Protocols

The Junos OS implements IP routing functionality, providing support for IP version 6 (IPv6). The routing protocols have been developed to provide the scale and control necessary for the Internet core.

The software supports the following unicast routing protocols:

- BGP—Border Gateway Protocol version 4, is an EGP that guarantees loop-free exchange of routing information between routing domains (also called autonomous systems). BGP, in conjunction with Junos routing policies, provides a system of administrative checks and balances that can be used to implement peering and transit agreements.
- ICMP—Internet Control Message Protocol router discovery enables hosts to discover the addresses of operational routers on the subnet.
- IS-IS—Intermediate System-to-Intermediate System is a link-state IGP for IP networks that uses the SPF algorithm, which also is referred to as the Dijkstra algorithm, to determine routes. The Junos OS supports a new and complete implementation of the protocol, addressing issues of scale, convergence, and resilience.

- OSPF version 3 (OSPFv3) supports IPv6. The fundamental mechanisms of OSPF such as flooding, designated router (DR) election, area-based topologies, and the SPF calculations remain unchanged. Some differences exist either because of changes in protocol semantics between IPv4 and IPv6, or because of the need to handle the increased address size of IPv6.
- RIP—Routing Information Protocol version 2 is a distance-vector IGP for IP networks based on the Bellman-Ford algorithm. RIP dynamically routes packets between a subscriber and a service provider without the subscriber having to configure BGP or to participate in the service provider's IGP discovery process.

**Related  
Documentation**

- [Junos OS Overview on page 3](#)
- [Junos OS Support for IPv4 Routing Protocols on page 19](#)

## Junos OS Routing and Forwarding Tables

A major function of the Junos OS routing protocol process is to maintain the Routing Engine's routing tables and use these tables to determine the active routes to network destinations. The routing protocol process then installs these routes into the Routing Engine's forwarding table. The Junos OS kernel then copies this forwarding table to the Packet Forwarding Engine.

The routing protocol process maintains multiple routing tables. By default, it maintains the following three routing tables. You can configure additional routing tables to suit your requirements.

- Unicast routing table—Stores routing information for all unicast routing protocols running on the router. BGP, IS-IS, OSPF, and RIP all store their routing information in this routing table. You can configure additional routes, such as static routes, to be included in this routing table. BGP, IS-IS, OSPF, and RIP use the routes in this routing table when advertising routing information to their neighbors.
- Multicast routing table (cache)—Stores routing information for all the running multicast protocols. DVMRP and PIM both store their routing information in this routing table, and you can configure additional routes to be included in this routing table.
- MPLS routing table—Stores MPLS path and label information.

With each routing table, the routing protocol process uses the collected routing information to determine active routes to network destinations.

For unicast routes, the routing protocol process determines active routes by choosing the most preferred route, which is the route with the lowest preference value. By default, the route's preference value is simply a function of how the routing protocol process learned about the route. You can modify the default preference value using routing policy and with software configuration parameters.

For multicast traffic, the routing protocol process determines active routes based on traffic flow and other parameters specified by the multicast routing protocol algorithms.

The routing protocol process then installs one or more active routes to each network destination into the Routing Engine's forwarding table.

**Related Documentation**

- [Routing Policy Overview on page 22](#)

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## Routing Policy Overview

By default, all routing protocols place their routes into the routing table. When advertising routes, the routing protocols by default advertise only a limited set of routes from the routing table. Specifically, each routing protocol exports only the active routes that were learned by that protocol. In addition, the interior gateway protocols (IS-IS, OSPF, and RIP) export the direct (interface) routes for the interfaces on which they are explicitly configured.

You can control the routes that a protocol places into each table and the routes from that table that the protocol advertises. You do this by defining one or more routing policies and then applying them to the specific routing protocol.

Routing policies applied when the routing protocol places routes into the routing table are referred to as *import policies* because the routes are being imported into the routing table. Policies applied when the routing protocol is advertising routes that are in the routing table are referred to as *export policies* because the routes are being exported from the routing table. In other words, the terms *import* and *export* are used with respect to the routing table.

A routing policy enables you to control (filter) which routes a routing protocol imports into the routing table and which routes a routing protocol exports from the routing table. A routing policy also enables you to set the information associated with a route as it is being imported into or exported from the routing table. Filtering imported routes enables you to control the routes used to determine active routes. Filtering routes being exported from the routing table enables you to control the routes that a protocol advertises to its neighbors.

You implement routing policy by defining policies. A policy specifies the conditions to use to match a route and the action to perform on the route when a match occurs. For example, when a routing table imports routing information from a routing protocol, a routing policy might modify the route's preference, mark the route with a color to identify it and allow it to be manipulated later, or prevent the route from even being installed in a routing table. When a routing table exports routes into a routing protocol, a policy might assign metric values, modify the BGP community information, tag the route with additional information, or prevent the route from being exported altogether. You also can define policies for redistributing the routes learned from one protocol into another protocol.

**Related Documentation**

- [Junos OS Routing and Forwarding Tables on page 21](#)
- [Junos OS Support for IPv4 Routing Protocols on page 19](#)
- [Junos OS Support for IPv6 Routing Protocols on page 20](#)



## Junos OS Support for VPNs

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Junos OS supports several types of virtual private networks (VPNs):

- **Layer 2 VPNs**—A Layer 2 VPN links a set of sites that share routing information, and whose connectivity is controlled by a collection of policies. A Layer 2 VPN is not aware of routes within a customer's network. It simply provides private links between a customer's sites over the service provider's existing public Internet backbone.
- **Layer 3 VPNs**—A Layer 3 VPN is the same thing as a Layer 2 VPN, but it is aware of routes within a customer's network, requiring more configuration on the part of the service provider than a Layer 2 VPN. The sites that make up a Layer 3 VPN are connected over a service provider's existing public Internet backbone.
- **Interprovider VPNs**—An interprovider VPN supplies connectivity between two VPNs in separate autonomous systems (ASs). This functionality can be used by a VPN customer with connections to several Internet service providers (ISPs), or different connections to the same ISP in various geographic regions.
- **Carrier-of-carrier VPNs**—Carrier-of-carrier VPNs allow a VPN service provider to supply VPN service to a customer who is also a service provider. The latter service provider supplies Internet or VPN service to an end customer.

**Related Documentation**

- [Junos OS Overview on page 3](#)



## CHAPTER 2

# Junos OS Security Overview

- [Junos OS Features for Router Security on page 25](#)
- [Junos OS Default Settings for Router Security on page 29](#)

## Junos OS Features for Router Security

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Router security consists of three major elements: physical security of the router, operating system security, and security that can be affected through configuration. Physical security involves restricting access to the router. Exploits that can easily be prevented from remote locations are extremely difficult or impossible to prevent if an attacker can gain access to the router's management port or console. The inherent security of Junos OS also plays an important role in router security. Junos OS is extremely stable and robust. Junos OS also provides features to protect against attacks, allowing you to configure the router to minimize vulnerabilities.

The following are Junos OS features available to improve router security:

- [Methods of Remote Access for Router Management on page 25](#)
- [Junos OS Supported Protocols and Methods for User Authentication on page 26](#)
- [Junos OS Plain-Text Password Requirements on page 27](#)
- [Junos OS Support for Routing Protocol Security Features and IPsec on page 27](#)
- [Junos OS Support for Firewall Filters on page 28](#)
- [Junos OS Support Distributed Denial-of-Service Protection on page 28](#)
- [Junos OS Auditing Support for Security on page 29](#)

## Methods of Remote Access for Router Management

When you first install Junos OS, all remote access to the router is disabled, thereby ensuring that remote access is possible only if deliberately enabled by an authorized user. You can establish remote communication with a router in one of the following ways:

- **Out-of-band management**—Enables connection to the router through an interface dedicated to router management. Juniper Networks routers support out-of-band management with a dedicated management Ethernet interface, as well as EIA-232 console and auxiliary ports. On all routers other than the TX Matrix Plus router, T1600 router, T1600 or T4000 routers connected to a TX Matrix Plus router in a routing matrix, T640 routers with a Routing Engine supporting 64-bit Junos OS, and PTX Series Packet

Transport Routers, the management interface is fxp0. On a TX Matrix Plus router, T1600 router, T1600 or T4000 routers in a routing matrix, T640 routers with a Routing Engine supporting 64-bit Junos OS, and PTX Series Packet Transport Routers, the management Ethernet Interface is labeled em0. The management Ethernet interface connects directly to the Routing Engine. No transit traffic is allowed through this interface, providing complete separation of customer and management traffic and ensuring that congestion or failures in the transit network do not affect the management of the router.

- Inband management—Enables connection to the routers using the same interfaces through which customer traffic flows. Although this approach is simple and requires no dedicated management resources, it has some disadvantages:
  - Management flows and transit traffic flows are mixed together. Any attack traffic that is mixed with the normal traffic can affect the communication with the router.
  - The links between router components might not be totally trustworthy, leading to the possibility of wiretapping and replay attacks.

For management access to the router, the standard ways to communicate with the router from a remote console are with Telnet and SSH. SSH provides secure encrypted communications and is therefore useful for inband router management. Telnet provides unencrypted, and therefore less secure, access to the router.

## Junos OS Supported Protocols and Methods for User Authentication

On a router, you can create local user login accounts to control who can log in to the router and the access privileges they have. A password, either an SSH key or a Message Digest 5 (MD5) password, is associated with each login account. To define access privileges, you create login classes into which you group users with similar jobs or job functions. You use these classes to explicitly define what commands their users are and are not allowed to issue while logged in to the router.

The management of multiple routers by many different personnel can create a user account management problem. One solution is to use a central authentication service to simplify account management, creating and deleting user accounts only on a single, central server. A central authentication system also simplifies the use of one-time password systems such as SecureID, which offer protection against password sniffing and password replay attacks (attacks in which someone uses a captured password to pose as a router administrator).

Junos OS supports two protocols for central authentication of users on multiple routers:

- Terminal Access Controller Access Control System Plus (TACACS+)
- Remote Authentication Dial-In User Service (RADIUS), a multivendor IETF standard whose features are more widely accepted than those of TACACS+ or other proprietary systems. All one-time-password system vendors support RADIUS.

Junos OS also supports the following authentication methods:

- Internet Protocol Security (IPsec). IPsec architecture provides a security suite for the IPv4 and IPv6 network layers. The suite provides such functionality as authentication

of origin, data integrity, confidentiality, replay protection, and nonrepudiation of source. In addition to IPsec, Junos OS supports the Internet Key Exchange (IKE), which defines mechanisms for key generation and exchange, and manages security associations (SAs).

- MD5 authentication of MSDP peering sessions. This authentication provides protection against spoofed packets being introduced into a peering session.
- SNMPv3 authentication and encryption. SNMPv3 uses the user-based security model (USM) for message security and the view-based access control model (VACM) for access control. USM specifies authentication and encryption. VACM specifies access-control rules.

## Junos OS Plain-Text Password Requirements

Junos OS has special requirements when you create plain-text passwords on a router. The default requirements for plain-text passwords are as follows:

- The password must be between 6 and 128 characters long.
- You can include uppercase letters, lowercase letters, numbers, punctuation marks, and any of the following special characters:  
! @ # \$ % ^ & \* , + = < > ; ;  
Control characters are not recommended.
- The password must contain at least one change of case or character class.

You can change the requirements for plain-text passwords.

You can include the **plain-text-password** statement at the following hierarchy levels:

- [edit system diag-port-authentication]
- [edit system pic-console-authentication]
- [edit system root-authentication]
- [edit system login user *username* authentication]

## Junos OS Support for Routing Protocol Security Features and IPsec

The main task of a router is to forward user traffic toward its intended destination based on the information in the router's routing and forwarding tables. You can configure routing policies that define the flows of routing information through the network, controlling which routes the routing protocols place in the routing tables and which routes they advertise from the tables. You can also use routing policies to change specific route characteristics, change the BGP route flap-damping values, perform per-packet load balancing, and enable class of service (CoS).

Attackers can send forged protocol packets to a router with the intent of changing or corrupting the contents of its routing table or other databases, which can degrade the functionality of the router. To prevent such attacks, you must ensure that routers form routing protocol peering or neighboring relationships with trusted peers. One way to do this is by authenticating routing protocol messages. The Junos OS BGP, IS-IS, OSPF, RIP,

and RSVP protocols support HMAC-MD5 authentication, which uses a secret key combined with the data being protected to compute a hash. When the protocols send messages, the computed hash is transmitted with the data. The receiver uses the matching key to validate the message hash.

Junos OS supports the IPsec security suite for the IPv4 and IPv6 network layers. The suite provides such functionality as authentication of origin, data integrity, confidentiality, replay protection, and nonrepudiation of source. Junos OS also supports IKE, which defines mechanisms for key generation and exchange, and manages SAs.

## Junos OS Support for Firewall Filters

Firewall filters allow you to control packets transiting the router to a network destination and packets destined for and sent by the router. You can configure firewall filters to control which data packets are accepted on and transmitted from the physical interfaces, and which local packets are transmitted from the physical interfaces and the Routing Engine. Firewall filters provide a means of protecting your router from excessive traffic. Firewall filters that control local packets can also protect your router from external aggressions, such as DoS attacks.

To protect the Routing Engine, you can configure a firewall filter only on the router's loopback interface. Adding or modifying filters for each interface on the router is not necessary. You can design firewall filters to protect against ICMP and Transmission Control Protocol (TCP) connection request (SYN) floods and to rate-limit traffic being sent to the Routing Engine.

## Junos OS Support Distributed Denial-of-Service Protection

A denial-of-service attack is any attempt to deny valid users access to network or server resources by using up all the resources of the network element or server. Distributed denial-of-service attacks involve an attack from multiple sources, enabling a much greater amount of traffic to attack the network. The attacks typically use network protocol control packets to trigger a large number of exceptions to the router's control plane. This results in an excessive processing load that disrupts normal network operations.

Junos OS DDoS protection enables the router to continue functioning while under an attack. It identifies and suppresses malicious control packets while enabling legitimate control traffic to be processed. A single point of DDoS protection management enables network administrators to customize profiles for their network control traffic. Protection and monitoring persists across graceful Routing Engine switchover (GRES) and unified in-service-software-upgrade (ISSU) switchovers. Protection is not diminished as the number of subscribers increases.

To protect against DDoS attacks, you can configure policers for host-bound exception traffic. The policers specify rate limits for individual types of protocol control packets or for all control packet types for a protocol. You can monitor policer actions for packet types and protocol groups at the level of the router, Routing Engine, and line cards. You can also control logging of policer events.

Flow detection is an enhancement to DDoS protection that supplements the DDoS policer hierarchies by using a limited amount of hardware resources to monitor the arrival rate

of host-bound flows of control traffic. Flow detection is much more scalable than a solution based on filter policers. Filter policers track all flows, which consumes a considerable amount of resources. In contrast, flow detection only tracks flows it identifies as suspicious, using far fewer resources to do so.

The flow detection application has two interrelated components, detection and tracking. Detection is the process where flows suspected of being improper are identified and subsequently controlled. Tracking is the process where flows are tracked to determine whether they are truly hostile and when these flows recover to within acceptable limits.

## Junos OS Auditing Support for Security

Junos OS logs significant events that occur on the router and within the network. Although logging itself does not increase security, you can use the system logs to monitor the effectiveness of your security policies and router configurations. You can also use the logs when reacting to a continued and deliberate attack as a means of identifying the source address, router, or port of the attacker's traffic. You can configure the logging of different levels of events, from only critical events to all events, including informational events. You can then inspect the contents of the system log files either in real time or later.

Debugging and troubleshooting are much easier when the timestamps in the system log files of all routers are synchronized, because events that span the network might be correlated with synchronous entries in multiple logs. Junos OS supports the Network Time Protocol (NTP), which you can enable on the router to synchronize the system clocks of routers and other networking equipment. By default, NTP operates in an unauthenticated mode. You can configure various types of authentication, including an HMAC-MD5 scheme.

### Related Documentation

- *Overview of IPSec*
- *Junos OS System Log Overview*

## Junos OS Default Settings for Router Security

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Junos OS protects against common router security weaknesses with the following default settings:

- Junos OS does not forward directed broadcast messages. Directed broadcast services send ping requests from a spoofed source address to a broadcast address and can be used to attack other Internet users. For example, if broadcast ping messages were allowed on the 200.0.0.0/24 network, a single ping request could result in up to 254 responses to the supposed source of the ping. The source would actually become the victim of a denial-of-service (DoS) attack.
- Only console access to the router is enabled by default. Remote management access to the router and all management access protocols, including Telnet, FTP, and SSH (Secure Shell), are disabled by default.
- Junos OS does not support the SNMP set capability for editing configuration data. Although the software supports the SNMP set capability for monitoring and

troubleshooting the network, this support exposes no known security issues. (You can configure the software to disable this SNMP set capability.)

- Junos OS ignores martian addresses that contain the following prefixes: 0.0.0.0/8, 127.0.0.0/8, 128.0.0.0/16, 191.255.0.0/16, 192.0.0.0/24, 223.255.55.0/24, and 240.0.0.0/4. Martian addresses are reserved host or network addresses about which all routing information should be ignored.



## CHAPTER 3

# Junos OS Configuration Overview

- [Junos OS Configuration Basics on page 31](#)
- [Methods for Configuring Junos OS on page 32](#)
- [Junos OS Configuration from External Devices on page 35](#)
- [Junos OS Commit Model for Router or Switch Configuration on page 35](#)
- [Understanding Junos OS Configuration Groups on page 36](#)

## Junos OS Configuration Basics

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Your router comes with Junos OS installed on it. When you power on the router, all software starts automatically. You simply need to configure the software so that the router will be ready to participate in the network.

To configure the Junos OS, you must specify a hierarchy of configuration statements that define the preferred software properties. You can configure all properties of the Junos OS, including interfaces, general routing information, routing protocols, and user access, as well as some system hardware properties. After you have created a candidate configuration, you commit the configuration to be evaluated and activated by the Junos OS.

### Related Documentation

- [Configuring Junos OS from External Devices on page 35](#)
- [Methods for Configuring Junos OS on page 32](#)
- [Initial Router or Switch Configuration Using Junos OS on page 41](#)

## Methods for Configuring Junos OS

You can use any of the methods shown in [Table 6 on page 32](#) to configure Junos OS.

**Table 6: Methods for Configuring Junos OS**

Method	Description
Command-line interface (CLI)	Create the configuration for the device using the CLI. You can enter commands from a single command line, and scroll through recently executed commands.
ASCII file	Load an ASCII file containing a configuration that you created earlier, either on this system or on another system. You can then activate and run the configuration file, or you can edit it using the CLI and then activate it.
J-Web graphical user interface (GUI)	Use the J-Web GUI to configure the device. J-Web enables you to monitor, configure, troubleshoot, and manage the router on a client by means of a Web browser. The J-Web GUI is preinstalled on J Series Routers and is an optional software package that can be installed on M Series and T Series routers. J-Web is not available for the QFX Series.
Junos XML management protocol (API)	Use Junos XML protocol Perl client modules to develop custom applications for configuring information on devices that run Junos OS. Client applications use the Junos XML management protocol to request and change configuration information on Juniper Networks J Series, M Series, and T Series routers. The Junos XML management protocol is customized for Junos OS, and operations in the API are equivalent to those in the Junos OS CLI.
NETCONF application programming interface (API)	Use NETCONF Perl client modules to develop custom applications for configuring information on devices that run Junos OS. Client applications use the NETCONF XML management protocol to request and change configuration information on Juniper Networks J Series, M Series, and T Series routers. The NETCONF XML management protocol includes features that accommodate the configuration data models of multiple vendors.
Configuration commit scripts	Create scripts that run at commit time to enforce custom configuration rules. Commit scripts are written in Extensible Stylesheet Language Transformations (XSLT). Commit scripts are not available for the QFX Series.

The following sections contain complete descriptions of the methods you can use to configure Junos OS:

- [Junos OS Command-Line Interface on page 33](#)
- [ASCII File on page 33](#)
- [J-Web Package on page 33](#)
- [Junos XML Management Protocol Software on page 34](#)

- [NETCONF XML Management Protocol Software on page 34](#)
- [Configuration Commit Scripts on page 34](#)

## Junos OS Command-Line Interface

The Junos OS CLI is a straightforward command interface. You use Emacs-style keyboard sequences to move around on a command line and scroll through a buffer that contains recently executed commands. You type commands on a single line, and the commands are executed when you press the Enter key. The CLI also provides command help and command completion. For more information about the CLI, see the *CLI User Guide* and the [CLI Explorer](#).

## ASCII File

You can load an ASCII file containing a configuration that you created earlier, either on this system or another system. You can then activate and run the configuration file as is, or you can edit it using the CLI and then activate it.

## J-Web Package

As an alternative to entering CLI commands, Junos OS supports the J-Web GUI. The J-Web user interface enables you to monitor, configure, troubleshoot, and manage the router on a client by means of a Web browser with Hypertext Transfer Protocol (HTTP) or HTTP over Secure Sockets Layer (HTTPS) enabled.

The J-Web user interface is preinstalled on J Series Routers. It is provided as an optional, licensed software package (jweb package) on M Series and T Series routers. The jweb package is not included in jinstall and jbundle software bundles. It must be installed separately. To install the package on M Series and T Series routers, follow the procedure described in the *Installation and Upgrade Guide*.

J-Web supports weak (56-bit) encryption by default. This enables international customers to install J-Web and use HTTPS connections for J-Web access. Domestic customers can also install the jcrypto strong encryption package. This package automatically overrides the weak encryption. For more information about the J-Web GUI, see the *J-Web Interface User Guide*.



**NOTE:** Because the J-Web package is bundled separately from other packages, it is possible to have a version mismatch between J-Web and other Junos OS packages you have installed.

To check for a version mismatch, use the `show system alarms` CLI command. If the version number does not match exactly, a system alarm appears. For example, if you install the 7.4R1.2 jroute package and the 7.4R1.1 jweb package, an alarm is activated. For more information on the `show system alarms` command, see the [CLI Explorer](#).

## Junos XML Management Protocol Software

The Junos XML management protocol is an Extensible Markup Language (XML) application that client applications use to request and change configuration information on Juniper Networks J Series, M Series, MX Series, and T Series routers. This API is customized for Junos OS, and operations in the API are equivalent to Junos OS CLI configuration mode commands. The Junos XML management protocol includes a set of Perl modules that enable client applications to communicate with a Junos XML protocol server on the router. The Perl modules are used to develop custom applications for configuring and monitoring Junos OS.

For a complete description of how to use Junos XML and Junos XML management protocol software, see the *Junos XML Management Protocol Developer Guide*.

## NETCONF XML Management Protocol Software

The NETCONF XML management protocol is an Extensible Markup Language (XML) application that client applications can use to request and change configuration information on Juniper Networks J Series, M Series, MX Series, and T Series routers. This API is customized for Junos OS, and includes features that accommodate the configuration data models of multiple vendors. The NETCONF XML management protocol includes a set of Perl modules that enable client applications to communicate with a NETCONF server on the router. The Perl modules are used to develop custom applications for configuring and monitoring Junos OS.

For a complete description of how to use Junos XML and NETCONF XML management protocol software, see the *NETCONF XML Management Protocol Developer Guide*.

## Configuration Commit Scripts

You can create and use scripts that run at commit time to enforce custom configuration rules. If a configuration breaks the custom rules, the script can generate actions that the Junos OS performs. These actions include:

- Generating custom error messages
- Generating custom warning messages
- Generating custom system log messages
- Making changes to the configuration

Configuration commit scripts also enable you to create macros, which expand simplified custom aliases for frequently used configuration statements into standard Junos OS configuration statements. Commit scripts are written in Extensible Stylesheet Language Transformations (XSLT). For more information, see the *Automation Scripting Feature Guide*.

### Related Documentation

- [Configuring Junos OS from External Devices on page 35](#)

## Junos OS Configuration from External Devices

You can configure the router from a system console connected to the router's console port or by using Telnet to access the router remotely. The router provides three ports on the craft interface for connecting external management devices to the Routing Engine and the Junos OS:

- Console port—Connects a system console using an RS-232 serial cable.
- Auxiliary port—Connects a laptop or modem using an RS-232 serial cable.
- Ethernet management port—Connects the Routing Engine to a management LAN (or any other device that plugs into an Ethernet connection) for remote management through a PC or other client device. The Ethernet port is 10/100 megabits per second (Mbps) autosensing and requires an RJ-45 connector.

### Related Documentation

- [Methods for Configuring Junos OS on page 32](#)
- [Configuring Junos OS to Set Console and Auxiliary Port Properties on page 63](#)

## Junos OS Commit Model for Router or Switch Configuration

The router or switch configuration is saved using a commit model—a candidate configuration is modified as desired and then committed to the system. When a configuration is committed, the router or switch checks the configuration for syntax errors, and if no errors are found, the configuration is saved as **juniper.conf.gz** and activated. The formerly active configuration file is saved as the first rollback configuration file (**juniper.conf.1.gz**), and any other rollback configuration files are incremented by 1. For example, **juniper.conf.1.gz** is incremented to **juniper.conf.2.gz**, making it the second rollback configuration file. The router or switch can have a maximum of 49 rollback configurations (numbered 1 through 49) saved on the system.

On the router or switch, the active configuration file and the first three rollback files (**juniper.conf.gz.1**, **juniper.conf.gz.2**, **juniper.conf.gz.3**) are located in the **/config** directory. If the file **rescue.conf.gz** is saved on the system, this file should also be saved in the **/config** directory. The factory default files are located in the **/etc/config** directory.

There are two mechanisms used to propagate the configurations between Routing Engines within a router or switch:

- Synchronization—Propagates a configuration from one Routing Engine to a second Routing Engine within the same router or switch chassis.



**NOTE:** The QFX3500 switch has only one Routing Engine.

To synchronize configurations, use the **commit synchronize** CLI command. If one of the Routing Engines is locked, the synchronization fails. If synchronization fails because of

a locked configuration file, you can use the **commit synchronize force** command. This command overrides the lock and synchronizes the configuration files.

- **Distribution**—Propagates a configuration across the routing plane on a multichassis router or switch. Distribution occurs automatically. There is no user command available to control the distribution process. If a configuration is locked during a distribution of a configuration, the locked configuration does not receive the distributed configuration file, so the synchronization fails. You need to clear the lock before the configuration and resynchronize the routing planes.



**NOTE:** When you use the **commit synchronize force** CLI command on a multichassis platform, the forced synchronization of the configuration files does not affect the distribution of the configuration file across the routing plane. If a configuration file is locked on a router or switch remote from the router or switch where the command was issued, the synchronization fails on the remote router or switch. You need to clear the lock and reissue the synchronization command.

**Related Documentation**

- [Configuring Junos OS for the First Time on a Router or Switch with a Single Routing Engine on page 43](#)
- *commit*

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## Understanding Junos OS Configuration Groups

This topic provides an overview of the configuration groups feature and the inheritance model in Junos OS, and contains the following sections:

- [Configuration Groups Overview on page 36](#)
- [Inheritance Model on page 37](#)
- [Configuring Configuration Groups on page 37](#)

### Configuration Groups Overview

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

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

You can also use wildcards in a configuration group to allow configuration data to be inherited by any object that matches a wildcard expression.

The configuration group mechanism is separate from the grouping mechanisms used elsewhere in the configuration, such as BGP groups. Configuration groups provide a generic mechanism that can be used throughout the configuration but that are known only to the Junos OS CLI. The individual software processes that perform the actions directed by the configuration receive the expanded form of the configuration—they have no knowledge of configuration groups.

## Inheritance Model

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

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

## Configuring Configuration Groups

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

To configure configuration groups and inheritance, you can include the **groups** statement at the **[edit]** hierarchy level:

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

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

### Related Documentation

- *Creating the Junos OS Configuration Group*





## PART 2

# Configuring and Administering Routers

- [Configuring Routers on page 41](#)
- [Monitoring Routers on page 67](#)
- [Managing Junos OS Processes on page 77](#)



## CHAPTER 4

# Configuring Routers

- [Initial Router or Switch Configuration Using Junos OS on page 41](#)
- [Configuring Junos OS for the First Time on a Router or Switch with a Single Routing Engine on page 43](#)
- [Configuring Junos OS for the First Time on a Device with Dual Routing Engines on page 47](#)
- [Junos OS Configuration Using the CLI on page 51](#)
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- [Creating and Activating a Candidate Configuration on page 54](#)
- [Mapping the Name of the Router to IP Addresses on page 54](#)
- [Example: Configuring a Proxy Server for License Updates on page 55](#)
- [Configuring Automatic Mirroring of the CompactFlash Card on the Hard Disk Drive on page 58](#)
- [Using Junos OS to Specify the Number of Configurations Stored on the CompactFlash Card on page 59](#)
- [Using Junos OS to Configure a Router or Switch to Transfer Its Configuration to an Archive Site on page 60](#)
- [Specifying the Physical Location of the Router or Switch on page 62](#)
- [Configuring Junos OS to Set Console and Auxiliary Port Properties on page 63](#)
- [Example: Configuring the Unique Identity of a Router for Making it Accessible on the Network on page 64](#)

### Initial Router or Switch Configuration Using Junos OS

---

This topic provides an overview of initial router or switch configuration tasks using Junos OS.

When you turn on a router or switch for the first time, Junos OS automatically boots and starts. You must enter basic configuration information so that the router or switch is on the network and you can log in to it over the network.

To configure the router or switch initially, you must connect a terminal or laptop computer to the router or switch through the console port—a serial port on the front of the router or switch. Only console access to the router or switch is enabled by default. Remote management access to the router or switch and all management access protocols, including Telnet, FTP, and SSH, are disabled by default.

When you first connect to the router or switch console, you must log in as the user **root**. At first, the root account requires no password. You see that you are the user **root**, because the command prompt shows the username **root@#**.

You must start the Junos OS command-line interface (CLI) using the command **cli**. The command prompt **root@>** indicates that you are the user **root** and that you are in Junos OS operational mode. Enter Junos OS configuration mode by typing the command **configure**. The command prompt **root@#** indicates that you are in the Junos OS configuration mode.

When you first configure a router or switch, you must configure the following basic properties:

- Router or switch hostname
- Domain name
- IP address of the router or switch management Ethernet interface. To find the management Ethernet interface that you should use for configuration, see *Supported Routing Engines by Router*.
- IP address of a backup router
- IP address of one or more DNS name servers on your network
- Password for the root account

**Related  
Documentation**

- [Configuring Junos OS for the First Time on a Router or Switch with a Single Routing Engine on page 43](#)
- [Configuring Junos OS for the First Time on a Device with Dual Routing Engines on page 47](#)
- *Supported Routing Engines by Router*
- [Junos OS Configuration Using the CLI on page 51](#)

## Configuring Junos OS for the First Time on a Router or Switch with a Single Routing Engine

When you power on a router the first time, Junos OS automatically boots and starts. You must enter basic configuration information so that the router is on the network and you can log in to it over the network.

To configure the router initially, you must connect a terminal or laptop computer to the router through the console port—a serial port on the front of the router. Only console access to the router is enabled by default. Remote management access to the router and all management access protocols, including Telnet, FTP, and SSH, are disabled by default.

To configure the Junos OS for the first time on a router with a single Routing Engine, follow these steps:

1. Connect a terminal or laptop computer to the router through the console port—a serial port on the front of the router. Only console access to the router is enabled by default.
2. Power on the router and wait for it to boot.

The Junos OS boots automatically. The boot process is complete when you see the **login:** prompt on the console.

3. Log in as the user **root**.

Initially, the **root** user account requires no password. You can see that you are the **root** user, because the prompt on the router shows the username **root@#**.

4. Start the Junos OS command-line interface (CLI):

```
root@# cli
root@>
```

5. Enter Junos OS configuration mode:

```
cli> configure
[edit]
root@#
```

6. Configure the name of the router (the router hostname). We do not recommend spaces in the router name. However, if the name does include spaces, enclose the entire name in quotation marks (" ").

```
[edit]
root@# set system host-name hostname
```

7. Configure the router's domain name:

```
[edit]
root@# set system domain-name domain-name
```



**NOTE:** Before you begin Step 8, see *Supported Routing Engines by Router* to find the management Ethernet interface that you should use to perform this configuration.

8. Configure the IP address and prefix length for the router management Ethernet interface. The management Ethernet interface provides a separate out-of-band management network for the router.

- For devices that use management Ethernet interface fxp0:

```
[edit]
root@# set interfaces fxp0 unit 0 family inet address address/prefix-length
```

- For devices that use management Ethernet interface em0:

```
[edit]
root@# set interfaces em0 unit 0 family inet address address/prefix-length
```

To use em0 as an out-of-band management Ethernet interface, you must configure its logical port, em0.0, with a valid IP address.

9. Configure the IP address of a backup or default router. This device is called the backup router, because it is used only while the routing protocol process is not running. Choose a router that is directly connected to the local router by way of the management interface. The router uses this backup router only when it is booting and only when the Junos routing software (the routing protocol process, rpd) is not running.

For routers with two Routing Engines, the backup Routing Engine, **RE1**, uses the backup router as a default gateway after the router boots. This enables you to access the backup Routing Engine. (**RE0** is the default master Routing Engine.)



**NOTE:** The backup router Routing Engine does not support more than 16 destinations. If you configure more than 16 destinations on the backup Routing Engine, the Junos OS ignores any destination addresses after the sixteenth address and displays a commit-time warning message to this effect.

```
[edit]
root@# set system backup-router address
```

10. Configure the IP address of a DNS server. The router uses the DNS name server to translate hostnames into IP addresses.

```
[edit]
root@# set system name-server address
```

11. Set the root password, entering either a clear-text password that the system will encrypt, a password that is already encrypted, or an SSH public key string.

Choose one of the following:

- a. To enter a clear-text password, use the following command:

```
[edit]
root@# set system root-authentication plain-text-password
New password: type password
Retype new password: retype password
```

- b. To enter a password that is already encrypted, use the following command:

```
[edit]
```

```
root@# set system root-authentication encrypted-password encrypted-password
```

- c. To enter an SSH public key, use the following command:

```
[edit]
root@# set system root-authentication ssh-rsa key
```

12. Optionally, display the configuration statements:

```
[edit]
root@ show
system {
  host-name hostname;
  domain-name domain.name;
  backup-router address;
  root-authentication {
    (encrypted-password "password" | public-key);
    ssh-dsa "public-key";
    ssh-ecdsa "public-key";
    ssh-rsa "public-key";
  }
  name-server {
    address;
  }
  interfaces {
    fxp0 {
      unit 0 {
        family inet {
          address address;
        }
      }
    }
  }
}
```

On routers that use management Ethernet interface em0, you will see em0 in place of fxp0 in the **show** command output.

13. Commit the configuration, which activates the configuration on the router:

```
[edit]
root@# commit
```

After committing the configuration, you see the newly configured hostname appear after the username in the prompt—for example, **user@host#**.

The defaults for Junos OS are now set on the router.

If you want to configure additional Junos OS properties at this time, remain in the CLI configuration mode and add the necessary configuration statements. You need to commit your configuration changes to activate them on the router.

14. Exit from the CLI configuration mode.

```
[edit]
root@hostname# exit
root@hostname>
```

15. Back up the configuration on the hard drive.

After you have installed the software on the router, committed the configuration, and are satisfied that the new configuration is successfully running, you should issue the **request system snapshot** command to back up the new software to the **/altconfig** file system. If you do not issue the **request system snapshot** command, the configuration on the alternate boot device will be out of sync with the configuration on the primary boot device.

The **request system snapshot** command causes the root file system to be backed up to **/altroot**, and **/config** to be backed up to **/altconfig**. The root and **/config** file systems are on the router's CompactFlash card, and the **/altroot** and **/altconfig** file systems are on the router's hard disk.



**NOTE:** After you issue the **request system snapshot** command, you cannot return to the previous version of the software, because the running copy and the backup copy of the software are identical.

#### Related Documentation

- [Initial Router or Switch Configuration Using Junos OS on page 41](#)
- [Supported Routing Engines by Router](#)
- [Format for Specifying IP Addresses, Network Masks, and Prefixes in Junos OS Configuration Statements on page 52](#)
- [Default Directories for Junos OS File Storage on the Router or Switch on page 17](#)
- [Configuring Automatic Mirroring of the CompactFlash Card on the Hard Disk Drive on page 58](#)



## Configuring Junos OS for the First Time on a Device with Dual Routing Engines

If a router has dual Routing Engines, you can create configuration groups and use the same configuration for both Routing Engines. This ensures that the configuration will not change during a failover scenario because of the identical configuration shared between the Routing Engines.

Configure the hostnames and addresses of the two Routing Engines using configuration groups at the **[edit groups]** hierarchy level. Use the reserved configuration group **re0** for the Routing Engine in slot 0 and **re1** for the Routing Engine in slot 1 to define Routing Engine-specific parameters. Configuring **re0** and **re1** groups enables both Routing Engines to use the same configuration file.

Use the **apply-groups** statement to reproduce the configuration group information in the main part of the configuration.

The **commit synchronize** command commits the same configuration on both Routing Engines. The command makes the active or applied configuration the same for both Routing Engines with the exception of the groups, **re0** being applied to only **RE0** and **re1** being applied only to **RE1**. If you do not synchronize the configurations between two Routing Engines and one of them fails, the router may not forward traffic correctly, because the backup Routing Engine may have a different configuration.

To initially configure a router with dual Routing Engines, follow these steps:

1. Go to [“Configuring Junos OS for the First Time on a Router or Switch with a Single Routing Engine” on page 43](#) and follow Step 1 through Step 5 to initially configure the backup Routing Engine.
2. Create the configuration group **re0**. The **re0** group is a special group designator that is only used by **RE0** in a redundant routing platform.

```
[edit]
root@host# set groups re0
```

3. Navigate to the **groups re0** level of the configuration hierarchy.

```
[edit]
root@host# edit groups re0
```

4. Specify the router hostname.

```
[edit groups re0]
root@host# set system host-name host-name
```



**NOTE:** The hostname specified in the router configuration is not used by the DNS server to resolve to the correct IP address. This hostname is used to display the name of the Routing Engine in the CLI. For example, the hostname appears at the command-line prompt when the user is logged in to the CLI:

```
user-name@host-name>
```



**NOTE:** Before you begin Step 5, see *Supported Routing Engines by Router* to find the management Ethernet interface that you should use to perform this configuration.

5. Configure the IP address and prefix length for the router management Ethernet interface. The management Ethernet interface provides a separate out-of-band management network for the router.

- For routers that use management Ethernet interface fxp0:

```
[edit groups]
root@host# set interfaces fxp0 unit 0 family inet address address/prefix-length
```

- For routers that use management Ethernet interface em0:

```
[edit groups]
root@host# set interfaces em0 unit 0 family inet address address/prefix-length
```

To use em0 as an out-of-band management Ethernet interface, you must configure its logical port, em0.0, with a valid IP address.

6. Set the loopback interface address for the **re0** configuration group:

```
[edit groups]
root@host# set re0 interfaces lo0 unit 0 family inet address address/prefix-length
```

7. Return to the top level of the hierarchy.

```
[edit groups re0]
root@host# top
```

8. Create the configuration group **re1**.

```
[edit]
root@host# set groups re1
```

9. Navigate to the **groups re1** level of the configuration hierarchy.

```
[edit]
root@host# edit groups re1
```

10. Specify the router hostname.

```
[edit groups re1]
root@host# set system host-name host-name
```



**NOTE:** Before you begin Step 11, see *Supported Routing Engines by Router* to find the management Ethernet interface that you should use to perform this configuration.

11. Configure the IP address and prefix length for the router management Ethernet interface.

- For routers that use management Ethernet interface fxp0:

```
[edit groups]
root@host# set interfaces fxp0 unit 0 family inet address address/prefix-length
```

- For routers that use management Ethernet interface em0:

```
[edit groups]
root@host# set interfaces em0 unit 0 family inet address address/prefix-length
```

To use em0 as an out-of-band management Ethernet interface, you must configure its logical port, em0.0, with a valid IP address.

12. Set the loopback interface address for **re1** configuration group:

```
[edit groups]
root@host# set re1 interfaces lo0 unit 0 family inet address address/prefix-length
```

13. Return to the top level of the hierarchy.

```
[edit groups re0]
root@host# top
```

14. Configure the **apply-groups** statement to reproduce the configuration group information to the main part of the configuration and to specify the group application order.

```
[edit]
root@host# set apply-groups [ re0 re1 ]
```

15. Configure Routing Engine redundancy:

```
[edit]
root@host# set chassis redundancy routing-engine 0 master
root@host# set chassis redundancy routing-engine 1 backup
```

16. Save the configuration change on both Routing Engines:

```
[edit]
user@host> commit synchronize
```

After the configuration changes are saved, complete the management console configuration.

1. Configure the IP address of the DNS server.

```
[edit ]
root@host# set system name-server address
```

2. Configure the router domain name:

```
[edit ]
root@host# set system domain-name domain-name
```

3. Configure the IP address of a backup or default router. A backup router is used only while the routing protocol process is not running. Choose a router that is directly connected to the local router by way of the management interface. The router uses this backup router only when it is booting and or when the Junos routing software (the routing protocol process, rpd) is not running. For more information, see *Configuring a Backup Router*.

For routers with two Routing Engines, the backup Routing Engine, **RE1**, uses the backup router as a default gateway after the router boots. This enables you to access the backup Routing Engine. (**RE0** is the default master Routing Engine.)



**NOTE:** The backup router Routing Engine does not support more than 16 destinations. If you configure more than 16 destinations on the backup Routing Engine, the Junos OS ignores any destination addresses after the sixteenth address and displays a commit-time warning message to this effect.

```
[edit]
root@host# set system backup-router address
```

4. Set the root password by choosing one of the following:

- a. To enter a clear-text password, use the following command:

```
[edit]
root@host# set system root-authentication plain-text-password
New password: type password
Retype new password: retry password
```

- b. To enter a password that is already encrypted, use the following command:

```
[edit]
root@host# set system root-authentication encrypted-password
encrypted-password
```

- c. To enter an SSH public key, use the following command:

```
[edit]
root@host# set system root-authentication ssh-rsa key
```

5. Optionally, display the configuration statements:

```
[edit]
root@ show
system {
  host-name hostname;
  domain-name domain.name;
  backup-router address;
  root-authentication {
    (encrypted-password "password" | public-key);
    ssh-dsa "public-key";
    ssh-ecdsa "public-key";
    ssh-rsa "public-key";
  }
  name-server {
    address;
  }
  interfaces {
    fxp0 {
      unit 0 {
        family inet {
          address address ;
        }
      }
    }
  }
}
```

On routers that use management Ethernet interface em0, you will see em0 in place of fxp0 in the **show** command output.

6. After you have installed the new software and are satisfied that it is successfully running, issue the **request system snapshot** command to back up the new software on both master and backup Routing Engines.

```
{master}
user@host> request system snapshot
```

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 CompactFlash card, and the **/altroot** and **/altconfig** file systems are on the router's hard disk.



**NOTE:** After you issue the **request system snapshot** command, you cannot return to the previous version of the software, because the running copy and backup copy of the software are identical.

For information about creating configuration groups, see *CLI User Guide*.

For information about configuring high availability features for redundant Routing Engine systems and the **re0** group, see *Junos OS High Availability Library for Routing Devices*.

#### Related Documentation

- [Configuring Junos OS for the First Time on a Router or Switch with a Single Routing Engine on page 43](#)
- [Supported Routing Engines by Router](#)
- [Initial Router or Switch Configuration Using Junos OS on page 41](#)
- [Format for Specifying IP Addresses, Network Masks, and Prefixes in Junos OS Configuration Statements on page 52](#)
- [Default Directories for Junos OS File Storage on the Router or Switch on page 17](#)
- [Configuring Automatic Mirroring of the CompactFlash Card on the Hard Disk Drive on page 58](#)

## Junos OS Configuration Using the CLI

You configure the Junos OS using the Junos OS command-line interface (CLI). The CLI is described in detail in the *CLI User Guide*.

After completing the initial minimal configuration, you can configure software properties. If you configure the software interactively using the CLI, you enter software configuration statements to create a candidate configuration that contains a hierarchy of statements. At any hierarchy level, you generally can enter statements in any order. While you are configuring the software, you can display all or portions of the candidate configuration, and you can insert or delete statements. Any changes you make affect only the candidate configuration, not the active configuration that is running on the router.

The configuration hierarchy logically groups related functions, which results in configuration statements that have a consistent syntax. For example, you configure routing protocols, routing policies, interfaces, and SNMP management in their own separate portions of the configuration hierarchy.

At each level of the hierarchy, you can display a list of the statements available at that level, along with short descriptions of the statements' functions. To have the CLI complete the statement name if it is unambiguous or to provide a list of possible completions, you can type a partial statement name followed by a space or tab.

More than one user can edit a router's configuration simultaneously. All changes made by all users are visible to everyone editing the configuration.

- Related Documentation**
- [Disk Space Management for Junos OS Installation](#)
  - [Creating and Activating a Candidate Configuration on page 54](#)

---

## Format for Specifying IP Addresses, Network Masks, and Prefixes in Junos OS Configuration Statements

---

Many statements in the Junos OS configuration include an option to specify an IP address or route prefix. This option is represented in one of the following ways:

- **network/prefix-length**—Network portion of the IP address, followed by a slash and the destination prefix length (previously called the subnet mask). For example, 10.0.0.1/8.
- **network**—IP address. For example, 10.0.0.2.
- **destination-prefix/prefix-length**—Route prefix, followed by a slash and the destination prefix length. For example, 192.168.1.10/32.

You enter all IP addresses in classless mode. You can enter the IP address with or without a prefix length, in standard dotted notation (for example, 1.2.3.4), or hexadecimal notation as a 32-bit number in network-byte order (for example, 0x01020304). If you omit any octets, they are assumed to be zero. Specify the prefix length as a decimal number from 1 through 32.

- Related Documentation**
- [Format for Specifying Filenames and URLs in Junos OS CLI Commands on page 52](#)

---

## Format for Specifying Filenames and URLs in Junos OS CLI Commands

---

In some CLI commands and configuration statements—including **file copy**, **file archive**, **load**, **save**, **set system login user *username* authentication load-key-file**, and **request system software add**—you can include a filename. On a routing matrix, you can include chassis information (for example, **lcc0**, **lcc0-re0**, or **lcc0-re1**) as part of the filename.

A *routing matrix* is a multichassis architecture composed of either one TX Matrix router and from one to four T640 routers connected to the TX Matrix router, or one TX Matrix Plus router and from one to four T1600 routers connected to the TX Matrix Plus router. From the perspective of the user interface, the routing matrix appears as a single router.

On a routing matrix composed of the TX Matrix router and T640 routers, the TX Matrix router controls all the T640 routers. On a routing matrix composed of a TX Matrix Plus router and T1600 routers, the TX Matrix Plus router controls all the T1600 routers.



**WARNING:** Starting with Junos OS Release 15.1, the `ssl3-support` option is not available for configuration with the `set system services xnm-ssl` and `file copy` commands. SSLv3 is no longer supported and available.

For all releases prior to and including Junos OS Release 14.2, SSLv3 is disabled by default at runtime. The `ssl3-support` option is hidden and deprecated in Junos OS Release 14.2 and earlier releases. However, you can use the `set system services xnm-ssl ssl3-support` command to enable SSLv3 for a Junos XML protocol client application to use as the protocol to connect to the Junos XML protocol server on a router, and you can use the `file copy source destination ssl3-support` command to enable the copying of files from an SSLv3 URL.

Using SSLv3 presents a potential security vulnerability, and we recommend that you not use SSLv3. For more details about this security vulnerability, go to <http://kb.juniper.net/InfoCenter/index?page=content&id=JSA10656>.

You can specify a filename or URL in one of the following ways:



**NOTE:** You cannot specify a HTTP(s) URL for a file as a destination, because HTTP(s) URLs are not writable.

- **filename**—File in the user's current directory on the local CompactFlash card (not applicable on the QFX Series). You can use wildcards to specify multiple source files or a single destination file. Wildcards are not supported in FTP.



**NOTE:** Wildcards are supported only by the `file (compare | copy | delete | list | rename | show)` commands. When you issue the `file show` command with a wildcard, it must resolve to one filename.

- **path/filename**—File on the local flash disk.
- **/var/filename** or **/var/path/filename**—File on the local hard disk. You can also specify a file on a local Routing Engine for a specific T640 router or a T1600 router in a routing matrix:  

```
user@host> file delete lcc0-re0:/var/tmp/junk
```
- **a:filename** or **a:path/filename**—File on the local removable media. The default path is `/` (the root-level directory). The removable media can be in MS-DOS or UNIX (UFS) format.
- **hostname:/path/filename**, **hostname:filename**, **hostname:path/filename**, or **"scp://hostname/path/filename"**—File on an `scp/ssh` server. This form is not available

in the worldwide version of Junos OS. The default path is the user's home directory on the remote system. You can also specify *hostname* as *username@hostname*.

- **ftp://hostname/path/filename**—File on an FTP server. You can also specify *hostname* as *username@hostname* or *username:password@hostname*. The default path is the user's home directory. To specify an absolute path, the path must start with **%2F**; for example, **ftp://hostname/%2Fpath/filename**. 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:

```
user@host> file copy ftp://username@ftp.hostname.net/filename
file copy ftp.hostname.net: Not logged in.

user@host> file copy ftp://username:prompt@ftp.hostname.net/filename
Password for username@ftp.hostname.net:
```

- **re0:/path/filename** or **re1:/path/filename**—File on a local Routing Engine. You can also specify a file on a local Routing Engine for a specific T640 router or a T1600 router in a routing matrix:

```
user@host> show log lcc0-re1:chassisd
```



**NOTE:** You cannot specify a URL for a file on an HTTP server, because HTTP URLs are not writable.

**Related  
Documentation**

- [Format for Specifying IP Addresses, Network Masks, and Prefixes in Junos OS Configuration Statements on page 52](#)
- [Default Directories for Junos OS File Storage on the Router or Switch on page 17](#)

---

## Creating and Activating a Candidate Configuration

You enter software configuration statements using the CLI to create a candidate configuration that contains a hierarchy of statements. To have a candidate configuration take effect, you commit the changes. At this point, the candidate file is checked for proper syntax, activated, and marked as the current, operational software configuration file. If multiple users are editing the configuration, when you commit the candidate configuration, all changes made by all the users take effect.

The CLI always maintains a copy of previously committed versions of the software configuration. If you need to return to a previous configuration, you can do this from within the CLI.

**Related  
Documentation**

- [Junos OS Commit Model for Router or Switch Configuration on page 35](#)

---

## Mapping the Name of the Router to IP Addresses

Whereas using the Domain Name System (DNS) is an easier and more scalable way to resolve IP addresses from hostnames, you might want to manually map the hostname to a static IP address for the following reasons:



- You might not have a DNS entry for the router.
- You might not want the computer to contact the DNS server to resolve a particular IP address—you might use this particular IP address a lot, or it might be just for testing or development purposes.

To map a router's hostname to one or more IP addresses:

1. Include the `inet` statement at the `[edit system static-host-mapping hostname]` hierarchy level.

```
user@host# set system static-host-mapping hostname inet [ ip-addresses ]
```

2. Verify the configuration with the `show` command.

```
[edit system]
user@host# show
static-host-mapping {
  hostname {
    inet [ ip-addresses ];
  }
}
```

#### Related Documentation

- [Example: Configuring the Unique Identity of a Router for Making it Accessible on the Network on page 64](#)
- [Reaching a Domain Name System Server](#)

## Example: Configuring a Proxy Server for License Updates

This example shows how to configure a proxy server to download Juniper Networks license updates.

- [Requirements on page 55](#)
- [Overview on page 55](#)
- [Configuration on page 56](#)
- [Verification on page 57](#)

### Requirements

This example uses the following hardware and software components:

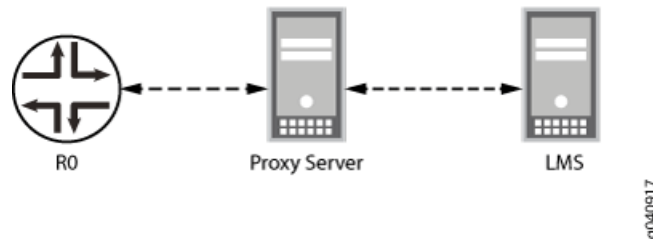
- An M Series, MX Series, PTX Series, or SRX Series device
- Junos OS Release 11.4 running on the device

### Overview

In Junos OS Release 11.4 and later, you can download Juniper Networks license updates using a proxy server. This feature is supported on M Series and SRX Series devices. In earlier releases, downloading license updates was only possible by directly connecting to the [Juniper Networks License Management System](#).

In an enterprise, there might be devices in a private network that might be restricted from connecting to the Internet directly for security reasons. In such scenarios, you can configure a proxy server in the private network to connect to the LMS and download the license updates, and have the routers or devices in the private network connect to the proxy server to download the licenses or license updates. In [Figure 2 on page 56](#), R0 is the router in the private network. Proxy Server represents the proxy server, and LMS represents the Juniper Networks License Management System.

Figure 2: Proxy Server Example



To enable this feature, you configure the device with details of the proxy server at the **[edit system proxy]** hierarchy level.

## Configuration

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

**Router R0**

```

set system proxy server 192.168.1.10
set system proxy port 3128
set system proxy username user1
set system proxy password user123
set system license traceoptions file license.log
set system license traceoptions flag all
  
```

**Step-by-Step Procedure** The following example requires you to navigate various levels in the configuration hierarchy. For information about navigating the CLI, see the *CLI User Guide*.

To configure the proxy server properties on the device:

1. Configure the proxy server IP address or hostname.
 

```

[edit system proxy]
user@hostR0# set server 192.168.1.10
      
```
2. Configure a port number (ranging from 0 through 65535) used to connect to the proxy server.
 

```

[edit system proxy]
user@hostR0# set port 3128
      
```
3. Configure the password as configured on the proxy server.
 

```

[edit system proxy]
user@R0# set password user123
      
```

4. Configure the username as configured on the proxy server.

```
[edit system proxy]
user@R0# set username user1
```

5. Configure trace options for licenses.

```
[edit system license]
user@R0# set traceoptions file license.log
user@R0# set traceoptions flag all
```

**Results** From configuration mode, confirm your configuration by entering the **show system** command. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```
user@R0# show system
proxy {
  server 192.168.1.10;
  port 3128;
  username user1;
  password "$ABC123"; ## SECRET-DATA
}
license {
  traceoptions {
    file license.log;
    flag all;
  }
}
```

If you are done configuring the router, enter **commit** from configuration mode.

## Verification

Confirm that the configuration is working properly.

### Verifying That the License Is Downloaded

**Purpose** Verify that the license is downloaded using the proxy server.

- Action**
1. Delete the existing license using the **request system license delete license-filename** command.
  2. Download the license using the **request system license update** command.

```
user@R0> request system license update
Request to automatically update license keys from https://devicex.example.com
has been sent, use 'show system license' to check status.
```

3. Verify the license using the **show system license** command.

```
user@R0> show system license
License usage:
```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
av_key_kaspersky_engine	0	1	0	
2011-11-17 16:00:00 PST				
idp-sig	1	1	0	

```

2011-11-17 16:00:00 PST
ax411-wlan-ap                                0          2          0    permanent

```

```

Licenses installed:
License identifier: JUNOS282725
License version: 2
Valid for device: AG2909AA0014
Features:
  av_key_kaspersky_engine - Kaspersky AV
  date-based, 2010-11-21 16:00:00 PST - 2011-11-17 16:00:00 PST

```

4. Check the system log file to verify that the license is downloaded using the proxy server.

```

user@R0> show /var/log/license.log
Nov 18 08:14:14 Received SIGHUP signal
Nov 18 08:14:17 GRES not enabled.
Nov 18 08:14:17 License download proxy server configured.
Nov 18 08:14:17 License download proxy server: 192.168.1.10
Nov 18 08:14:17 License download proxy server port: 3128
Nov 18 08:14:17 License download proxy user name: user1
Nov 18 08:14:17 License download proxy user password: xxx
Nov 18 08:14:18 Access configuration autoupdate url: devicex.example.com
Nov 18 08:14:18 Access configuration renew-before-expiration: 60 days
Nov 18 08:14:18 Access configuration renew-interval: 1 hours
Nov 18 08:16:53 Received SIGUSR1 signal, license download start...
Nov 18 08:16:58 env HTTP_PROXY=http://192.168.1.10/
Nov 18 08:16:58 env HTTP_PROXY_AUTH="basic*:abc:xxx"
HTTP_PROXY_AUTH="basic*:user:<password>" /usr/sbin/license_fetch -o
/tmp/license.keys.1053
'https://devicex.example.com/junos/key_retrieval?serial=AG2909AA0014=11.4I'
2> /tmp/license.status.1053
Nov 18 08:17:03 /tmp/license.keys.1053                                505 kB
505 kBps

```

- Related Documentation
- [password \(Proxy Systems\) on page 126](#)
  - [port on page 129](#)
  - [proxy on page 133](#)
  - [server on page 140](#)
  - [username on page 147](#)

## Configuring Automatic Mirroring of the CompactFlash Card on the Hard Disk Drive

You can direct the hard disk to automatically mirror the contents of the CompactFlash card. When you include the **mirror-flash-on-disk** statement, the hard disk maintains a synchronized mirror copy of the CompactFlash card contents. Data written to the CompactFlash card is simultaneously updated in the mirrored copy of the hard disk. If the CompactFlash card fails to read data, the hard disk automatically retrieves its mirrored copy of the CompactFlash card.



**CAUTION:** We recommend that you disable flash-to-disk mirroring when you upgrade or downgrade the router.

You cannot issue the `request system snapshot` command while flash-to-disk mirroring is enabled.

To configure the mirroring of the CompactFlash card to the hard disk, include the `mirror-flash-on-disk` statement at the `[edit system]` hierarchy level:

```
[edit system]
mirror-flash-on-disk;
```



**NOTE:** After you have enabled or disabled the `mirror-flash-on-disk` statement, you must reboot the router for your changes to take effect. To reboot, issue the `request system reboot` command.

#### Related Documentation

- [Using Junos OS to Specify the Number of Configurations Stored on the CompactFlash Card on page 59](#)
- [Configuring Junos OS for the First Time on a Router or Switch with a Single Routing Engine on page 43](#)

## Using Junos OS to Specify the Number of Configurations Stored on the CompactFlash Card

By default, Junos OS saves the current configuration and three previous versions of the committed configuration on the CompactFlash card. The currently operational Junos OS configuration is stored in the file `juniper.conf.gz`, and the last three committed configurations are stored in the files `juniper.conf.1.gz`, `juniper.conf.2.gz`, and `juniper.conf.3.gz`. These four files are located in the CompactFlash card in the directory `/config`.

In addition to saving the current configuration and the current operational version, you can also specify how many previous versions of the committed configurations you want stored on the CompactFlash card in the directory `/config`. The remaining previous versions of committed configurations are stored in the directory `/var/db/config` on the hard disk. This is useful when you have very large configurations that might not fit on the CompactFlash card.

To specify how many previous versions of the committed configurations you want stored on the CompactFlash card, include the `max-configurations-on-flash` statement at the `[edit system]` hierarchy level:

```
[edit system]
max-configurations-on-flash number;
```

*number* is a value from 0 through 49.

- Related Documentation**
- [Configuring Automatic Mirroring of the CompactFlash Card on the Hard Disk Drive on page 58](#)

## Using Junos OS to Configure a Router or Switch to Transfer Its Configuration to an Archive Site

---

You can configure a router or switch to transfer its configuration to an archive file periodically. The following tasks describe how to transfer the configuration to an archive site:

1. [Configuring the Transfer of the Currently Active Configuration to an Archive Site on page 60](#)
2. [Configuring the Periodic Transfer of the Active Configuration to an Archive Site on page 60](#)
3. [Configuring the Transfer of the Currently Active Configuration When a Configuration Is Committed on page 61](#)
4. [Configuring Archive Sites for the Transfer of Active Configuration Files on page 61](#)

### Configuring the Transfer of the Currently Active Configuration to an Archive Site

If you want to back up your device's current configuration to an archive site, you can configure the router or switch to transfer its currently active configuration by FTP or secure copy (SCP) periodically or after each commit.

To configure the router or switch to transfer its currently active configuration to an archive site, include statements at the **[edit system archival configuration]** hierarchy level:

```
[edit system archival configuration]
archive-sites {
  ftp://username<:password>@host-address<:port>/url-path;
  scp://username<:password>@host-address<:port>/url-path;
}
transfer-interval interval;
transfer-on-commit;
```



**NOTE:** When specifying a URL in a Junos OS statement using an IPv6 host address, you must enclose the entire URL in quotation marks (") and enclose the IPv6 host address in brackets ([ ]). For example,  
"ftp://username<:password>@[ipv6-host-address]<:port>/url-path"

### Configuring the Periodic Transfer of the Active Configuration to an Archive Site

To configure the router or switch to periodically transfer its currently active configuration to an archive site, include the **transfer-interval** statement at the **[edit system archival configuration]** hierarchy level:

```
[edit system archival configuration]
transfer-interval interval;
```

The *interval* is a period of time ranging from 15 through 2880 minutes.

## Configuring the Transfer of the Currently Active Configuration When a Configuration Is Committed

To configure the router or switch to transfer its currently active configuration to an archive site each time you commit a candidate configuration, include the **transfer-on-commit** statement at the **[edit system archival configuration]** hierarchy level:

```
[edit system archival configuration]
transfer-on-commit;
```



**NOTE:** When specifying a URL in a Junos OS statement using an IPv6 host address, you must enclose the entire URL in quotation marks ("" ) and enclose the IPv6 host address in brackets ( [ ] ). For example,  
 “scp://username<:password>@[ipv6-host-address]<:port>/url-path”

## Configuring Archive Sites for the Transfer of Active Configuration Files

When you configure the router or switch to transfer its configuration files, you specify an archive site to which the files are transferred. If you specify more than one archive site, the router or switch attempts to transfer files to the first archive site in the list, moving to the next site only if the transfer fails.

When you use the **archive-sites** statement, you can specify a destination as an FTP URL, or SCP-style remote file specification. The URL type **file://** is also supported.

To configure the archive site, include the **archive-sites** statement at the **[edit system archival configuration]** hierarchy level:

```
[edit system archival configuration]
archive-sites {
  ftp://username@host:<port>url-path password password;
  scp://username@host:<port>url-path password password;
  file://<path>/<filename>;
}
```



**NOTE:** When specifying a URL in a Junos OS statement using an IPv6 host address, you must enclose the entire URL in quotation marks ("" ) and enclose the IPv6 host address in brackets ( [ ] ). For example,  
 “scp://username<:password>@[ipv6-host-address]<:port>/url-path”

When you specify the archive site, do not add a forward slash (/) to the end of the URL.

The destination filename is saved in the following format, where *n* corresponds to the number of the compressed configuration rollback file that has been archived:

```
<router-name>_YYYYMMDD_HHMMSS_juniper.conf.n.gz
```



**NOTE:** The time included in the destination filename is always in Coordinated Universal Time (UTC) regardless of whether the time on the router is configured as UTC or the local time zone. The default time zone on the router or switch is UTC.

## Specifying the Physical Location of the Router or Switch

To specify the physical location of the router or switch, you can configure the following options for the **location** statement at the **[edit system]** hierarchy level:

- **altitude *feet***—Number of feet above sea level.
- **building *name***—Name of the building, 1 to 28 characters in length. If the string contains spaces, enclose it in quotation marks (" ").
- **country-code *code***—Two-letter country code.
- **floor *number***—Floor in the building.
- **hcoord *horizontal-coordinate***—Bellcore Horizontal Coordinate.
- **lata *transport-area***—Local Access Transport Area.
- **latitude *degrees***—Latitude in degree format.
- **longitude *degrees***—Longitude in degree format.
- **npa-nxx *number***—First six digits of the phone number (area code and exchange).
- **postal-code *postal-code***—Postal code.
- **rack *number***—Rack number.
- **vcoord *vertical-coordinate***—Bellcore Vertical Coordinate.

The following example shows how to specify the physical location of the router or switch:

```
[edit system]
location {
  altitude feet;
  building name;
  country-code code;
  floor number;
  hcoord horizontal-coordinate;
  lata transport--area;
  latitude degrees;
  longitude degrees;
  npa-nxx number;
  postal-code postal-code;
  rack number;
  vcoord vertical-coordinate;
}
```

### Related Documentation

- *Getting Started Guide for Routing Devices*



## Configuring Junos OS to Set Console and Auxiliary Port Properties

Each router or switch has a console port and an auxiliary port for connecting terminals to the router or switch. The console port is enabled by default, and its speed is 9600 baud. The auxiliary port is disabled by default.

To configure the properties for the console and auxiliary ports, include the **ports** statement at the **[edit system]** hierarchy level:

```
[edit system]
ports {
  auxiliary {
    disable;
    insecure;
    type terminal-type;
  }
  console {
    authentication-order;
    disable;
    insecure;
    log-out-on-disconnect;
    type terminal-type;
  }
}
```

By default, the terminal type is unknown, and the terminal speed is 9600 baud for both the console and auxiliary ports. To change the terminal type, include the **type** statement, specifying a **terminal-type** of **ansi**, **vt100**, **small-xterm**, or **xterm**. The first three terminal types set a screen size of 80 columns by 24 lines. The last type, **xterm**, sets the size to 80 columns by 65 rows.

By default, the console session is not logged out when the data carrier is lost on the console modem control lines. To log out the session when the data carrier on the console port is lost, include the **log-out-on-disconnect** statement. You can use the **show system users** command to verify the console session is logged out.



**NOTE:** The **log-out-on-disconnect** statement is not operational on MX80 routers. On MX80 routers you must manually log out from the console with the **request system logout u0** command.

By default, terminal connections to the console and auxiliary ports are secure. When you configure the console as insecure, root logins are not allowed to establish terminal connections. In addition, superusers and anyone with a user identifier (UID) of 0 are not allowed to establish terminal connections in multiuser mode when you configure the console as insecure. To disable root login connections to the console and auxiliary ports, include the **insecure** statement. This option can be used to prevent a user from attempting password recovery by booting into single-user mode, if the user does not know the root password.

To disable console login, include the **disable** statement. By default, console login is enabled.

For Common Criteria compliance, the console port must be disabled.

**Related  
Documentation**

- [Methods for Configuring Junos OS on page 32](#)
- *console*
- [ports on page 130](#)

---

## Example: Configuring the Unique Identity of a Router for Making it Accessible on the Network

---

To use a router in a network, you must configure the router's identity. Configuring a router's identity makes the router accessible on the network and so that other users can log in to it. You can refer to any Internet-connected machine in either of two ways:

- By its IP address
- By its hostname

Once you have a hostname, you can find the IP address, you can use the Domain Name System (DNS) to resolve an IP address from a hostname, or you can manually map the hostname to a static IP address. Although using the DNS is an easier and more scalable way to resolve IP addresses from hostnames, you might not have a DNS entry for the router, or you might not want the computer to contact the DNS server to resolve a particular IP address (perhaps you use this particular IP address a lot, or you might be using it only for testing or development purposes and do not want to give it a DNS entry).

To configure a router's unique identity, you might need to include all or part of the following: the hostname of the router, its IP address, the domain name, two or three name servers, mapping of the hostname to the IP address.

- [Requirements on page 64](#)
- [Overview on page 64](#)
- [Configuration on page 65](#)
- [Verification on page 66](#)

### Requirements

No special configuration beyond device initialization is required before configuring this example.

### Overview

A hostname is the router's name. It is easier for most people to remember a hostname than an IP address. Junos OS uses the configured hostname as part of the command prompt, to prepend log files and other accounting information, as well as in other places where knowing the device identity is useful. You can use the hostname to telnet to a router.

The domain name is the string appended to hostnames that are not fully qualified. The domain name is the name of a network associated with an organization. For sites in the United States, domain names typically take the form of *org-name.org-type*.

The mapping of hostnames to IP addresses is handled through a service called the Domain Name System (DNS). A series of special DNS servers across the world known as name servers keep track of the hostname and IP address information for all the devices on the Internet. Applications that need to determine an IP address from a hostname (or vice versa) contact the local name server to get this information. You can set a few name servers.

In case your hostname and IP address do not have a DNS entry in a name server, configure a static mapping.

In this example, the values given in [Table 7 on page 65](#) are used to configure each of these variables. You need to substitute data pertinent to your router and network for these values.

**Table 7: Values to Use in Example**

Name of Variable	Value Used in Example	Value You Substitute
domain-name <i>domain-name</i>	domain-name device.example.net	
host-name <i>host-name</i>	host-name example-re0	
inet <i>ip-address</i>	inet 172.22.147.39	
name-server <i>ip-address</i>	name-server 172.24.16.115	
	name-server 192.0.2.0	

## Configuration

### CLI Quick Configuration

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

```
set system domain-name device.example.net
set system host-name example-re0
set system name-server 172.24.16.115
set system name-server 192.0.2.0
set system static-host-mapping example-re0 inet 172.22.147.39
```

### Configuring the Router's Identity

### Step-by-Step Procedure

To configure the identity settings of a device:

1. Configure the domain name of your network.  
[edit]

```
user@host# set system domain-name device.example.net
```

2. Configure the hostname, using the **set system host-name** command.

```
[edit]
user@host# set system host-name example-re0
```

3. Configure from one to three name servers.

```
[edit]
user@host# set system name-server 172.24.16.115
user@host# set system name-server 192.0.2.0
```

4. Map from the hostname to the IP address, using the **set system static-host-mapping** command.

```
[edit]
user@host# set system static-host-mapping example-re0 inet 172.22.147.39
```

---

## Results

To check the configuration, use the configuration mode **show system** command.

```
[edit]
user@host# show system
domain-name device.example.net;
host-name example-re0;
name-server {
  172.24.16.115;
  192.0.2.0;
}
static-host-mapping {
  example-re0 {
    inet 172.22.147.39;
  }
}
```

When you have the correct configuration, enter **commit**.

## Verification

---

### Verifying the Hostname and IP Address of a Device

**Purpose** Verify the hostname and IP address of a device.

**Action** Issue the **show host *host-name*** operational command.

```
user@example-re0> show host newton
newton.device.example.net is an alias for example-re0.device.example.net.
example-re0.device.example.net has address 172.22.147.39
```

**Related Documentation**

- *Understanding Hostnames*
- *Reaching a Domain Name System Server*

## CHAPTER 5

# Monitoring Routers

- [Junos OS Tools for Monitoring the Router on page 67](#)
- [Tracing and Logging Junos OS Operations on page 67](#)
- [Understanding Dropped Packets and Untransmitted Traffic Using show Commands on page 69](#)
- [Log a User Out of the Router on page 74](#)

### Junos OS Tools for Monitoring the Router

---

The primary method of monitoring and troubleshooting Junos OS, routing protocols, network connectivity, and the router hardware is to enter commands from the CLI. The CLI enables you to display information in the routing tables and routing protocol-specific data, and to check network connectivity using **ping** and **traceroute** commands.

The J-Web GUI is a Web-based alternative to using CLI commands to monitor, troubleshoot, and manage the router.

Junos OS includes SNMP software, which enables you to manage routers. The SNMP software consists of an SNMP master agent and a MIB II agent, and supports MIB II SNMP version 1 traps and version 2 notifications, SNMP version 1 **Get** and **GetNext** requests, and version 2 **GetBulk** requests.

The software also supports tracing and logging operations so that you can track events that occur in the router—both normal router operations and error conditions—and track the packets that are generated by or pass through the router. Logging operations use a syslog-like mechanism to record system-wide, high-level operations, such as interfaces going up or down and users logging in to or out of the router. Tracing operations record more detailed messages about the operation of routing protocols, such as the various types of routing protocol packets sent and received, and routing policy actions.

#### Related Documentation

- [Methods for Configuring Junos OS on page 32](#)
- [Junos OS Features for Router Security on page 25](#)

### Tracing and Logging Junos OS Operations

---

Tracing and logging operations allow you to track events that occur in the router—both normal router operations and error conditions—and to track the packets that are generated

by or passed through the router. The results of tracing and logging operations are placed in files in the `/var/log` directory on the router.

Junos OS provides an option to do remote tracing for specific processes, which greatly reduces use of the router's internal storage for tracing and is analogous to remote system logging. You configure remote tracing system-wide using the **tracing** statement at the **[edit system]** hierarchy level. By default, remote tracing is not configured. You can disable remote tracing for specific processes using the **no-remote-trace** statement at the **[edit process-name traceoptions]** hierarchy level. This feature does not alter local tracing functionality in any way, and logging files are stored on the router.

Junos OS supports remote tracing for the following processes:

- `chassisd`—Chassis-control process
- `eventd`—Event-processing process
- `cosd`—Class-of-service process
- `spd`—Adaptive-services process

Logging operations use a system logging mechanism similar to the UNIX `syslogd` utility to record systemwide, high-level operations, such as interfaces going up or down and users logging in to or out of the router. You configure these operations by using the **syslog** statement at the **[edit system]** hierarchy level, as described in *Junos OS System Log Overview*, and by using the **options** statement at the **[edit routing-options]** hierarchy level, as described in the *Junos OS Routing Protocols Library*.

Tracing operations record more detailed messages about the operation of routing protocols, such as the various types of routing protocol packets sent and received, and routing policy actions. You configure tracing operations using the **traceoptions** statement. You can define tracing operations in different portions of the router configuration:

- Global tracing operations—Define tracing for all routing protocols. You define these tracing operations at the **[edit routing-options]** hierarchy level of the configuration.
- Protocol-specific tracing operations—Define tracing for a specific routing protocol. You define these tracing operations in the **[edit protocol]** hierarchy when configuring the individual routing protocol. Protocol-specific tracing operations override any equivalent operations that you specify in the global **traceoptions** statement. If there are no equivalent operations, they supplement the global tracing options. If you do not specify any protocol-specific tracing, the routing protocol inherits all the global tracing operations.
- Tracing operations within individual routing protocol entities—Some protocols allow you to define more granular tracing operations. For example, in Border Gateway Protocol (BGP), you can configure peer-specific tracing operations. These operations override any equivalent BGP-wide operations or, if there are no equivalents, supplement them. If you do not specify any peer-specific tracing operations, the peers inherit, first, all the BGP-wide tracing operations and, second, the global tracing operations.
- Interface tracing operations—Define tracing for individual router interfaces and for the interface process itself. You define these tracing operations at the **[edit interfaces]**

hierarchy level of the configuration as described in the *Junos OS Network Interfaces Library for Routing Devices*.

- Remote tracing—To enable system-wide remote tracing, include the **destination-override syslog host** statement at the **[edit system tracing]** hierarchy level. This specifies the remote host running the system log process (syslogd), which collects the traces. Traces are written to file(s) on the remote host per the syslogd configuration in */etc/syslog.conf*. By default remote tracing is *not* configured.

To override the system-wide remote tracing configuration for a particular process, include the **no-remote-trace** statement at the **[edit process-name traceoptions]** hierarchy. When **no-remote-trace** is enabled, the process does local tracing.



**NOTE:** When remote tracing is configured, traces will go to the remote host.

To collect traces, use the **local0** facility as the selector in */etc/syslog.conf* on the remote host. To separate traces from various processes into different files, include the process name or trace-file name if it is specified at the **[edit process-name traceoptions file]** hierarchy level, in the Program field in */etc/syslog.conf*. If your syslog server supports parsing hostname and program name, then you can separate traces from the various processes.

**Related Documentation** • *Junos OS System Log Overview*

## Understanding Dropped Packets and Untransmitted Traffic Using show Commands

Starting with Junos OS Release 14.2, packets that need to be forwarded to the adjacent network element or a neighboring device along a routing path might be dropped by a router owing to several factors. Some of the causes for such a loss of traffic or a block in transmission of data packets include overloaded system conditions, profiles and policies that restrict the bandwidth or priority of traffic, network outages, or disruption with physical cable faults. You can use a number of show commands to determine and analyze the statistical counters and metrics related to any traffic loss and take an appropriate corrective measure. The fields displayed in the output of the show commands help in diagnosing and debugging network performance and traffic-handling efficiency problems.

The following **show** commands and associated fields applicable for dropped packets enable you to view and analyze some of the system parameters for errors or disruption in transmitted packets:

**show interfaces  
extensive Command**

**show interfaces extensive**—Display input and output packet errors or drops

The following are the output fields related to packet drops:

**Input Errors**—Input errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:

- **Errors**—Sum of the incoming frame aborts and FCS errors.
- **Drops**—Number of packets dropped by the input queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.
- **Framing errors**—Number of packets received with an invalid frame checksum (FCS).
- **Runts**—Number of frames received that are smaller than the runt threshold.
- **Policed discards**—Number of frames that the incoming packet match code discarded because they were not recognized or not of interest. Usually, this field reports protocols that the Junos OS does not handle.
- **L3 incompletes**—Number of incoming packets discarded because they failed Layer 3 (usually IPv4) sanity checks of the header. For example, a frame with less than 20 bytes of available IP header is discarded. L3 incomplete errors can be ignored by configuring the `ignore-l3-incompletes` statement.
- **L2 channel errors**—Number of times the software did not find a valid logical interface for an incoming frame.
- **L2 mismatch timeouts**—Number of malformed or short packets that caused the incoming packet handler to discard the frame as unreadable.
- **FIFO errors**—Number of FIFO errors in the receive direction that are reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.
- **Resource errors**—Sum of transmit drops.

**Output Errors**—Output errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:

- **Carrier transitions**—Number of times the interface has gone from **down** to **up**. This number does not normally increment quickly, increasing only when the cable is unplugged, the far-end system is powered down and then up, or another problem occurs. If the number of carrier transitions increments quickly (perhaps once every 10 seconds), the cable, the far-end system, or the PIC or PIM is malfunctioning.
- **Errors**—Sum of the outgoing frame aborts and FCS errors.
- **Drops**—Number of packets dropped by the output queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism.
- **Collisions**—Number of Ethernet collisions. The Gigabit Ethernet PIC supports only full-duplex operation, so for Gigabit Ethernet PICs, this number should always remain 0. If it is nonzero, there is a software bug.
- **Aged packets**—Number of packets that remained in shared packet SDRAM so long that the system automatically purged them. The value in this field should never increment. If it does, it is most likely a software bug or possibly malfunctioning hardware.



- **FIFO errors**—Number of FIFO errors in the send direction as reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning.
- **HS link CRC errors**—Number of errors on the high-speed links between the ASICs responsible for handling the router interfaces.
- **MTU errors**—Number of packets whose size exceeded the MTU of the interface.
- **Resource errors**—Sum of transmit drops.

#### Queue counters (Egress)

CoS queue number and its associated user-configured forwarding class name.

- **Queued packets**—Number of queued packets.
- **Transmitted packets**—Number of transmitted packets.
- **Dropped packets**—Number of packets dropped by the ASIC's RED mechanism.

#### Queue counters (Ingress)

CoS queue number and its associated user-configured forwarding class name. Displayed on IQ2 interfaces.

- **Queued packets**—Number of queued packets.
- **Transmitted packets**—Number of transmitted packets.
- **Dropped packets**—Number of packets dropped by the ASIC's RED mechanism.

### **show interfaces queue** Command

**show interfaces queue**—Display class-of-service (CoS) queue information for physical interfaces.

The following are the output fields related to packet drops:

**Queue counters (Ingress)**—CoS queue number and its associated user-configured forwarding class name. Displayed on IQ2 interfaces.

- **Queued packets**—Number of queued packets.
- **Transmitted packets**—Number of transmitted packets.
- **Dropped packets**—Number of packets dropped by the ASIC's RED mechanism.

**Tail-dropped packets**—Number of packets dropped because of tail drop.

**RL-dropped packets**—Number of packets dropped due to rate limiting. For rate-limited interfaces hosted on MICs, MPCs, and Enhanced Queuing DPCs only, this statistic is not included in the queued traffic statistics.

**RL-dropped bytes**—Number of bytes dropped due to rate limiting. For rate-limited interfaces hosted on MICs, MPCs, and Enhanced Queuing DPCs only, this statistic is not included in the queued traffic statistics.

**RED-dropped packets**—Number of packets dropped because of random early detection (RED).

- (M Series and T Series routers only) On M320 and M120 routers and the T Series routers, the total number of dropped packets is displayed. On all other M Series routers, the output classifies dropped packets into the following categories:
  - **Low, non-TCP**—Number of low-loss priority non-TCP packets dropped because of RED.
  - **Low, TCP**—Number of low-loss priority TCP packets dropped because of RED.
  - **High, non-TCP**—Number of high-loss priority non-TCP packets dropped because of RED.
  - **High, TCP**—Number of high-loss priority TCP packets dropped because of RED.
- (J Series routers and MX Series routers with enhanced DPCs, and T Series routers with enhanced FPCs only) The output classifies dropped packets into the following categories:
  - **Low**—Number of low-loss priority packets dropped because of RED.
  - **Medium-low**—Number of medium-low loss priority packets dropped because of RED.
  - **Medium-high**—Number of medium-high loss priority packets dropped because of RED.
  - **High**—Number of high-loss priority packets dropped because of RED.

**RED-dropped bytes**—Number of bytes dropped because of RED. The byte counts vary by interface hardware.

- (M Series and T Series routers only) On M320 and M120 routers and the T Series routers, only the total number of dropped bytes is displayed. On all other M Series routers, the output classifies dropped bytes into the following categories:
  - **Low, non-TCP**—Number of low-loss priority non-TCP bytes dropped because of RED.
  - **Low, TCP**—Number of low-loss priority TCP bytes dropped because of RED.
  - **High, non-TCP**—Number of high-loss priority non-TCP bytes dropped because of RED.
  - **High, TCP**—Number of high-loss priority TCP bytes dropped because of RED.
- (J Series routers only) The output classifies dropped bytes into the following categories:
  - **Low**—Number of low-loss priority bytes dropped because of RED.
  - **Medium-low**—Number of medium-low loss priority bytes dropped because of RED.
  - **Medium-high**—Number of medium-high loss priority bytes dropped because of RED.
  - **High**—Number of high-loss priority bytes dropped because of RED.

**show class-of-service  
fabric statistics  
summary Command**

**show class-of-service fabric statistics summary**—Display class-of-service (CoS) switch fabric queue drop statistics.

The following are the output fields related to packet drops:

**Drop statistics**—Fabric queue statistics for dropped traffic:

- **Packets**—Dropped packet count for high-priority and low-priority queues.
- **Bytes**—Dropped byte count for high-priority and low-priority queues.
- **pps**—Dropped packets-per-second count for high-priority and low-priority queues.
- **bps**—Dropped bits-per-second count for high-priority and low-priority queues.

**show pfe statistics  
traffic fpc Command**

**show pfe statistics traffic fpc**—Display packet drops related to the entire FPC

The following are the output fields related to packet drops:

**Packet Forwarding Engine Hardware Discard statistics**—Information about Packet Forwarding Engine hardware discards:

- **Timeout**—Number of packets discarded because of timeouts.
- **Truncated key**—Number of packets discarded because of truncated keys.
- **Bits to test**—Number of bits to test.
- **Data error**—Number of packets discarded because of data errors.
- **Stack underflow**—Number of packets discarded because of stack underflows.
- **Stack overflow**—Number of packets discarded because of stack overflows.
- **Normal discard**—Number of packets discarded because of discard routes. Packets are dropped silently without being further processed by the host. Normal discards are reported when packets match a firewall filter term that has an action of discard or when the final result of the route look-up is a next hop of discard.
- **Extended discard**—Number of packets discarded because of illegal next hops. Packets are dropped silently but are also sent to the Routing Engine for further processing. Extended discards are reported when packets match a firewall filter term that has an action of discard and an additional action that requires Routing Engine processing, such as log, count, sample, or syslog.
- **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.

**Packet Forwarding Engine Local Traffic statistics**—Information about Packet Forwarding Engine local traffic:

- **Local packets input**—Number of incoming packets from the local network.
- **Local packets output**—Number of outgoing packets dispatched to a host in the local network.
- **Software input high drops**—Number of incoming software packets of high-priority, dropped during transmission.
- **Software input medium drops**—Number of incoming software packets of medium-priority, dropped during transmission.
- **Software input low drops**—Number of incoming software packets of low-priority, dropped during transmission.
- **Software output drops**—Number of outgoing software packets that were dropped during transmission.
- **Hardware input drops**—Number of incoming hardware packets that were dropped during transmission.

The preceding commands represent only the main parameters that you can use to identify and monitor traffic drops or errors. Depending on your specific deployment scenario and network conditions, you might need to view the output of other relevant **show** commands to evaluate different factors that might be resulting in traffic transmission losses.

**Related  
Documentation**

- *show interfaces extensive*
- *show interfaces queue*
- *show pfe statistics traffic*
- *show class-of-service fabric statistics*

---

## Log a User Out of the Router

**Purpose** Disconnect a user session when that session does not terminate after the user logs out.

**Action** To log a user out of all terminal sessions on a router, enter the following Junos OS CLI operational mode command:

```
user@host> request system logout username
```

**Sample Output**

```
user@host> show system users
10:07PM up 13 days, 1:25, 2 users, load averages: 0.17, 0.05, 0.02
USER      TTY      FROM              LOGIN@   IDLE   WHAT
harry     p0       hpot-1t.cmpy.net  10:07PM        -  -cli (c1
wizard    p1       hpot-1t.cmpy.net  10:06PM        -  -cli (c1

user@host> request system logout user harry
user@host> show system users
10:07PM up 13 days, 1:25, 1 user, load averages: 0.24, 0.06, 0.02
USER      TTY      FROM              LOGIN@   IDLE   WHAT
wizard    p1       hpot-1t.cmpy.net  10:06PM        -  -cli (c1
```

**Meaning** The sample output for the first **show system users** command shows there were two users on the router, **harry** and **wizard**. The **request system logout user** command was issued to log out user **harry**. Because there is no output to indicate that **harry** was logged out, the **show system users** command was issued again to verify that user **harry** was actually logged out of the router.



## CHAPTER 6

# Managing Junos OS Processes

- [Disabling Junos OS Processes on page 77](#)
- [Viewing Core Files from Junos OS Processes on page 78](#)
- [Saving Core Files from Junos OS Processes on page 78](#)
- [Configuring Failover to Backup Media If a Junos OS Process Fails on page 78](#)
- [Using the AgentD Process for Exporting Data to the Routing Engine on page 79](#)
- [Using Virtual Memory for Process Configuration Data on page 80](#)
- [Example: Configuring Virtual Memory for Process Configuration Data on page 81](#)

## Disabling Junos OS Processes

---



**CAUTION:** Never disable any of the software processes unless instructed to do so by a Customer Support engineer.

To disable a software process, specify the appropriate option in the **processes** statement at the **[edit system]** hierarchy level:

```
[edit system]
processes {
  process-name (enable | disable);
}
```



**NOTE:** The *process-name* variable is one of the valid process names. You can obtain a complete list of process names by using the CLI command completion feature. For additional information, see [processes](#).

### Related Documentation

- [Configuring Failover to Backup Media If a Junos OS Process Fails on page 78](#)
- [Configuring Password Authentication for the Diagnostics Port](#)
- [Viewing Core Files from Junos OS Processes on page 78](#)

## Viewing Core Files from Junos OS Processes

---

When an internal Junos OS process generates a core file, the output found at **/var/crash/** and **/var/tmp/** can now be viewed. This provides a quick method of finding core issues across large networks.

Use the CLI command **show system core-dumps** to view core files.

```
root@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
```

### Related Documentation

- [Saving Core Files from Junos OS Processes on page 78](#)

## Saving Core Files from Junos OS Processes

---

By default, when an internal Junos OS process generates a core file, the file and associated context information are saved for debugging purposes in a compressed tar file named **/var/tmp/process-name.core.core-number.tgz**. The contextual information includes the configuration and system log message files.

To disable the saving of core files and associated context information, include the **no-saved-core-context** statement at the **[edit system]** hierarchy level:

```
[edit system]
no-saved-core-context;
```

To save the core files only, include the **saved-core-files** statement at the **[edit system]** hierarchy level and specify the number of files to save:

```
[edit system]
saved-core-files number;
```

**number** is the number of core files to save and can be a value from 1 through 10.

To save the core files along with the contextual information, include the **saved-core-context** statement at the **[edit system]** hierarchy level:

```
[edit system]
saved-core-context;
```

### Related Documentation

- [Viewing Core Files from Junos OS Processes on page 78](#)

## Configuring Failover to Backup Media If a Junos OS Process Fails

---

For routers or switches with redundant Routing Engines, you can configure the router or switch to switch to backup media that contains a version of the system if a software process fails repeatedly. You can configure the router or switch to fail over either to backup media or to the other Routing Engine. To configure automatic switchover to



backup media if a software process fails, include the **failover** statement at the **[edit system processes process-name]** hierarchy level:

```
[edit system processes]
process-name failover (alternate-media | other-routing-engine);
```

**process-name** is one of the valid process names. If this statement is configured for a process, and that process fails four times within 30 seconds, the router reboots from either the alternative media or the other Routing Engine.

#### Related Documentation

- [Disabling Junos OS Processes on page 77](#)
- [Saving Core Files from Junos OS Processes on page 78](#)
- [processes on page 132](#)

## Using the AgentD Process for Exporting Data to the Routing Engine

Starting with Junos OS Release 14.2, the agent process is a control plane process. AgentD interfaces with the Junos OS CLI to configure sensors and streaming servers, and to export profiles that are present in the Packet Forwarding Engine. The data pertaining to sensors is in turn exported in .jrf (Java required files format) format at the configured intervals to the streaming servers from Packet Forwarding Engine. AgentD can intercept the data sent out from the Packet Forwarding Engine to prevent the Routing Engine processes or daemons from querying the Packet Forwarding Engine. Starting with Junos OS Release 14.2, this data is exported by agentD from the Packet Forwarding Engine to the Routing Engine. A historical snapshot of this data collected is maintained in the Routing Engine. A limit on the number of records of the sensor data that is saved in the Routing Engine exists.

The following operations occur during the export of data to the Routing Engine using agentD:

1. AgentD listens on port 2000 for messages from the Packet Forwarding Engine. Data can be received at the Routing Engine by configuring the IP address of one of the streaming servers as the Routing Engine IP address of fxp0 and port as 2000.
2. The data is sent by Packet Forwarding Engine in JRF format.
3. AgentD maintains the sensor data history in a database (/var/run/agentd.db). It is a Berkeley database. AgentD database has tables based on sensor types. Because CPU, NPU, and interface sensor types are supported, a total of three tables are created.
4. It is possible to maintain a history of maximum 50 records for each table in the database. The number of records is configured using a hidden statement.



**NOTE:** We recommend that you use the hidden statement to configure the limit on the number of records of sensor data that is exported by agentD only with the assistance of a Juniper Technical Assistance Center representative.

5. After the sensor data arrives at the Routing Engine, agentD decodes the header to find sensor type so as to write the data into the respective table. It determines the sensor ID, FPC slot, Packet Forwarding Engine ID, and retrieves the current timestamp. This 4-tuple value becomes the key for the table. The entire message along with the header is written to the database table.
6. When a fresh record needs to be written to the table, the maximum limit for number of records, if configured, is examined. If the limit is exceeded, the oldest entry is purged from the table to insert the fresh record.

**Release History Table**

Release	Description
14.2R1	Starting with Junos OS Release 14.2, the agent process is a control plane process.

## Using Virtual Memory for Process Configuration Data

Configuration data for each process in Junos OS is stored in memory that is mapped within the address space of each process, requiring a fixed maximum space to be reserved in each process. Typically, the maximum database size available is 680 MB for the i386 platform and 238 MB for other platforms. This scheme works well until a process is managing many functions at commit time and negatively impacts the commit time, or simply needs more memory than the default allotment. For example, the rpd process might be managing many routes and require more space to store important information about the routes.

In circumstances that require more than the maximum memory-mapped size, you can use **virtual-memory-mapping** at the **[edit system configuration-database]** hierarchy level to make more memory available for the configuration database per process.

You can configure a portion of virtual memory at a fixed size for the initial portion of the configuration database, and you can specify an amount to be used for page-pooling. Page-pooling uses a small amount of memory to bring database pages into memory as needed, rather than mapping the entire configuration database into the virtual memory space for the process.

For i386 platforms on the M Series, MX Series, and T Series devices only, you can also extend the configuration database size from a maximum of 680 MB to 1.5 GB.

### Related Documentation

- [Example: Configuring Virtual Memory for Process Configuration Data on page 81](#)
- [configuration-database on page 108](#)
- [extend-size on page 113](#)
- [virtual-memory-mapping on page 148](#)

## Example: Configuring Virtual Memory for Process Configuration Data

This example shows how to use **virtual-memory-mapping** to configure different fixed and page-pooling sizes for the configuration database for individual processes in Junos OS.

- [Requirements on page 81](#)
- [Overview on page 81](#)
- [Configuration on page 82](#)

### Requirements

This example uses the following hardware and software components:

- A Juniper Networks M Series, MX Series, or T Series router
- Junos OS Release 13.2 or later

### Overview

Typically, the maximum database size available for storing configuration data per process is 680 MB for the i386 platform and 238 MB for other platforms, and it is mapped within the address space reserved for that process. Depending on the process, this database size might impact commit performance for a process that manages many changes at commit. To improve commit performance, you can use **virtual-memory-mapping** at the **[edit system configuration-database]** hierarchy level to allocate virtual memory for storing process configuration data on a per-process basis. You can configure a portion of the virtual memory as fixed size and a portion for page-pooling. Page-pooling uses just a small amount of memory to swap pages in or out as needed, rather than mapping the entire configuration database at once.

Using **virtual-memory-mapping** and enabling page-pooling are methods used to improve commit performance for processes that manage many changes at commit time that negatively impact commit performance.

Additionally, for i386 systems *only*, the option **extend-size** is available at the **[edit system configuration-database]** hierarchy level to increase the configuration database size from 680 MB to 1.5 GB, to improve commit performance for mgd. The extended size will automatically be used by mgd. Other processes will only be able to access the increased size by using page-pooling. The **extend-size** option is not available on MX80, MX40, MX10, or MX5 platforms.

The configurations provided here are only examples. The sizes and processes that you configure will be different depending on the needs of your system.

### Syntax

The syntax structure used in this example is available in Junos OS Release 13.2 or later.

```
system {
  configuration-database {
    virtual-memory-mapping {
```

```

        process process name {
            fixed-size size KB;
            page-pooling-size size KB;
        }
    }
    extend-size;
}

```

## Configuration

- [Configuring Virtual Memory Parameters for a Single Process on page 82](#)
- [Configuring Virtual Memory Parameters for Multiple Processes on page 83](#)
- [Configuring Extended Size for the Configuration Database on page 84](#)

### Configuring Virtual Memory Parameters for a Single Process

#### Step-by-Step Procedure

This example sets parameters of 512 KB for the fixed size and 512 KB for the page-pooling size of virtual memory mapping for the interface-control process, which controls the router's physical interface devices and logical interfaces.

This example assumes that the interface-control process on this sample system manages so many changes at commit time that performance is impacted. After completing this configuration on this system, the user expects improvement in the commit time performance.

1. Set the virtual memory fixed size to 512 KB and the page-pooling size to 512 KB for the interface-control process.

[edit]

```

user@host# set system configuration-database virtual-memory-mapping process
interface-control fixed-size 512 page-pooling 512

```

2. Commit the changes.

```

user@host# commit

```

**Results** Verify the setup using the `show system configuration-database` command.

```

user@host# show system configuration-database

```

```

configuration-database {
  virtual-memory-mapping {
    process interface-control {
      fixed-size 512;
      page-pooling-size 512;
    }
  }
}

```



**NOTE:** Starting from Junos OS Release 15.1, you use the `show system configuration database usage operational mode` command to view the usage statistics of configuration database memory.

### Configuring Virtual Memory Parameters for Multiple Processes

**Step-by-Step Procedure** You can configure virtual memory parameters for configuration data for more than one process on a single system. This example configures parameters to enable page-pooling for the processes: interface-control, mib-process, firewall, event-processing, vrrp, and snmp.

1. Set the fixed-size to 20480 and set the page-pooling size to 30720 for the interface-control process.  

```
user@host# set system configuration-database virtual-memory-mapping process interface-control fixed-size 20480 page-pooling 30720
```
2. Set the fixed-size to 512 and set the page-pooling size to 30720 for the mib-process.  

```
user@host# set system configuration-database virtual-memory-mapping process mib-process fixed-size 512 page-pooling 30720
```
3. Set the fixed-size to 30720 and set the page-pooling size to 1024 for the firewall process.  

```
user@host# set system configuration-database virtual-memory-mapping process firewall 30720 page-pooling 1024
```
4. Set the fixed-size to 10240 and set the page-pooling size to 10240 for the snmp process.  

```
user@host# set system configuration-database virtual-memory-mapping process snmp fixed-size 10240 page-pooling 10240
```
5. Commit the changes.  

```
user@host# commit
```

**Results** Verify the setup using the `show system configuration-database` command.

```
user@host# show system configuration-database
configuration-database {
  virtual-memory-mapping {
    process interface-control {
      fixed-size 20480;
      page-pooling-size 30720;
    }
    process mib-process {
      fixed-size 512;
      page-pooling-size 30720;
    }
    process firewall {
      fixed-size 30720;
      page-pooling-size 1024;
    }
    process snmp {
      fixed-size 10240;
      page-pooling-size 10240;
    }
  }
}
```



**NOTE:** Starting from Junos OS Release 15.1, you use the `show system configuration database usage` operational mode command to view the usage statistics of configuration database memory.

### Configuring Extended Size for the Configuration Database

#### Step-by-Step Procedure

This example increases the configuration database size available to mgd and other processes on i386 versions of M Series, MX Series, or T Series platforms to 1.5 GB from the default of 680 MB.



**NOTE:** This feature is only available on i386 platforms, and mgd automatically uses the increased database size. To make the extended memory available for other processes, enable [page-pooling-size](#) under [virtual-memory-mapping](#). The `extend-size` option is not available on MX80, MX40, MX10, or MX5 platforms.

1. Extend the configuration database size.  
`[edit]`  
`user@host# set system configuration-database extend-size`
2. Commit the changes.  
`user@host# commit`

**Results** Verify the setup using the `show system configuration-database` command. For brevity, this **show** output includes only the configuration that is relevant to this example.

```
user@host# show system configuration-database
configuration-database {
...
  extend-size;
}
```



**NOTE:** Starting from Junos OS Release 15.1, you use the `show system configuration database usage` operational mode command to view the usage statistics of configuration database memory.

## Release History Table

Release	Description
15.1	Starting from Junos OS Release 15.1, you use the <b>show system configuration database usage</b> operational mode command to view the usage statistics of configuration database memory.

## Related Documentation

- [Using Virtual Memory for Process Configuration Data on page 80](#)
- [configuration-database on page 108](#)
- [extend-size on page 113](#)
- [virtual-memory-mapping on page 148](#)
- [show system configuration database usage on page 466](#)





## PART 3

# Configuration Statements and Operational Commands

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## CHAPTER 7

# Configuration Statements

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## System Management Configuration Statements

---

This topic lists all the configuration statements that you can include at the **[edit system]** hierarchy level to configure system management features:

```
system {  
  accounting {  
    destination {  
      radius {  
        server {  
          server-address {  
            accounting-port port-number;  
            retry number;
```

```

        secret password;
        source-address address;
        timeout seconds;
    }
}
tacplus {
    server {
        server-address {
            port port-number;
            secret password;
            single-connection;
            timeout seconds;
        }
    }
}
enhanced-avs-max;
events [ login change-log interactive-commands ];
}
archival {
    configuration {
        archive-sites {
            ftp://<username>:<password>@<host>:<port>/<url-path>;
            ftp://<username>:<password>@<host>:<port>/<url-path>;
        }
        transfer-interval interval;
        transfer-on-commit;
    }
}
allow-v4mapped-packets;
arp {
    aging-timer minutes;
    gratuitous-arp-delay;
    gratuitous-arp-on-ifup;
    interfaces;
    passive-learning;
    purging;
}
authentication-order [ authentication-methods ];
backup-router address <destination destination-address>;
commit {
    delta-export;
    fast-synchronize;
    persist-groups-inheritance;
    server;
    synchronize
}
synchronize;
(compress-configuration-files | no-compress-configuration-files);
default-address-selection;
dump-device (compact-flash | remove-compact | usb);
diag-port-authentication (encrypted-password "password" | plain-text-password);
dynamic-profile-options {
    versioning;
}

```

```
domain-name domain-name;
domain-search [ domain-list ];
host-name hostname;
inet6-backup-router address <destination destination-address>;
internet-options {
    tcp-mss mss-value;
    (gre-path-mtu-discovery | no-gre-path-mtu-discovery);
    icmpv4-rate-limit bucket-size bucket-size packet-rate packet-rate;
    icmpv6-rate-limit bucket-size bucket-size packet-rate packet-rate;
    (ipip-path-mtu-discovery | no-ipip-path-mtu-discovery);
    (ipv6-path-mtu-discovery | no-ipv6-path-mtu-discovery);
    ipv6-path-mtu-discovery-timeout;
    no-tcp-rfc1323-paws;
    no-tcp-rfc1323;
    (path-mtu-discovery | no-path-mtu-discovery);
    source-port upper-limit <upper-limit>;
    (source-quench | no-source-quench);
    tcp-drop-synfin-set;
}
location {
    altitude feet;
    building name;
    country-code code;
    floor number;
    hcoord horizontal-coordinate;
    lata service-area;
    latitude degrees;
    longitude degrees;
    npa-nxx number;
    postal-code postal-code;
    rack number;
    vcoord vertical-coordinate;
}
login {
    announcement text;
    class class-name {
        access-end;
        access-start;
        allow-commands "regular-expression";
        ( allow-configuration | allow-configuration-regexps ) "regular expression 1" "regular expression 2";
        allowed-days;
        deny-commands "regular-expression";
        ( deny-configuration | deny-configuration-regexps ) "regular expression 1" "regular expression 2";
        idle-timeout minutes;
        login-script
        login-tip;
        permissions [ permissions ];
    }
    message text;
    password {
        change-type (set-transitions | character-set);
        format (md5 | sha1 | des);
        maximum-length length;
        minimum-changes number;
```

```

    minimum-length length;
  }
  retry-options {
    backoff-threshold number;
    backoff-factor seconds;
    minimum-time seconds;
    tries-before-disconnect number;
  }
  user username {
    full-name complete-name;
    uid uid-value;
    class class-name;
    authentication {
      (encrypted-password "password" | plain-text-password);
      ssh-rsa "public-key";
      ssh-dsa "public-key";
    }
  }
}
login-tip number;
mirror-flash-on-disk;
name-server {
  address;
}
no-multicast-echo;
no-redirects;
no-ping-record-route;
no-ping-time-stamp;
ntp {
  authentication-key key-number type type value password;
  boot-server address;
  broadcast <address> <key key-number> <version value> <ttl value>;
  broadcast-client;
  multicast-client <address>;
  peer address <key key-number> <version value> <prefer>;
  source-address source-address;
  server address <key key-number> <version value> <prefer>;
  trusted-key [ key-numbers ];
}
ports {
  auxiliary {
    type terminal-type;
  }
  pic-console-authentication {
    encrypted-password encrypted-password;
    plain-text-password;
    console {
      insecure;
      log-out-on-disconnect;
      type terminal-type;
      disable;
    }
  }
}
processes {
  process--name (enable | disable) failover (alternate-media | other-routing-engine);
  timeout seconds;
}

```

```
    }
  }
radius-server server-address {
  accounting-port port-number;
  port port-number;
  retry number;
  secret password;
  source-address source-address;
  timeout seconds;
}
radius-options {
  enhanced-accounting
  password-protocol mschap-v2;
}
attributes {
  nas-ip-address ip-address;
}
enhanced-accounting;
password-protocol mschap-v2;
}
root-authentication {
  (encrypted-password "password" | plain-text-password);
  ssh-rsa "public-key";
  ssh-dsa "public-key";
}
(saved-core-context | no-saved-core-context);
saved-core-files saved-core-files;
scripts {
  commit {
    allow-transients;
    file filename {
      optional;
      refresh;
      refresh-from url;
      source url;
    }
    traceoptions {
      file <filename> <files number> <size size> <world-readable | no-world-readable>;
      flag flag;
      no-remote-trace;
    }
  }
  op {
    file filename {
      arguments {
        argument-name {
          description descriptive-text;
        }
      }
      command filename-alias;
      description descriptive-text;
      refresh;
      refresh-from url;
      source url;
    }
    refresh;
    refresh-from url;
```



```

    traceoptions {
        file <filename> <files number> <size size> <world-readable | no-world-readable>;
        flag flag;
        no-remote-trace;
    }
}
services {
    finger {
        connection-limit limit;
        rate-limit limit;
    }
    flow-tap-dtcp {
        ssh {
            connection-limit limit;
            rate-limit limit;
        }
    }
    ftp {
        connection-limit limit;
        rate-limit limit;
    }
    rest {
        control {
            allowed-sources [ value-list ];
            connection-limit limit;
        }
        enable-explorer;
        http {
            addresses [ addresses ];
            port port-number;
        }
        https {
            addresses [ addresses ];
            cipher-list [ cipher-1 cipher-2 cipher-3 ... ];
            mutual-authentication {
                certificate-authority certificate-authority-profile-name;
            }
            port port-number;
            server-certificate local-certificate-identifier;
        }
        traceoptions {
            flag flag;
        }
    }
}
service-deployment {
    servers server-address {
        port port-number;
    }
    source-address source-address;
}
ssh {
    root-login (allow | deny | deny-password);
    protocol-version [v1 v2];
    connection-limit limit;
    rate-limit limit;
}

```

```

}
telnet {
    connection-limit limit;
    rate-limit limit;
}
web-management {
    http {
        interfaces [ interface-names ];
        port port;
    }
    https {
        interfaces [ interface-names ];
        local-certificate name;
        port port;
    }
    session {
        idle-timeout [ minutes ];
        session-limit [ session-limit ];
    }
}
xnm-clear-text {
    connection-limit limit;
    rate-limit limit;
}
xnm-ssl {
    connection-limit limit;
    local-certificate name;
    rate-limit limit;
}
}
static-host-mapping {
    hostname {
        alias [ alias ];
        inet [ address ];
        sysid system-identifier;
    }
}
syslog {
    archive <files number> <size size> <world-readable | no-world-readable>;
    console {
        facility severity;
    }
    file filename {
        facility severity;
        archive <archive-sites {ftp-url <password password>}> <files number> <size size>
            <start-time "YYYY-MM-DD.hh:mm"> <transfer-interval minutes> <world-readable |
            no-world-readable>;
        explicit-priority;
        match "regular-expression";
        match-string string-name;
        structured-data {
            brief;
        }
    }
}
host (hostname | other-routing-engine | scc-master) {
    facility severity;

```

```

    explicit-priority;
    facility-override facility;
    log-prefix string;
    match "regular-expression";
    source-address source-address;
    structured-data {
        brief;
    }
}
source-address source-address;
time-format (year | millisecond | year millisecond);
user (username | *) {
    facility severity;
    match "regular-expression";
}
}
tacplus-options {
    enhanced-accounting;
    service-name service-name;
    (no-cmd-attribute-value | exclude-cmd-attribute);
}
tacplus-server server-address {
    secret password;
    single-connection;
    source-address source-address;
    timeout seconds;
}
time-zone (GMThour-offset | time-zone);
}
tracing {
    destination-override {
        syslog host;
    }
}
use-imported-time-zones;
}


```

## announcement



---

<b>Syntax</b>	announcement <i>text</i> ;
<b>Hierarchy Level</b>	[edit system login]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Configure a system login announcement. This announcement appears after a user logs in.
<b>Options</b>	<b>text</b> —Text of the announcement. If the text contains any spaces, enclose it in quotation marks.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring the Junos OS to Display a System Login Announcement</i></li><li>• <a href="#">message on page 123</a></li></ul>

## archival

<b>Syntax</b>	<pre> archival {   configuration {     archive-sites {       file://&lt;path&gt;/&lt;filename&gt;;       ftp://username@host:&lt;port&gt;url-path password password;       http://username@host:&lt;port&gt;url-path password password;       pasvftp://username@host:&lt;port&gt;url-path password password;       scp://username@host:&lt;port&gt;url-path password password;     }     transfer-interval interval;     transfer-on-commit;   } } </pre>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.</p>
<b>Description</b>	Configure copying of the currently active configuration to an archive site. An archive site can be a file, or an FTP, HTTP, or SCP location.
<b>Options</b>	The remaining statements are explained separately.
<div style="display: flex; align-items: center;">  <div> <p><b>NOTE:</b> The [edit system archival] hierarchy is not available on QFabric systems.</p> </div> </div>	
<b>Required Privilege Level</b>	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>Using Junos OS to Configure a Router or Switch to Transfer Its Configuration to an Archive Site on page 60</li> </ul>

## archive-sites (Configuration File)

<b>Syntax</b>	<pre>archive-sites {   file://&lt;path&gt;/&lt;filename&gt;;   ftp://username@host:&lt;port&gt;url-path password password;   http://username@host:&lt;port&gt;url-path password password;   pasvftp://username@host:&lt;port&gt;url-path password password;   scp://username@host:&lt;port&gt;url-path password password; }</pre>
<b>Hierarchy Level</b>	[edit system archival configuration]
<b>Release Information</b>	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.</p>
<b>Description</b>	<p>Specify where to transfer the current configuration files. When specifying a URL in a Junos OS statement using an IPv6 host address, you must enclose the entire URL in quotation marks ( " ") and enclose the IPv6 host address in brackets ( [ ] ). For example, "scp://username&lt;:password&gt;@[ipv6-host-address]&lt;:port&gt;/url-path"</p> <p>If you specify more than one archive site, the router or switch attempts to transfer the configuration files to the first archive site in the list, moving to the next only if the transfer fails.</p> <p>The destination filename is saved in the following format, where <i>n</i> corresponds to the number of the compressed configuration rollback file that has been archived:</p> <p><i>router-name_YYYYMMDD_HHMMSS_juniper.conf.n.gz</i></p> <div style="margin-top: 20px;">  <p><b>NOTE:</b> The time included in the destination filename is always in Coordinated Universal Time (UTC) regardless of whether the time on the router or switch is configured as UTC or the local time zone. The default time zone on the router or switch is UTC.</p> </div> <div style="margin-top: 20px;">  <p><b>NOTE:</b> The [edit system archival] hierarchy is not available on QFabric systems.</p> </div>
<b>Options</b>	<p>The prefix used in the configuration statement determines the form of transfer:</p> <p><b>file://</b> —transfer on a path to a named file</p> <p><b>ftp://</b> —transfer using active FTP server</p> <p><b>http://</b> —transfer using HTTP server</p>

**pasvftp://** —transfer to a device that only accepts passive FTP services

**scp://** —transfer to a known host using background SCP file transfers

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

<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Configuring Archive Sites for the Transfer of Active Configuration Files on page 61</a></li><li>• <a href="#">Junos OS Commit Model for Router or Switch Configuration on page 35</a></li><li>• <a href="#">configuration on page 107</a></li><li>• <a href="#">transfer-on-commit on page 146</a></li></ul>
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## autoinstallation

---

<b>Syntax</b>	<pre>autoinstallation {   configuration-servers {     url;   }   interfaces {     interface-name {       bootp;       rarp;     }   } }</pre>
<b>Hierarchy Level</b>	[edit <a href="#">system</a> ]
<b>Release Information</b>	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.1 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.</p>
<b>Description</b>	<p>Download a configuration file automatically from an FTP, Hypertext Transfer Protocol (HTTP), or Trivial FTP (TFTP) server. When you power on a router or switch configured for autoinstallation, it requests an IP address from a Dynamic Host Configuration Protocol (DHCP) server. Once the router or switch has an address, it sends a request to a configuration server and downloads and installs a configuration.</p>
<b>Options</b>	The remaining statements are explained separately.
<b>Required Privilege Level</b>	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>ACX Series Autoinstallation Overview</i></li><li>• <i>Before You Begin Autoinstallation on an ACX Series Universal Access Router</i></li><li>• <i>Autoinstallation Configuration of ACX Series Universal Access Routers</i></li><li>• <i>USB Autoinstallation on ACX Series Routers</i></li><li>• <i>Verifying Autoinstallation on ACX Series Universal Access Routers</i></li><li>• <i>show system autoinstallation status</i></li><li>• <i>Upgrading Software by Using Automatic Software Download</i></li><li>• <a href="#">configuration-servers on page 109</a></li><li>• <i>idle-timeout</i></li></ul>



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## backup-router

---

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

## commit (System)

<b>Syntax</b>	<pre> commit {   and-quit;   at;   comment;   delta-export;   fast-synchronize;   force;   peers {     name of peer {       user name of user;       authentication string;     }   }   peers-synchronize;   persist-groups-inheritance ;   scripts;   server;   synchronize; } </pre>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 7.4.</p> <p>Option <b>persist-groups-inheritance</b> added in Junos OS Release 13.2.</p> <p>Option <b>delta-export</b> added in Junos OS Release 14.2.</p> <p>Option <b>peers</b> added in Junos OS Release 14.2R6</p> <p>Option <b>peers-synchronize</b> added in Junos OS Release 14.2R6</p>
<b>Description</b>	Configure options for Junos OS commit.
<b>Options</b>	<p><b>and-quit</b>—(Optional) Quit configuration mode if the commit synchronization succeeds.</p> <p><b>at</b>—(Optional) Time at which to activate configuration changes.</p> <p><b>comment</b>—(Optional) Write a message to the commit log.</p> <p><b>delta-export</b>—(Optional) Configure system commit to export only the changes made in the candidate configuration instead of exporting the entire candidate configuration to the configuration database.</p> <p><b>fast-synchronize</b>—(Optional) Configure the default commit to occur simultaneously on dual Routing Engines.</p> <p><b>force</b>—(Optional) Force a commit synchronization on the other Routing Engine (ignore warnings).</p> <p><b>peers</b>—(Optional) Specify the host names or IP addresses of the MC-LAG peers and the user authentication details for the users administering the MC-LAG peers that are participating in commit synchronization.</p>

**peers-synchronize**—(Optional) Configure a commit synchronization on MC-LAG peers

**persist-groups-inheritance**—(Optional) Configure commit to quickly apply configuration groups that use wildcards.

**scripts**—(Optional) Push scripts to the other Routing Engine.

**server**—(Optional) Configure a default batch commit.

**synchronize**—(Optional) Configure the default commit to occur sequentially on dual Routing Engines.

—


—

<b>Required Privilege Level</b>	<b>maintenance</b> —To view this statement in the configuration. <b>maintenance-control</b> —To add this statement to the configuration.
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<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">delta-export on page 109</a></li><li>• <a href="#">fast-synchronize on page 114</a></li><li>• <a href="#">persist-groups-inheritance on page 127</a></li><li>• <a href="#">server on page 139</a></li><li>• <a href="#">synchronize on page 142</a></li></ul>
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## compress-configuration-files (System)

---

<b>Syntax</b>	(compress-configuration-files   no-compress-configuration-files);
<b>Hierarchy Level</b>	[edit <a href="#">system</a> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	<p>Compress the current operational configuration file. By default, the current operational configuration file is compressed, and is stored in the file <b>juniper.conf</b>, in the <b>/config</b> file system, along with the last three committed versions of the configuration. However, with large networks, the current configuration file might exceed the available space in the <b>/config</b> file system. Compressing the current configuration file allows the file to fit in the file system, typically reducing the size of the file by 90 percent. The current configuration file is compressed on the second commit of the configuration after the first commit is made to include the <b>compress-configuration-files</b> statement.</p>
	<div> <b>NOTE:</b> We recommend that you enable compression of the router configuration files to minimize the amount of disk space that they require.</div>
<b>Default</b>	The current operational configuration file is uncompressed.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Compressing the Current Configuration File</i></li></ul>

## configuration

<b>Syntax</b>	<pre> configuration {   transfer-interval interval;   transfer-on-commit;   archive-sites {     file://&lt;path&gt;/&lt;filename&gt;;     ftp://username@host:&lt;port&gt;url-path password password;     http://username@host:&lt;port&gt;url-path password password;     pasvftp://username@host:&lt;port&gt;url-path password password;     scp://username@host:&lt;port&gt;url-path password password;   } } </pre>
<b>Hierarchy Level</b>	[edit system archival]
<b>Release Information</b>	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.</p>
<b>Description</b>	Configure the router or switch to periodically transfer its currently active configuration (or after each commit).
<div>  <p><b>NOTE:</b> The [edit system archival] hierarchy is not available on QFabric systems.</p> </div>	
<b>Options</b>	The remaining statements are explained separately.
<b>Required Privilege Level</b>	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Using Junos OS to Configure a Router or Switch to Transfer Its Configuration to an Archive Site on page 60</a></li> <li>• <i>archive</i></li> <li>• <a href="#">archive-sites on page 100</a></li> <li>• <a href="#">transfer-interval on page 145</a></li> <li>• <a href="#">transfer-on-commit on page 146</a></li> </ul>

## configuration-database

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Syntax	<pre>configuration-database {     virtual-memory-mapping {         process <i>process name</i> {             fixed-size <i>size KB</i>;             page-pooling-size <i>size KB</i>;         }     }     extend-size; }</pre>
Hierarchy Level	[edit system]
Release Information	Statement introduced in Junos OS Release 13.2.
Description	<p>Define parameters for the configuration databases.</p> <p>Configure the <b>virtual-memory-mapping</b> statement hierarchy to increase the memory space available for the configuration database size per process, as needed, by using virtual memory mapping and page-pooling.</p>
Options	<p><b>extend-size</b>—For i386 platforms on the M, MX, or T Series devices only, increase the memory space available for the configuration database, per process, up to 1.5 GB.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">Example: Configuring Virtual Memory for Process Configuration Data on page 81</a></li></ul>

## configuration-servers

<b>Syntax</b>	configuration-servers { url; }
<b>Hierarchy Level</b>	[edit <a href="#">system autoinstallation</a> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	For EX Series switches only, configure the URL address of a server from which to obtain configuration files. Examples of URLs:  <code>tftp://hostname/path/filename</code>  <code>ftp://username:prompt@ftp.hostname.net/filename /</code>
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Upgrading Software by Using Automatic Software Download</i></li> <li>• Getting Started Guide for your router model</li> <li>• <a href="#">autoinstallation on page 102</a></li> <li>• <i>idle-timeout</i></li> </ul>

## delta-export

<b>Syntax</b>	delta-export;
<b>Hierarchy Level</b>	[edit <a href="#">system commit</a> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 14.2.
<b>Description</b>	Configure system commit to export only the changes made in the candidate configuration instead of exporting the entire candidate configuration to the configuration database. This helps to reduce the time taken to commit the configuration changes.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">commit on page 104</a></li> <li>• <a href="#">System Management Configuration Statements on page 90</a></li> </ul>

## domain-name

---

<b>Syntax</b>	<code>domain-name <i>domain-name</i>;</code>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Configure the name of the domain in which the router or switch is located. This is the default domain name that is appended to hostnames that are not fully qualified.
<b>Options</b>	<i>domain-name</i> —Name of the domain.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Reaching a Domain Name System Server</i></li></ul>

## domain-search

---

<b>Syntax</b>	<code>domain-search [ <i>domain-list</i> ];</code>
<b>Hierarchy Level</b>	[edit system], [edit system services dhcp], [edit system services dhcp], [edit system services dhcp pool], [edit system services dhcp static-binding]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Configure a list of domains to be searched.
<b>Options</b>	<i>domain-list</i> —A list of domain names to search. The list can contain up to six domain names, with a total of up to 256 characters.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Reaching a Domain Name System Server</i></li></ul>



## dump-device



<b>Syntax</b>	<pre>dump-device {   compact-flash;   removable-compact-flash;   usb; }</pre>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	<p>Configure the medium used for storing memory snapshots of system failure. When you specify the storage and an operating system fails, the operating system writes a snapshot of the state of the router when it failed to the storage medium. When the operating system is rebooted, the storage device is checked for a snapshot. If found, the snapshot of memory is written to the <b>/var/crash</b> directory on the router and can be examined by Juniper Networks customer support to help determine the cause of failure.</p> <p>If the swap partition on the device medium is not large enough for the system memory snapshot, the snapshot is not successfully written to the directory. Use the <b>request system snapshot</b> command to specify the swap partition.</p>
<b>Options</b>	<p><b>compact-flash</b>—The primary CompactFlash card.</p> <p><b>removable-compact-flash</b>—The CompactFlash card on the front of the router as the system software failure memory snapshot device.</p> <p><b>usb</b>—The device attached to the universal serial bus (USB) port.</p>
<b>Required Privilege Level</b>	<p><b>system</b>—To view this statement in the configuration.</p> <p><b>system-control</b>—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>Getting Started Guide for your router model</li> </ul>

## events

---

<b>Syntax</b>	<code>events [ <i>events</i> ];</code>
<b>Hierarchy Level</b>	[edit system accounting]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Configure the types of events to track and log.
<b>Options</b>	<b><i>events</i></b> —Event types; can be one or more of the following: <ul style="list-style-type: none"><li>• <b>change-log</b>—Audit configuration changes.</li><li>• <b>interactive-commands</b>—Audit interactive commands (any command-line input).</li><li>• <b>login</b>—Audit logins.</li></ul>
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring TACACS+ System Accounting</i></li></ul>

## extend-size

<b>Syntax</b>	extend-size;
<b>Hierarchy Level</b>	[edit system configuration-database]
<b>Description</b>	(M, MX, T i386 only) Extend the default size of the configuration database to 1.5 GB. This is only used by mgd and only in the M, MX, and T Series i386 platforms. The <b>extend-size</b> option is not available on MX80, MX40, MX10, or MX5 platforms.
	<p> <b>NOTE:</b> You must reboot the router after committing this statement to make the change effective.</p> <p> <b>NOTE:</b> Starting with Junos OS Release 15.1R2, any operation on the <b>system configuration-database extend-size</b> configuration statement such as, <b>deactivate</b>, <b>delete</b>, or <b>set</b>, generates the following warning message:</p> <p>Change in 'system configuration-database extend-size' will be effective at next reboot only.</p>
<b>Required Privilege Level</b>	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Example: Configuring Virtual Memory for Process Configuration Data on page 81</a></li> </ul>

## fast-synchronize

---

<b>Syntax</b>	fast-synchronize;
<b>Hierarchy Level</b>	[edit <b>system</b> commit]
<b>Release Information</b>	Statement introduced in Junos OS Release 12.2.
<b>Description</b>	Configure commits to run in parallel (simultaneously) on both the master and backup Routing Engines to reduce the time required for commit synchronization. The <b>fast-synchronize</b> configuration is valid only on systems with two Routing Engines.

**NOTE:**

- When the **fast-synchronize** statement is configured, the commits on the master Routing Engine and the backup Routing Engine run in parallel. In this process, the configuration is validated only on the Routing Engine where you execute the **commit** command. Therefore, it is recommended not to include too many configuration details in groups like **re0** and **re1**, because the configuration specified in group **re0** is applied only if the current Routing Engine is in slot 0. Likewise, the configuration specified in group **re1** is applied only if the current Routing Engine is in slot 1.
  - Ensure that the Junos OS software version running on both the Routing Engines is same.
- 

<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring Multiple Routing Engines to Synchronize Committed Configurations Automatically</i></li><li>• <a href="#">synchronize on page 142</a></li></ul>

## fixed-size (Virtual Memory Mapping)

<b>Syntax</b>	fixed-size <i>size KB</i> ;
<b>Hierarchy Level</b>	[edit system configuration-database virtual-memory-mapping process <i>process name</i> ]
<b>Description</b>	Configure a nondefault size for the fixed size memory to be used for the initial portion of the configuration database for a specific process when using virtual memory mapping to improve commit performance. This is used in conjunction with a page-pooling size set aside to swap pages in and out of virtual memory to improve commit performance.
<b>Options</b>	<p><b>size KB</b>—Size in kilobytes to directly map for the initial portion (fixed size) of the configuration database for the specified process.</p> <p><b>Range:</b> Minimum 1024 KB, maximum 680 MB</p>
<b>Required Privilege Level</b>	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Using Virtual Memory for Process Configuration Data on page 80</a></li> <li>• <a href="#">Example: Configuring Virtual Memory for Process Configuration Data on page 81</a></li> <li>• <a href="#">configuration-database on page 108</a></li> <li>• <a href="#">extend-size on page 113</a></li> <li>• <a href="#">virtual-memory-mapping on page 148</a></li> </ul>

## groups

```
Syntax  groups {
        group-name {
            configuration-data;
            when {
                chassis chassis-id;
                member member-id;
                model model-id;
                node node-id;
                peers [ names of peers ]
                routing-engine routing-engine-id;
                time <start-time> [to <end-time>];
            }
            conditional-data;
        }
        lccn-re0 {
            configuration-data;
        }
        lccn-re1 {
            configuration-data;
        }
    }
```

Hierarchy Level [\[edit\]](#)

Release Information Statement introduced before Junos OS Release 7.4.

Description Create a configuration group.

Options —

**group-name**—Name of the configuration group. To configure multiple groups, specify more than one **group-name**.

**configuration-data**—The configuration statements that are to be applied elsewhere in the configuration with the **apply-groups** statement, to have the target configuration inherit the statements in the group.

**when conditional-data**—Option introduced in Junos 11.3. The conditional statements that are to be applied when this configuration group is applied.

On routers that support multiple Routing Engines, you can also specify two special group names:

**re0**—Configuration statements that are to be applied to the Routing Engine in slot 0.

**re1**—Configuration statements that are to be applied to the Routing Engine in slot 1.

The configuration specified in group **re0** is applied only if the current Routing Engine is in slot 0; likewise, the configuration specified in group **re1** is applied only if the current Routing Engine is in slot 1. Therefore, both Routing Engines can use the same configuration file, each using only the configuration statements that apply to it. Each

**re0** or **re1** group contains at a minimum the configuration for the hostname and the management interface (**fxp0**). If each Routing Engine uses a different management interface, the group also should contain the configuration for the backup router and static routes.

(Routing matrix only) The TX Matrix router supports group names for the Routing Engines in each connected T640 router in the following formats:



**NOTE:** The management Ethernet interface used for the TX Matrix Plus router, T1600 routers in a routing matrix, and PTX Series Packet Transport Routers, is **em0**. Junos OS automatically creates the router's management Ethernet interface, **em0**.

- **lccn-re0**—Configuration statements applied to the Routing Engine in slot 0 of the specified T640 router that is connected to a TX Matrix router.
- **lccn-re1**—Configuration statements applied to the specified to the Routing Engine in slot 1 of the specified T640 router that is connected to a TX Matrix router.

*n* identifies the T640 router and can be from 0 through 3.

The remaining statements are explained separately.

**Required Privilege Level**      configure—To enter configuration mode.

**Related Documentation**

- *Creating the Junos OS Configuration Group*
- *apply-groups*
- *apply-groups-except*

## host-name

---

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

## inet6-backup-router

---

<b>Syntax</b>	<code>inet6-backup-router <i>address</i> &lt;destination <i>destination-address</i>&gt;;</code>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Set a default router (running IP version 6 [IPv6]) to use while the local router or switch (running IPv6) is booting and if the routing protocol processes fail to start. The Junos OS removes the route to this router or switch as soon as the software starts.
<b>Options</b>	<i>address</i> —Address of the default router.  <i>destination <i>destination-address</i></i> —(Optional) Destination address that is reachable through the backup router. You can include this option to achieve network reachability while loading, configuring, and recovering the router or switch, but without the risk of installing a default route in the forwarding table.  <b>Default:</b> All hosts (default route) are reachable through the backup router.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring a Backup Router</i></li></ul>




## interfaces

---

<b>Syntax</b>	<pre> interfaces {     interface-name {         bootp;         rarp;     } } </pre>
<b>Hierarchy Level</b>	[edit <a href="#">system autoinstallation</a> ]
<b>Release Information</b>	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
<b>Description</b>	Configure the interface on which to perform autoinstallation. A request for an IP address is sent from the interface. Specify the IP address procurement protocol.
<b>Options</b>	<p><b>rarpbootp</b>—Send requests over serial interfaces with Frame Relay.</p> <p><b>rarp</b>—Send requests over Ethernet interfaces.</p>
<b>Required Privilege Level</b>	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Upgrading Software by Using Automatic Software Download</i></li> <li>• <a href="#">autoinstallation on page 102</a></li> </ul>

## load-key-file

---

<b>Syntax</b>	load-key-file <i>URL filename</i> ;
<b>Hierarchy Level</b>	[edit system root-authentication], [edit system login user <i>username</i> authentication]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series. Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
<b>Description</b>	<div> <b>NOTE:</b> ECDSA is not supported on the QFabric system.</div> <p>Load RSA (SSH version 1 and SSH version 2) and DSA or ECDSA (SSH version 2) public keys from a previously-generated named file at a specified URL location or local path. The file contains one or more SSH keys that are copied into the configuration when the command is issued.</p>
<b>Required Privilege Level</b>	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring the Root Password</i></li><li>• <i>Configuring the Root Password</i></li><li>• <i>Configuring Junos OS User Accounts by Using a Configuration Group</i></li></ul>

## location (System)

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

- Related Documentation**
- [Specifying the Physical Location of the Router or Switch on page 62](#)

---

## login-tip

---

<b>Syntax</b>	login-tip;
<b>Hierarchy Level</b>	[edit system login class <i>class-name</i> ]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Enable CLI tips at login.
<b>Default</b>	Disabled.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	• <a href="#">Configuring Login Tips</a>

---

## max-configurations-on-flash

---

<b>Syntax</b>	max-configurations-on-flash <i>number</i> ;
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	Specify the number of configurations stored on the CompactFlash card.
<b>Options</b>	<i>number</i> —The number of configurations stored on the CompactFlash card. <b>Range:</b> 0 through 49. The most recently saved configuration is number 0, and the oldest saved configuration is number 49.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	• <a href="#">Using Junos OS to Specify the Number of Configurations Stored on the CompactFlash Card on page 59</a>

---

## message

---

<b>Syntax</b>	<code>message <i>text</i>;</code>
<b>Hierarchy Level</b>	[edit system login]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	<p>Configure a system login message. This message appears before a user logs in.</p> <p>You can format the message using the following special characters:</p> <ul style="list-style-type: none"><li>• \n—New line</li><li>• \t—Horizontal tab</li><li>• \'—Single quotation mark</li><li>• \"—Double quotation mark</li><li>• \\—Backslash</li></ul>
<b>Options</b>	<i>text</i> —Text of the message.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring the Junos OS to Display a System Login Message</i></li><li>• <a href="#">announcement on page 98</a></li></ul>

## mirror-flash-on-disk

---

<b>Syntax</b>	mirror-flash-on-disk;
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement deprecated for Junos OS with Upgraded FreeBSD in Junos OS Release 15.1.



**NOTE:** To determine which platforms run Junos OS with Upgraded FreeBSD, see the table listing the platforms currently running Junos OS with upgraded FreeBSD in *Understanding Junos OS with Upgraded FreeBSD*.

**Description** Configure the hard disk to automatically mirror the contents of the CompactFlash card. The hard disk maintains a synchronized mirror copy of the CompactFlash card contents. Data written to the CompactFlash card is simultaneously updated in the mirrored copy of the hard disk. If the CompactFlash card fails to read data, the hard disk automatically retrieves its mirrored copy of the CompactFlash card.



**CAUTION:** We recommend that you disable flash disk mirroring when you upgrade or downgrade the router.

You cannot issue the `request system snapshot` command while the `mirror-flash-on-disk` statement is enabled.



**NOTE:** After you have enabled or disabled the `mirror-flash-on-disk` statement, you must reboot the router for your changes to take effect. To reboot, issue the `request system reboot` command.

<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Configuring Automatic Mirroring of the CompactFlash Card on the Hard Disk Drive on page 58</a></li></ul>

---

## name-server

---

<b>Syntax</b>	<code>name-server {     <code>address</code>; }</code>
<b>Hierarchy Level</b>	[edit system], [edit system services dhcp], [edit system services dhcp], [edit system services dhcp pool], [edit system services dhcp static-binding]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Configure one or more Domain Name System (DNS) name servers.
<b>Options</b>	<b><code>address</code></b> —Address of the name server. To configure multiple name servers, include a maximum of three <b><code>address</code></b> options.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Reaching a Domain Name System Server</i></li></ul>

## page-pooling-size (Virtual Memory Mapping)

---

<b>Syntax</b>	<code>page-pooling-size size KB;</code>
<b>Hierarchy Level</b>	[edit system configuration-database virtual-memory-mapping process <i>process name</i> ]
<b>Description</b>	Configure a page-pooling size to use to swap pages in and out of virtual memory for a specific process when using virtual memory mapping to improve commit performance. This is used in conjunction with a fixed size memory to be used for the initial portion of the configuration database.
<b>Options</b>	<b>size KB</b> —Size in kilobytes to use for page-pooling the remaining data in the database. <b>Range:</b> Minimum 1024 KB, maximum 680 MB
<b>Required Privilege Level</b>	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Using Virtual Memory for Process Configuration Data on page 80</a></li><li>• <a href="#">Example: Configuring Virtual Memory for Process Configuration Data on page 81</a></li><li>• <a href="#">configuration-database on page 108</a></li><li>• <a href="#">extend-size on page 113</a></li><li>• <a href="#">virtual-memory-mapping on page 148</a></li></ul>

## password (Proxy Systems)

---

<b>Syntax</b>	<code>password password;</code>
<b>Hierarchy Level</b>	[edit system proxy]
<b>Release Information</b>	Statement introduced in Junos OS Release 11.4.
<b>Description</b>	Configure the proxy server parameters for a device.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Example: Configuring a Proxy Server for License Updates on page 55</a></li></ul>



## **`persist-groups-inheritance`**

---

<b>Syntax</b>	<code>persist-groups-inheritance;</code>
<b>Hierarchy Level</b>	[edit system commit]
<b>Release Information</b>	Statement introduced in Junos OS Release 13.2.
<b>Description</b>	Configure this option to improve commit performance for systems that use many configuration groups that use wildcards. This option causes the full inheritance paths of the configuration groups to be built in the database instead of in the process memory.
<b>Options</b>	There are no options for this configuration.
<b>Required Privilege Level</b>	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Improving Commit Time When Using Configuration Groups</i></li></ul>

## pic-console-authentication

---

<b>Syntax</b>	<pre>pic-console authentication {     (encrypted-password "<i>password</i>"   plain-text-password); }</pre>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	Configure console access to Physical Interface Cards (PICs).
<b>Default</b>	Disabled. By default, there is no password setting for console access.
<b>Options</b>	<p><b>encrypted-password "<i>password</i>"</b>—Use MD5 or other encrypted authentication. Specify the MD5 or other password. You can specify only one encrypted password.</p> <p>You cannot configure a blank password for <b>encrypted-password</b> using blank quotation marks (" "). You must configure a password whose number of characters range from 1 through 128 characters and enclose the password in quotation marks.</p> <p><b>plain-text-password</b>—Use a plain-text password. The CLI prompts you for the password and then encrypts it. The CLI displays the encrypted version, and the software places the encrypted version in its user database. You can specify only one plain-text password.</p> <p>The default requirements for plain-text passwords are:</p> <ul style="list-style-type: none"><li>• The password must be between 6 and 128 characters long</li><li>• You can include most character classes in a password (uppercase letters, lowercase letters, numbers, punctuation marks, and other special characters). Control characters are not recommended.</li><li>• Valid passwords must contain at least one change of case or character class.</li></ul>
<b>Required Privilege Level</b>	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Configuring Junos OS to Set Console and Auxiliary Port Properties on page 63</a></li><li>• <a href="#">Configuring Password Authentication for Console Access to PICs</a></li></ul>

## port (Syslog)

---

<b>Syntax</b>	<code>port <i>port number</i>;</code>
<b>Hierarchy Level</b>	[edit system syslog host <i>hostname</i>   other-routing-engine  scc-master)]
<b>Release Information</b>	Statement introduced in Junos OS Release 11.3.
<b>Description</b>	Specify the port number for the remote syslog server.
<b>Options</b>	<p><b><i>port number</i></b>—Port number of the remote syslog server.</p> <p><b>Range:</b> 0 through 65535</p> <p><b>Default:</b> 514</p>
<b>Required Privilege Level</b>	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>syslog</i></li> <li>• <i>host</i></li> </ul>

## port (Proxy Server)

---

<b>Syntax</b>	<code>port <i>port-number</i>;</code>
<b>Hierarchy Level</b>	[edit system proxy]
<b>Release Information</b>	Statement introduced in Junos OS Release 11.4.
<b>Description</b>	Configure the port number for the proxy server ranging from <b>0</b> through <b>65535</b> .
<b>Required Privilege Level</b>	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Example: Configuring a Proxy Server for License Updates on page 55</a></li> </ul>

## ports


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<b>Syntax</b>	<pre>ports {   auxiliary {     disable;     insecure;     type <i>terminal-type</i>;     port-type (mini-usb   rj45);   }   console {     disable;     insecure;     log-out-on-disconnect;     type <i>terminal-type</i>;   } }</pre>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	<p>Configure the properties of the console and auxiliary ports. The ports are located on the router's craft interface.</p> <p>See the switch's hardware documentation for port locations.</p> <p>The remaining statements are explained separately.</p>
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Configuring Junos OS to Set Console and Auxiliary Port Properties on page 63</a></li></ul>

## process (Virtual Memory Mapping)

<b>Syntax</b>	<pre>process process name {     fixed-size size;     page-pooling-size size; }</pre>
<b>Hierarchy Level</b>	[edit system configuration-database virtual-memory-mapping]
<b>Description</b>	<p>Configure parameters on a per-process basis for using virtual memory mapping for the configuration database. Configure a nondefault size for the fixed size memory to be used for the initial portion of the configuration database for a specific process. Also configure a page-pooling size to be used to access virtual memory as needed by implementing page-pooling.</p>
<b>Options</b>	<p><b>fixed-size size KB</b>—Size in kilobytes to directly map for the initial portion of the configuration database for the specified process.  <b>Range:</b> Minimum 512 KB, maximum 680 MB</p> <p><b>page-pooling-size size KB</b>—Size in kilobytes to use for page-pooling the remaining data in the database.  <b>Range:</b> Minimum 512 KB, maximum 680 MB</p>
<b>Required Privilege Level</b>	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Using Virtual Memory for Process Configuration Data on page 80</a></li> <li>• <a href="#">Example: Configuring Virtual Memory for Process Configuration Data on page 81</a></li> <li>• <a href="#">configuration-database on page 108</a></li> <li>• <a href="#">extend-size on page 113</a></li> <li>• <a href="#">virtual-memory-mapping on page 148</a></li> </ul>

## processes

<b>Syntax</b>	<pre>processes {   process-name (enable   disable) failover (alternate-media   other-routing-engine);   timeout seconds; }</pre>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
<b>Description</b>	Configure which Junos OS processes are running on the router or switch.
<div>  <p><b>CAUTION:</b> Never disable any of the software processes unless instructed to do so by a customer support engineer.</p> </div>	
<b>Default</b>	All processes are enabled by default.
<b>Options</b>	<p><b>(enable   disable)</b>—(Optional) Enable or disable a specified process.</p> <p><b>failover (alternate-media   other-routing-engine)</b>—(Optional) For routers or switches with redundant Routing Engines only, switch to backup media if a process fails repeatedly. If a process fails four times within 30 seconds, the router or switch reboots from the alternate media or the other Routing Engine.</p> <p><b>process-name</b>—One of the valid process names. You can obtain a complete list of process names by using the CLI command completion feature. After specifying a process name, command completion also indicates any additional options for that process.</p> <p><b>timeout seconds</b>—(Optional) How often the system checks the watchdog timer, in seconds. If the watchdog timer has not been checked in the specified number of seconds, the system reloads. If you set the time value too low, it is possible for the system to reboot immediately after it loads.</p> <p><b>Values:</b> 15, 60, or 180</p> <p><b>Default:</b> 180 seconds (rounded up to 291 seconds by the Junos kernel)</p>
<b>Required Privilege Level</b>	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>Disabling Junos OS Processes on page 77</li> </ul>

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## proxy (System)

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<b>Syntax</b>	<pre>proxy {   server (<i>hostname</i>   <i>ip-address</i>);   port <i>port-number</i>;   username <i>username</i>;   password <i>password</i>; }</pre>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced in Junos OS Release 11.4.
<b>Description</b>	<p>Configure the proxy server properties for a device.</p> <p>The remaining statements are explained separately.</p>
<b>Required Privilege Level</b>	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Example: Configuring a Proxy Server for License Updates on page 55</a></li></ul>

## root-authentication

<b>Syntax</b>	<pre> root-authentication {   (encrypted-password "password"   plain-text-password);   load-key-file URL:filename;   no-public-keys   ssh-dsa "public-key";   ssh-ecdsa "public-key";   ssh-rsa "public-key"; } </pre>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p>
<b>Description</b>	<p>Configure the authentication methods for the root-level user, whose username is <b>root</b>.</p> <p>You can use the <b>load-key-file URL:filename</b> statement to load an SSH key file that was previously generated using <b>ssh-keygen</b>.</p> <p>Optionally, you can use the <b>ssh-dsa</b>, <b>ssh-ecdsa</b>, or <b>ssh-rsa</b> statements to directly configure SSH RSA, DSA, or ECDSA keys to authenticate root logins. You can configure more than one public key for SSH authentication of root logins as well as for user accounts. When a user logs in as root, the public keys are referenced to determine whether the private key matches any of them.</p> <p>To view the SSH keys entries, use the configuration mode <b>show</b> command. For example:</p> <pre> [edit system] user@host# set root-authentication load-key-file my-host:.ssh/id_dsa.pub .file.19692   0 KB   0.3 kB/s   ETA: 00:00:00   100% [edit system] user@host# show root-authentication {   ssh-rsa "ABC123 user@domain.net"; #   SECRET-DATA } </pre>
<b>Options</b>	<p><b>encrypted-password "password"</b>—MD5 or other encrypted authentication. Specify the MD5 or other password. You can specify only one encrypted password.</p> <p>You cannot configure a blank password for <b>encrypted-password</b> using blank quotation marks (" "). You must configure a password whose number of characters range from 1 through 128 characters and enclose the password in quotation marks.</p> <p><b>load-key-file URL:filename</b>—Load an SSH key file that was previously generated using <b>ssh-keygen</b>. The <b>URL:filename</b> is the path to the file's location and name. When using this option, the contents of the key file are copied into the configuration immediately after entering the <b>load-key-file URL:filename</b> statement. This command loads RSA (SSH version 1 and SSH version 2) and DSA (SSH version 2) public keys.</p> <p><b>no-public-keys</b>—Disable SSH public key based authentication.</p>



**plain-text-password**—Plain-text password. The CLI prompts you for the password and then encrypts it. The CLI displays the encrypted version, and the software places the encrypted version in its user database. You can specify only one plain-text password.

**ssh-ecdsa "*public/private-key*"**—SSH ECDSA (variant of DSA that uses elliptic curve cryptography) public key. You can specify one or more public keys.

**ssh-dsa "*public-key*"**—SSH version 2 authentication. Specify the DSA (SSH version 2) public key. You can specify one or more public keys.

**ssh-rsa "*public-key*"**—SSH version 1 authentication. Specify the RSA (SSH version 1 and SSH version 2) public key. You can specify one or more public keys.

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

<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Understanding User Accounts</i></li><li>• <i>Protecting Network Security by Configuring the Root Password</i></li><li>• <i>Recovering the Root Password</i></li><li>• <i>authentication</i></li></ul>
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## root-login

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<b>Syntax</b>	root-login (allow   deny   deny-password);
<b>Hierarchy Level</b>	[edit system services ssh]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series. Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.
<b>Description</b>	Control user access through SSH.
<b>Default</b>	root-login deny-password is the default.
<b>Options</b>	<b>allow</b> —Allow users to log in to the router or switch as root through SSH.  <b>deny</b> —Disable users from logging in to the router or switch as root through SSH.  <b>deny-password</b> —Allow users to log in to the router or switch as root through SSH when the authentication method (for example, RSA authentication) does not require a password.
<b>Required Privilege Level</b>	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring SSH Service for Remote Access to the Router or Switch</i></li></ul>

## routing (System Processes)

<b>Syntax</b>	routing { force-32-bit   force-64-bit   auto-64-bit; }
<b>Hierarchy Level</b>	[edit system processes], [edit logical-systems <i>logical-system name</i> system processes]
<b>Release Information</b>	Statement introduced in Junos OS Release 13.3 R4.
<b>Description</b>	Configure routing protocols process (rpd) mode.



**NOTE:** Subscriber management is not supported when the routing protocol daemon (rpd) is running in 64-bit mode. For subscriber management support, rpd must run in 32-bit mode.

**Options** **auto-64-bit**—(Optional) Enable to use 64-bit mode. If the system is 64-bit capable and has at least 16 GB of RAM, then **auto-64-bit** will cause the Routing Engine to run in 64-bit mode. Otherwise, it will run in 32-bit mode.



**NOTE:** This option is not applicable for logical systems.

**force-32-bit**—(Optional) Enable to always use 32-bit mode.



**NOTE:** For MX Series routers, virtual private LAN service (VPLS) dynamic profiles are not supported with the 64-bit mode routing protocol process (rpd). To enable VPLS dynamic profiles configuration, configure the routing process to use 32-bit mode.

**force-64-bit**—(Optional) Enable to always use 64-bit mode.



**TIP:** You need not restart the routing protocol process (rpd) to use the 64-bit mode.

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

**Related Documentation**

- [Disabling Junos OS Processes on page 77](#)

- [processes on page 132](#)

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## saved-core-context

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Syntax	(saved-core-context   no-saved-core-context);
Hierarchy Level	[edit system]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	<p>Configure whether the router saves core files generated by internal Junos processes, along with contextual information (system log files and a copy of the current configuration):</p> <ul style="list-style-type: none"><li>• <b>saved-core-context</b>—The router saves each cores file and its associated context in a compressed tar file named <code>/var/tmp/process-name.core.core-number.tgz</code>.</li><li>• <b>no-saved-core-context</b>—The router does not save cores files and their associated context.</li></ul> <p>The router saves core files.</p>
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">Saving Core Files from Junos OS Processes on page 78</a></li><li>• <a href="#">saved-core-files on page 138</a></li></ul>

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## saved-core-files

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Syntax	saved-core-files <i>number</i> ;
Hierarchy Level	[edit system]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Save core files generated by internal Junos processes, but not the associated contextual information (configuration and system log files).
Options	<p><b>number</b>—Maximum number of core files to save.</p> <p><b>Range:</b> 1 through 10</p>
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">Saving Core Files from Junos OS Processes on page 78</a></li><li>• <a href="#">saved-core-context on page 138</a></li></ul>

## server (Batch Commits)

<b>Syntax</b>	<pre> server {   commit-interval &lt;number-of-seconds-between-commits&gt;;   days-to-keep-error-logs &lt;days-to-keep-error-log-entries&gt;;   maximum-aggregate-pool &lt;maximum-number-of-commits-to-aggregate&gt;;   maximum-entries &lt;number-of-entries&gt;;   traceoptions {     file filename;     files number;     flag (all   batch   commit-server   configuration);     size maximum-file-size;     (world-readable   no-world-readable);   } } </pre>
<b>Hierarchy Level</b>	[edit system commit]
<b>Release Information</b>	Statement introduced in Junos OS Release 12.1.
<b>Description</b>	Configure the system commit to occur in batches. Configure parameters for aggregating and saving batch commits.
<b>Options</b>	<p><b><i>commit-interval</i></b>—Configure the interval between commits.</p> <p><b><i>days-to-keep-error-logs</i></b>—Configure the number of days to keep log entries.</p> <p><b><i>maximum-aggregate-pool</i></b>—Configure the maximum number of commits to aggregate together.</p> <p><b><i>maximum-entries</i></b>—Configure the maximum number of commit entries.</p>
<b>Required Privilege Level</b>	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Example: Configuring Batch Commit Server Properties</i></li> </ul>

## server (Proxy)

---

<b>Syntax</b>	<code>server (hostname   ip-address);</code>
<b>Hierarchy Level</b>	[edit system proxy]
<b>Release Information</b>	Statement introduced in Junos OS Release 11.4.
<b>Description</b>	Configure the proxy server name or IP address.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Example: Configuring a Proxy Server for License Updates on page 55</a></li></ul>

## static-host-mapping

<b>Syntax</b>	<pre>static-host-mapping {     hostname {         alias [ <i>aliases</i> ];         inet [ <i>addresses</i> ];         inet6 [ <i>addresses</i> ];         sysid <i>system-identifier</i>;     } }</pre>
<b>Hierarchy Level</b>	[edit system]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	(Optional) Statically map a hostname to one or more IP addresses and aliases, and configure an International Organization for Standardization (ISO) system identifier (system ID).
<b>Default</b>	If you do not statically map the hostname, the mapping is generated dynamically, based on the system configuration. For instance, if you omit the <b>static-host-mapping hostname sysid</b> statement, the IS-IS system ID is dynamically generated from the host portion of the ISO address configured on the loopback interface (lo0) and is mapped to the <b>host-name</b> statement configured at the [edit system] hierarchy level.
<b>Options</b>	<p><b>alias <i>alias</i></b>—Alias for the hostname.</p> <p><b>hostname</b>—Fully qualified hostname.</p> <p><b>inet <i>address</i></b>—IP address. You can specify one or more IP addresses for the host.</p> <p><b>inet6 <i>address</i></b>—IP address. You can specify one or more IPv6 addresses for the host.</p> <p><b>sysid <i>system-identifier</i></b>—ISO system identifier (system ID). This is the 6-byte portion of the Intermediate System-to-Intermediate System (IS-IS) network service access point (NSAP). We recommend that you use the host's IP address represented in binary-coded decimal (BCD) format. For example, the IP address 208.197.169.18 is 2081.9716.9018 in BCD.</p>
<b>Required Privilege Level</b>	<p>system—To view this statement in the configuration.</p> <p>system-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><i>Configuring the Hostname of a Router or Switch by Using a Configuration Group</i></li> </ul>

## synchronize

<b>Syntax</b>	synchronize;
<b>Hierarchy Level</b>	[edit system commit]
<b>Release Information</b>	Statement introduced in Junos OS Release 7.4. Statement introduced in Junos OS Release 10.4 for EX Series switches.
<b>Description</b>	For devices with multiple Routing Engines only. Configure the <b>commit</b> command to automatically perform a <b>commit synchronize</b> action between dual Routing Engines within the same chassis. The Routing Engine on which you execute the <b>commit</b> command (the requesting Routing Engine) copies and loads its candidate configuration to the other (the responding) Routing Engine. Each Routing Engine then performs a syntax check on the candidate configuration file being committed. If no errors are found, the configuration is activated and becomes the current operational configuration on both Routing Engines.



**NOTE:** If you configure the **commit synchronize** statement at the [edit system] hierarchy level and issue a **commit** in the master Routing Engine, the master configuration is automatically synchronized with the backup. However, if the backup Routing Engine is down when you issue the **commit**, the Junos OS displays a warning and commits the candidate configuration in the master Routing Engine. When the backup Routing Engine comes up, its configuration will automatically be synchronized with the master. A newly inserted backup Routing Engine automatically synchronizes its configuration with the master Routing Engine configuration.



**NOTE:** When you configure nonstop active routing (NSR), you must configure the **commit synchronize** statement. Otherwise, the **commit** operation fails.

On the TX Matrix router, synchronization only occurs between the Routing Engines within the same chassis. When synchronization is complete, the new configuration is then distributed to the Routing Engines on the T640 routers. That is, the master Routing Engine on the TX Matrix router distributes the configuration to the master Routing Engine on each T640 router. Likewise, the backup Routing Engine on the TX Matrix router distributes the configuration to the backup Routing Engine on each T640 router.

On the TX Matrix Plus router, synchronization only occurs between the Routing Engines within the switch-fabric chassis and when synchronization is complete, the new configuration is then distributed to the Routing Engines on the line-card chassis (LCC). That is, the master Routing Engine on the TX Matrix Plus router distributes the configuration to the master Routing Engine on each LCC. Likewise, the backup Routing Engine on the TX Matrix Plus router distributes the configuration to the backup Routing Engine on each LCC.



In EX Series Virtual Chassis configurations:

- On EX4200 switches in Virtual Chassis, synchronization occurs between the switch in the master role and the switch in the backup role.
- On EX8200 switches in a Virtual Chassis, synchronization occurs only between the master and backup XRE200 External Routing Engines.

**Options**    **and-quit**—(Optional) Quit configuration mode if the commit synchronization succeeds.

**at**—(Optional) Time at which to activate configuration changes.

**comment**—(Optional) Write a message to the commit log.

**force**—(Optional) Force a commit synchronization on the other Routing Engine (ignore warnings).

**scripts**—(Optional) Push scripts to the other Routing Engine.

**Required Privilege**    **system**—To view this statement in the configuration.

**Level**    **system-control**—To add this statement to the configuration.

**Related**    • *Synchronizing the Routing Engine Configuration*  
**Documentation**    • *Configuring Multiple Routing Engines to Synchronize Committed Configurations Automatically*

## synchronize (Commit configuration)

---

<b>Syntax</b>	synchronize;
<b>Hierarchy Level</b>	[edit <a href="#">system</a> commit]
<b>Release Information</b>	Statement introduced in Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	<p>For devices with multiple Routing Engines only. Configure a <b>commit</b> command to automatically result in a <b>commit synchronize</b> action between dual Routing Engines within the same chassis. The Routing Engine on which you execute the <b>commit</b> command (the requesting Routing Engine) copies and loads its candidate configuration to the other (the responding) Routing Engines. All Routing Engines then perform a syntax check on the candidate configuration file being committed. If no errors are found, the configuration is activated and becomes the current operational configuration on all Routing Engines.</p> <p>Starting with Junos OS Release 9.3, accounting of events and operations on a backup Routing Engine is not supported on accounting servers such as TACACS+ or RADIUS. Logging of accounting events is supported only for events and operations on a master Routing Engine.</p>
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring Multiple Routing Engines to Synchronize Committed Configurations Automatically</i></li></ul>

## system

---

<b>Syntax</b>	system { ... }
<b>Hierarchy Level</b>	[edit]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Configure system management properties.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">System Management Configuration Statements on page 90</a></li></ul>

## transfer-interval (Configuration)

<b>Syntax</b>	<code>transfer-interval <i>interval</i>;</code>
<b>Hierarchy Level</b>	[edit system archival configuration]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series.
<b>Description</b>	Configure the router or switch to periodically transfer its currently active configuration to an archive site.
<b>Options</b>	<i>interval</i> —Interval at which to transfer the current configuration to an archive site. <b>Range:</b> 15 through 2880 minutes



**NOTE:** The [edit system archival] hierarchy is not available on QFabric systems.

<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring the Periodic Transfer of the Active Configuration to an Archive Site on page 60</a></li> <li>• <a href="#">archive</a></li> <li>• <a href="#">configuration on page 107</a></li> <li>• <a href="#">transfer-on-commit on page 146</a></li> </ul>

## transfer-on-commit

<b>Syntax</b>	transfer-on-commit;
<b>Hierarchy Level</b>	[edit system archival configuration]
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 11.1 for the QFX Series. Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.
<b>Description</b>	Configure the router or switch to transfer its currently active configuration to an archive site each time you commit a candidate configuration.



**NOTE:** When specifying a URL in a Junos OS statement using an IPv6 host address, you must enclose the entire URL in quotation marks ( " ") and enclose the IPv6 host address in brackets ( [ ] ). For example, "ftp://username<:password>@[ipv6-host-address]<:port>/url-path" .



**NOTE:** The [edit system archival] hierarchy is not available on QFabric systems.

<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring the Transfer of the Currently Active Configuration When a Configuration Is Committed on page 61</a></li> <li>• <a href="#">archive</a></li> <li>• <a href="#">configuration on page 107</a></li> <li>• <a href="#">transfer-interval on page 145</a></li> </ul>

## trusted-key

---

<b>Syntax</b>	<code>trusted-key [ <i>key-numbers</i> ];</code>
<b>Hierarchy Level</b>	<code>[edit system ntp]</code>
<b>Release Information</b>	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	For NTP, configure the keys you are allowed to use when you configure the local router or switch to synchronize its time with other systems on the network.
<b>Options</b>	<i>key-numbers</i> —One or more key numbers. Each key can be any 32-bit unsigned integer except 0.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring NTP Authentication Keys</i></li> <li>• <i>authentication-key</i></li> <li>• <i>broadcast</i></li> <li>• <i>peer</i></li> <li>• <i>server</i></li> </ul>

## username (System)

---

<b>Syntax</b>	<code>username <i>username</i>;</code>
<b>Hierarchy Level</b>	<code>[edit system proxy]</code>
<b>Release Information</b>	Statement introduced in Junos OS Release 11.4.
<b>Description</b>	Configure the username as configured in the proxy server.
<b>Required Privilege Level</b>	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Example: Configuring a Proxy Server for License Updates on page 55</a></li> </ul>

## virtual-memory-mapping

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Syntax	<pre>virtual-memory-mapping {   process process name {     fixed-size size KB;     page-pooling-size size KB;   } }</pre>
Hierarchy Level	[edit system configuration-database]
Description	<p>Define parameters for using virtual memory mapping for the configuration database on a per-process basis. You can define a fixed size for the initial portion of the database and configure a page-pooling size for the remaining portion of the database. Page-pooling enables the configuration database to use small amounts of virtual memory by swapping pages in or out, as needed, for remaining process configurations that might temporarily exceed the fixed memory database size that is allocated. Using this method, there is no need to map the entire database into the virtual memory of the process. Only the most recently used pages are pooled (pointed to) when accessed.</p>
Options	<p><b>fixed-size size KB</b>—Size in kilobytes to directly map for the initial portion of the configuration database for the specified process.</p> <p><b>Range:</b> Minimum 512 KB, maximum 680 MB</p> <p><b>page-pooling-size size KB</b>—Size in kilobytes to use for page-pooling the remaining data in the database.</p> <p><b>Range:</b> Minimum 512 KB, maximum 680 MB</p>
Required Privilege Level	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">Using Virtual Memory for Process Configuration Data on page 80</a></li><li>• <a href="#">Example: Configuring Virtual Memory for Process Configuration Data on page 81</a></li><li>• <a href="#">configuration-database on page 108</a></li><li>• <a href="#">extend-size on page 113</a></li><li>• <a href="#">process on page 131</a></li></ul>

## CHAPTER 8

# File Management Commands

- file archive
- file checksum md5
- file checksum sha1
- file checksum sha-256
- file compare
- file copy
- file delete
- file list
- file rename
- file show

## file archive

---

<b>Syntax</b>	<code>file archive destination <i>destination</i> source <i>source</i> &lt;compress&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.
<b>Description</b>	Archive, and optionally compress, one or multiple local system files as a single file, locally or at a remote location.  For information on valid filename and URL formats, see <a href="#">“Format for Specifying Filenames and URLs in Junos OS CLI Commands” on page 52</a> .
<b>Options</b>	<b>destination <i>destination</i></b> —Destination of the archived file or files. Specify the destination as a URL or filename. The Junos OS adds one of the following suffixes if the destination filename does not already have it: <ul style="list-style-type: none"><li>• For archived files—The suffix <b>.tar</b></li><li>• For archived and compressed files—The suffix <b>.tgz</b></li></ul> <b>source <i>source</i></b> —Source of the original file or files. Specify the source as a URL or filename. <b>compress</b> —(Optional) Compress the archived file with the GNU zip (gzip) compression utility. The compressed files have the suffix <b>.tgz</b> .
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Format for Specifying Filenames and URLs in Junos OS CLI Commands on page 52</a></li></ul>
<b>List of Sample Output</b>	<a href="#">file archive (Multiple Files) on page 150</a> <a href="#">file archive (Single File) on page 151</a> <a href="#">file archive (with Compression) on page 151</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### file archive (Multiple Files)

The following sample command archives all message files in the local directory `/var/log/messages` as the single file `messages-archive.tar`.

```
user@host> file archive source /var/log/messages* destination /var/log/messages-archive.tar
/usr/bin/tar: Removing leading / from absolute path names in the archive.
user@host>
```



### file archive (Single File)

The following sample command archives one message file in the local directory **/var/log/messages** as the single file **messages-archive.tar**.

```
user@host> file archive source /var/log/messages destination /var/log/messages-archive.tar
/usr/bin/tar: Removing leading / from absolute path names in the archive.
user@host
```

### file archive (with Compression)

The following sample command archives and compresses all message files in the local directory **/var/log/messages** as the single file **messages-archive.tgz**.

```
user@host> file archive compress source /var/log/messages* destination
/var/log/messages-archive.tgz
/usr/bin/tar: Removing leading / from absolute path names in the archive.
```

## file checksum md5

---

<b>Syntax</b>	<code>file checksum md5 &lt;pathname&gt; filename</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.
<b>Description</b>	Calculate the Message Digest 5 (MD5) checksum of a file.
<b>Options</b>	<b>pathname</b> —(Optional) Path to a filename.  <b>filename</b> —Name of a local file for which to calculate the MD5 checksum.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring Checksum Hashes for a Commit Script</i></li><li>• <i>Configuring Checksum Hashes for an Event Script</i></li><li>• <i>Configuring Checksum Hashes for an Op Script</i></li><li>• <i>Configuring Checksum Hashes for an SNMP Script</i></li><li>• <i>Executing an Op Script from a Remote Site</i></li><li>• <a href="#">file checksum sha-256 on page 154</a></li><li>• <a href="#">file checksum sha1 on page 153</a></li></ul>
<b>List of Sample Output</b>	<a href="#">file checksum md5 on page 152</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

#### file checksum md5

```
user@host> file checksum md5 jbundle-5.3R2.4-export-signed.tgz
MD5 (jbundle-5.3R2.4-export-signed.tgz) = $ABC123
```

## file checksum sha1

<b>Syntax</b>	<code>file checksum sha1 &lt;pathname&gt; filename</code>
<b>Release Information</b>	<p>Command introduced in Junos OS Release 9.5.</p> <p>Command introduced in Junos OS Release 9.5 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.</p>
<b>Description</b>	Calculate the Secure Hash Algorithm (SHA-1) checksum of a file.
<b>Options</b>	<p><b>pathname</b>—(Optional) Path to a filename.</p> <p><b>filename</b>—Name of a local file for which to calculate the SHA-1 checksum.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Configuring Checksum Hashes for a Commit Script</i></li> <li>• <i>Configuring Checksum Hashes for an Event Script</i></li> <li>• <i>Configuring Checksum Hashes for an Op Script</i></li> <li>• <i>Configuring Checksum Hashes for an SNMP Script</i></li> <li>• <i>Executing an Op Script from a Remote Site</i></li> <li>• <a href="#">file checksum md5 on page 152</a></li> <li>• <a href="#">file checksum sha-256 on page 154</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">file checksum sha1 on page 153</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### file checksum sha1

```
user@host> file checksum sha1 /var/db/scripts/opscript.slax

SHA1 (/var/db/scripts/commitscript.slax) = $ABC123
```

## file checksum sha-256

---

<b>Syntax</b>	<code>file checksum sha-256 &lt;pathname&gt; filename</code>
<b>Release Information</b>	Command introduced in Junos OS Release 9.5. Command introduced in Junos OS Release 9.5 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.
<b>Description</b>	Calculate the Secure Hash Algorithm 2 family (SHA-256) checksum of a file.
<b>Options</b>	<b>pathname</b> —(Optional) Path to a filename.  <b>filename</b> —Name of a local file for which to calculate the SHA-256 checksum.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring Checksum Hashes for a Commit Script</i></li><li>• <i>Configuring Checksum Hashes for an Event Script</i></li><li>• <i>Configuring Checksum Hashes for an Op Script</i></li><li>• <i>Configuring Checksum Hashes for an SNMP Script</i></li><li>• <i>Executing an Op Script from a Remote Site</i></li><li>• <a href="#">file checksum md5 on page 152</a></li><li>• <a href="#">file checksum sha1 on page 153</a></li></ul>
<b>List of Sample Output</b>	<a href="#">file checksum sha-256 on page 154</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

#### file checksum sha-256

```
user@host> file checksum sha-256 /var/db/scripts/commitscript.slax  
  
SHA256 (/var/db/scripts/commitscript.slax) =$ABC123
```

## file compare

<b>Syntax</b>	<pre>file compare (files <i>filename filename</i>) &lt;context   unified&gt; &lt;ignore-white-space&gt;</pre>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.</p>
<b>Description</b>	<p>Compare two local files and describe the differences between them in default, context, or unified output styles:</p> <ul style="list-style-type: none"> <li>• <b>Default</b>—In the first line of output, <b>c</b> means lines were changed between the two files, <b>d</b> means lines were deleted between the two files, and <b>a</b> means lines were added between the two files. The numbers preceding this alphabetical marker represent the first file, and the lines after the alphabetical marker represent the second file. A left angle bracket (&lt;) in front of output lines refers to the first file. A right angle bracket (&gt;) in front of output lines refers to the second file.</li> <li>• <b>Context</b>—The display is divided into two parts. The first part is the first file; the second part is the second file. Output lines preceded by an exclamation point (!) have changed. Additions are marked with a plus sign (+), and deletions are marked with a minus sign (-).</li> <li>• <b>Unified</b>—The display is preceded by the line number from the first and the second file (xx,xxx,x). Before the line number, additions to the file are marked with a plus sign (+), and deletions to the file are marked with a minus sign (-). The body of the output contains the affected lines. Changes are viewed as additions plus deletions.</li> </ul>
<b>Options</b>	<p><b>files <i>filename</i></b>—Names of two local files to compare.</p> <p><b>context</b>—(Optional) Display output in context format.</p> <p><b>ignore-white-space</b>—(Optional) Ignore changes in the amount of white space.</p> <p><b>unified</b>—(Optional) Display output in unified format.</p>
<b>Required Privilege Level</b>	none
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Format for Specifying Filenames and URLs in Junos OS CLI Commands on page 52</a></li> <li>• <a href="#">Viewing Core Files from Junos OS Processes on page 78</a></li> </ul>
<b>List of Sample Output</b>	<p><a href="#">file compare files on page 157</a></p> <p><a href="#">file compare files context on page 157</a></p> <p><a href="#">file compare files unified on page 157</a></p> <p><a href="#">file compare files unified ignore-white-space on page 157</a></p>

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

## Sample Output

### file compare files

```
user@host> file compare files /tmp/one /tmp/two
100c100
<          full-name "File 1";
---
>          full-name "File 2";
102c102
<          class foo; # 'foo' is not defined
---
>          class super-user;
```

### file compare files context

```
user@host> file compare files /tmp/one /tmp/two context
*** /tmp/one   Wed Dec  3 17:12:50 2003
--- /tmp/two   Wed Dec  3 09:13:14 2003
*****
*** 97,104 ****
        }
    }
    user bill {
!         full-name "Bill Smith";
!         class foo; # 'foo' is not defined
        authentication {
            encrypted-password $ABC123;
        }
--- 97,105 ----
    }
    user bill {
!         full-name "Bill Smith";
!         uid 1089;
!         class super-user;
        authentication {
            encrypted-password $ABC123;
        }
    }
```

### 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-password $ABC123;
    }
}
```

### 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 $ABC123; # SECRET-DATA
         }
     }
```



## file copy

**Syntax** `file copy source destination`  
`<source-address address>`

**Release Information** Command introduced before Junos OS Release 7.4.  
**source-address** option added in Junos OS Release 7.4.  
 Command introduced in Junos OS Release 9.0 for EX Series switches.  
 Command introduced in Junos OS Release 11.1 for QFX Series switches.

**Description** Copy files from one location to another location on the local device or to a location on a remote device reachable by the local device.

For information on valid filename and URL formats, see [“Format for Specifying Filenames and URLs in Junos OS CLI Commands” on page 52](#).



**WARNING:** Starting with Junos OS Release 15.1, the `ssl3-support` option is not available for configuration with the `set system services xnm-ssl` and `file copy` commands. SSLv3 is no longer supported and available.

For all releases prior to and including Junos OS Release 14.2, SSLv3 is disabled by default at runtime. The `ssl3-support` option is hidden and deprecated in Junos OS Release 14.2 and earlier releases. However, you can use the `set system services xnm-ssl ssl3-support` command to enable SSLv3 for a Junos XML protocol client application to use as the protocol to connect to the Junos XML protocol server on a router, and you can use the `file copy source destination ssl3-support` command to enable the copying of files from an SSLv3 URL.

Using SSLv3 presents a potential security vulnerability, and we recommend that you not use SSLv3. For more details about this security vulnerability, go to <http://kb.juniper.net/InfoCenter/index?page=content&id=JSA10656>.



**NOTE:** If you define an ordered set of ciphers, key exchange methods, or message authentication codes (MACs) at the `[edit system services ssh]` hierarchy level, the newly-defined set is used when copying files using secure copy protocol (scp). For more information, see *Configuring the SSH Service to Support Legacy Cryptography*.

**Required Privilege Level** maintenance

**Related Documentation**

- [Format for Specifying Filenames and URLs in Junos OS CLI Commands on page 52](#)
- [Default Directories for Junos OS File Storage on the Router or Switch on page 17](#)

- *Copying a Configuration File from One Routing Engine to the Other*

**List of Sample Output**

- [Copy a File from the Local Device to a Personal Computer on page 160](#)
- [Copy a Configuration File between Routing Engines on page 160](#)
- [Copy a Log File between Routing Engines on page 160](#)
- [Copy a File from a TX Matrix Plus Router to a T1600 Router Connected to the TX Matrix Plus on page 160](#)
- [Copy a File Using File Transfer Protocol on page 160](#)
- [Copy a File Using File Transfer Protocol and Requiring a Password on page 161](#)
- [Copy a File Using Secure Copy Protocol \(scp\) on page 161](#)

## Sample Output

The following are examples of a variety of file copy scenarios.

### Copy a File from the Local Device to a Personal Computer

```
user@host> file copy /var/tmp/rpd.core.4 mypc:/c/junipero/tmp
...transferring.file..... |           0 KB |   0.3 kB/s | ETA: 00:00:00 | 100%
```

### Copy a Configuration File between Routing Engines

The following sample command copies a configuration file from Routing Engine 0 to Routing Engine 1:

```
user@host> file copy /config/juniper.conf re1:/var/tmp/copied-juniper.conf
```

### Copy a Log File between Routing Engines

The following sample command copies a log file from Routing Engine 0 to Routing Engine 1:

```
user@host> file copy lcc0-re0:/var/log/chassisd lcc0-re1:/var/tmp
```

### Copy a File from a TX Matrix Plus Router to a T1600 Router Connected to the TX Matrix Plus

The following sample command copies a text file from Routing Engine 1 on the switch-fabric chassis sfc0 to Routing Engine 1 on the line-card chassis lcc0:

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

### Copy a File Using File Transfer Protocol

To use anonymous FTP to copy a local file to a remote system, enter the following command:

```
user@host>file copy filename ftp://hostname/filename
```

In the following example, `/config/juniper.conf` is the local file and `hostname` is the FTP server:

```
user@host> file copy /config/juniper.conf ftp://hostname/juniper.conf
Receiving ftp: //hostname/juniper.conf (2198 bytes): 100%
2198 bytes transferred in 0.0 seconds (2.69 MBps)
```

### Copy a File Using File Transfer Protocol and Requiring a Password

To use FTP where you require more privacy and are prompted for a password, enter the following command:

```
root@host> file copy filename ftp://user@hostname/filename
```

In the following example, `/config/juniper.conf` is the local file and `hostname` is the FTP server:

```
root@host> file copy /config/juniper.conf ftp://user@hostname/juniper.conf
Password for user@hostname: *****
Receiving ftp: //user@hostname/juniper.conf (2198 bytes): 100%
2198 bytes transferred in 0.0 seconds (2.69 MBps)
```

### Copy a File Using Secure Copy Protocol (scp)

To use scp to copy a local file to a remote system, enter the following command:

```
root@host> file copy filename scp://user@hostname/path/filename
```

In the following example, `/config/juniper.conf` is the local file, `user` is the username, and `ssh-host` is the scp server:

```
root@host> file copy /config/juniper.conf scp://user@ssh-host/tmp/juniper.conf
user@ssh-host's password: *****
juniper.conf          100%
| ***** |
2198          00:00
```

## file delete

---

<b>Syntax</b>	<code>file delete <i>filename</i></code> <code>&lt;purge&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.
<b>Description</b>	Delete a file on the local router or switch.
<b>Options</b>	<b><i>filename</i></b> —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.  <b><i>purge</i></b> —(Optional) Overwrite regular files before deleting them.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<a href="#">file delete on page 162</a> <a href="#">file delete (Routing Matrix) on page 162</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### file delete

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

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

### file delete (Routing Matrix)

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

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

## file list

<b>Syntax</b>	file list <detail   recursive> <filename>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.
<b>Description</b>	Display a list of files on the local router or switch.
<b>Options</b>	<p><b>none</b>—Display a list of all files for the current directory.</p> <p><b>detail   recursive</b>—(Optional) Display detailed output or descend recursively through the directory hierarchy, respectively.</p> <p><b>filename</b>—(Optional) Display a list of files. For a routing matrix, the filename must include the chassis information.</p>
<b>Additional Information</b>	The default directory is the home directory of the user logged in to the router or switch. To view available directories, enter a space and then a backslash (/) after the <b>file list</b> command. To view files within a specific directory, include a backslash followed by the directory and, optionally, subdirectory name after the <b>file list</b> command.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<a href="#">file list on page 163</a> <a href="#">file list (Routing Matrix) on page 163</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### file list

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

### file list (Routing Matrix)

```
user@host> file list lcc0-re0:var/tmp
lcc0-re0:
-----
/var/tmp/:
.gdbinit
.pccardd
Test/
chassisd*
chassisd.user1*
```

check\_time\*  
cores/  
diagTestPrep\*  
diagtest\*  
diagtest.user\*  
do\_switchovers\*  
dump\_test\*  
err.user2.log  
esw\_clearstats\*  
esw\_counter\*  
esw\_debug\*  
esw\_debug\_ge\*  
esw\_filt\_test\*  
esw\_filter\_tnp\_addr\*  
esw\_getstats\*  
esw\_phy\*  
esw\_stats\*

## file rename

<b>Syntax</b>	<code>file rename <i>source destination</i></code>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.</p>
<b>Description</b>	Rename a file on the local router or switch.
<b>Options</b>	<p><b><i>destination</i></b>—New name for the file.</p> <p><b><i>source</i></b>—Original name of the file. For a routing matrix, the filename must include the chassis information.</p>
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<p><a href="#">file rename on page 165</a></p> <p><a href="#">file rename (Routing Matrix) on page 165</a></p>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### file rename

The following example lists the files in `/var/tmp`, renames one of the files, and then displays the list of files again to reveal the newly named file.

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

user@host> file rename /var/tmp/dcd.core /var/tmp/dcd.core.990413
user@host> file list /var/tmp
dcd.core.990413
rpd.core
snmpd.core
```

### file rename (Routing Matrix)

The following example lists the files in `/var/tmp`, renames one of the files, and then displays the list of files again to reveal the newly named file.

```
user@host> file list lcc0-re1:/var/tmp
lcc0-re1:
-----

/var/tmp:
.pccardd
sartre.conf
snmpd
syslogd.core-tarball.0.tgz
```

```
user@host> file rename lcc0-re0:/var/tmp/snmpd /var/tmp/snmpd.rr
```

```
user@host> file list lcc0-re1:/var/tmp
```

```
lcc0-re1:
```

```
-----
```

```
/var/tmp:
```

```
.pccardd
```

```
sartre.conf
```

```
snmpd.rr
```

```
syslogd.core-tarball.0.tgz
```



## file show

<b>Syntax</b>	<code>file show <i>filename</i></code> <code>&lt;encoding (base64   raw)&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.
<b>Description</b>	Display the contents of a file.
<b>Options</b>	<b><i>filename</i></b> —Name of a file. For a routing matrix, the filename must include the chassis information.  <b><code>encoding (base64   raw)</code></b> —(Optional) Encode file contents with base64 encoding or show raw text.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<a href="#">file show on page 167</a> <a href="#">file show (Routing Matrix) on page 167</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### file show

```
user@host> file show /var/log/messages
Apr 13 21:00:08 dev1 /kernel: so-1/1/2: loopback suspected; going to standby.
Apr 13 21:00:40 dev1 /kernel: so-1/1/2: loopback suspected; going to standby.
Apr 13 21:02:48 dev1 last message repeated 4 times
Apr 13 21:07:04 dev1 last message repeated 8 times
Apr 13 21:07:13 dev1 /kernel: so-1/1/0: Clearing SONET alarm(s) RDI-P
Apr 13 21:07:29 dev1 /kernel: so-1/1/0: Asserting SONET alarm(s) RDI-P
...
```

### file show (Routing Matrix)

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

set print pretty

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

define msgbuf
    printf "%s", msgbufp->msg_ptr
```

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

## CHAPTER 9

# System Software Administrative Commands

- clear system commit
- clear system reboot
- configure
- request message
- request system configuration rescue delete
- request system configuration rescue save
- request system halt
- request system license add
- request system license delete
- request system license save
- request system logout
- request system partition abort
- request system partition hard-disk
- request system power-off
- request system reboot
- request system snapshot
- request system software abort
- request system software add
- request system zeroize
- show chassis hardware
- show configuration
- show host
- show log
- show system connections
- show system name-resolution

- `show version`
- `start shell`

## clear system commit

---

<b>Syntax</b>	clear system commit
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
<b>Description</b>	Clear any pending commit operation.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	maintenance (or the actual user who scheduled the commit)
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show system commit on page 462</a></li> </ul>
<b>List of Sample Output</b>	<p><a href="#">clear system commit on page 171</a></p> <p><a href="#">clear system commit (None Pending) on page 171</a></p> <p><a href="#">clear system commit (User Does Not Have Required Privilege Level) on page 171</a></p>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

#### clear system commit

```
user@host> clear system commit
Pending commit cleared.
```

#### clear system commit (None Pending)

```
user@host> clear system commit
No commit scheduled.
```

#### clear system commit (User Does Not Have Required Privilege Level)

```
user@host> clear system commit
error: Permission denied
```

## clear system reboot

---

<b>List of Syntax</b>	<a href="#">Syntax on page 172</a> <a href="#">Syntax (EX Series Switches) on page 172</a> <a href="#">Syntax (TX Matrix Router) on page 172</a> <a href="#">Syntax (TX Matrix Plus Router) on page 172</a> <a href="#">Syntax (QFX Series) on page 172</a>
<b>Syntax</b>	clear system reboot <both-routing-engines>
<b>Syntax (EX Series Switches)</b>	clear system reboot <all-members> <both-routing-engines> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	clear system reboot <both-routing-engines> <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	clear system reboot <both-routing-engines> <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (QFX Series)</b>	clear system reboot <infrastructure <i>name</i> > <interconnect-device <i>name</i> > <node-group <i>name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
<b>Description</b>	Clear any pending system software reboots or halts. When issued on a TX Matrix router without any options, the default behavior clears all pending system software reboots or halts on all T640 routers connected to the TX Matrix router. When issued on a TX Matrix Plus router without any options, the default behavior clears all pending system software reboots or halts on all T1600 or T4000 routers connected to the TX Matrix Plus router.
<b>Options</b>	<b>none</b> —Clear all pending system software reboots or halts.  <b>all-chassis</b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) Clear all halt or reboot requests for all the Routing Engines in the chassis.  <b>all-lcc</b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, clear all halt or reboot requests for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, clear all halt or reboot requests on the l connected T1600 or T4000 LCCs.

**all-members**—(EX4200 switches only) (Optional) Clear all halt or reboot requests on all members of the Virtual Chassis configuration.

**both-routing-engines**—(Systems with multiple Routing Engines) (Optional) Clear all halt or reboot requests on both Routing Engines. On a TX Matrix router, clear both Routing Engines on all chassis connected to the TX Matrix router. Likewise, on a TX Matrix Plus router, clear both Routing Engines on all chassis connected to the TX Matrix Plus router.

**infrastructure *name***—(QFabric systems) (Optional) Clear all halt or reboot requests on the fabric control Routing Engines or fabric manager Routing Engines.

**interconnect-device *name***—(QFabric systems) (Optional) Clear all halt or reboot requests on the Interconnect device.

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

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

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

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

**node-group *name***—(QFabric systems) (Optional) Clear all halt or reboot requests on the Node group.

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

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

**Required Privilege Level**      maintenance

<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">request system reboot on page 201</a></li><li>• <a href="#">Routing Matrix with a TX Matrix Plus Router Solutions Page</a></li></ul>
<b>List of Sample Output</b>	<a href="#">clear system reboot on page 175</a> <a href="#">clear system reboot (TX Matrix Router) on page 175</a> <a href="#">clear system reboot (QFX Series) on page 175</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.



## Sample Output

### clear system reboot

```
user@host> clear system reboot
reboot requested by root at Sat Dec 12 19:37:34 1998
[process id 17855]
Terminating...
```

### clear system reboot (TX Matrix Router)

```
user@host> clear system reboot
scc-re0:
-----
No shutdown/reboot scheduled.
lcc0-re0:
-----
No shutdown/reboot scheduled.
lcc2-re0:
-----
No shutdown/reboot scheduled.
```

### clear system reboot (QFX Series)

```
user@switch> clear system reboot node-group node1
No shutdown/reboot scheduled.
```

## configure

---

<b>Syntax</b>	<code>configure</code> <code>&lt;batch&gt;</code> <code>&lt;dynamic&gt;</code> <code>&lt;exclusive&gt;</code> <code>&lt;private&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Enter configuration mode. When this command is entered without any optional keywords, everyone can make configuration changes and commit all changes made to the configuration.
<b>Options</b>	<p><b>none</b>—Enter configuration mode.</p> <p><b>batch</b>—(Optional) Work in the batch commit mode where commit operations are executed in batches.</p> <p><b>dynamic</b>—(Optional) Configure routing policies and certain routing policy objects in a dynamic database that is not subject to the same verification required in the standard configuration database. As a result, the time it takes to commit changes to the dynamic database is much shorter than for the standard configuration database. You can then reference these policies and policy objects in routing policies you configure in the standard database.</p> <p><b>exclusive</b>—(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><b>private</b>—(Optional) Allow multiple users to edit different parts of the configuration at the same time and to commit only their own changes, or to roll back without interfering with one another's changes. You cannot commit changes in configure private mode when another user is in configure exclusive mode.</p>
<b>Additional Information</b>	For more information about the different methods of entering configuration mode and the restrictions that apply, see the <i>Junos OS Administration Library</i> .
<b>Required Privilege Level</b>	configure
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">show configuration on page 418</a></li></ul>
<b>List of Sample Output</b>	<a href="#">configure on page 177</a>
<b>Output Fields</b>	When you enter this command, you are placed in configuration mode and the system prompt changes from <i>hostname&gt;</i> to <i>hostname#</i> .

## Sample Output

configure

```
user@host> configure
Entering configuration mode
[edit]
user@host#
```

## request message

---


<b>Syntax</b>	<code>request message all message "text"</code> <code>request message message "text" (terminal <i>terminal-name</i>   user <i>user-name</i>)</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
<b>Description</b>	Display a message on the screens of all users who are logged in to the router or switch or on specific screens.
<b>Options</b>	<b>all</b> —Display a message on the terminal of all users who are currently logged in.  <b>message "text"</b> —Message to display.  <b>terminal <i>terminal-name</i></b> —Name of the terminal on which to display the message.  <b>user <i>user-name</i></b> —Name of the user to whom to direct the message.
<b>Required Privilege Level</b>	maintenance
<b>List of Sample Output</b>	<a href="#">request message message on page 178</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request message message

```
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
```

## request system configuration rescue delete

<b>Syntax</b>	request system configuration rescue delete
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.</p>
<b>Description</b>	Delete an existing rescue configuration.
<div>  <p><b>NOTE:</b> The [edit system configuration] hierarchy is not available on QFabric systems.</p> </div>	
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">request system configuration rescue save on page 180</a></li> <li>• <a href="#">request system software rollback</a></li> <li>• <a href="#">show system commit on page 462</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">request system configuration rescue delete on page 179</a>
<b>Output Fields</b>	This command produces no output.


### Sample Output

#### request system configuration rescue delete

```
user@host> request system configuration rescue delete
```

## request system configuration rescue save

---

<b>Syntax</b>	request system configuration rescue save
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.
<b>Description</b>	Save the most recently committed configuration as the rescue configuration so that you can return to it at any time by using the <b>rollback</b> command.
<div> <b>NOTE:</b> The [edit system configuration] hierarchy is not available on QFabric systems.</div>	
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>request system software delete</i></li><li>• <i>request system software rollback</i></li><li>• <a href="#">show system commit on page 462</a></li></ul>
<b>List of Sample Output</b>	<a href="#">request system configuration rescue save on page 180</a>
<b>Output Fields</b>	This command produces no output.

### Sample Output

#### request system configuration rescue save

```
user@host> request system configuration rescue save
```

## request system halt

<b>List of Syntax</b>	<a href="#">Syntax on page 181</a> <a href="#">Syntax (EX Series Switches) on page 181</a> <a href="#">Syntax (PTX Series) on page 181</a> <a href="#">Syntax (TX Matrix Router) on page 181</a> <a href="#">Syntax (TX Matrix Plus Router) on page 181</a> <a href="#">Syntax (MX Series Router) on page 182</a> <a href="#">Syntax (QFX Series) on page 182</a>
<b>Syntax</b>	<pre>request system halt &lt;at <i>time</i>&gt; &lt;backup-routing-engine&gt; &lt;both-routing-engines&gt; &lt;other-routing-engine&gt; &lt;in <i>minutes</i>&gt; &lt;media (compact-flash   disk   removable-compact-flash   usb)&gt; &lt;message "<i>text</i>"&gt;</pre>
<b>Syntax (EX Series Switches)</b>	<pre>request system halt &lt;all-members&gt; &lt;at <i>time</i>&gt; &lt;backup-routing-engine&gt; &lt;both-routing-engines&gt; &lt;in <i>minutes</i>&gt; &lt;local&gt; &lt;media (external   internal)&gt; &lt;member <i>member-id</i>&gt; &lt;message "<i>text</i>"&gt; &lt;other-routing-engine&gt; &lt;slice <i>slice</i>&gt;</pre>
<b>Syntax (PTX Series)</b>	<pre>request system halt &lt;at <i>time</i>&gt; &lt;backup-routing-engine&gt; &lt;both-routing-engines&gt; &lt;other-routing-engine&gt; &lt;in <i>minutes</i>&gt; &lt;media (compact-flash   disk)&gt; &lt;message "<i>text</i>"&gt;</pre>
<b>Syntax (TX Matrix Router)</b>	<pre>request system halt &lt;all-lcc   lcc <i>number</i>   scc&gt; &lt;at <i>time</i>&gt; &lt;backup-routing-engine&gt; &lt;both-routing-engines&gt; &lt;other-routing-engine&gt; &lt;in <i>minutes</i>&gt; &lt;media (compact-flash   disk)&gt; &lt;message "<i>text</i>"&gt;</pre>
<b>Syntax (TX Matrix Plus Router)</b>	<pre>request system halt &lt;all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i>&gt;</pre>

	<div>&lt;at <i>time</i>&gt; &lt;backup-routing-engine&gt; &lt;both-routing-engines&gt; &lt;other-routing-engine&gt; &lt;in <i>minutes</i>&gt; &lt;media (compact-flash   disk)&gt; &lt;message "text"&gt;</div>
<b>Syntax (MX Series Router)</b>	<div>request system halt &lt;all-members&gt; &lt;at <i>time</i>&gt; &lt;backup-routing-engine&gt; &lt;both-routing-engines&gt; &lt;in <i>minutes</i>&gt; &lt;local&gt; &lt;media (external   internal)&gt; &lt;member <i>member-id</i>&gt; &lt;message "text"&gt; &lt;other-routing-engine&gt;</div>
<b>Syntax (QFX Series)</b>	<div>request system halt &lt;all-members&gt; &lt;at <i>time</i>&gt; &lt;both-routing-engines&gt; &lt;director-device <i>director-device-id</i>&gt; &lt;in <i>minutes</i>&gt; &lt;local&gt; &lt;media &gt; &lt;member <i>member-id</i>&gt; &lt;message "text"&gt; &lt;other-routing-engine&gt; &lt;slice <i>slice</i>&gt;</div>
<b>Release Information</b>	<div>Command introduced before Junos OS Release 7.4. <b>other-routing-engine</b> option introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series. <b>director-device</b> option introduced for QFabric systems in Junos OS Release 12.2. <b>backup-routing-engine</b> option introduced in Junos OS Release 13.1. Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</div>
<b>Description</b>	<div>Stop the router or switch software.</div>





**NOTE:** When you issue this command on an individual component—for example, a Node device—in a QFabric system, you will receive a warning that says “Hardware-based members will halt, Virtual Junos Routing Engines will reboot.” If you want to halt only one member of a Node group, issue this command with the `member` option on the Node device CLI, because you cannot issue this command from the QFabric CLI. Also, issuing this command might cause traffic loss on an individual component.

When you issue this command on a QFX5100 switch, you are not prompted to reboot. You must power cycle the switch to reboot.



**NOTE:** For the routers with the Routing Engines RE-S-2x00x6, RE-PTX-2x00x8, and RE-S-2x00x8, this command is deprecated and might be removed completely in a future release.

On these routers, this command is replaced with the `request vmhost halt` command which provides similar functionality.

**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 and MX Series routers 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.
- ***yyymmddhhmm***—Absolute time at which to stop the software, specified as year, month, day, hour, and minute.
- ***hh:mm***—Absolute time on the current day at which to stop the software.

**backup-routing-engine**—(Optional) Halt the backup Routing Engine. This command halts the backup Routing Engine, regardless from which Routing Engine the command is executed. For example, if you issue the command from the master Routing Engine, the backup Routing Engine is halted. If you issue the command from the backup Routing Engine, the backup Routing Engine is halted.

**both-routing-engines**—(Optional) Halt both Routing Engines at the same time.

**director-device *director-device-id***—(QFabric systems only) Halt a specific Director device.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, halt a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, halt a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Halt the local Virtual Chassis member.

**in *minutes***—(Optional) Number of minutes from now to stop the software. This option is an alias for the at +*minutes* option.

**media (compact-flash | disk)**—(Optional) Boot medium for the next boot.

**media (external | internal)**—(EX Series and QFX Series switches and MX Series routers only) (Optional) Halt the boot media:

- **external**—Halt the external mass storage device.
- **internal**—Halt the internal flash device.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Halt the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**message "*text*"**—(Optional) Message to display to all system users before stopping the software.

**other-routing-engine**—(Optional) Halt the other Routing Engine from which the command is issued. For example, if you issue the command from the master Routing Engine, the backup Routing Engine is halted. Similarly, if you issue the command from the backup Routing Engine, the master Routing Engine is halted.

**scc**—(TX Matrix routers only) (Optional) Halt the TX Matrix router (or switch-card chassis).

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

**slice *slice***—(EX Series and QFX Series switches only) (Optional) Halt a partition on the boot media. This option has the following suboptions:

- 1—Halt partition 1.
- 2—Halt partition 2.
- **alternate**—Reboot from the alternate partition.

**Additional Information** On the M7i router, the **request system halt** command does not immediately power down the Packet Forwarding Engine. The power-down process can take as long as 5 minutes.

On a TX Matrix router and TX Matrix Plus router if you issue the **request system halt** command on the master Routing Engine, all the master Routing Engines connected to the routing matrix are halted. If you issue this command on the backup Routing Engine, all the backup Routing Engines connected to the routing matrix are halted.



**NOTE:** If you have a router or switch with two Routing Engines and you want to shut the power off to the router or switch or remove a Routing Engine, you must first halt the backup Routing Engine (if it has been upgraded), and then halt the master Routing Engine. To halt a Routing Engine, issue the **request system halt** command. You can also halt both Routing Engines at the same time by issuing the **request system halt both-routing-engines** command.

**Required Privilege Level** maintenance

**Related Documentation**

- [clear system reboot on page 172](#)
- [request system power-off on page 196](#)
- [request vmhost halt](#)
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**

- [request system halt on page 186](#)
- [request system halt \(In 2 Hours\) on page 186](#)
- [request system halt \(Immediately\) on page 186](#)
- [request system halt \(At 1:20 AM\) on page 186](#)

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

## Sample Output

### request system halt

```
user@host> request system halt
Halt the system ? [yes,no] (no) yes

*** FINAL System shutdown message from root@section2 ***
System going down IMMEDIATELY
Terminated
...
syncing disks... 11 8 done
The operating system has halted.
Please press any key to reboot.
```

### request system halt (In 2 Hours)

The following example, which assumes that the time is 5 PM (1700), illustrates three different ways to request that the system stop 2 hours from now:

```
user@host> request system halt at +120
user@host> request system halt in 120
user@host> request system halt at 19:00
```

### request system halt (Immediately)

```
user@host> request system halt at now
```

### request system halt (At 1:20 AM)

To stop the system at 1:20 AM, enter the following command. Because 1:20 AM is the next day, you must specify the absolute time.

```
user@host> request system halt at yymdd120
request system halt at 120
Halt the system at 120? [yes,no] (no) yes
```

## request system license add

<b>Syntax</b>	<code>request system license add (<i>filename</i>   terminal)</code>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Command introduced in Junos OS Release 9.5 for SRX Series devices.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p>
<b>Description</b>	Add a license key.
<b>Options</b>	<p><b><i>filename</i></b>—License key from a file or URL. Specify the filename or the URL where the key is located.</p> <p><b><i>terminal</i></b>—License key from the terminal.</p>
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Adding New Licenses (CLI Procedure)</i></li> </ul>
<b>List of Sample Output</b>	<a href="#">request system license add on page 187</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request system license add

```

user@host> request system license add terminal
E408408918 aeaqib qcsbja okbuqe rcmxnq vjocwf uxfsta
           z5ufjb kdrmt6 57bimv 2f3ddp qttcdn 627q4a
           jx4s5x hiri
E408408918: successfully added
add license complete (no errors)

```

## request system license delete

---

<b>Syntax</b>	<code>request system license delete ( <i>license-identifier</i>   license-identifier-list [ <i>licenseid001</i> <i>licenseid002</i> <i>licenseid003</i> ]   all )</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Option <b>license-identifier-list</b> introduced in Junos OS Release 13.1.
<b>Description</b>	Delete a license key. You can choose to delete one license at a time, all licenses at once, or a list of license identifiers enclosed in brackets.
<b>Options</b>	<b><i>license-identifier</i></b> —Text string that uniquely identifies a license key.  <b>license-identifier-list [ <i>licenseid001</i> <i>licenseid002</i> <i>licenseid003</i>.... ]</b> —Delete multiple license identifiers as a list enclosed in brackets.  <b>all</b> —Delete all licenses on the device.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Deleting a License (CLI Procedure)</i></li></ul>

## request system license save

---

<b>Syntax</b>	<code>request system license save (<i>filename</i>   terminal)</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 9.5 for SRX Series devices.
<b>Description</b>	Save installed license keys to a file or URL.
<b>Options</b>	<b><i>filename</i></b> —License key from a file or URL. Specify the filename or the URL where the key is located.  <b><i>terminal</i></b> —License key from the terminal.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Saving License Keys</i></li></ul>
<b>List of Sample Output</b>	<a href="#">request system license save on page 189</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request system license save

```
user@host> request system license save ftp://user@host/license.conf
```

## request system logout

---

<b>Syntax</b>	<code>request system logout (pid <i>pid</i>   terminal <i>terminal</i>   user <i>username</i>)</code> <code>&lt;all&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
<b>Description</b>	Log out users from the router or switch and the configuration database. If a user held the <b>configure exclusive</b> lock, this command clears the exclusive lock.
<b>Options</b>	<b>all</b> —(Optional) Log out all sessions owned by a particular PID, terminal session, or user. (On a TX Matrix or TX Matrix Plus router, this command is broadcast to all chassis.)  <b>pid <i>pid</i></b> —Log out the user session using the specified management process identifier (PID). The PID type must be management process.  <b>terminal <i>terminal</i></b> —Log out the user for the specified terminal session.  <b>user <i>username</i></b> —Log out the specified user.
<b>Required Privilege Level</b>	configure
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Log a User Out of the Router on page 74</a></li></ul>
<b>List of Sample Output</b>	<a href="#">request system logout on page 190</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

### Sample Output

#### request system logout

```
user@host> request system logout user test all
Connection closed by foreign host.
```



## request system partition abort

<b>List of Syntax</b>	<a href="#">Syntax on page 191</a> <a href="#">Syntax (TX Matrix Router) on page 191</a> <a href="#">Syntax (TX Matrix Plus Router) on page 191</a> <a href="#">Syntax (MX Series Router) on page 191</a>
<b>Syntax</b>	request system partition abort
<b>Syntax (TX Matrix Router)</b>	request system partition abort <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	request system partition abort <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	request system partition abort <all-members> <local> <member <i>member-id</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6. Command deprecated for Junos OS with Upgraded FreeBSD in Junos OS Release 15.1.



**NOTE:** To determine which platforms run Junos OS with Upgraded FreeBSD, see the table listing the platforms currently running Junos OS with upgraded FreeBSD in *Understanding Junos OS with Upgraded FreeBSD*.

<b>Description</b>	Terminate a previously scheduled storage media partition operation. If the command is issued between the time of a partition request and a reboot, the partition request is aborted and the storage media is not affected.
<b>Options</b>	<p><b>all-chassis</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) Abort a previously scheduled partition operation for all chassis.</p> <p><b>all-lcc</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, abort a previously scheduled partition operation on all T640 routers ( line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, abort a previously scheduled partition operation on all routers ( line-card chassis) connected to the TX Matrix Plus router.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Abort a previously scheduled partition operation for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix 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</p>

previously scheduled partition operation on a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Abort a previously scheduled partition operation for the local Virtual Chassis member.

**member *member-id***—(MX Series routers only) (Optional) Abort a previously scheduled partition operation for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

**scc**—(TX Matrix routers only) (Optional) Abort a previously scheduled partition operation on the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Abort a previously scheduled partition operation on the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

**Required Privilege Level** maintenance

**Related Documentation**

- [request system partition hard-disk on page 193](#)

**List of Sample Output** [request system partition abort on page 192](#)

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

## Sample Output

### [request system partition abort](#)

```
user@host> request system partition abort
The hard disk is no longer scheduled to be partitioned.
```

## request system partition hard-disk

<b>List of Syntax</b>	<a href="#">Syntax on page 193</a> <a href="#">Syntax (TX Matrix Router) on page 193</a> <a href="#">Syntax (TX Matrix Plus Router) on page 193</a> <a href="#">Syntax (MX Series Router) on page 193</a>
<b>Syntax</b>	request system partition hard-disk
<b>Syntax (TX Matrix Router)</b>	request system partition hard-disk <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	request system partition hard-disk <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	request system partition hard-disk <all-members> <local> <member <i>member-id</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6. Command deprecated for Junos OS with Upgraded FreeBSD in Junos OS Release 15.1.



**NOTE:** To determine which platforms run Junos OS with Upgraded FreeBSD, see the table listing the platforms currently running Junos OS with upgraded FreeBSD in *Understanding Junos OS with Upgraded FreeBSD*.

<b>Description</b>	Set up the hard disk for partitioning. After this command is issued, the hard disk is partitioned the next time the system is rebooted. When the hard disk is partitioned, the contents of <b>/altroot</b> and <b>/altconfig</b> are saved and restored. All other data on the hard disk is at risk of being lost.
<b>Options</b>	<p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Schedule a partition of the hard disk for all routers in the chassis at its next reboot.</p> <p><b>all-lcc</b>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, schedule a partition of the hard disk on all T640 routers connected to the TX Matrix router at their next reboot. On a TX Matrix Plus router, schedule a partition of the hard disk on all connected LCCs.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Schedule a partition of the hard disk for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix Plus router, schedule a partition of the hard disk on a specific T640 router connected to the TX Matrix router. On a TX Matrix Plus router, schedule a partition of the hard disk on a specific router that is connected to the TX Matrix Plus router.</p>

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Schedule a partition of the hard disk for the local member of the Virtual Chassis.

**member *member-id***—(MX Series routers only) (Optional) Schedule a partition of the hard disk for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

**scc**—(TX Matrix routers only) (Optional) Schedule a partition of the hard disk on the T640 router connected to the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Schedule a partition of the hard disk on the connected T1600 or T4000 LCCs connected to the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** To immediately partition the hard disk, use the **request system reboot** command. To cancel the partition request, use the **request system partition abort** command.

**Required Privilege Level** maintenance

**Related Documentation**

- [request system partition abort on page 191](#)
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [request system partition hard-disk on page 194](#)

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

## Sample Output

### [request system partition hard-disk](#)

```
user@host> request system partition hard-disk
WARNING: The hard disk is about to be partitioned. The contents
WARNING: of /altroot and /altconfig will be saved and restored.
WARNING: All other data is at risk. This is the setup stage, the
WARNING: partition happens during the next reboot.
```

```
Setting up to partition the hard disk ...
```

WARNING: A REBOOT IS REQUIRED TO PARTITION THE HARD DISK. Use the  
WARNING: 'request system reboot' command when you are ready to proceed  
WARNING: with the partitioning. To abort the partition of the hard disk  
WARNING: use the 'request system partition abort' command.

## request system power-off

---

<b>List of Syntax</b>	<a href="#">Syntax on page 196</a> <a href="#">Syntax (EX Series Switches) on page 196</a> <a href="#">Syntax (TX Matrix Router) on page 196</a> <a href="#">Syntax (TX Matrix Plus Router) on page 196</a> <a href="#">Syntax (MX Series Router) on page 196</a> <a href="#">Syntax (QFX Series) on page 197</a>
<b>Syntax</b>	<code>request system power-off</code> <code>&lt;both-routing-engines&gt;</code> <code>&lt;other-routing-engine&gt;</code> <code>&lt;at <i>time</i>&gt;</code> <code>&lt;in <i>minutes</i>&gt;</code> <code>&lt;media (compact-flash   disk   removable-compact-flash   usb)&gt;</code> <code>&lt;message "<i>text</i>"&gt;</code>
<b>Syntax (EX Series Switches)</b>	<code>request system power-off</code> <code>&lt;all-members&gt;</code> <code>&lt;at <i>time</i>&gt;</code> <code>&lt;both-routing-engines&gt;</code> <code>&lt;in <i>minutes</i>&gt;</code> <code>&lt;local&gt;</code> <code>&lt;media (external   internal)&gt;</code> <code>&lt;member <i>member-id</i>&gt;</code> <code>&lt;message "<i>text</i>"&gt;</code> <code>&lt;other-routing-engine&gt;</code> <code>&lt;slice <i>slice</i>&gt;</code>
<b>Syntax (TX Matrix Router)</b>	<code>request system power-off</code> <code>&lt;all-chassis   all-lcc   lcc <i>number</i>   scc&gt;</code> <code>&lt;both-routing-engines&gt;</code> <code>&lt;other-routing-engine&gt;</code> <code>&lt;at <i>time</i>&gt;</code> <code>&lt;in <i>minutes</i>&gt;</code> <code>&lt;media (compact-flash   disk)&gt;</code> <code>&lt;message "<i>text</i>"&gt;</code>
<b>Syntax (TX Matrix Plus Router)</b>	<code>request system power-off</code> <code>&lt;all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i>&gt;</code> <code>&lt;both-routing-engines&gt;</code> <code>&lt;other-routing-engine&gt;</code> <code>&lt;at <i>time</i>&gt;</code> <code>&lt;in <i>minutes</i>&gt;</code> <code>&lt;media (compact-flash   disk)&gt;</code> <code>&lt;message "<i>text</i>"&gt;</code>
<b>Syntax (MX Series Router)</b>	<code>request system power-off</code> <code>&lt;all-members&gt;</code> <code>&lt;at <i>time</i>&gt;</code> <code>&lt;both-routing-engines&gt;</code> <code>&lt;in <i>minutes</i>&gt;</code> <code>&lt;local&gt;</code>

	<pre> &lt;media (external   internal)&gt; &lt;member <i>member-id</i>&gt; &lt;message "<i>text</i>"&gt; &lt;other-routing-engine&gt; </pre>
<b>Syntax (QFX Series)</b>	<pre> request system power-off &lt;at <i>time</i>&gt; &lt;in <i>minutes</i>&gt; &lt;media (external   internal)&gt; &lt;message "<i>text</i>"&gt; &lt;slice <i>slice</i>&gt; </pre>
<b>Release Information</b>	<p>Command introduced in Junos OS Release 8.0.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
<b>Description</b>	Power off the Routing Engines.



**NOTE:** When you issue this command on an individual component in a QFabric system, you will receive a warning that says “Hardware-based members will halt, Virtual Junos Routing Engines will reboot.” If you want to halt only one member, use the *member* option. You cannot issue this command from the QFabric CLI.



**NOTE:** For a standalone chassis (such as MX Series, PTX Series, and T Series routers), the request to power off the system is applicable only to the Routing Engines. When you request to power off both Routing Engines, all the FPCs in the chassis shut down after approximately 10 minutes and the chassis fans run at full speed. The FPCs shut down because they no longer have communication with the Routing Engines and an Inter-Integrated Circuit (I2C) timeout occurred.



**NOTE:** For the routers with Routing Engines RE-S-2x00x6, RE-PTX-2x00x8, and RE-S-2x00x8, this command is deprecated and might be removed completely in a future release.

On these routers, this command is replaced with the `request vmhost power-off` command which provides similar functionality.

<b>Options</b>	<p><b>none</b>—Power off the router or switch software immediately.</p> <p><b>all-chassis</b>—(Optional) (TX Matrix and TX Matrix Plus router only) Power off all Routing Engines in the chassis.</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 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 and MX Series routers 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 specific router that is connected to the TX Matrix Plus router. Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Power off the local Virtual Chassis member.

**media (compact-flash | disk)**—(Optional) Boot medium for the next boot.

**media (external | internal)**—(EX Series and QFX Series switches and MX Series routers 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 and MX Series routers only) (Optional) Power off the specified member of the Virtual Chassis configuration. For EX4200 switches, replace ***member-id*** with a value from 0 through 9. For an MX Series Virtual Chassis, replace ***member-id*** with a value of 0 or 1.

**message "*text*"**—(Optional) Message to display to all system users before 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 and QFX 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 200](#)

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

## Sample Output

### [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

<b>List of Syntax</b>	<a href="#">Syntax on page 201</a> <a href="#">Syntax (EX Series Switches) on page 201</a> <a href="#">Syntax (TX Matrix Router) on page 201</a> <a href="#">Syntax (TX Matrix Plus Router) on page 201</a> <a href="#">Syntax (MX Series Router) on page 201</a>
<b>Syntax</b>	<pre>request system reboot &lt;at <i>time</i>&gt; &lt;both-routing-engines&gt; &lt;in <i>minutes</i>&gt; &lt;media (compact-flash   disk   removable-compact-flash   usb)&gt; &lt;message "<i>text</i>"&gt; &lt;other-routing-engine&gt;</pre>
<b>Syntax (EX Series Switches)</b>	<pre>request system reboot &lt;all-members&gt; &lt;at <i>time</i>&gt; &lt;both-routing-engines&gt; &lt;in <i>minutes</i>&gt; &lt;local&gt; &lt;media (external   internal)&gt; &lt;member <i>member-id</i>&gt; &lt;message "<i>text</i>"&gt; &lt;other-routing-engine&gt; &lt;slice <i>slice</i>&gt;</pre>
<b>Syntax (TX Matrix Router)</b>	<pre>request system reboot &lt;all-chassis   all-lcc   lcc <i>number</i>   scc&gt; &lt;at <i>time</i>&gt; &lt;both-routing-engines&gt; &lt;in <i>minutes</i>&gt; &lt;media (compact-flash   disk)&gt; &lt;message "<i>text</i>"&gt; &lt;other-routing-engine&gt;</pre>
<b>Syntax (TX Matrix Plus Router)</b>	<pre>request system reboot &lt;all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i>&gt; &lt;at <i>time</i>&gt; &lt;both-routing-engines&gt; &lt;in <i>minutes</i>&gt; &lt;media (compact-flash   disk)&gt; &lt;message "<i>text</i>"&gt; &lt;other-routing-engine&gt; &lt;partition (1   2   alternate)&gt;</pre>
<b>Syntax (MX Series Router)</b>	<pre>request system reboot &lt;all-members&gt; &lt;at <i>time</i>&gt; &lt;both-routing-engines&gt; &lt;in <i>minutes</i>&gt; &lt;local&gt;</pre>

```
<media (external | internal)>  
<member member-id>  
<message "text">  
<other-routing-engine>
```

**Release Information** Command introduced before Junos OS Release 7.4.  
Option **other-routing-engine** introduced in Junos OS Release 8.0.  
Command introduced in Junos OS Release 9.0 for EX Series switches.  
Option **sfc** introduced for the TX Matrix Plus router in Junos OS Release 9.6.  
Option **both-routing-engines** introduced in Junos OS Release 12.1.

**Description** Reboot the software.



**NOTE:** Starting with Junos OS Release 15.1F3, the statement **request system reboot** reboots only the guest operating system on the PTX5000 with RE-PTX-X8-64G and, MX240, MX480, and MX960 with RE-S-X6-64G.

Starting with Junos OS Release 15.1F5, the statement **request system reboot** reboots only the guest operating system on the MX2010, and MX2020 with REMX2K-X8-64G.

---

**Options** **none**—Reboot the software immediately.

**all-chassis**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router or TX Matrix Plus router, reboot all routers connected to the TX Matrix or TX Matrix Plus router, respectively.

**all-lcc**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router or TX Matrix Plus router, reboot all line card chassis connected to the TX Matrix or TX Matrix Plus router, respectively.

**all-members**—(EX4200 switches and MX Series routers only) (Optional) Reboot the software on all members of the Virtual Chassis configuration.

**at *time***—(Optional) Time at which to reboot the software, specified in one of the following ways:

- **now**—Stop or reboot the software immediately. This is the default.
- **+*minutes***—Number of minutes from now to reboot the software.
- ***yymmddhhmm***—Absolute time at which to reboot the software, specified as year, month, day, hour, and minute.
- ***hh:mm***—Absolute time on the current day at which to stop the software, specified in 24-hour time.

**both-routing-engines**—(Optional) Reboot both Routing Engines at the same time.

**in *minutes***—(Optional) Number of minutes from now to reboot the software. This option is an alias for the **at +*minutes*** option.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Line-card chassis number.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Reboot the software on the local Virtual Chassis member.

**media (compact-flash | disk)**—(Optional) Boot medium for next boot.

**media (external | internal)**—(EX Series switches and MX Series routers only) (Optional) Reboot the boot media:

- **external**—Reboot the external mass storage device.
- **internal**—Reboot the internal flash device.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Reboot the software on the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**message "*text*"**—(Optional) Message to display to all system users before stopping or rebooting the software.

**other-routing-engine**—(Optional) Reboot the other Routing Engine from which the command is issued. For example, if you issue the command from the master Routing Engine, the backup Routing Engine is rebooted. Similarly, if you issue the command from the backup Routing Engine, the master Routing Engine is rebooted.

**partition**—(TX Matrix Plus routers only) (Optional) Reboot using the specified partition on the boot media. This option has the following suboptions:

- **1**—Reboot from partition 1.
- **2**—Reboot from partition 2.
- **alternate**—Reboot from the alternate partition.

**scc**—(TX Matrix routers only) (Optional) Reboot the Routing Engine on the TX Matrix switch-card chassis. If you issue the command from re0, re0 is rebooted. If you issue the command from re1, re1 is rebooted.

**sfc number**—(TX Matrix Plus routers only) (Optional) Reboot the Routing Engine on the TX Matrix Plus switch-fabric chassis. If you issue the command from re0, re0 is rebooted. If you issue the command from re1, re1 is rebooted. Replace *number* with 0.

**slice slice**—(EX Series switches only) (Optional) Reboot a partition on the boot media. This option has the following suboptions:

- 1—Power off partition 1.
- 2—Power off partition 2.
- **alternate**—Reboot from the alternate partition.

**Additional Information** Reboot requests are recorded in the system log files, which you can view with the **show log** command (see [show log](#)). Also, the names of any running processes that are scheduled to be shut down are changed. You can view the process names with the **show system processes** command (see [show system processes](#)).

On a TX Matrix or TX Matrix Plus router, if you issue the **request system reboot** command on the master Routing Engine, all the master Routing Engines connected to the routing matrix are rebooted. If you issue this command on the backup Routing Engine, all the backup Routing Engines connected to the routing matrix are rebooted.



**NOTE:** Before issuing the **request system reboot** command on a TX Matrix Plus router with no options or the **all-chassis**, **all-lcc**, **lcc number**, or **sfc** options, verify that master Routing Engine for all routers in the routing matrix are in the same slot number. If the master Routing Engine for a line-card chassis is in a different slot number than the master Routing Engine for a TX Matrix Plus router, the line-card chassis might become logically disconnected from the routing matrix after the **request system reboot** command.

---



**NOTE:** To reboot a router that has two Routing Engines, reboot the backup Routing Engine (if you have upgraded it) first, and then reboot the master Routing Engine.

---

**Required Privilege Level** maintenance

**Related Documentation**

- [clear system reboot on page 172](#)
- [request system halt on page 181](#)
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)
- [request vmhost reboot](#)

**List of Sample Output** [request system reboot on page 205](#)  
[request system reboot \(at 2300\) on page 205](#)  
[request system reboot \(in 2 Hours\) on page 205](#)  
[request system reboot \(Immediately\) on page 205](#)  
[request system reboot \(at 1:20 AM\) on page 205](#)

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

## Sample Output

### request system reboot

```
user@host> request system reboot
Reboot the system ? [yes,no] (no)
```

### request system reboot (at 2300)

```
user@host> request system reboot at 2300 message ?Maintenance time!?
Reboot the system ? [yes,no] (no) yes

shutdown: [pid 186]
*** System shutdown message from root@test.example.net ***
System going down at 23:00
```

### request system reboot (in 2 Hours)

The following example, which assumes that the time is 5 PM (17:00), illustrates three different ways to request the system to reboot in two hours:

```
user@host> request system reboot at +120
user@host> request system reboot in 120
user@host> request system reboot at 19:00
```

### request system reboot (Immediately)

```
user@host> request system reboot at now
```

### request system reboot (at 1:20 AM)

To reboot the system at 1:20 AM, enter the following command. Because 1:20 AM is the next day, you must specify the absolute time.

```
user@host> request system reboot at 06060120
request system reboot at 120
Reboot the system at 120? [yes,no] (no) yes
```

## request system snapshot

---

<b>List of Syntax</b>	<a href="#">Syntax on page 206</a> <a href="#">Syntax (ACX Series Routers) on page 206</a> <a href="#">Syntax (EX Series Switches) on page 206</a> <a href="#">Syntax (MX Series Routers) on page 206</a> <a href="#">Syntax (TX Matrix Routers) on page 206</a> <a href="#">Syntax (TX Matrix Plus Routers) on page 206</a>
<b>Syntax</b>	request system snapshot <partition>
<b>Syntax (ACX Series Routers)</b>	request system snapshot <media type> <partition>
<b>Syntax (EX Series Switches)</b>	request system snapshot <all-members   local   member <i>member-id</i> > <media type> <partition> <re0   re1   routing-engine <i>routing-engine-id</i> > <slice alternate>
<b>Syntax (MX Series Routers)</b>	request system snapshot <all-members> <config-partition> <local> <member <i>member-id</i> > <media <i>usb-port-number</i> > <partition> <root-partition>
<b>Syntax (TX Matrix Routers)</b>	request system snapshot <all-chassis   all-lcc   lcc <i>number</i>   scc> <config-partition> <partition> <root-partition>
<b>Syntax (TX Matrix Plus Routers)</b>	request system snapshot <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <config-partition> <partition> <root-partition>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 10.0 for EX Series switches. Command introduced in Junos OS Release 12.2 for ACX Series routers. Options <config-partition> and <root-partition> introduced in Junos OS Release 13.1 for M Series, MX Series, T Series, and TX Series routers. Option <b>media <i>usb-port-number</i></b> introduced in Junos OS Release 13.2 for MX104 routers. Options <config-partition>, <root-partition>, and <slice> deprecated for Junos OS with Upgraded FreeBSD in Junos OS Release 15.1





**NOTE:** To determine which platforms run Junos OS with Upgraded FreeBSD, see the table listing the platforms currently running Junos OS with upgraded FreeBSD in *Understanding Junos OS with Upgraded FreeBSD*.

- Description**
- On the router, back up the currently running and active file system partitions to standby partitions that are not running. Specifically, the root file system (/) is backed up to **/altroot**, and **/config** is backed up to **/altconfig**. The root and **/config** file systems are on the router's flash drive, and the **/altroot** and **/altconfig** file systems are on the router's hard drive.
  - On the switch, take a snapshot of the files currently used to run the switch—the complete contents of the root (/), **/altroot**, **/config**, **/var**, and **/var-tmp** directories, which include the running Junos OS, the active configuration, and log files.



**CAUTION:** After you run the **request system snapshot** command, you cannot return to the previous version of the software, because the running and backup copies of the software are identical.



**NOTE:** Starting with Junos OS Release 15.1F3, the statement **request system snapshot** creates a snapshot of the guest OS image only for the PTX5000 with RE-DUO-C2600-16G, and the MX240, MX480, and MX960 routers with RE-S-1800X4-32G-S.

Starting with Junos OS Release 15.1F5, the statement **request system snapshot** creates a snapshot of the guest OS image only for the MX2010 and MX2020 routers with REMX2K-1800-32G-S.

On these routers, in order to create snapshot of the host OS image along with Junos OS image, use the **request vmhost snapshot** command.

**Options** The specific options available depend upon the router or switch:

**none**—Back up the currently running software as follows:

- On the router, back up the currently running and active file system partitions to standby partitions that are not running. Specifically, the root file system (/) is backed up to **/altroot**, and **/config** is backed up to **/altconfig**. The root and **/config** file systems are on the router's flash drive, and the **/altroot** and **/altconfig** file systems are on the router's hard drive.
- On the switch, take a snapshot of the files currently used to run the switch and copy them to the media that the switch did not boot from. If the switch is booted

from internal media, the snapshot is copied to external (USB) media. If the switch is booted from external (USB) media, the snapshot is copied to internal media.

- If the snapshot destination is external media but a USB flash drive is not connected, an error message is displayed.
- If the automatic snapshot procedure is already in progress, the command returns the following error: **Snapshot already in progress. Cannot start manual snapshot.** For additional information about the automatic snapshot feature, see *Understanding Resilient Dual-Root Partitions on Switches*.

**all-chassis | all-lcc | lcc *number*** —(TX Matrix and TX Matrix Plus router only) (Optional)

- **all-chassis**—On a TX Matrix router, archive data and executable areas for all Routing Engines in the chassis. On a TX Matrix Plus router, archive data and executable areas for all Routing Engines in the chassis.
- **all-lcc**—On a TX Matrix router, archive data and executable areas for all T640 routers (or line-card chassis) connected to a TX Matrix router. On a TX Matrix Plus router, archive data and executable areas for all routers (or line-card chassis) connected to a TX Matrix Plus router.
- **lcc *number***—On a TX Matrix router, archive data and executable areas for a specific T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, archive data and executable areas for a specific router (line-card chassis) that is connected to a TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**all-members | local | member *member-id***—(EX Series switch Virtual Chassis and MX Series routers only) (Optional) Specify where to place the snapshot (archive data and executable areas) in a Virtual Chassis:

- **all-members**—Create a snapshot (archive data and executable areas) for all members of the Virtual Chassis.
- **local**—Create a snapshot (archive data and executable areas) on the member of the Virtual Chassis that you are currently logged into.
- **member *member-id***—Create a snapshot (archive data and executable areas) for the specified member of the Virtual Chassis.

**config-partition**—(M, MX, T, TX Series routers only) Create a snapshot of the configuration partition only and store it onto the default **/altconfig** on the hard disk device or an **/altconfig** on a USB device. Option deprecated for Junos OS with Upgraded FreeBSD in Junos OS Release 15.1.



**NOTE:** To determine which platforms run Junos OS with Upgraded FreeBSD, see the table listing the platforms currently running Junos OS with upgraded FreeBSD in *Understanding Junos OS with Upgraded FreeBSD*.

**media type**—(ACX Series, M320, T640, MX960 routers, and EX Series switches only) (Optional) Specify the boot device the software is copied to:

- **compact-flash**—Copy software to the primary compact flash drive.
- **external**—(Switches only) Copy software to an external mass storage device, such as a USB flash drive. If a USB drive is not connected, the switch displays an error message.
- **internal**—Copy software to an internal flash drive.
- **removable-compact-flash**—Copy software to the removable compact flash drive.
- **usb**—(ACX Series, M320, T640, MX960 routers only) Copy software to the device connected to the USB port.
- **usb0**—(MX104 routers only) Copy software to the device connected to the USB0 port.
- **usb1**—(MX104 routers only) Copy software to the device connected to the USB1 port.

**partition**—(Optional) Repartition the flash drive before a snapshot occurs. If the partition table on the flash drive is corrupted, the **request system snapshot** command fails and reports errors. The partition option is only supported for restoring the software image from the hard drive to the flash drive.

(Routers only) You cannot issue the request system snapshot command when you enable flash disk mirroring. We recommend that you disable flash disk mirroring when you upgrade or downgrade the software. For more information, see the *Junos OS Administration Library*.

(EX Series switches only) If the snapshot destination is the media that the switch did not boot from, you must use the **partition** option.

**re0 | re1 | routing-engine routing-engine-id**—(EX6200 and EX8200 switches only) Specify where to place the snapshot in a redundant Routing Engine configuration.

- **re0**—Create a snapshot on Routing Engine 0.
- **re1**—Create a snapshot on Routing Engine 1.

- **routing-engine** *routing-engine-id*—Create a snapshot on the specified Routing Engine.

**root-partition**—(M, MX, T, TX Series routers only) Create a snapshot of the root partition only and store it onto the default **/altroot** on the hard disk device or an **/altroot** on a USB device. Option deprecated for Junos OS with Upgraded FreeBSD in Junos OS Release 15.1.



**NOTE:** To determine which platforms run Junos OS with Upgraded FreeBSD, see the table listing the platforms currently running Junos OS with upgraded FreeBSD in *Understanding Junos OS with Upgraded FreeBSD*.

**slice alternate**—(EX Series switches only) (Optional) Take a snapshot of the active root partition and copy it to the alternate slice on the boot media.  
Option deprecated for Junos OS with Upgraded FreeBSD in Junos OS Release 15.1.



**NOTE:** To determine which platforms run Junos OS with Upgraded FreeBSD, see the table listing the platforms currently running Junos OS with upgraded FreeBSD in *Understanding Junos OS with Upgraded FreeBSD*.

**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.

#### Additional Information

- (Routers only) Before upgrading the software on the router, when you have a known stable system, issue the **request system snapshot** command to back up the software, including the configuration, to the **/altroot** and **/altconfig** file systems. After you have upgraded the software on the router and are satisfied that the new packages are successfully installed and running, issue the **request system snapshot** command again to back up the new software to the **/altroot** and **/altconfig** file systems.
- (Routers only) You cannot issue the **request system snapshot** command when you enable flash disk mirroring. We recommend that you disable flash disk mirroring when you upgrade or downgrade the software. For more information, see the *Junos OS Administration Library*.
- (TX Matrix and TX Matrix Plus router only) On a routing matrix, if you issue the **request system snapshot** command on the master Routing Engine, all the master Routing Engines connected to the routing matrix are backed up. If you issue this command on the backup Routing Engine, all the backup Routing Engines connected to the routing matrix are backed up.

**Required Privilege Level** maintenance

**Related Documentation**

- *request system snapshot (Junos OS with Upgraded FreeBSD)*
- [show system snapshot on page 510](#)
- *show system auto-snapshot*

**List of Sample Output**

- [request system snapshot \(Routers\) on page 211](#)
- [request system snapshot \(EX Series Switches\) on page 211](#)
- [request system snapshot \(When the Partition Flag Is On\) on page 211](#)
- [request system snapshot \(MX104 Routers When Media Device is Missing\) on page 212](#)
- [request system snapshot \(When Mirroring Is Enabled\) on page 212](#)
- [request system snapshot all-lcc \(Routing Matrix\) on page 212](#)
- [request system snapshot all-members \(Virtual Chassis\) on page 212](#)

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

## Sample Output

### request system snapshot (Routers)

```
user@host> request system snapshot
umount: /altroot: not currently mounted
Copying / to /altroot.. (this may take a few minutes)
umount: /altconfig: not currently mounted
Copying /config to /altconfig.. (this may take a few minutes)

The following filesystems were archived: / /config
```

### request system snapshot (EX Series Switches)

```
user@switch> request system snapshot partition
Clearing current label...
Partitioning external media (/dev/da1) ...
Partitions on snapshot:

Partition Mountpoint Size Snapshot argument
s1a /altroot 179M none
s2a / 180M none
s3d /var/tmp 361M none
s3e /var 121M none
s4d /config 60M none
Copying '/dev/da0s1a' to '/dev/da1s1a' .. (this may take a few minutes)
Copying '/dev/da0s2a' to '/dev/da1s2a' .. (this may take a few minutes)
Copying '/dev/da0s3d' to '/dev/da1s3d' .. (this may take a few minutes)
Copying '/dev/da0s3e' to '/dev/da1s3e' .. (this may take a few minutes)
Copying '/dev/da0s4d' to '/dev/da1s4d' .. (this may take a few minutes)
The following filesystems were archived: /altroot / /var/tmp /var /config
```

### request system snapshot (When the Partition Flag Is On)

```
user@host> request system snapshot partition
Performing preliminary partition checks ...
Partitioning ad0 ...
umount: /altroot: not currently mounted
Copying / to /altroot.. (this may take a few minutes)
```

The following filesystems were archived: / /config

#### request system snapshot (MX104 Routers When Media Device is Missing)

```
user@host > request system snapshot media usb0
error: usb0 media missing or invalid
```

#### request system snapshot (When Mirroring Is Enabled)

```
user@host> request system snapshot
Snapshot is not possible since mirror-flash-on-disk is configured.
```

#### request system snapshot all-lcc (Routing Matrix)

```
user@host> request system snapshot all-lcc
lcc0-re0:
-----
Copying '/' to '/altroot' .. (this may take a few minutes)
Copying '/config' to '/altconfig' .. (this may take a few minutes)
The following filesystems were archived: / /config

lcc2-re0:
-----
Copying '/' to '/altroot' .. (this may take a few minutes)
Copying '/config' to '/altconfig' .. (this may take a few minutes)
The following filesystems were archived: / /config
```

#### request system snapshot all-members (Virtual Chassis)

```
user@switch> request system snapshot all-members media internal
fpc0:
-----
Copying '/dev/da0s2a' to '/dev/da0s1a' .. (this may take a few minutes)
The following filesystems were archived: /

fpc1:
-----
Copying '/dev/da0s2a' to '/dev/da0s1a' .. (this may take a few minutes)
The following filesystems were archived: /

fpc2:
-----
Copying '/dev/da0s2a' to '/dev/da0s1a' .. (this may take a few minutes)
The following filesystems were archived: /

fpc3:
-----
Copying '/dev/da0s2a' to '/dev/da0s1a' .. (this may take a few minutes)
The following filesystems were archived: /

fpc4:
-----
Copying '/dev/da0s2a' to '/dev/da0s1a' .. (this may take a few minutes)
The following filesystems were archived: /

fpc5:
-----
Copying '/dev/da0s2a' to '/dev/da0s1a' .. (this may take a few minutes)
The following filesystems were archived: /
```

## request system software abort

<b>Syntax</b>	<b>request system software abort in-service-upgrade</b>
<b>Release Information</b>	Command introduced in JUNOS Release 9.0. Command introduced in Junos OS Release 13.2 for PTX5000 routers.
<b>Description</b>	Abort a unified in-service software upgrade (ISSU). The unified ISSU must be in progress and you must issue this command from a router session other than the one on which you issued the <b>request system in-service-upgrade</b> command that launched the unified ISSU.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>request system software in-service-upgrade</i></li> <li>• <i>show chassis in-service-upgrade</i></li> <li>• <i>Getting Started with Unified In-Service Software Upgrade</i></li> <li>• <i>Example: Performing a Unified ISSU</i></li> </ul>
<b>List of Sample Output</b>	<a href="#">request system software abort (New Router Session) on page 213</a> <a href="#">request system software in-service-upgrade (Unified ISSU Session) on page 213</a>
<b>Output Fields</b>	When you enter the <b>request system software abort</b> command on a new router session, you are provided feedback on the status of your request in the router session on which you issued the <b>request system software in-service-upgrade</b> command.

## Sample Output

### request system software abort (New Router Session)

```
user@host> request system software abort
```

### request system software in-service-upgrade (Unified ISSU Session)

```
user@host> request system software in-service-upgrade
/var/tmp/jinstall-9.0-20080117.0-domestic-signed.tgz
ISSU: Preparing Backup RE
Pushing bundle to re1
Checking compatibility with configuration Initializing...
Using jbase-9.0-20080116.2
Verified manifest signed by PackageProduction_9_0_0 Using
/var/tmp/jinstall-9.0-20080117.0-domestic-signed.tgz
Verified jinstall-9.0-20080117.0-domestic.tgz signed by PackageProduction_9_0_0
Using jinstall-9.0-20080117.0-domestic.tgz
Using jbundle-9.0-20080117.0-domestic.tgz
Checking jbundle requirements on /
Using jbase-9.0-20080117.0.tgz
Verified manifest signed by PackageProduction_9_0_0 Using
jkernel-9.0-20080117.0.tgz Verified manifest signed by PackageProduction_9_0_0
Using jcrypto-9.0-20080117.0.tgz Verified manifest signed by
PackageProduction_9_0_0 Using jpfe-9.0-20080117.0.tgz Using
```

```
jdocs-9.0-20080117.0.tgz Verified manifest signed by PackageProduction_9_0_0 Using
jroute-9.0-20080117.0.tgz Verified manifest signed by PackageProduction_9_0_0
Hardware Database regeneration succeeded Validating against /config/juniper.conf.gz
mgd: commit complete
Validation succeeded
Installing package '/var/tmp/jinstall-9.0-20080117.0-domestic-signed.tgz'
...
Verified jinstall-9.0-20080117.0-domestic.tgz signed by PackageProduction_9_0_0
Adding jinstall...
Verified manifest signed by PackageProduction_9_0_0

WARNING: This package will load JUNOS 9.0-20080117.0 software.
WARNING: It will save JUNOS configuration files, and SSH keys
WARNING: (if configured), but erase all other files and information
WARNING: stored on this machine. It will attempt to preserve dumps
WARNING: and log files, but this can not be guaranteed. This is the
WARNING: pre-installation stage and all the software is loaded when
WARNING: you reboot the system.

Saving the config files ...
NOTICE: uncommitted changes have been saved in
/var/db/config/juniper.conf.pre-install
Installing the bootstrap installer ...

WARNING: A REBOOT IS REQUIRED TO LOAD THIS SOFTWARE CORRECTLY. Use the
WARNING: 'request system reboot' command when software installation is
WARNING: complete. To abort the installation, do not reboot your system,
WARNING: instead use the 'request system software delete jinstall'
WARNING: command as soon as this operation completes.

Saving package file in
/var/sw/pkg/jinstall-9.0-20080117.0-domestic-signed.tgz ...
Saving state for rollback ...
Backup upgrade done
Rebooting Backup RE

Rebooting re1
error: ISSU Aborted! Backup RE maybe in inconsistent state, Please restore backup
RE
ISSU: IDLE

{master}
user@host>
```



## request system software add

**List of Syntax**    [Syntax on page 215](#)  
                          [Syntax \(EX Series Switches\) on page 215](#)  
                          [Syntax \(TX Matrix Router\) on page 215](#)  
                          [Syntax \(TX Matrix Plus Router\) on page 216](#)  
                          [Syntax \(MX Series Router\) on page 216](#)  
                          [Syntax \(QFX Series\) on page 216](#)  
                          [Syntax \(OCX Series\) on page 217](#)

**Syntax**    `request system software add package-name`  
                  `<best-effort-load>`  
                  `<delay-restart>`  
                  `<device-alias alias-name>`  
                  `<force>`  
                  `<no-copy>`  
                  `<no-validate>`  
                  `<re0 | re1>`  
                  `<reboot>`  
                  `<satellite slot-id>`  
                  `<set [package-name package-name]>`  
                  `<unlink>`  
                  `<upgrade-group [all | upgrade-group-name]>`  
                  `<upgrade-with-config>`  
                  `<satellite slot-id>`  
                  `<validate>`  
                  `<version version-string>`

**Syntax (EX Series Switches)**    `request system software add package-name`  
                  `<best-effort-load>`  
                  `<delay-restart>`  
                  `<force>`  
                  `<no-copy>`  
                  `<no-validate>`  
                  `<re0 | re1>`  
                  `<reboot>`  
                  `<set [package-name package-name]>`  
                  `<upgrade-with-config>`  
                  `<validate>`  
                  `<validate-on-host hostname>`  
                  `<validate-on-routing-engine routing-engine>`

**Syntax (TX Matrix Router)**    `request system software add package-name`  
                  `<best-effort-load>`  
                  `<delay-restart>`  
                  `<force>`  
                  `<lcc number | scc>`  
                  `<no-copy>`  
                  `<no-validate>`  
                  `<re0 | re1>`  
                  `<reboot>`  
                  `<set [package-name package-name]>`  
                  `<unlink>`  
                  `<upgrade-with-config>`

	<ul style="list-style-type: none"><li>&lt;validate&gt;</li><li>&lt;validate-on-host <i>hostname</i>&gt;</li><li>&lt;validate-on-routing-engine <i>routing-engine</i>&gt;</li></ul>
Syntax (TX Matrix Plus Router)	<pre>request system software add <i>package-name</i> &lt;best-effort-load&gt; &lt;delay-restart&gt; &lt;force&gt; &lt;lcc <i>number</i>   sfc <i>number</i>&gt; &lt;no-copy&gt; &lt;no-validate&gt; &lt;re0   re1&gt; &lt;reboot&gt; &lt;set [<i>package-name package-name</i>]&gt; &lt;unlink&gt; &lt;upgrade-with-config&gt; &lt;validate&gt; &lt;validate-on-host <i>hostname</i>&gt; &lt;validate-on-routing-engine <i>routing-engine</i>&gt;</pre>
Syntax (MX Series Router)	<pre>request system software add <i>package-name</i> &lt;best-effort-load&gt; &lt;delay-restart&gt; &lt;device-alias <i>alias-name</i>&gt; &lt;force&gt; &lt;member <i>member-id</i>&gt; &lt;no-copy&gt; &lt;no-validate&gt; &lt;re0   re1&gt; &lt;reboot&gt; &lt;satellite <i>slot-id</i>&gt; &lt;set [<i>package-name package-name</i>]&gt; &lt;upgrade-group [all   <i>upgrade-group-name</i>]&gt; &lt;unlink&gt; &lt;upgrade-with-config&gt; &lt;validate&gt; &lt;version <i>version-string</i>&gt; &lt;validate-on-host <i>hostname</i>&gt; &lt;validate-on-routing-engine <i>routing-engine</i>&gt;</pre>
Syntax (QFX Series)	<pre>request system software add <i>package-name</i> &lt;best-effort-load&gt; &lt;component all&gt; &lt;delay-restart&gt; &lt;force&gt; &lt;force-host&gt; &lt;no-copy&gt; &lt;no-validate&gt; &lt;partition&gt; &lt;reboot&gt; &lt;unlink&gt; &lt;upgrade-with-config&gt; &lt;validate&gt; &lt;validate-on-host <i>hostname</i>&gt; &lt;validate-on-routing-engine <i>routing-engine</i>&gt;</pre>

**Syntax (OCX Series)** request system software add *package-name*  
 <best-effort-load>  
 <delay-restart>  
 <force>  
 <force-host>  
 <no-copy>  
 <no-validate>  
 <reboot>  
 <unlink>  
 <upgrade-with-config>  
 <validate>

**Release Information** Command introduced before Junos OS Release 7.4.  
**best-effort-load** and **unlink** options added in Junos OS Release 7.4.  
 Command introduced in Junos OS Release 9.0 for EX Series switches.  
**sfc** option introduced in Junos OS Release 9.6 for the TX Matrix Plus router.  
 Command introduced in Junos OS Release 11.1 for the QFX Series. **set [package-name package-name]** option added in Junos OS Release 11.1 for EX Series switches.  
**set [package-name package-name]** option added in Junos OS Release 12.2 for M Series, MX Series, and T Series routers.



**NOTE:** On EX Series switches, the **set [package-name package-name]** option allows you to install only two software packages on a mixed EX4200 and EX4500 Virtual Chassis, whereas, on M Series, MX Series, and T Series routers, the **set [package-name package-name]** option allows you to install multiple software packages and software add-on packages at the same time.

**upgrade-with-config** and **upgrade-with-config-format** *format* options added in Junos OS Release 12.3 for M Series routers, MX Series routers, and T Series routers, EX Series Ethernet switches, and QFX Series devices.  
 Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.  
**device-alias**, **satellite**, **upgrade-group**, and **version** options introduced in Junos OS Release 14.2R3 for Junos Fusion.  
**validate-on-host** and **validate-on-routing-engine** options added in Junos OS Release 15.1F3 for PTX5000 routers and MX240, MX480, and MX960 routers.  
**upgrade-with-config-format** *format* option deleted in Junos OS Release 16.1 for M Series routers, MX Series routers, and T Series routers, EX Series Ethernet switches, and QFX Series devices.

#### Description



**NOTE:** We recommend that you always download the software image to **/var/tmp** only. On EX Series and QFX Series switches, you must use the **/var/tmp** directory. Other directories are not supported.

Install a software package or bundle on the router or switch.

For information on valid filename and URL formats, see [“Format for Specifying Filenames and URLs in Junos OS CLI Commands”](#) on page 52.



**WARNING:** Any configuration changes performed after inputting the `request system software add` command will be lost when the system reboots with an upgraded version of Junos OS.



**NOTE:** When graceful Routing Engine switchover (GRES) is enabled on a device, you must perform a unified ISSU operation to update the software running on the device. With GRES enabled, if you attempt to perform a software upgrade by entering the `request system software add package-name` command, an error message is displayed stating that only in-service-software-upgrades are supported when GRES is configured. In such a case, you must either remove the GRES configuration before you attempt the upgrade or perform a unified ISSU.



**NOTE:** Starting with Junos OS Release 15.1F3, the statement `request system software add` installs a software package for the guest OS only for the PTX5000 router with RE-DUO-C2600-16G, and for MX240, MX480, and MX960 routers with RE-S-1800X4-32G-S.

Starting with Junos OS Release 15.1F5, the statement `request system software add` installs a software package for the guest OS only for the MX2010 and MX2020 routers with REMX2K-1800-32G-S.

On these routers, in order to install both Junos software and host software packages, use the `request vmhost software add` command.

**Options** *package-name*—Location from which the software package or bundle is to be installed.

For example:

- */var/tmp/package-name*—For a software package or bundle that is being installed from a local directory on the router or switch.
- *protocol://hostname/pathname/package-name*—For a software package or bundle that is to be downloaded and installed from a remote location. Replace *protocol* with one of the following:
  - **ftp**—File Transfer Protocol.  
Use *ftp://hostname/pathname/package-name*. To specify authentication credentials, use *ftp://<username>:<password>@hostname/pathname/package-name*. To have the system prompt you for the password, specify **prompt** in place of the

password. If a password is required, and you do not specify the password or **prompt**, an error message is displayed.

- **http**—Hypertext Transfer Protocol.  
Use **http://hostname/pathname/package-name**. To specify authentication credentials, use **http://<username>:<password>@hostname/pathname/package-name**. If a password is required and you omit it, you are prompted for it.
- **scp**—Secure copy (available only for Canada and U.S. version).  
Use **scp://hostname/pathname/package-name**. To specify authentication credentials, use **scp://<username>:<password>@hostname/pathname/package-name**.



NOTE:

- The **pathname** in the protocol is the relative path to the user's home directory on the remote system and not the root directory.
- Do not use the **scp** protocol in the **request system software add** command to download and install a software package or bundle from a remote location. The previous statement does not apply to the QFabric switch. The software upgrade is handled by the management process (**mgd**), which does not support **scp**.  
Use the **file copy** command to copy the software package or bundle from the remote location to the **/var/tmp** directory on the hard disk:  
**file copy scp://source/package-name /var/tmp**  
Then install the software package or bundle using the **request system software add** command:  
**request system software add /var/tmp/package-name**

**best-effort-load**—(Optional) Activate a partial load and treat parsing errors as warnings instead of errors.

**component all**—(QFabric systems only) (Optional) Install software package on all of the QFabric components.

**delay-restart**—(Optional) Install a software package or bundle, but do not restart software processes.

**device-alias alias-name**—(Junos Fusion only) (Optional) Install the satellite software package onto the specified satellite device using the satellite device's alias name.

**force**—(Optional) Force the addition of the software package or bundle (ignore warnings).

**force-host**—(Optional) Force the addition of host software package or bundle (ignore warnings) on the QFX5100 device.

**lcc number**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) In a routing matrix based on the TX Matrix router, install a software package or bundle on a T640

router that is connected to the TX Matrix router. In a routing matrix based on the TX Matrix Plus router, install a software package or bundle on a router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**member *member-id***—(MX Series routers only) (Optional) Install a software package on the specified Virtual Chassis member. Replace *member-id* with a value of 0 or 1.

**partition** —(QFX3500 switches only) (Optional) Format and repartition the media before installation.

**satellite *slot-id***—(Junos Fusion only) (Optional) Install the satellite software package onto the specified satellite device using the satellite devices FPC slot identifier.

**scc**—(TX Matrix routers only) (Optional) Install a software package or bundle on a Routing Engine on a TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Install a software package or bundle on a Routing Engine on a TX Matrix Plus router. Replace *number* with 0.

**no-copy**—(Optional) Install a software package or bundle, but do not save copies of the package or bundle files.

**no-validate**—(Optional) When loading a software package or bundle with a different release, suppress the default behavior of the **validate** option.



**NOTE:** Software packages from unidentified providers cannot be loaded. To authorize providers, include the **provider-id** statement at the [edit system extensions provider] hierarchy level.

---

**re0 | re1**—(Optional) On routers or switches that support dual or redundant Routing Engines, load a software package or bundle on the Routing Engine in slot 0 (re0) or the Routing Engine in slot 1 (re1).

**reboot**—(Optional) After adding the software package or bundle, reboot the system. On a QFabric switch, the software installation is not complete until you reboot the component for which you have installed the software.

**set** [*package-name package-name*]—(Mixed EX4200 and EX4500 Virtual Chassis only)  
 (Optional) Install two software packages—a package for an EX4200 switch and the same release of the package for an EX4500 switch—to upgrade all member switches in a mixed EX4200 and EX4500 Virtual Chassis.

**set** [*package-name package-name*]—(M Series, MX Series, and T Series routers only)  
 (Optional) Install multiple software packages and software add-on packages at the same time.

**unlink**—(Optional) On M Series, T Series, and MX Series routers, use the unlink option to remove the software package from this directory after a successful upgrade is completed.

**upgrade-group** [ **all** *upgrade-group-name* ]—(Junos Fusion only) (Required to configure a Junos Fusion using autoconversion or manual conversion) Associate a satellite software image with a satellite software upgrade group. The satellite software package is associated with the specified satellite software upgrade group using the *upgrade-group-name*, or for all satellite software upgrade groups in a Junos Fusion when the **all** keyword is specified.

A satellite software upgrade group is a group of satellite devices in a Junos Fusion that are designated to upgrade to the same satellite software version using the same satellite software package. See *Understanding Software in a Junos Fusion Provider Edge*, *Understanding Software in a Junos Fusion Enterprise*, and *Managing Satellite Software Upgrade Groups in a Junos Fusion*.

**upgrade-with-config**—(Optional) Install one or more configuration files.



**NOTE:** Configuration files specified with this option must have the extension **.text** or **.xml** and have the extension specified. Using the extension **.txt** will not work.

**validate**—(Optional) Validate the software package or bundle against the current configuration as a prerequisite to adding the software package or bundle. This is the default behavior when the software package or bundle being added is a different release.



**NOTE:** The **validate** option only works on systems that do not have **graceful-switchover** (GRES) enabled. To use the **validate** option on a system with GRES, either disable GRES for the duration of the installation, or install using the command **request system software in-service-upgrade**, which requires nonstop active routing (NSR) to be enabled when using GRES.

**validate-on-host** *hostname*—(Optional) Validate the software package by comparing it to the running configuration on a remote Junos OS host. Specify a host, replacing

**hostname** with the remote hostname. You can optionally provide the username that will be used to log in to the remote host by specifying the hostname in the format **user@hostname**.

**validate-on-routing-engine *routing-engine***—(Optional) Validate the software bundle or package by comparing it to the running configuration on a Junos OS Routing Engine on the same chassis. Specify a Routing Engine, replacing ***routing-engine*** with the routing engine name.

**Additional Information** Before upgrading the software on the router or switch, when you have a known stable system, issue the **request system snapshot** command to back up the software, including the configuration, to the **/altroot** and **/altconfig** file systems. After you have upgraded the software on the router or switch and are satisfied that the new package or bundle is successfully installed and running, issue the **request system snapshot** command again to back up the new software to the **/altroot** and **/altconfig** file systems.



**NOTE:** The **request system snapshot** command is currently not supported on the QFabric system. Also, you cannot add or install multiple packages on a QFabric system.

After you run the **request system snapshot** command, you cannot return to the previous version of the software because the running and backup copies of the software are identical.

If you are upgrading more than one package at the same time, delete the operating system package, **jkernel**, last. Add the operating system package, **jkernel**, first and the routing software package, **jroute**, last. If you are upgrading all packages at once, delete and add them in the following order:

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

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

Likewise, when you issue the **request system software add *package-name*** command on a TX Matrix Plus master Routing Engine, all the T1600 or T4000 master Routing Engines that are connected to it are upgraded to the same version of software. If you issue the same command on the TX Matrix Plus backup Routing Engine, all the T1600 or T4000 backup Routing Engines that are connected to it are upgraded to the same version of software.



<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Format for Specifying Filenames and URLs in Junos OS CLI Commands on page 52</a></li> <li>• <i>request system software delete</i></li> <li>• <i>request system software rollback</i></li> <li>• <i>request system storage cleanup</i></li> <li>• <i>Upgrading Software</i></li> <li>• <i>Upgrading Software on a QFabric System</i></li> <li>• <i>Managing Satellite Software Upgrade Groups in a Junos Fusion</i></li> <li>• <i>request system software add (Maintenance)</i></li> <li>• <a href="#">Routing Matrix with a TX Matrix Plus Router Solutions Page</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">request system software add validate on page 223</a> <a href="#">request system software add validate-on-host on page 224</a> <a href="#">request system software add (Mixed EX4200 and EX4500 Virtual Chassis) on page 225</a> <a href="#">request system software add component all (QFabric Systems) on page 225</a> <a href="#">request system software add upgrade-group (Junos Fusion) on page 225</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### request system software add validate

```

user@host> request system software add validate /var/tmp/jinstall-7.2R1.7-domestic-signed.tgz
Checking compatibility with configuration
Initializing...
Using jbase-7.1R2.2
Using /var/tmp/jinstall-7.2R1.7-domestic-signed.tgz
Verified jinstall-7.2R1.7-domestic.tgz signed by PackageProduction_7_2_0
Using /var/validate/tmp/jinstall-signed/jinstall-7.2R1.7-domestic.tgz
Using /var/validate/tmp/jinstall/jbundle-7.2R1.7-domestic.tgz
Checking jbundle requirements on /
Using /var/validate/tmp/jbundle/jbase-7.2R1.7.tgz
Using /var/validate/tmp/jbundle/jkernel-7.2R1.7.tgz
Using /var/validate/tmp/jbundle/jcrypto-7.2R1.7.tgz
Using /var/validate/tmp/jbundle/jpfe-7.2R1.7.tgz
Using /var/validate/tmp/jbundle/jdocs-7.2R1.7.tgz
Using /var/validate/tmp/jbundle/jroute-7.2R1.7.tgz
Validating against /config/juniper.conf.gz
mgd: commit complete
Validation succeeded
Validating against /config/rescue.conf.gz
mgd: commit complete
Validation succeeded
Installing package '/var/tmp/jinstall-7.2R1.7-domestic-signed.tgz' ...
Verified jinstall-7.2R1.7-domestic.tgz signed by PackageProduction_7_2_0
Adding jinstall...

WARNING:   This package will load JUNOS 7.2R1.7 software.
WARNING:   It will save JUNOS configuration files, and SSH keys

```

```

WARNING:      (if configured), but erase all other files and information
WARNING:      stored on this machine. It will attempt to preserve dumps
WARNING:      and log files, but this can not be guaranteed. This is the
WARNING:      pre-installation stage and all the software is loaded when
WARNING:      you reboot the system.

```

```

Saving the config files ...
Installing the bootstrap installer ...

```

```

WARNING:      A REBOOT IS REQUIRED TO LOAD THIS SOFTWARE CORRECTLY. Use the
WARNING:      'request system reboot' command when software installation is
WARNING:      complete. To abort the installation, do not reboot your system,
WARNING:      instead use the 'request system software delete jinstall'
WARNING:      command as soon as this operation completes.

```

```

Saving package file in /var/sw/pkg/jinstall-7.2R1.7-domestic-signed.tgz ...
Saving state for rollback ...

```

### request system software add validate-on-host

```

user@host> request system software add validate-on-host user@xyz
:/var/tmp/jinstall-15.1-20150516_ib_15_2_psd.0-domestic-signed.tgz
user@host> request system software add validate-on-host user@xyz
:/var/tmp/jinstall-15.1-20150516_ib_15_2_psd.0-domestic-signed.tgz
Extracting JUNOS version from package...
Connecting to remote host xyz...
Password:
Sending configuration to xyz...
Validating configuration on xyz...
PACKAGE TYPE: not found
Checking compatibility with configuration
Initializing...
Using jbase-15.1-20150516_ib_15_2_psd.0
Verified manifest signed by PackageDevelopmentEc_2015
Using jruntime-15.1-20150516_ib_15_2_psd.0
Verified manifest signed by PackageDevelopmentEc_2015
Using jkernel-15.1-20150516_ib_15_2_psd.0
Verified manifest signed by PackageDevelopmentEc_2015
Using jroute-15.1-20150516_ib_15_2_psd.0
Verified manifest signed by PackageDevelopmentEc_2015
Using jcrypto-15.1-20150516_ib_15_2_psd.0
Verified manifest signed by PackageDevelopmentEc_2015
Using jweb-15.1-20150516_ib_15_2_psd.0
Verified manifest signed by PackageDevelopmentEc_2015
Using /var/packages/jtools-15.1-20150516_ib_15_2_psd.0
Verified manifest signed by PackageDevelopmentEc_2015
Using /var/tmp/config.tgz
Hardware Database regeneration succeeded
Validating against /config/juniper.conf.gz
mgd: warning: schema: init: 'logical-systems-vlans' contains-node 'juniper-config
  vlans': not found
mgd: commit complete
Validation succeeded
Installing package
'/var/tmp/jinstall-15.1-20150516_ib_15_2_psd.0-domestic-signed.tgz' ...
Verified jinstall-15.1-20150516_ib_15_2_psd.0-domestic.tgz signed by
PackageDevelopmentEc_2015
Adding jinstall...

WARNING:      The software that is being installed has limited support.
WARNING:      Run 'file show /etc/notices/unsupported.txt' for details.

```

```

WARNING: This package will load JUNOS 15.1-20150516_ib_15_2_psd.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-15.1-20150516_ib_15_2_psd.0-domestic-signed.tgz ...
Saving state for rollback ...

```

## Sample Output

### request system software add (Mixed EX4200 and EX4500 Virtual Chassis)

```

user@switch> request system software add set
[/var/tmp/jinstall-ex-4200-11.1R1.1-domestic-signed.tgz
/var/tmp/jinstall-ex-4500-11.1R1.1-domestic-signed.tgz]
...

```

### request system software add component all (QFabric Systems)

```

user@switch> request system software add /pbdata/packages/jinstall-qfabric-12.2X50-D1.3.rpm
component all
...

```

### request system software add upgrade-group (Junos Fusion)

```

user@aggregation-device> request system software add /var/tmp/satellite-1.0R1.1-signed.tgz
upgrade-group group1

```

## request system zeroize

---

**Syntax**    request system zeroize  
              <media>  
              <local>

**Release Information**    Command introduced before Junos OS Release 9.0.  
                              Command introduced in Junos OS Release 11.2 for EX Series switches.  
                              Option **media** added in Junos OS Release 11.4 for EX Series switches.  
                              Command introduced in Junos OS Release 12.2 for MX Series routers.  
                              Command introduced in Junos OS Release 12.3 for the QFX Series.  
                              Option **local** added in Junos OS Release 14.1.  
                              Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

---

**Description**



**NOTE:** The **media** option is not available on the QFX Series.

---

Remove all configuration information on the Routing Engines and reset all key values on the device where you run the command.

- If the device has dual Routing Engines, the command is broadcast to all Routing Engines on the device.
- In a Virtual Chassis or Virtual Chassis Fabric (VCF) composed of EX Series switches (except EX8200 Virtual Chassis) or QFX Series switches, this command operates only on the member switch where you run the command, even if that switch is in the master Routing Engine role. The command is not forwarded to the backup Routing Engine member or to member switches in the line-card role. To apply this command to more than one member of an EX Series or QFX Series Virtual Chassis or VCF, we recommend you remove and disconnect each of those members from the Virtual Chassis or VCF, and then run the command on each isolated switch individually.

The command removes all data files, including customized configuration and log files, by unlinking the files from their directories. The command removes all user-created files from the system, including all plain-text passwords, secrets, and private keys for SSH, local encryption, local authentication, IPsec, RADIUS, TACACS+, and SNMP.

This command reboots the device and sets it to the factory default configuration. After the reboot, you cannot access the device through the management Ethernet interface. Log in through the console as **root** and start the Junos OS CLI by typing **cli** at the prompt.



**NOTE:** If the configuration contains the `commit synchronize` statement at the `[edit system]` hierarchy level, and you issue a `commit` in the master Routing Engine, the master configuration is automatically synchronized with the backup. If the backup Routing Engine is down when you issue the `commit`, the Junos OS displays a warning and commits the candidate configuration in the master Routing Engine. When the backup Routing Engine comes up, its configuration will automatically be synchronized with the master. A newly inserted backup Routing Engine or a Routing Engine that comes up after running the `request system zeroize` command also automatically synchronizes its configuration with the master Routing Engine configuration.



**NOTE:** Starting with Junos OS Release 15.1F3, the `request system zeroize` command removes all configuration information on the guest OS for the PTX5000 router with RE-DUO-C2600-16G, and MX240, MX480, and MX960 with RE-S-1800X4-32G-S.

Starting with Junos OS Release 15.1F5, the `request system zeroize` command removes all configuration information on the guest OS for the MX2010 and MX2020 with REMX2K-1800-32G-S.

On these routers, in order to remove all configuration information on both guest OS and host OS, use the `request vmhost zeroize` command.

To completely erase user-created data so that it is unrecoverable, use the **media** option.

**Options** **media**—(Optional) In addition to removing all configuration and log files, causes memory and the media to be scrubbed, removing all traces of any user-created files. Every storage device attached to the system is scrubbed, including disks, flash drives, removable USBs, and so on. The duration of the scrubbing process is dependent on the size of the media being erased. As a result, the `request system zeroize media` operation can take considerably more time than the `request system zeroize` operation. However, the critical security parameters are all removed at the beginning of the process.

**local**—(Optional) Remove all the configuration information and restore all the key values on the active Routing Engine.



**NOTE:** Specifying this option has no effect on switches in a Virtual Chassis or VCF composed of EX Series switches (except EX8200 Virtual Chassis) or QFX switches, because in these configurations, the `request system zeroize` command only operates locally by default.

**Required Privilege Level** maintenance

**Related Documentation**

- [request system snapshot on page 206](#)
- *Reverting to the Default Factory Configuration for the EX Series Switch*
- *Reverting to the Rescue Configuration for the EX Series Switch*
- *Reverting to the Default Factory Configuration*
- *Reverting to the Rescue Configuration*
- *Reverting to the Default Factory Configuration by Using the request system zeroize Command*

**List of Sample Output** [request system zeroize on page 228](#)  
[request system zeroize media on page 229](#)

## Sample Output

### request system zeroize

```
user@host> request system zeroize
warning: System will be rebooted and may not boot without configuration
Erase all data, including configuration and log files? [yes,no] (no) yes

0 1 1 0 0 0 done

syncing disks... All buffers synced.
Uptime: 5d19h20m26s
recorded reboot as normal shutdown
Rebooting...

U-Boot 1.1.6 (Mar 11 2011 - 04:39:06)

Board: EX4200-24T 2.11
EPLD: Version 6.0 (0x85)
DRAM: Initializing (1024 MB)
FLASH: 8 MB

Firmware Version: --- 01.00.00 ---
USB: scanning bus for devices... 2 USB Device(s) found
      scanning bus for storage devices... 1 Storage Device(s) found

ELF file is 32 bit
Consoles: U-Boot console

FreeBSD/PowerPC U-Boot bootstrap loader, Revision 2.4
(user@device.example.net, Fri Mar 11 03:03:36 UTC 2011)
Memory: 1024MB
bootsequencing is enabled
bootsuccess is set
new boot device = disk0s1:
Loading /boot/defaults/loader.conf
/kernel data=0x915c84+0xa1260 syms=[0x4+0x7cbd0+0x4+0xb1c19]

Hit [Enter] to boot immediately, or space bar for command prompt.
Booting [/kernel]...
```

```

Kernel entry at 0x800000e0 ...
GDB: no debug ports present
KDB: debugger backends: ddb
KDB: current backend: ddb
Copyright (c) 1996-2011, Juniper Networks, Inc.
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    The Regents of the University of California. All rights reserved.
JUNOS 11.1R1.8 #0: 2011-03-09 20:14:25 UTC

user@device.example.net:/volume/build/junos/11.1/release/11.1R1.8/obj-powerpc/bsd/kernels/
    JUNIPER-EX/kernel
Timecounter "decrementer" frequency 50000000 Hz quality 0
cpu0: Freescale e500v2 core revision 2.2
cpu0: HID0 80004080
...

```

### request system zeroize media

```

user@host> request system zeroize media
warning: System will be rebooted and may not boot without configuration
Erase all data, including configuration and log files? [yes,no] (no) yes

warning: ipsec-key-management subsystem not running - not needed by configuration.
warning: zeroizing fpc0

{master:0}
root> Waiting (max 60 seconds) for system process `vnlrui' to stop...done
. . .
Syncing disks, vnodes remaining...2 4 2 4 3 2 1 1 0 0 0 done

syncing disks... All buffers synced.
Uptime: 14m50s
recorded reboot as normal shutdown
Rebooting...

U-Boot 1.1.6 (Apr 21 2011 - 13:58:42)

Board: EX4200-48PX 1.1
EPLD: Version 8.0 (0x82)
DRAM: Initializing (512 MB)
FLASH: 8 MB
NAND: No NAND device found!!!
0 MiB

Firmware Version: --- 01.00.00 ---
USB: scanning bus for devices... 2 USB Device(s) found
    scanning bus for storage devices... 1 Storage Device(s) found

ELF file is 32 bit
Consoles: U-Boot console

FreeBSD/PowerPC U-Boot bootstrap loader, Revision 2.2
(user@device1.example.com, Fri Feb 26 17:48:51 PST 2010)
Memory: 512MB
Loading /boot/defaults/loader.conf
/kernel data=0x9abfdc+0xb06e4 syms=[0x4+0x83b30+0x4+0xbd7c6]

Hit [Enter] to boot immediately, or space bar for command prompt.
Booting [/kernel] in 1 second... Booting [/kernel]...

```

```
Kernel entry at 0x800000e0 ...
GDB: no debug ports present
KDB: debugger backends: ddb
KDB: current backend: ddb
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JUNOS 11.4R1.2 #0: 2011-10-27 18:05:39 UTC
user@device1.example.com:/volume/build/junos/11.4/release/11.4R1.2/obj-powerpc/
bsd/kernels/JUNIPER-EX/kernel
can't re-use a leaf (all_slot_serialid)!
Timecounter "decrementer" frequency 50000000 Hz quality 0
cpu0: Freescale e500v2 core revision 2.2
cpu0: HID0 80004080<EMCP,TBEN,EN_MAS7_UPDATE>
real memory = 511705088 (488 MB)
avail memory = 500260864 (477 MB)
ETHERNET SOCKET BRIDGE initialising
Initializing EXSERIES platform properties ...
. . .
Automatic reboot in progress...
Media check on da0 on ex platforms
** /dev/da0s2a
FILE SYSTEM CLEAN; SKIPPING CHECKS
clean, 20055 free (31 frags, 2503 blocks, 0.0% fragmentation)
zeroizing /dev/da0s1a ...
. . .
zeroizing /dev/da0s3d ...
. . .
zeroizing /dev/da0s3e ...
. . .
zeroizing /dev/da0s4d ...
. . .
zeroizing /dev/da0s4e ...
. . .

syncing disks... All buffers synced.
Uptime: 3m40s
Rebooting...

U-Boot 1.1.6 (Apr 21 2011 - 13:58:42)

Board: EX4200-48PX 1.1
EPLD: Version 8.0 (0x82)
DRAM: Initializing (512 MB)
FLASH: 8 MB
NAND: No NAND device found!!!
0 MiB

Firmware Version: --- 01.00.00 ---
USB: scanning bus for devices... 2 USB Device(s) found
      scanning bus for storage devices... 1 Storage Device(s) found

ELF file is 32 bit
Consoles: U-Boot console

FreeBSD/PowerPC U-Boot bootstrap loader, Revision 2.2
(user@device1.example.com, Fri Feb 26 17:48:51 PST 2010)
Memory: 512MB
Loading /boot/defaults/loader.conf
```



```

/kernel data=0x9abfdc+0xb06e4 syms=[0x4+0x83b30+0x4+0xbd7c6]

Hit [Enter] to boot immediately, or space bar for command prompt.
Booting [/kernel] in 1 second... Booting [/kernel]...
Kernel entry at 0x800000e0 ...
GDB: no debug ports present
KDB: debugger backends: ddb
KDB: current backend: ddb
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The Regents of the University of California. All rights reserved.
JUNOS 11.4R1.2 #0: 2011-10-27 18:05:39 UTC
user@device1.example.com:/volume/build/junos/11.4/release/11.4R1.2/obj-powerpc/
bsd/kernels/JUNIPER-EX/kernel
can't re-use a leaf (all_slot_serialid)!
Timecounter "decrementer" frequency 50000000 Hz quality 0
cpu0: Freescale e500v2 core revision 2.2
cpu0: HID0 80004080 <EMCP,TBEN,EN_MAS7_UPDATE>
real memory = 511705088 (488 MB)
avail memory = 500260864 (477 MB)
ETHERNET SOCKET BRIDGE initialising
Initializing EXSERIES platform properties ...
. . .
Automatic reboot in progress...
Media check on da0 on ex platforms
** /dev/da0s1a
FILE SYSTEM CLEAN; SKIPPING CHECKS
clean, 20064 free (48 frags, 2502 blocks, 0.1% fragmentation)
zeroizing /dev/da0s2a ...
. . .
Creating initial configuration...mgd: error: Cannot open configuration file:
/config/juniper.conf
mgd: warning: activating factory configuration
mgd: commit complete
mgd: -----
mgd: Please login as 'root'. No password is required.
mgd: To start Initial Setup, type 'ezsetup' at the JUNOS prompt.
mgd: To start JUNOS CLI, type 'cli' at the JUNOS prompt.
mgd: -----
Setting initial options: debugger_on_panic=NO debugger_on_break=NO.
Starting optional daemons: .
Doing initial network setup:
. . .

Amnesiac (ttyu0)

```

## show chassis hardware

---

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<b>Syntax</b>	<code>show chassis hardware</code> <code>&lt;detail   extensive&gt;</code> <code>&lt;clei-models&gt;</code> <code>&lt;models&gt;</code>
<b>Syntax (EX Series)</b>	<code>show chassis hardware</code> <code>&lt;clei-models&gt;</code> <code>&lt;detail   extensive&gt;</code> <code>&lt;models&gt;</code> <code>&lt;satellite [slot-id <i>slot-id</i>   device-alias <i>alias-name</i>]&gt;</code>
<b>Syntax (T4000 Router)</b>	<code>show chassis hardware</code> <code>&lt;clei-models&gt;</code> <code>&lt;detail   extensive&gt;</code> <code>&lt;models&gt;</code>
<b>Syntax (TX Matrix Router)</b>	<code>show chassis hardware</code> <code>&lt;clei-models&gt;</code> <code>&lt;detail   extensive&gt;</code> <code>&lt;models&gt;</code> <code>&lt;lcc <i>number</i>   scc&gt;</code>
<b>Syntax (TX Matrix Plus Router)</b>	<code>show chassis hardware</code> <code>&lt;clei-models&gt;</code> <code>&lt;detail   extensive&gt;</code> <code>&lt;models&gt;</code> <code>&lt;lcc <i>number</i>   sfc <i>number</i>&gt;</code>
<b>Syntax (MX Series Routers)</b>	<code>show chassis hardware</code> <code>&lt;detail   extensive&gt;</code> <code>&lt;clei-models&gt;</code> <code>&lt;models&gt;</code> <code>&lt;all-members&gt;</code> <code>&lt;local&gt;</code> <code>&lt;member <i>member-id</i>&gt;</code>

Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)	<pre>show chassis hardware &lt;clei-models&gt; &lt;detail   extensive&gt; &lt;models&gt; &lt;satellite [slot-id <i>slot-id</i>   device-alias <i>alias-name</i>]&gt;</pre>
Syntax (QFX Series)	<pre>show chassis hardware &lt;detail   extensive&gt; &lt;clei-models&gt; &lt;interconnect-device <i>name</i>&gt; &lt;node-device <i>name</i>&gt; &lt;models&gt;</pre>
Syntax (OCX Series)	<pre>show chassis hardware &lt;detail   extensive&gt; &lt;clei-models&gt; &lt;models&gt;</pre>
Syntax (PTX Series Packet Transport Routers)	<pre>show chassis hardware &lt;detail   extensive&gt; &lt;clei-models&gt; &lt;models&gt;</pre>
Syntax (ACX Series Universal Access Routers)	<pre>show chassis hardware &lt;detail   extensive&gt; &lt;clei-models&gt; &lt;models&gt;</pre>
Syntax (ACX5048 and ACX5096 Routers)	<pre>show chassis hardware &lt;detail   extensive&gt; &lt;clei-models&gt; &lt;models&gt;</pre>
Syntax (ACX500 Routers)	<pre>show chassis hardware &lt;detail   extensive&gt; &lt;clei-models&gt; &lt;models&gt;</pre>
Release Information	<p>Command introduced before Junos OS Release 7.4.</p> <p><b>models</b> option introduced in Junos OS Release 8.2.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>sfc</b> option introduced in Junos OS Release 9.6 for the TX Matrix Plus router.</p> <p>Command introduced in Junos OS Release 11.1 for QFX Series.</p> <p>Command introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.</p> <p>Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 15.1X54-D20 for ACX5048 and ACX5096 Routers.</p>
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>

In the EX Series switch command output, FPC refers to the following:

- On EX2200 switches, EX3200 switches, EX4200 standalone switches, and EX4500 switches—Refers to the switch; FPC *number* is always 0.
- On EX4200 switches in a Virtual Chassis configuration—Refers to the member of a Virtual Chassis; FPC *number* equals the member ID, from 0 through 9.
- On EX8208 and EX8216 switches—Refers to a line card; FPC *number* equals the slot number for the line card.

On QFX3500, QFX5100, and OCX Series standalone switches, and PTX1000 routers both the FPC and FPC *number* are always 0.

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

Starting from Junos OS Release 11.4, the output of the **show chassis hardware models** operational mode command displays the enhanced midplanes FRU model numbers (CHAS-BP3-MX240-S, CHAS-BP3-MX480-S or CHAS-BP3-MX960-S) based on the router. Prior to release 11.4, the FRU model numbers are left blank when the router has enhanced midplanes. Note that the enhanced midplanes are introduced through the Junos OS Release 13.3, but can be supported on all Junos OS releases.

Starting with Junos OS Release 14.1, the output of the **show chassis hardware detail | extensive | clei-models | models** operational mode command displays the new DC power supply module (PSM) and power distribution unit (PDU) that are added to provide power to the high-density FPC (FPC2-PTX-P1A) and other components in a PTX5000 Packet Transport Router.

- Options**
- none**—Display information about hardware. For a TX Matrix router, display information about the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display information about the TX Matrix Plus router and its attached routers.
  - clei-models**—(Optional) Display Common Language Equipment Identifier (CLEI) barcode and model number for orderable field-replaceable units (FRUs).
  - detail**—(Optional) Include RAM and disk information in output.
  - extensive**—(Optional) Display ID EEPROM information.
  - all-members**—(MX Series routers only) (Optional) Display hardware-specific information for all the members of the Virtual Chassis configuration.
  - interconnect-device name**—(QFabric systems only) (Optional) Display hardware-specific information for the Interconnect device.
  - lcc number**—(TX Matrix routers and TX Matrix Plus router only) (Optional) On a TX Matrix router, display hardware information for a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display hardware information for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

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

**member *member-id***—(MX Series routers and EX Series switches) (Optional) Display hardware-specific information for the specified member of the Virtual Chassis configuration. Replace *member-id* variable with a value 0 or 1.

**models**—(Optional) Display model numbers and part numbers for orderable FRUs and, for components that use ID EEPROM format v2, the CLEI code.

**node-device *name***—(QFabric systems only) (Optional) Display hardware-specific information for the Node device.

**satellite [*slot-id slot-id* | *device-alias alias-name*]**—(Junos Fusion only) (Optional) Display hardware information for the specified satellite device in a Junos Fusion, or for all satellite devices in the Junos Fusion if no satellite devices are specified.

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

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

**Additional Information** The **show chassis hardware detail** command now displays DIMM information for the following Routing Engines, as shown in [Table 8 on page 235](#).

**Table 8: Routing Engines Displaying DIMM Information**

Routing Engines	Routers
RE-S-1800x2 and RE-S-1800x4	MX240, MX480, and MX960 routers
RE-A-1800x2	M120 and M320 routers

In Junos OS Release 11.4 and later, the output for the **show chassis hardware models** operational mode command for MX Series routers display the enhanced midplanes FRU model numbers—CHAS-BP3-MX240-S, CHAS-BP3-MX480-S, or CHAS-BP3-MX960-S—based on the router. In releases before Junos OS Release 11.4, the FRU model numbers are left blank when the router has enhanced midplanes. Note

that the enhanced midplanes are introduced through Junos OS Release 13.3, but can be supported on all Junos OS releases.

**Required Privilege Level**

view

**Related Documentation**

- [\*show chassis power\*](#)

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[show chassis hardware \(ACX5096 Router\) on page 413](#)  
[show chassis hardware detail \(ACX5096 Router\) on page 413](#)  
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**Output Fields** [Table 9 on page 240](#) lists the output fields for the **show chassis hardware** command. Output fields are listed in the approximate order in which they appear.

Table 9: show chassis hardware Output Fields

Field Name	Field Description	Level of Output
<b>Item</b>	<p>Chassis component:</p> <ul style="list-style-type: none"> <li>(EX Series switches)—Information about the chassis, Routing Engine (SRE and Routing Engine modules in EX8200 switches), power supplies, fan trays, and LCD panel. Also displays information about Flexible PIC Concentrators (FPCs) and associated Physical Interface Cards (PICs). Information about the backplane, midplane, and SIBs (SF modules) is displayed for EX8200 switches.</li> <li>(MX Series routers and EX Series switches)—Information about the backplane, Routing Engine, Power Entry Modules (PEMs), and fan trays. Also displays information about Flexible PIC Concentrators (FPCs) and associated Physical Interface Cards (PICs), Modular Port Concentrators (MPCs) and associated Modular Interface Cards (MICs), or Dense Port Concentrators (DPCs). MX80 routers have a single Routing Engine and a built-in Packet Forwarding Engine that attaches directly to MICs. The Packet Forwarding Engine has two “pseudo” FPCs (FPC 0 and FPC1). MX80 routers also have a Forwarding Engine Board (FEB). MX104 routers have a built-in Packet forwarding Engine and a Forwarding Engine Board (FEB). The Packet Forwarding Engine of the MX104 router has three “pseudo” FPCs (FPC0, FPC1, and FPC2).</li> <li>(M Series routers, except for the M320 router)—Information about the backplane; power supplies; fan trays; Routing Engine; maxicab (the connection between the Routing Engine and the backplane, for the M40 router only); SCB, SSB, SFM, or FEB; MCS and PCG (for the M160 router only); each FPC and PIC; and each fan, blower, and impeller.</li> <li>(M120, M320, and T Series routers)—Information about the backplane, power supplies, fan trays, midplane, FPM (craft interface), CIP, PEM, SCG, CB, FPC, PIC, SFP, SPMB, and SIB.</li> <li>(QFX Series)—Information about the chassis, Pseudo CB, Routing Engine, power supplies, fan trays, Interconnect devices, and Node devices. Also displays information about Flexible PIC Concentrators (FPCs) and associated Physical Interface Cards (PICs).</li> <li>(PTX Series)—Information about the chassis, midplane, craft interface (FPM), power distribution units (PDUs) and Power Supply Modules (PSMs), Centralized Clock Generators (CCGs), Routing Engines, Control Boards (CBs) and Switch Processor Mezzanine Boards (SPMBs), Flexible PIC Concentrators (FPCs), PICs, Switch Interface Boards (SIBs), and fan trays (vertical and horizontal).</li> <li>(MX2010 and MX2020 routers)—Information about the chassis, midplane, craft interface (FPM), power midplane (PMP), Power Supply Modules (PSMs), Power Distribution Modules (PDMs), Routing Engines, Control Boards (CBs) and Switch Processor Mezzanine Boards (SPMBs), Switch Fabric Boards (SFBs), Flexible PIC Concentrators (FPCs), PICs, adapter cards (ADCs) and fan trays.</li> </ul>	All levels
<b>Version</b>	Revision level of the chassis component.	All levels
<b>Part number</b>	Part number of the chassis component.	All levels
<b>Serial number</b>	Serial number of the chassis component. The serial number of the backplane is also the serial number of the router chassis. Use this serial number when you need to contact Juniper Networks Customer Support about the router or switch chassis.	All levels

Table 9: show chassis hardware Output Fields (*continued*)

Field Name	Field Description	Level of Output
Assb ID or Assembly ID	( <b>extensive</b> keyword only) Identification number that describes the FRU hardware.	<b>extensive</b>
Assembly Version	( <b>extensive</b> keyword only) Version number of the FRU hardware.	<b>extensive</b>
Assembly Flags	( <b>extensive</b> keyword only) Flags.	<b>extensive</b>
FRU model number	( <b>clei-models</b> , <b>extensive</b> , and <b>models</b> keyword only) Model number of the FRU hardware component.	none specified
CLEI code	( <b>clei-models</b> and <b>extensive</b> keyword only) Common Language Equipment Identifier code. This value is displayed only for hardware components that use ID EEPROM format v2. This value is not displayed for components that use ID EEPROM format v1.	none specified
EEPROM Version	ID EEPROM version used by the hardware component: <b>0x00</b> (version 0), <b>0x01</b> (version 1), or <b>0x02</b> (version 2).	<b>extensive</b>
Description	<p>Brief description of the hardware item:</p> <ul style="list-style-type: none"> <li>• Type of power supply.</li> <li>• Type of PIC. If the PIC type is not supported on the current software release, the output states <b>Hardware Not Supported</b>.</li> <li>• Type of FPC: <b>FPC Type 1</b>, <b>FPC Type 2</b>, <b>FPC Type 3</b>, <b>FPC Type 4</b>, or <b>FPC TypeOC192</b>.</li> </ul> <p>On EX Series switches, a brief description of the FPC.</p> <p>The following list shows the PIM abbreviation in the output and the corresponding PIM name.</p> <ul style="list-style-type: none"> <li>• <b>2x FE</b>—Either two built-in Fast Ethernet interfaces (fixed PIM) or dual-port Fast Ethernet PIM</li> <li>• <b>4x FE</b>—4-port Fast Ethernet ePIM</li> <li>• <b>1x GE Copper</b>—Copper Gigabit Ethernet ePIM (one 10-Mbps, 100-Mbps, or 1000-Mbps port)</li> <li>• <b>1x GE SFP</b>—SFP Gigabit Ethernet ePIM (one fiber port)</li> <li>• <b>2x Serial</b>—Dual-port serial PIM</li> <li>• <b>2x T1</b>—Dual-port T1 PIM</li> <li>• <b>2x E1</b>—Dual-port E1 PIM</li> <li>• <b>2x CT1E1</b>—Dual-port channelized T1/E1 PIM</li> <li>• <b>1x T3</b>—T3 PIM (one port)</li> <li>• <b>1x E3</b>—E3 PIM (one port)</li> <li>• <b>4x BRI S/T</b>—4-port ISDN BRI S/T PIM</li> <li>• <b>4x BRI U</b>—4-port ISDN BRI U PIM</li> <li>• <b>1x ADSL Annex A</b>—ADSL 2/2+ Annex A PIM (one port, for POTS)</li> <li>• <b>1x ADSL Annex B</b>—ADSL 2/2+ Annex B PIM (one port, for ISDN)</li> <li>• <b>2x SHDSL (ATM)</b>—G SHDSL PIM (2-port two-wire module or 1-port four-wire module)</li> </ul>	All levels

Table 9: show chassis hardware Output Fields (*continued*)

Field Name	Field Description	Level of Output
	<ul style="list-style-type: none"> <li>• <b>1x TGM550</b>—TGM550 Telephony Gateway Module (Avaya VoIP gateway module with one console port, two analog <b>LINE</b> ports, and two analog <b>TRUNK</b> ports)</li> <li>• <b>1x DS1 TIM510</b>—TIM510 E1/T1 Telephony Interface Module (Avaya VoIP media module with one E1 or T1 trunk termination port and ISDN PRI backup)</li> <li>• <b>4x FXS, 4x FXO, TIM514</b>—TIM514 Analog Telephony Interface Module (Avaya VoIP media module with four analog <b>LINE</b> ports and four analog <b>TRUNK</b> ports)</li> <li>• <b>4x BRI TIM521</b>—TIM521 BRI Telephony Interface Module (Avaya VoIP media module with four ISDN BRI ports)</li> <li>• <b>Crypto Accelerator Module</b>—For enhanced performance of cryptographic algorithms used in IP Security (IPsec) services</li> <li>• <b>MPC M16x10GE</b>—16-port 10-Gigabit Module Port Concentrator that supports SFP+ optical transceivers. (Not on EX Series switches.)</li> <li>• For hosts, the Routing Engine type.</li> <li>• For small form-factor pluggable transceiver (SFP) modules, the type of fiber: <b>LX, SX, LH, or T</b>.</li> <li>• LCD description for EX Series switches (except EX2200 switches).</li> <li>• <b>MPC2</b>—1-port MPC2 that supports two separate slots for MICs.</li> <li>• <b>MPC3E</b>—1-port MPC3E that supports two separate slots for MICs (MIC-3D-1X100GE-CFP and MIC-3D-20GE-SFP) on MX960, MX480, and MX240 routers. The MPC3E maps one MIC to one PIC (1 MIC, 1 PIC), which differs from the mapping of legacy MPCs.</li> <li>• 100GBASE-LR4, pluggable CFP optics</li> <li>• Supports the Enhanced MX Switch Control Board with fabric redundancy and existing SCBs without fabric redundancy.</li> <li>• Interoperates with existing MX Series line cards, including Flexible Port Concentrators (FPC), Dense Port Concentrators (DPCs), and Modular Port Concentrators (MPCs).</li> <li>• <b>MPC4E</b>—Fixed configuration MPC4E that is available in two flavors: MPC4E-3D-32XGE-SFP and MPC4E-3D-2CGE-8XGE on MX2020, MX960, MX480, and MX240 routers.</li> <li>• LCD description for MX Series routers</li> </ul>	

## Sample Output

### show chassis hardware (EX8216 Switch)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis       REV 06   710-016845   CY0109220035  EX8216
Midplane      REV 06   710-016845   BA0909120112  EX8216-MP
CB 0          REV 22   710-020771   AX0109197723  EX8216-RE320
CB 1          REV 22   710-020771   AX0109197726  EX8216-RE320
  Routing Engine 1    BUILTIN      BUILTIN        RE-EX8216
FPC 3         REV 19   710-020683   BC0109083125  EX8200-48F
  CPU         REV 13   710-020598   BF0109144549  EX8200-CPU
FPC 4         REV 17   710-020683   BC0108500127  EX8200-48F
  CPU         REV 10   710-020598   BF0108460510  EX8200-CPU

```

PIC 0			BUILTIN	BUILTIN	48x 100 Base-QFX/1000
Base-X					
Xcvr 1	REV 01	740-011613	PE70V89	SFP-SX	
Xcvr 11	REV 01	740-011613	PE70YCE	SFP-SX	
Xcvr 12	REV 01	740-011613	PE70VSH	SFP-SX	
Xcvr 13	REV 01	740-011613	E08C02063	SFP-SX	
Xcvr 14	REV 01	740-011613	PE70VKU	SFP-SX	
Xcvr 15	REV 01	740-011613	E08E03372	SFP-SX	
Xcvr 21	REV 01	740-011613	PE70VAD	SFP-SX	
Xcvr 22	REV 01	740-011613	E08E01228	SFP-SX	
Xcvr 23	REV 01	740-011613	PE70VSL	SFP-SX	
Xcvr 24	REV 01	740-011613	E08E03409	SFP-SX	
Xcvr 25	REV 01	740-011613	PE70VL4	SFP-SX	
Xcvr 26	REV 01	740-011613	PDQ4L2Z	SFP-SX	
Xcvr 27	REV 01	740-011613	PE70WFK	SFP-SX	
Xcvr 28	REV 01	740-011782	PBD2B5U	SFP-SX	
Xcvr 29	REV 01	740-011613	PE70UQX	SFP-SX	
Xcvr 30	REV 01	740-011613	PE70VL5	SFP-SX	
Xcvr 31	REV 01	740-011613	PE70V0F	SFP-SX	
Xcvr 32	REV 01	740-011613	E08C02052	SFP-SX	
Xcvr 33	REV 01	740-011613	E08C02197	SFP-SX	
Xcvr 34	REV 01	740-011613	PE70V0L	SFP-SX	
Xcvr 35	REV 01	740-011613	E08E03390	SFP-SX	
Xcvr 36	REV 01	740-011613	PDQ4VL9	SFP-SX	
Xcvr 37	REV 01	740-011613	E08E03370	SFP-SX	
Xcvr 38	REV 01	740-011613	E08E03362	SFP-SX	
Xcvr 39	REV 01	740-011613	E08C02065	SFP-SX	
Xcvr 40	REV 01	740-011613	E08E03405	SFP-SX	
Xcvr 41	REV 01	740-011613	E08E03411	SFP-SX	
Xcvr 43	REV 01	740-011613	E08C02171	SFP-SX	
Xcvr 45	REV 01	740-011613	E08E03410	SFP-SX	
FPC 13	REV 16	710-016837	BB0109051344	EX8200-8XS	
CPU					
SIB 0	REV 10	710-021613	AY0109166244	EX8216-SF320	
SIB 1	REV 10	710-021613	AY0109166357	EX8216-SF320	
SIB 2	REV 10	710-021613	AY0109166362	EX8216-SF320	
SIB 3	REV 10	710-021613	AY0109166338	EX8216-SF320	
SIB 4	REV 10	710-021613	AY0109166350	EX8216-SF320	
SIB 5	REV 10	710-021613	AY0109166365	EX8216-SF320	
SIB 6	REV 10	710-021613	AY0109166361	EX8216-SF320	
SIB 7	REV 10	710-021613	AY0109166399	EX8216-SF320	
PSU 0	REV 17	740-021466	BG0709170003	EX8200-AC2K	
PSU 1	REV 17	740-021466	BG0709170004	EX8200-AC2K	
PSU 2	REV 17	740-021466	BG0709170020	EX8200-AC2K	
PSU 3	REV 17	740-021466	BG0709170017	EX8200-AC2K	
PSU 4	REV 17	740-021466	BG0709170008	EX8200-AC2K	
PSU 5	REV 17	740-021466	BG0709170018	EX8200-AC2K	
Top Fan Tray					
FTC 0	REV 4	760-022620	CX1209140212	EX8216-FT	
FTC 1	REV 4	760-022620	CX1209140212	EX8216-FT	
Bottom Fan Tray					
FTC 0	REV 4	760-022620	CX1209140211	EX8216-FT	
FTC 1	REV 4	760-022620	CX1209140211	EX8216-FT	
LCD 0	REV 04	710-025742	CE0109186919	EX8200 LCD	

### show chassis hardware clei-models (EX8216 Switch)

```

user@host> show chassis hardware clei-models
Hardware inventory:
Item          Version  Part number  CLEI code  FRU model number
Midplane      REV 08   710-016845

```

PSU 0	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 1	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 2	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 3	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 4	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 5	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
Top Fan Tray				
Bottom Fan Tray				

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

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

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

Fan Tray 0	FANTRAY-T-S
Fan Tray 1	FANTRAY-T-S
Fan Tray 2	FAN-REAR-TX-T640-S

#### show chassis hardware (EX2300-C Switch)

```
user@switch> show chassis hardware
Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis
Pseudo CB 0
Routing Engine 0
FPC 0              REV 04    650-059984   HV0215410003   EX2300-C-12P
CPU
PIC 0              REV 04    BUILTIN      BUILTIN        12x10/100/1000 Base-T
PIC 1              REV 04    650-059984   HV0215410003   2x10G SFP/SFP+
Xcvr 0             REV 01    740-021309   T09K00695      SFP+-10G-LR
Xcvr 1             REV 01    740-030658   AD1146A05JT    SFP+-10G-USR
Power Supply 0
JPSU-170W-AC
```

#### show chassis hardware (EX2300 Switch)

```
user@switch> show chassis hardware
Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis
Pseudo CB 0
Routing Engine 0
FPC 0              REV 05    650-059968   JY0215410033   EX2300-24P
CPU
PIC 0              REV 05    BUILTIN      BUILTIN        24x10/100/1000 Base-T
PIC 1              REV 05    650-059968   JY0215410033   4x10G SFP/SFP+
Xcvr 0             REV 01    740-030658   AD1125A03ES    SFP+-10G-USR
Xcvr 1             REV 01    740-021308   AJPOTDZ        SFP+-10G-SR
Xcvr 3             REV 01    740-021309   A9401FL        SFP+-10G-LR
Power Supply 0
JPSU-450W-AC-AFO
Fan Tray 0
(AFO)
Fan Tray 1
(AFO)
Fan Module, Airflow Out
Fan Module, Airflow Out
```

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

```
user@host> show chassis hardware detail
Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis
Routing Engine 0 REV 11    750-021256   BM0208327733   EX4200-24T, 8 POE
Routing Engine 0
FPC 0              REV 11    750-021256   BM0208327733   EX4200-24T, 8 POE
CPU
PIC 0              BUILTIN  BUILTIN      24x 10/100/1000 Base-T
PIC 1              REV 03B  711-021270   AR0208162285   4x GE SFP
BRD                REV 08    711-021264   AK0208328289   EX4200-24T, 8 POE
Power Supply 0    REV 03    740-020957   AT0508346354   PS 320W AC
Fan Tray
```

#### show chassis hardware (EX4300 Switch)

```
user@host> show chassis hardware
Hardware inventory:
Item              Version  Part number  Serial number  Description
```

Chassis			PD3713160055	EX4300-48P
Routing Engine 0	REV 04	650-044930	PD3713160055	EX4300-48P
FPC 0	REV 04	650-044930	PD3713160055	EX4300-48P
CPU		BUILTIN	BUILTIN	FPC CPU
PIC 0	REV 04	BUILTIN	BUILTIN	48x 10/100/1000 Base-T
PIC 1	REV 04	BUILTIN	BUILTIN	4x 40GE
Power Supply 0	REV 01	740-046871	1EDA3090026	JPSU-1100-AC-AF0-A
Fan Tray 0 (AF0)				Fan Module, Airflow Out
Fan Tray 1 (AF0)				Fan Module, Airflow Out

### show chassis hardware models (EX4500 Switch)

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

Hardware inventory:

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

### show chassis hardware detail (EX9200 Switch)

```
user@switch> show chassis hardware
```

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN111DA44RFB	EX9208
Midplane	REV 05	710-017414	TS2912	EX9208-BP
FPM Board	REV 02	710-017254	XN1804	Front Panel Display
PEM 0	Rev 01	740-022697	QCS0906C033	PS 1.2-1.7kW; 100-240V
AC in				
PEM 1	Rev 01	740-022697	QCS0906C095	PS 1.2-1.7kW; 100-240V
AC in				
Routing Engine 0	REV 08	740-031116	9009122883	RE-S-EX9200-1800X4
CB 0	REV 16	750-031391	CAAW4391	EX9200-SCBEF
PC 0	REV 07	750-049612	CABJ9312	EX9200 40x1G Copper
CPU	REV 04	711-038484	CABH8268	MPCE PMB 2G
MIC 0	REV 02	750-049607	CABT9623	40x 1GE RJ45
PIC 0		BUILTIN	BUILTIN	10x 1GE RJ45
PIC 1		BUILTIN	BUILTIN	10x 1GE RJ45
PIC 2		BUILTIN	BUILTIN	10x 1GE RJ45
PIC 3		BUILTIN	BUILTIN	10x 1GE RJ45
FPC 1	REV 10	710-013699	CAAN3529	EX9200-40x1G-SFP
CPU	REV 04	711-038484	CAAL7608	MPCE PMB 2G
MIC 0	REV 26	750-028392	CAAS5151	20x 1GE SFP
PIC 0		BUILTIN	BUILTIN	10x 1GE SFP
PIC 1		BUILTIN	BUILTIN	10x 1GE SFP
MIC 1	REV 26	750-028392	CAAC8006	20x 1GE SFP
PIC 2		BUILTIN	BUILTIN	10x 1GE SFP
Xcvr 8	REV 01	740-011613	E08L03674	SFP-SX
Xcvr 9	REV 01	740-011613	E08M00243	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE SFP
FPC 3	REV 10	710-013699	CAAR5261	EX9200-40x1G-SFP
CPU	REV 04	711-038484	CAAS2118	MPCE PMB 2G
MIC 0	REV 26	750-028392	CAAS5067	20x 1GE SFP
PIC 0		BUILTIN	BUILTIN	10x 1GE SFP
Xcvr 2	REV 01	740-031851	PNA7L8U	SFP-SX
Xcvr 3	REV 02	740-011613	AM0943SEKGZ	SFP-SX
Xcvr 4	REV 02	740-011613	AM0943SEJZ9	SFP-SX



PIC 1		BUILTIN	BUILTIN	10x 1GE SFP
MIC 1	REV 26	750-028392	CAAS5132	20x 1GE SFP
PIC 2		BUILTIN	BUILTIN	10x 1GE SFP
Xcvr 4	REV 01	740-011613	E08D02625	SFP-SX
Xcvr 9	REV 02	740-011613	PJH4RD9	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE SFP
Xcvr 0	REV 01	740-011613	AM0813S8YME	SFP-SX
Fan Tray				Left Fan Tray

### show chassis hardware (M7i Router)

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			31959	M7i
Midplane	REV 02	710-008761	CA0209	M7i Midplane
Power Supply 0	Rev 04	740-008537	PD10272	AC Power Supply
Routing Engine	REV 01	740-008846	1000396803	RE-5.0
CFEB	REV 02	750-009492	CA0166	Internet Processor IIv1
FPC 0				E-FPC
PIC 0	REV 04	750-003163	HJ6416	1x G/E, 1000 BASE-SX
PIC 1	REV 04	750-003163	HJ6423	1x G/E, 1000 BASE-SX
PIC 2	REV 04	750-003163	HJ6421	1x G/E, 1000 BASE-SX
PIC 3	REV 02	750-003163	HJ0425	1x G/E, 1000 BASE-SX
FPC 1				E-FPC
PIC 2	REV 01	750-009487	HM2275	ASP - Integrated
PIC 3	REV 01	750-009098	CA0142	2x F/E, 100 BASE-TX

Hardware inventory:

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

### show chassis hardware (M10 Router)

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			1122	M10
Midplane	REV 1.1	710-001950	S/N AC6626	
Power supply A	Rev 01	740-002497	S/N LC36095	AC
Power supply B	Rev 01	740-002497	S/N LC36100	AC

Display	REV 1.2	710-001995	S/N AC6656	
Host			18000005dfb3fb01	teknor
FEB	REV 01	710-001948	S/N AC6632	Internet Processor II
FPC 0				
PIC 0	REV 08	750-001072	S/N AB2485	1x G/E, 1000 BASE-SX
PIC 1	REV 01	750-000613	S/N AA1048	1x OC-12 SONET, SMIR
FPC 1				
Fan Tray 0				FANTRAY-M10I-S
Fan Tray 1				FANTRAY-M10I-S

#### show chassis hardware models (M10 Router)

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

Hardware inventory:

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

#### show chassis hardware (M20 Router)

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

Hardware inventory:

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

Fan Tray 0  
Fan Tray 1  
Fan Tray 2  
Fan Tray 3

Front Upper Fan Tray  
Front Middle Fan Tray  
Front Bottom Fan Tray  
Rear Fan Tray

### show chassis hardware models (M20 Router)

user@host> show chassis hardware models

Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Backplane	REV 03	710-002334		CHAS-MP-M20-S
Power Supply A	REV 06	740-001465		PWR-M20-AC-S
Display	REV 04	710-001519		CRAFT-M20-S
Routing Engine 0	REV 06	740-003239		RE-333-768-S
Routing Engine 1	REV 06	740-003239		RE-333-768-S
SSB 0	REV 02	710-001951		SSB-E-M20
SSB 1	N/A	N/A		
FPC 0	REV 03	710-003308		FPC-E
PIC 0	REV 08	750-002303		P-4FE-TX
PIC 1	REV 07	750-004745		P-2MCDS3
PIC 2	REV 03	750-002965		PE-4CHDS3
FPC 1	REV 03	710-003308		FPC-E
PIC 0	REV 03	750-002914		P-20C3-ATM-MM
Fan Tray 0				FANTRAY-F-M20-S
Fan Tray 1				FANTRAY-F-M20-S
Fan Tray 2				FANTRAY-F-M20-S
Fan Tray 3				FANTRAY-R-M20-S

### show chassis hardware (M40 Router)

user@host> show chassis hardware

Hardware inventory:

Item	Version	Part number	Serial number	Description
Backplane	REV 02	710-000073	S/N AA0053	
Power supply A	Rev 2	740-000235	S/N 000042	DC
Maxicab	REV X1	710-000229	S/N AA0139	
Minicab	REV X1	710-000482	S/N AA0201	
Display	REV 06	710-000150	S/N AA0905	
Host				cpv5000
SCB	REV X1	710-000075	S/N AA0158	Internet Processor I
SSRAM bank 0	REV 02	710-000077	S/N AA2267	1 MB
SSRAM bank 1	REV 02	710-000077	S/N AA2270	1 MB
SSRAM bank 2	REV 02	710-000077	S/N AA2269	1 MB
SSRAM bank 3	REV 02	710-000077	S/N AA2268	1 MB
FPC 0	REV 01	710-000175	S/N AA0048	
SSRAM	REV 01	710-000077	S/N AA2333	1 MB
SDRAM bank 0	REV 01	710-000099	S/N AA2332	64 MB
SDRAM bank 1	REV X1	710-000099	S/N AA2337	64 MB
PIC 0	REV 04	750-000613	S/N aa0343	1x OC-12 SONET, SMIR
PIC 1	REV 04	750-000613	S/N AA0379	1x OC-12 SONET, SMIR
PIC 2	REV 04	750-000613	S/N AA0377	1x OC-12 SONET, SMIR
PIC 3	REV 04	750-000613	S/N AA0378	1x Tunnel
FPC 2	REV 01	710-000175	S/N AA0042	
SSRAM	REV 02	710-000077	S/N AA2288	1 MB
SDRAM bank 0	REV 01	710-000099	S/N AA2331	64 MB
SDRAM bank 1	REV 01	710-000099	S/N AA2330	64 MB
PIC 0	REV X1	750-000603	S/N AA0143	4x OC-3 SONET, SMIR
PIC 1	REV X1	750-000615	S/N AA0149	4x OC-3 SONET, MM
PIC 2	REV X1	750-000611	S/N AA0148	4x OC-3 SONET, MM
PIC 3	REV 04	750-000613	S/N AA0330	1x OC-12 SONET, SMIR
FPC 4	REV 01	710-000175	S/N AA0050	

SSRAM	REV 01	710-000077	S/N AA2327	1 MB
SDRAM bank 0	REV 01	710-000099	S/N AA2329	64 MB
SDRAM bank 1	REV 01	710-000099	S/N AA2328	64 MB
PIC 0	REV 04	750-000613	S/N AA0320	1x OC-12 SONET, SMIR
PIC 2	REV 05	750-000616	S/N AA1341	1x OC-12 ATM, MM
PIC 3	REV 08	750-001072	S/N AB2462	1x G/E, 1000 BASE-SX
FPC 5	REV 10	710-000175	S/N AA7663	
SSRAM	REV 01	710-000077	S/N 501590	1 MB
SDRAM bank 0	REV 01	710-000099	S/N 300949	64 MB
SDRAM bank 1	REV 01	710-000099	S/N 300868	64 MB
PIC 1	REV 01	750-001323	S/N AB1670	1x Tunnel

### show chassis hardware (M40e Router)

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis				m40e
Midplane	REV 01	710-005071	AX3671	
FPM CMB	REV 03	710-001642	AR9074	
FPM Display	REV 03	710-001647	AR7331	
CIP	REV 04	710-002649	BB4449	
PEM 0	Rev 01	740-003787	MC12364	Power Entry Module
PEM 1	Rev 01	740-003787	MC12383	Power Entry Module
PCG 0	REV 07	710-001568	AG1332	
PCG 1	REV 07	710-001568	AR3789	
Host 0			3e000007c8176601	Present
MCS 0	REV 11	710-001226	AN5813	
SFM 0 SPP	REV 07	710-001228	AG4676	
SFM 0 SPR	REV 05	710-002189	AE4735	Internet Processor II
SFM 1 SPP	REV 07	710-001228	AP1347	
SFM 1 SPR	REV 05	710-002189	BE0063	Internet Processor II
FPC 0	REV 01	710-011725	BE0669	M40e-EP-FPC Type 1
CPU	REV 01	710-004600	BD9504	
PIC 0	REV 03	750-003737	AY3991	4x G/E, 1000 BASE-SX
FPC 1	REV 01	710-005197	BD9842	M40e-FPC Type 2
CPU	REV 01	710-004600	BB4869	
PIC 0	REV 07	750-001900	AR8278	1x OC-48 SONET, SMSR
FPC 2	REV 02	710-005197	BD9824	M40e-FPC Type 2
CPU	REV 01	710-004600	BD9531	
PIC 0	REV 03	750-003737	AY3986	4x G/E, 1000 BASE-SX
FPC 4	REV 02	710-005078	BE0664	M40e-FPC Type 1
CPU	REV 01	710-004600	BD9559	
PIC 0	REV 03	750-001894	AG7963	1x G/E, 1000 BASE-SX
PIC 2	REV 01	750-002575	AF2472	4x OC-3 SONET, SMIR
FPC 6	REV 02	710-005078	BE0652	M40e-FPC Type 1
CPU	REV 01	710-004600	BD9607	
PIC 0	REV 02	750-002911	AN2286	4x F/E, 100 BASE-TX
PIC 2	REV 01	750-002577	AP6345	4x OC-3 SONET, MM

### show chassis hardware (M120 Router)

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN000054AC	M120
Midplane	REV 01	710-013667	RB4170	M120 Midplane
FPM Board	REV 02	710-011407	CJ9186	M120 FPM Board
FPM Display	REV 02	710-011405	CJ9173	M120 FPM Display
FPM CIP	REV 02	710-011410	CJ9221	M120 FPM CIP
PEM 0	Rev 05	740-011936	RM28320	AC Power Entry Module

PEM 1	Rev 05	740-011936	RM28321	AC Power Entry Module
Routing Engine 0	REV 03	740-014080	1000642883	RE-A-1000
CB 0	REV 03	710-011403	CM8346	M120 Control Board
CB 1	REV 06	710-011403	CP6728	M120 Control Board
FPC 1	REV 02	710-015908	CP6925	M120 CFPC 10GE
PIC 0		BUILTIN	BUILTIN	1x 10GE(LAN/WAN) XFP
Xcvr 0	REV 01	740-014279	62E204N00007	XFP-10G-LR
FPC 3	REV 03	710-011393	CJ9234	M120 FPC Type 2
PIC 0	REV 16	750-008155	NB5229	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F15JB	SFP-SX
Xcvr 1	REV 01	740-007326	P4Q0R9G	SFP-SX
PIC 1	REV 09	750-007745	CG4360	4x OC-3 SONET, SMIR
PIC 2	REV 16	750-008155	ND7787	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F12AS	SFP-SX
Xcvr 1	REV 01	740-011613	P9F1ALU	SFP-SX
PIC 3	REV 07	750-011800	JW1284	8x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011613	P9F1AM6	SFP-SX
Xcvr 6	REV 01	740-011613	P9F16NN	SFP-SX
Xcvr 7	REV 01	740-011782	P8C29Y7	SFP-SX
Board B	REV 02	710-011395	CN3754	M120 FPC Mezz
FPC 4	REV 02	710-011398	CP6741	M120 FPC Type 3
PIC 0	REV 16	750-007141	NB2855	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011782	P922A1F	SFP-SX
Xcvr 1	REV 01	740-011782	P922A16	SFP-SX
Xcvr 2	REV 01	740-011782	P922A0U	SFP-SX
Xcvr 3	REV 01	740-011782	P9229UZ	SFP-SX
Xcvr 4	REV 01	740-009029	P11JXWP	SFP-LX
Xcvr 6	REV 01	740-011613	P9F1ALW	SFP-SX
FPC 5	REV 01	710-011388	CJ9088	M120 FPC Type 1
PIC 0	*** Hardware Not Supported ***			
PIC 1	REV 05	750-012052	NB0410	1x CHOC3 IQ SONET, SMLR
PIC 2	REV 01	750-013167	CM3824	4x CHDS3 IQ
PIC 3	REV 01	750-010240	CB5366	1x G/E SFP, 1000 BASE
Board B	REV 01	710-011390	CJ9103	M120 FPC Mezz Board
FEB 3	REV 04	710-011663	CP6673	M120 FEB
FEB 4	REV 04	710-011663	CJ9368	M120 FEB
FEB 5	REV 04	710-011663	CJ9386	M120 FEB
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Top Fan Tray
Fan Tray 3				Rear Bottom Fan Tray

### show chassis hardware detail (M120 Router)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN000054AC	M120
Midplane	REV 01	710-013667	RB4170	M120 Midplane
FPM Board	REV 02	710-011407	CJ9186	M120 FPM Board
FPM Display	REV 02	710-011405	CJ9173	M120 FPM Display
FPM CIP	REV 02	710-011410	CJ9221	M120 FPM CIP
PEM 0	Rev 05	740-011936	RM28320	AC Power Entry Module
PEM 1	Rev 05	740-011936	RM28321	AC Power Entry Module
Routing Engine 0	REV 03	740-014080	1000642883	RE-A-1000
ad0	248 MB	SILICONSYSTEMS INC	256M 126CT505S0763SC00110	Compact Flash
ad2	38154 MB	HTE541040G9SA00	MPBBTOX2HS2E3M	Hard Disk
CB 0	REV 03	710-011403	CM8346	M120 Control Board
CB 1	REV 06	710-011403	CP6728	M120 Control Board

FPC 1	REV 02	710-015908	CP6925	M120 CFPC 10GE
PIC 0		BUILTIN	BUILTIN	1x 10GE(LAN/WAN) XFP
Xcvr 0	REV 01	740-014279	62E204N00007	XFP-10G-LR
FPC 3	REV 03	710-011393	CJ9234	M120 FPC Type 2
PIC 0	REV 16	750-008155	NB5229	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F15JB	SFP-SX
Xcvr 1	REV 01	740-007326	P4Q0R9G	SFP-SX
PIC 1	REV 09	750-007745	CG4360	4x OC-3 SONET, SMIR
PIC 2	REV 16	750-008155	ND7787	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F12AS	SFP-SX
Xcvr 1	REV 01	740-011613	P9F1ALU	SFP-SX
PIC 3	REV 07	750-011800	JW1284	8x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011613	P9F1AM6	SFP-SX
Xcvr 6	REV 01	740-011613	P9F16NN	SFP-SX
Xcvr 7	REV 01	740-011782	P8C29Y7	SFP-SX
Board B	REV 02	710-011395	CN3754	M120 FPC Mezz
FPC 4	REV 02	710-011398	CP6741	M120 FPC Type 3
PIC 0	REV 16	750-007141	NB2855	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011782	P922A1F	SFP-SX
Xcvr 1	REV 01	740-011782	P922A16	SFP-SX
Xcvr 2	REV 01	740-011782	P922A0U	SFP-SX
Xcvr 3	REV 01	740-011782	P9229UZ	SFP-SX
Xcvr 4	REV 01	740-009029	P11JXWP	SFP-LX
Xcvr 6	REV 01	740-011613	P9F1ALW	SFP-SX
FPC 5	REV 01	710-011388	CJ9088	M120 FPC Type 1
PIC 0	*** Hardware Not Supported ***			
PIC 1	REV 05	750-012052	NB0410	1x CHOC3 IQ SONET, SMLR
PIC 2	REV 01	750-013167	CM3824	4x CHDS3 IQ
PIC 3	REV 01	750-010240	CB5366	1x G/E SFP, 1000 BASE
Board B	REV 01	710-011390	CJ9103	M120 FPC Mezz Board
FEB 3	REV 04	710-011663	CP6673	M120 FEB
FEB 4	REV 04	710-011663	CJ9368	M120 FEB
FEB 5	REV 04	710-011663	CJ9386	M120 FEB
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Top Fan Tray
Fan Tray 3				Rear Bottom Fan Tray

### show chassis hardware models (M120 Router)

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

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

PIC 1	REV 05	750-012052	PB-1CHOC3-SMIR-QPP
PIC 2	REV 01	750-013167	PE-4CHDS3-QPP
PIC 3	REV 01	750-010240	PB-1GE-SFP
Fan Tray 0			FFANTRAY-M120-S
Fan Tray 1			FFANTRAY-M120-S
Fan Tray 2			RFANTRAY-M120-S
Fan Tray 3			RFANTRAY-M120-S

### show chassis hardware (M160 Router)

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

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

### show chassis hardware models (M160 Router)

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

Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 03	710-009120		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 MB
SSRAM bank 1	REV 01	710-000077	S/N 306474	1 MB
SSRAM bank 2	REV 01	710-000077	S/N 306388	1 MB
SSRAM bank 3	REV 01	710-000077	S/N 306392	1 MB
SFM 1 SPP	REV 04	710-001228	S/N AA2860	
SFM 1 SPR	REV 01	710-001224	S/N AB0139	Internet Processor I
SSRAM bank 0	REV 01	710-000077	S/N 302917	1 MB
SSRAM bank 1	REV 01	710-000077	S/N 302662	1 MB
SSRAM bank 2	REV 01	710-000077	S/N 302593	1 MB
SSRAM bank 3	REV 01	710-000077	S/N 100160	1 MB
FPC 0	REV 03	710-001255	S/N AA9806	FPC Type 1



CPU	REV 02	710-001217	S/N AA9590	
SSRAM	REV 01	710-000077	S/N 302836	1 MB
SDRAM 0	REV 01	710-001196	S00141	32 MB
SDRAM 1	REV 01	710-001196	S0010;	32 MB
SSRAM	REV 01	710-000077	S/N 302633	1 MB
SDRAM 0	REV 01	710-001196	S00143	32 MB
SDRAM 1	REV 01	710-001196	S00115	32 MB
SSRAM	REV 01	710-000077	S/N 302952	1 MB
SDRAM 0	REV 01	710-001196	S00135	32 MB
SDRAM 1	REV 01	710-001196	S001=3	32 MB
SSRAM	REV 01	710-000077	S/N 302892	1 MB
SDRAM 0	REV 01	710-001196	S00076	32 MB
SDRAM 1	REV 01	710-001196	S001=5	32 MB
PIC 1	REV 05	750-000616	S/N AA1527	1x OC-12 ATM, MM
PIC 2	REV 05	750-000616	S/N AA1535	1x OC-12 ATM, MM
PIC 3	REV 01	750-000616	S/N AA1519	1x OC-12 ATM, MM
FPC 1	REV 02	710-001611	S/N AA9523	FPC Type 2
CPU	REV 02	710-001217	S/N AA9571	
SSRAM	REV 01	710-000077	S/N 306340	1 MB
SDRAM 0	REV 01	710-001196	S00012	32 MB
SDRAM 1	REV 01	710-001196	S0001?	32 MB
SSRAM	REV 01	710-000077	S/N 306454	1 MB
SDRAM 0	REV 01	710-001196	S00028	32 MB
SDRAM 1	REV 01	710-001196	S0002?	32 MB
SSRAM	REV 01	710-000077	S/N 306492	1 MB
SDRAM 0	REV 01	710-001196	S00015	32 MB
SDRAM 1	REV 01	710-001196	S00031	32 MB
SSRAM	REV 01	710-000077	S/N 306363	1 MB
SDRAM 0	REV 01	710-001196	S00013	32 MB
SDRAM 1	REV 01	710-001196	S00032	32 MB
PIC 0	REV 03	750-001900	S/N AA9626	1x STM-16 SDH, SMIR
PIC 1	REV 01	710-002381	S/N AD3633	2x G/E, 1000 BASE-SX
FPC 2				FPC Type OC192
... SSRAM	REV 01	710-000077	S/N 306466	1 MB

### show chassis hardware (M320 Router)

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

Item	Version	Part number	Serial number	Description
Chassis			67245	M320
Midplane	REV 05	710-009120	RB1202	M320 Midplane
FPM GBUS	REV 04	710-005928	HZ5697	M320 Board
FPM Display	REV 05	710-009351	HR1464	M320 FPM Display
CIP	REV 04	710-005926	HT8672	M320 CIP
PEM 0	Rev 05	740-009148	QK34208	DC Power Entry Module
PEM 1	Rev 05	740-009148	QK34262	DC Power Entry Module
PEM 2	Rev 05	740-009148	QF10449	DC Power Entry Module
PEM 3	Rev 05	740-009148	QJ18257	DC Power Entry Module
Routing Engine 0	REV 06	740-008883	P11123901185	RE-4.0
CB 0	REV 07	710-009115	JB2382	M320 Control Board
FPC 0	REV 02	710-005017	CD9926	M320 FPC Type 2
CPU	REV 01	710-011659	CJ6940	M320 PCA SCPU
PIC 0	REV 07	750-001900	AT1594	1x OC-48 SONET, SMSR
PIC 1	REV 03	750-001850	HS2746	1x Tunnel
PIC 2	REV 05	750-010618	JE7117	4x G/E SFP, 1000 BASE
PIC 3	REV 06	750-001900	HE6083	1x OC-48 SONET, SMSR
FPC 2	REV 02	710-005017	CH0319	M320 FPC Type 1
CPU	REV 01	710-011659	CJ6942	M320 PCA SCPU
PIC 0	REV 05	750-003034	BD8705	4x OC-3 SONET, SMIR
FPC 5	REV 02	710-005017	CD9938	M320 FPC Type 2

CPU				
FPC 7	REV 02	710-005017	CD9934	M320 FPC Type 2
CPU				
SIB 0	REV 09	710-009184	JA6540	M320 SIB
SIB 1	REV 09	710-009184	HV9511	M320 SIB
SIB 2	REV 09	710-009184	HW2057	M320 SIB
SIB 3	REV 09	710-009184	JA6687	M320 SIB
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray

### show chassis hardware models (M320 Router)

```

user@host> show chassis hardware models
Hardware inventory:

```

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

## show chassis hardware (MX5 Router)

```

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

```

## show chassis hardware (MX10 Router)

```

user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number  Description
Chassis                               E1372         MX10-T
Midplane          REV 01   711-038211   YF5285        MX10-T
PEM 0             Rev 04   740-028288   VB01678       AC Power Entry Module
Routing Engine    BUILTIN  BUILTIN      BUILTIN       Routing Engine
TFEB 0            BUILTIN  BUILTIN      BUILTIN       Forwarding Engine
Processor
  QXM 0           REV 05   711-028408   ZA9053        MPC QXM
  FPC 0            BUILTIN  BUILTIN      BUILTIN       MPC BUILTIN
  MIC 0            BUILTIN  BUILTIN      BUILTIN       4x 10GE XFP
  PIC 0            BUILTIN  BUILTIN      BUILTIN       4x 10GE XFP
  FPC 1            BUILTIN  BUILTIN      BUILTIN       MPC BUILTIN
  MIC 0           REV 24   750-028392   YX9436        3D 20x 1GE(LAN) SFP
  PIC 0            BUILTIN  BUILTIN      BUILTIN       10x 1GE(LAN) SFP
    Xcvr 0         REV 01   740-031851   AM1107SUFQW   SFP-SX

```

PIC 1	BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Fan Tray			Fan Tray

### show chassis hardware (MX40 Router)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               E1367          MX40-T
Midplane      REV 01   711-038211   YF5284         MX40-T
PEM 0         Rev 04   740-028288   VB01680        AC Power Entry Module
PEM 1         Rev 04   740-028288   VB01700        AC Power Entry Module
Routing Engine BUILTIN   BUILTIN      Routing Engine
TFEB 0        BUILTIN   BUILTIN      Forwarding Engine
Processor
  QXM 0       REV 05   711-028408   ZA9048         MPC QXM
  FPC 0       BUILTIN   BUILTIN      MPC BUILTIN
    MIC 0     BUILTIN   BUILTIN      4x 10GE XFP
      PIC 0   BUILTIN   BUILTIN      4x 10GE XFP
        Xcvr 0 REV 01   740-014279   M7067UPP       XFP-10G-LR
        Xcvr 1     NON-JNPR   K9J02UN        XFP-10G-LR
  FPC 1       BUILTIN   BUILTIN      MPC BUILTIN
    MIC 0     REV 24   750-028392   YX3504         3D 20x 1GE(LAN) SFP
      PIC 0   BUILTIN   BUILTIN      10x 1GE(LAN) SFP
        Xcvr 0 REV 01   740-011613   AM0812S8WTE    SFP-SX
        Xcvr 1 REV 01   740-011613   PFA6KV2         SFP-SX
        Xcvr 2 REV 01   740-031851   AM1045SUDDM     SFP-SX
        Xcvr 3 REV 01   740-011613   PD63C7M         SFP-SX
        Xcvr 4 REV 01   740-011613   PD63DJY         SFP-SX
        Xcvr 5 REV 02   740-011613   AA0950STLL9     SFP-SX
        Xcvr 6 REV 01   740-011782   PAR1YHC         SFP-SX
        Xcvr 7 REV 01   740-011782   P9P0XXL         SFP-SX
        Xcvr 8 REV 01   740-011613   PD63D95         SFP-SX
        Xcvr 9 REV 01   740-031851   AM1045SU9B8     SFP-SX
      PIC 1   BUILTIN   BUILTIN      10x 1GE(LAN) SFP
        Xcvr 0 REV 01   740-011613   PF21L3Z         SFP-SX
        Xcvr 1 REV 01   740-031851   AM1045SU7M9     SFP-SX
        Xcvr 2 REV 01   740-031851   AM1045SUAPT     SFP-SX
        Xcvr 3 REV 01   740-011613   PFF2BZH         SFP-SX
        Xcvr 4 REV 01   740-031851   AM1045SUDDN     SFP-SX
        Xcvr 5 REV 01   740-031851   AM1039S00ZR     SFP-SX
        Xcvr 6 REV 01   740-031851   AM1045SUD6Y     SFP-SX
        Xcvr 8 REV 01   740-011613   PFM1QBS         SFP-SX
        Xcvr 9 REV 01   740-011613   PFF2E25         SFP-SX
    MIC 1     REV 01   750-021130   KG4391         3D 2x 10GE XFP
      PIC 2   BUILTIN   BUILTIN      1x 10GE XFP
        Xcvr 0 REV 01   740-011571   C645XJ04G       XFP-10G-SR
      PIC 3   BUILTIN   BUILTIN      1x 10GE XFP
        Xcvr 0     NON-JNPR   CA49BK0AE       XFP-10G-SR
Fan Tray
Fan Tray

```

### show chassis hardware (Fixed MX80 Router)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               MX80-48T
Midplane      REV 01   711-031603   KF9250         MX80-48T
Routing Engine BUILTIN   BUILTIN      Routing Engine
FEB 0         BUILTIN   BUILTIN      Forwarding Engine Board
FPC 0         BUILTIN   BUILTIN      MPC BUILTIN

```

MIC 0		BUILTIN	BUILTIN	4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	4x 10GE XFP
Xcvr 0		NON-JNPR	M6439D41	XFP-10G-LR
Xcvr 1	REV 01	740-014279	6XE931N00202	XFP-10G-LR
Xcvr 2	REV 01	740-014289	C715XU05F	XFP-10G-SR
Xcvr 3	REV 01	740-014289	C650XU0EP	XFP-10G-SR
FPC 1		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0	REV 01	711-029399	JR6981	12x 1GE(LAN) RJ45
PIC 0		BUILTIN	BUILTIN	12x 1GE(LAN) RJ45
PIC 1		BUILTIN	BUILTIN	12x 1GE(LAN) RJ45
MIC 1	REV 01	BUILTIN	BUILTIN	12x 1GE(LAN) RJ45
PIC 2		BUILTIN	BUILTIN	12x 1GE(LAN) RJ45
PIC 3		BUILTIN	BUILTIN	12x 1GE(LAN) RJ45
Fan Tray				Fan Tray

### show chassis hardware (Modular MX80 Router)

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

```
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               MX80
Midplane                               MX80
PEM 0                               AC Power Entry Module
Routing Engine                               Routing Engine
FEB 0                               Forwarding Engine Board

QXM 0          REV 05  711-028408  JR7041  MPC QXM
FPC 0                               MPC BUILTIN
MIC 0                               4x 10GE XFP
PIC 0                               4x 10GE XFP
FPC 1                               MPC BUILTIN
MIC 0          REV 02  750-028380  JR6598  3D 2x 10GE XFP
PIC 0                               1x 10GE XFP
Xcvr 0         REV 01  740-014289  T07M86365 XFP-10G-SR
PIC 1                               1x 10GE XFP
Xcvr 0         REV 01  740-014289  T07M71094 XFP-10G-SR
MIC 1          REV 02  750-028380  JG8548  3D 2x 10GE XFP
PIC 2                               1x 10GE XFP
Xcvr 0         REV 02  740-014289  T08L86302 XFP-10G-SR
PIC 3                               1x 10GE XFP
Xcvr 0         REV 02  740-014289  C810XU0BA XFP-10G-SR
Fan Tray                               Fan Tray
```

### show chassis hardware (MX104 Router)

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

```
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               MX104
Midplane          REV 28  750-044219  CAAX5741  MX104
PEM 0             REV 03  740-045933  1H072500016 AC Power Entry Module
PEM 1             REV 03  740-045932  1H073050017 DC Power Entry Module
Routing Engine 0  REV 20  750-044228  CAAY7935  RE-MX-104
Routing Engine 1 REV 13  750-044228  CAAM6380  RE-MX-104
AFEB 0                               Forwarding Engine
Processor
FPC 0                               MPC BUILTIN
FPC 1                               MPC BUILTIN
MIC 0          REV 15  750-036132  CAAF7948  2x0C12/8x0C3 CC-CE
PIC 0                               2x0C12/8x0C3 CC-CE
```

Xcvr 0	REV 01	740-011615	PCQ0U2J	SFP-IR
Xcvr 1	REV 01	740-016068	PJL7A6G	SFP-SR
Xcvr 2	REV 01	740-016068	PJL7A5J	SFP-SR
Xcvr 3	REV 01	740-016065	PJN5HPZ	SFP-SR
Xcvr 4	REV 01	740-029122	PKB38TL	SFP-LR
Xcvr 5	REV 01	740-011787	P6A107G	SFP-LR
Xcvr 6	REV 01	740-029122	PKB38TR	SFP-LR
Xcvr 7	REV 01	740-011787	PBKONK3	SFP-LR
MIC 1				
FPC 2		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B10F00465	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B10F00461	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B10G01545	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B10G01385	SFP+-10G-SR
Fan Tray 0	REV 02	711-049570	CAAX6538	Fan Tray

#### show chassis hardware detail (MX104 Router)

```

user@host> show chassis hardware detail
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               G3503         MX104
Midplane      REV 28   750-044219   CAAX5741      MX104
PEM 0         REV 03   740-045933   1H072500016   AC Power Entry Module
PEM 1         REV 03   740-045932   1H073050017   DC Power Entry Module
Routing Engine 0 REV 20   750-044228   CAAY7935      RE-MX-104
  da0        7836 MB  ATP IG eUSB SSD      Nand Flash 0
  usb0 (addr 1) EHCI root hub 0    Freescale     uhub0
  usb0 (addr 2) USB2513Bi 9491    SMSC          uhub1
  usb0 (addr 3) ATP IG eUSB SSD 44801 ATP Electronics umass0
Routing Engine 1 REV 13   750-044228   CAAM6380      RE-MX-104
  da0        7836 MB  ATP IG eUSB SSD      Nand Flash 0
AFEB 0                               BUILTIN       BUILTIN       Forwarding Engine
Processor
FPC 0                               BUILTIN       BUILTIN       MPC BUILTIN
FPC 1                               BUILTIN       BUILTIN       MPC BUILTIN
MIC 0         REV 15   750-036132   CAAF7948      2x0C12/8x0C3 CC-CE
PIC 0                               BUILTIN       BUILTIN       2x0C12/8x0C3 CC-CE
  Xcvr 0      REV 01   740-011615   PCQ0U2J      SFP-IR
  Xcvr 1      REV 01   740-016068   PJL7A6G      SFP-SR
  Xcvr 2      REV 01   740-016068   PJL7A5J      SFP-SR
  Xcvr 3      REV 01   740-016065   PJN5HPZ      SFP-SR
  Xcvr 4      REV 01   740-029122   PKB38TL      SFP-LR
  Xcvr 5      REV 01   740-011787   P6A107G      SFP-LR
  Xcvr 6      REV 01   740-029122   PKB38TR      SFP-LR
  Xcvr 7      REV 01   740-011787   PBKONK3      SFP-LR
MIC 1
FPC 2                               BUILTIN       BUILTIN       MPC BUILTIN
MIC 0                               BUILTIN       BUILTIN       4x 10GE(LAN) SFP+
PIC 0                               BUILTIN       BUILTIN       4x 10GE(LAN) SFP+
  Xcvr 0      REV 01   740-031980   B10F00465    SFP+-10G-SR
  Xcvr 1      REV 01   740-031980   B10F00461    SFP+-10G-SR
  Xcvr 2      REV 01   740-031980   B10G01545    SFP+-10G-SR
  Xcvr 3      REV 01   740-031980   B10G01385    SFP+-10G-SR
Fan Tray 0    REV 02   711-049570   CAAX6538     Fan Tray

```

#### show chassis hardware detail (MX480 Packet Transport Router with details of virtual disk size)

```

user@host> show chassis hardware detail

```

## Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN122FFD9AFB	MX480
Midplane	REV 05	710-017414	ACRB8882	MX480 Midplane
FPM Board	REV 02	710-017254	CADF7623	Front Panel Display
PEM 0	Rev 07	740-017343	QCS1128A0TY	DC Power Entry Module
PEM 1	Rev 07	740-017343	QCS1128A0JM	DC Power Entry Module
Routing Engine 0	REV 07	750-054758	CADG2028	RE-S-2X00x6
vtbd0	15361 MB			Virtio Block Disk
vtbd1	15360 MB			Virtio Block Disk
ada0	511 MB QEMU HARDDISK		QM00002	Emulated IDE Disk
usb0 (addr 1)	UHCI root HUB 0		Intel	uhub0
Routing Engine 1	REV 00	750-054758		RE-S-2X00x6
vtbd0	15361 MB			Virtio Block Disk
vtbd1	15360 MB			Virtio Block Disk
ada0	511 MB QEMU HARDDISK		QM00002	Emulated IDE Disk
usb0 (addr 1)	UHCI root HUB 0		Intel	uhub0
CB 0	REV 01	750-055976	CACS1837	Enhanced MX SCB 2
CB 1	REV 01	750-055976	CADD9894	Enhanced MX SCB 2
Xcvr 1	REV 01	740-031980	AP41KCL	SFP+-10G-SR
FPC 0	REV 09	750-049040	CACX1759	LOAD MPC Type 2
CPU	REV 10	711-035209	CACP9324	HMPC PMB 2G
FPC 4	REV 28	750-037355	CACY8384	MPC4E 3D 2CGE+8XGE
CPU	REV 10	711-035209	CACX0428	HMPC PMB 2G
Fan Tray				Enhanced Left Fan Tray

## show chassis hardware extensive (MX104 Router)

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

## Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			G3503	MX104
Jedec Code:	0x7fb0	EEPROM Version:	0x02	
		S/N:	G3503	
Assembly ID:	0x0560	Assembly Version:	00.00	
Date:	00-00-0000	Assembly Flags:	0x00	
ID:	MX104			
Board Information Record:				
Address 0x00:	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00			
I2C Hex Data:				
Address 0x00:	7f b0 02 ff 05 60 00 00 00 00 00 00 00 00 00 00			
Address 0x10:	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00			
Address 0x20:	47 33 35 30 33 00 00 00 00 00 00 00 00 00 00 00			
Address 0x30:	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00			
Address 0x40:	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00			
Address 0x50:	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00			
Address 0x60:	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00			
Address 0x70:	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00			
Midplane	REV 28	750-044219	CAAX5741	MX104
Jedec Code:	0x7fb0	EEPROM Version:	0x02	
P/N:	750-044219	S/N:	CAAX5741	
Assembly ID:	0x0560	Assembly Version:	01.28	
Date:	03-27-2013	Assembly Flags:	0x00	
Version:	REV 28	CLEI Code:	PROTOXCLEI	
ID:	MX104	FRU Model Number:	PROTO-ASSEMBLY	
Board Information Record:				
Address 0x00:	ad 01 08 00 b0 a8 6e a7 f8 00 ff ff ff ff ff ff			
I2C Hex Data:				
Address 0x00:	7f b0 02 ff 05 60 01 1c 52 45 56 20 32 38 00 00			
Address 0x10:	00 00 00 00 37 35 30 2d 30 34 34 32 31 39 00 00			
Address 0x20:	53 2f 4e 20 43 41 41 58 35 37 34 31 00 1b 03 07			

```

Address 0x30: dd ff ff ff ad 01 08 00 b0 a8 6e a7 f8 00 ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff
Address 0x70: ff ff ff c2 47 33 35 30 33 00 00 00 00 00 00 00
PEM 0          REV 03    740-045933    1H072500016    AC Power Entry Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-045933      S/N:             1H072500016
Assembly ID:   0x0475          Assembly Version: 00.03
Date:          12-14-2012      Assembly Flags:   0x00
Version:       REV 03          CLEI Code:        IPUPAJ9KAA
ID: AC Power Entry Module      FRU Model Number: PWR-AMX1100-AC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff 02 02 00 ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 75 00 03 52 45 56 20 30 33 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 34 35 39 33 33 00 00
Address 0x20: 31 48 30 37 32 35 30 30 30 31 36 00 00 0e 0c 07
Address 0x30: dc 30 43 ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: 02 02 00 ff 01 49 50 55 50 41 4a 39 4b 41 41 50
Address 0x50: 57 52 2d 41 4d 58 31 31 30 30 2d 41 43 2d 53 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 70 ff ff ff ff ff ff ff ff ff ff ff ff
PEM 1          REV 03    740-045932    1H073050017    DC Power Entry Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-045932      S/N:             1H073050017
Assembly ID:   0x0476          Assembly Version: 00.03
Date:          01-30-2013      Assembly Flags:   0x00
Version:       REV 03          CLEI Code:        IPUPAJ8KAA
ID: DC Power Entry Module      FRU Model Number: PWR-AMX1100-DC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff 02 02 00 ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 76 00 03 52 45 56 20 30 33 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 34 35 39 33 32 00 00
Address 0x20: 31 48 30 37 33 30 35 30 30 31 37 00 00 1e 01 07
Address 0x30: dd 30 44 ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: 02 02 00 ff 01 49 50 55 50 41 4a 38 4b 41 41 50
Address 0x50: 57 52 2d 41 4d 58 31 31 30 30 2d 44 43 2d 53 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 72 ff ff ff ff ff ff ff ff ff ff ff ff
Routing Engine 0 REV 20    750-044228    CAAY7935          RE-MX-104
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           750-044228      S/N:             CAAY7935
Assembly ID:   0x0b81          Assembly Version: 01.20
Date:          03-18-2013      Assembly Flags:   0x00
Version:       REV 20          CLEI Code:        PROTOXCLEI
ID: RE-MX-104          FRU Model Number: PROTO-ASSEMBLY
Board Information Record:
Address 0x00: ad 01 00 08 b0 a8 6e a6 fc 10 ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 fe 0b 81 01 14 52 45 56 20 32 30 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 34 34 32 32 38 00 00
Address 0x20: 53 2f 4e 20 43 41 41 59 37 39 33 35 00 12 03 07
Address 0x30: dd ff ff ff ad 01 00 08 b0 a8 6e a6 fc 10 ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff ff
da0    7836 MB ATP IG eUSB SSD          Nand Flash 0
usb0 (addr 1) EHCI root hub 0          Freescale          uhub0

```



```

usb0 (addr 2) USB2513Bi 9491          SMC          uhub1
usb0 (addr 3) ATP IG eUSB SSD 44801 ATP Electronics umass0
Routing Engine 1 REV 13 750-044228 CAAM6380 RE-MX-104
Jedec Code: 0x7fb0          EEPROM Version: 0x02
P/N: 750-044228          S/N: CAAM6380
Assembly ID: 0x0b81        Assembly Version: 01.13
Date: 09-17-2012          Assembly Flags: 0x00
Version: REV 13          CLEI Code: PROTOXCLEI
ID: RE-MX-104          FRU Model Number: PROTO-ASSEMBLY
Board Information Record:
Address 0x00: ad 01 00 08 64 87 88 27 08 18 ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 fe 0b 81 01 0d 52 45 56 20 31 33 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 34 34 32 32 38 00 00
Address 0x20: 53 2f 4e 20 43 41 41 4d 36 33 38 30 00 11 09 07
Address 0x30: dc ff ff ff ad 01 00 08 64 87 88 27 08 18 ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff ff
da0 7836 MB ATP IG eUSB SSD Nand Flash 0
AFEB 0 BUILTIN BUILTIN Forwarding Engine
Processor
FPC 0 BUILTIN BUILTIN MPC BUILTIN
FPC 1 BUILTIN BUILTIN MPC BUILTIN
MIC 0 REV 15 750-036132 CAAF7948 2xOC12/8xOC3 CC-CE
Jedec Code: 0x7fb0          EEPROM Version: 0x02
P/N: 750-036132          S/N: CAAF7948
Assembly ID: 0x0a1a        Assembly Version: 01.15
Date: 07-03-2012          Assembly Flags: 0x00
Version: REV 15          CLEI Code: IP9IAM2DAA
ID: 2xOC12/8xOC3 CC-CE    FRU Model Number: MIC-3D-80C3-20C12-ATM
Board Information Record:
Address 0x00: 12 01 05 03 05 ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0a 1a 01 0f 52 45 56 20 31 35 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 36 31 33 32 00 00
Address 0x20: 53 2f 4e 20 43 41 41 46 37 39 34 38 00 03 07 07
Address 0x30: dc ff ff ff 12 01 05 03 05 ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 39 49 41 4d 32 44 41 41 4d
Address 0x50: 49 43 2d 33 44 2d 38 4f 43 33 2d 32 4f 43 31 32
Address 0x60: 2d 41 54 4d 00 00 41 00 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff e3 c0 02 a3 9c 00 00 00 00 0a 60 00 00
PIC 0 BUILTIN BUILTIN 2xOC12/8xOC3 CC-CE
Xcvr 0 REV 01 740-011615 PCQOU2J SFP-IR
Xcvr 1 REV 01 740-016068 PJL7A6G SFP-SR
Xcvr 2 REV 01 740-016068 PJL7A5J SFP-SR
Xcvr 3 REV 01 740-016065 PJN5HPZ SFP-SR
Xcvr 4 REV 01 740-029122 PKB38TL SFP-LR
Xcvr 5 REV 01 740-011787 P6A107G SFP-LR
Xcvr 6 REV 01 740-029122 PKB38TR SFP-LR
Xcvr 7 REV 01 740-011787 PBKONK3 SFP-LR
MIC 1
FPC 2 BUILTIN BUILTIN MPC BUILTIN
MIC 0 BUILTIN BUILTIN 4x 10GE(LAN) SFP+
Jedec Code: 0x0000          EEPROM Version: 0x00
P/N: BUILTIN          S/N: BUILTIN
Assembly ID: 0x0a60        Assembly Version: 00.00
Date: 00-00-0000          Assembly Flags: 0x00
ID: 4x 10GE(LAN) SFP+
Board Information Record:

```

```

Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 00 00 00 00 0a 60 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 4d 58 43 00
Address 0x20: 42 55 49 4c 54 49 4e 00 4d 58 43 00 00 00 00 00
Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 c0 02 a5 04 7f b0 02 ff 0a 1a 01 0f
PIC 0          BUILTIN      BUILTIN      4x 10GE(LAN) SFP+
  Xcvr 0      REV 01      740-031980    B10F00465    SFP+-10G-SR
  Xcvr 1      REV 01      740-031980    B10F00461    SFP+-10G-SR
  Xcvr 2      REV 01      740-031980    B10G01545    SFP+-10G-SR
  Xcvr 3      REV 01      740-031980    B10G01385    SFP+-10G-SR
Fan Tray 0     REV 02      711-049570    CAAX6538      Fan Tray
Jedec Code:    0x7fb0      EEPROM Version: 0x02
P/N:           711-049570  S/N:           CAAX6538
Assembly ID:   0x0b82      Assembly Version: 01.02
Date:          03-01-2013  Assembly Flags: 0x00
Version:       REV 02      CLEI Code:     PROTOXCLEI
ID: Fan Tray    FRU Model Number: PROTO-ASSEMBLY
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 82 01 02 52 45 56 20 30 32 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 34 39 35 37 30 00 00
Address 0x20: 53 2f 4e 20 43 41 41 58 36 35 33 38 00 01 03 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff ff

```

### show chassis hardware models (MX104 Router)

```

user@host> show chassis hardware models
Hardware inventory:
Item          Version  Part number  Serial number  FRU model number
Midplane      REV 20    750-044219   CAAS5849       PROTO-ASSEMBLY
PEM 0         REV 01    740-045932   1H072400065
Routing Engine 0 REV 16    750-044228   CAAR5915       PROTO-ASSEMBLY
AFEB 0
FPC 0         BUILTIN   BUILTIN
FPC 1         BUILTIN   BUILTIN
MIC 0         REV 01    750-046905   CAAK7103       MIC-3D-20GE-SFP-EH
FPC 2         BUILTIN   BUILTIN
Fan Tray      REV 02    711-049570   CAAX6538       PROTO-ASSEMBLY

```

### show chassis hardware clei-models (MX104 Router)

```

user@host> show chassis hardware clei-models
Hardware inventory:
Item          Version  Part number  CLEI code      FRU model number
Midplane      REV 20    750-044219   PROTOXCLEI     PROTO-ASSEMBLY
PEM 0         REV 01    740-045932
Routing Engine 0 REV 16    750-044228   PROTOXCLEI     PROTO-ASSEMBLY
AFEB 0
FPC 0         BUILTIN
FPC 1         BUILTIN
MIC 0         REV 01    750-046905   PROTOXCLEI     MIC-3D-20GE-SFP-EH

```

```

FPC 2          BUILTIN
Fan Tray       REV 02  711-049570  CAAX6538          PROTO-ASSEMBLY

```

### show chassis hardware (MX240 Router)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN10C7F7EAFC	MX240
Midplane	REV 01	710-021041	TR1502	MX240 Backplane
FPM Board	REV 01	710-017254	KD4017	Front Panel Display
PEM 0	Rev 02	740-017330	000332	PS 1.2-1.7kW; 100-240V
AC in				
PEM 1	Rev 02	740-017330	000226	PS 1.2-1.7kW; 100-240V
AC in				
Routing Engine 0	REV 06	740-013063	1000703522	RE-S-2000
Routing Engine 1	REV 06	740-015113	1000687625	RE-S-1300
CB 0	REV 07	710-013385	KC9057	MX SCB
CB 1	REV 05	710-013385	JY4760	MX SCB
FPC 1	REV 01	750-021679	KC7340	DPCE 40x 1GE R
CPU	REV 06	710-013713	KD4078	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011613	P9F18ME	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN)
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN)
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN)
FPC 2	REV 04	710-016669	JS4529	DPCE 40x 1GE R EQ
CPU	REV 06	710-013713	KB3969	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 01	740-011613	PBG3Y79	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3XU8	SFP-SX
Xcvr 2	REV 01	740-011613	PBG3YG6	SFP-SX
Xcvr 3	REV 01	740-011613	PBG3XUG	SFP-SX
Xcvr 4	REV 01	740-011613	PBG3XTJ	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 01	740-011613	PBG3ZUM	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3Y5H	SFP-SX
Xcvr 2	REV 01	740-011613	PBG3UZT	SFP-SX
Xcvr 3	REV 01	740-011613	PBG3US1	SFP-SX
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 01	740-011613	PBG3YG7	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3XZ9	SFP-SX
Xcvr 2	REV 01	740-011613	PBG3XTY	SFP-SX
Xcvr 3	REV 01	740-011613	PBG3UZG	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 01	740-011613	PBG3Y8W	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3YVX	SFP-SX
Xcvr 2	REV 01	740-011613	PBG3YB3	SFP-SX
Xcvr 3	REV 01	740-011613	PBG43VQ	SFP-SX
Fan Tray 0	REV 01	710-021113	JS4642	MX240 Fan Tray

### show chassis hardware detail (MX 240 Router with Routing Engine Displaying DIMM Information)

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

Item	Version	Part number	Serial number	Description
Chassis			JN11279B4AFC	MX240 Backplane
Midplane	REV 07	760-021404	TS2474	MX240 Backplane
FPM Board	REV 03	760-021392	XC2643	Front Panel Display
PEM 0	Rev 03	740-017343	QCS0908A068	DC Power Entry Module
Routing Engine 0	REV 01	740-031117	AARCH00	RE-S-1800x4

```

ad0    3764 MB  STEC M2+ CF 9.0.2    STIM2Q3209239145303 Removable Compact Flash

ad1    28626 MB  WDC SSD-F0030S-5000  C933Z036237215548S00 Compact Flash
usb0 (addr 1)  EHCI root hub 0      Intel      uhub0
usb0 (addr 2)  product 0x0020 32    vendor 0x8087 uhub1
DIMM 0        VL31B5263E-F8S DIE REV-0 PCB REV-0  MFR ID-ce80
DIMM 1        VL31B5263E-F8S DIE REV-0 PCB REV-0  MFR ID-ce80
DIMM 2        VL31B5263E-F8S DIE REV-0 PCB REV-0  MFR ID-ce80
DIMM 3        SL31B5263E-F8S DIE REV-0 PCB REV-0  MFR ID-ce80
CB 0          REV 03    710-021523  XD7225    MX SCB
Fan Tray 0    REV 01    710-021113  WZ4986    MX240 Fan Tray

```

### show chassis hardware (MX240 Router with Enhanced MX SCB)

```

user@host> show chassis hardware
Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              REV 01    710-021041  JN10C7F7EAF  MX240
Midplane             REV 01    710-017254  KD4017        MX240 Backplane
FPM Board            REV 01    740-017330  000332        Front Panel Display
PEM 0                Rev 02    740-017330  000332        PS 1.2-1.7kW; 100-240V
AC in
PEM 1                Rev 02    740-017330  000226        PS 1.2-1.7kW; 100-240V
AC in
Routing Engine 0     REV 06    740-013063  1000703522    RE-S-2000
Routing Engine 1     REV 06    740-015113  1000687625    RE-S-1300
CB 0                 REV 02    710-031391  YE8494        Enhanced MX SCB
CB 1                 REV 05    710-031391  YOP5764       Enhanced MX SCB
FPC 1                REV 01    750-021679  KC7340        DPCE 40x 1GE R
CPU                  REV 06    710-013713  KD4078        DPC PMB
PIC 0                BUILTIN   BUILTIN      10x 1GE(LAN)
Xcvr 0               REV 01    740-011613  P9F18ME       SFP-SX
PIC 1                BUILTIN   BUILTIN      10x 1GE(LAN)
PIC 2                BUILTIN   BUILTIN      10x 1GE(LAN)
PIC 3                BUILTIN   BUILTIN      10x 1GE(LAN)
FPC 2                REV 04    710-016669  JS4529        DPCE 40x 1GE R EQ
CPU                  REV 06    710-013713  KB3969        DPC PMB
PIC 0                BUILTIN   BUILTIN      10x 1GE(LAN) EQ
Xcvr 0               REV 01    740-011613  PBG3Y79       SFP-SX
Xcvr 1               REV 01    740-011613  PBG3XU8       SFP-SX
Xcvr 2               REV 01    740-011613  PBG3YG6       SFP-SX
Xcvr 3               REV 01    740-011613  PBG3XUG       SFP-SX
Xcvr 4               REV 01    740-011613  PBG3XTJ       SFP-SX
PIC 1                BUILTIN   BUILTIN      10x 1GE(LAN) EQ
Xcvr 0               REV 01    740-011613  PBG3ZUM       SFP-SX
Xcvr 1               REV 01    740-011613  PBG3Y5H       SFP-SX
Xcvr 2               REV 01    740-011613  PBG3UZT       SFP-SX
Xcvr 3               REV 01    740-011613  PBG3US1       SFP-SX
PIC 2                BUILTIN   BUILTIN      10x 1GE(LAN) EQ
Xcvr 0               REV 01    740-011613  PBG3YG7       SFP-SX
Xcvr 1               REV 01    740-011613  PBG3XZ9       SFP-SX
Xcvr 2               REV 01    740-011613  PBG3XTY       SFP-SX
Xcvr 3               REV 01    740-011613  PBG3UZG       SFP-SX
PIC 3                BUILTIN   BUILTIN      10x 1GE(LAN) EQ
Xcvr 0               REV 01    740-011613  PBG3Y8W       SFP-SX
Xcvr 1               REV 01    740-011613  PBG3YVX       SFP-SX
Xcvr 2               REV 01    740-011613  PBG3YB3       SFP-SX
Xcvr 3               REV 01    740-011613  PBG43VQ       SFP-SX
Fan Tray 0           REV 01    710-021113  JS4642        MX240 Fan Tray

```

**show chassis hardware (MX480 Router)**

```

user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number  Description
Chassis          REV 04   710-017414   JN10C7F7FAFB  MX480
Midplane         REV 02   710-017254   KB8459        MX480 Midplane
FPM Board        Rev 02   740-017330   QCS07519029   Front Panel Display
PEM 0            Rev 02   740-017330   QCS07519029   PS 1.2-1.7kW; 100-240V
AC in
PEM 1            Rev 02   740-017330   QCS07519041   PS 1.2-1.7kW; 100-240V
AC in
PEM 2            Rev 02   740-017330   QCS07519097   PS 1.2-1.7kW; 100-240V
AC in
Routing Engine 0 REV 07   740-013063   1000733381    RE-S-2000
Routing Engine 1 REV 07   740-013063   1000733540    RE-S-2000
CB 0             REV 07   710-013385   KA8022        MX SCB
CB 1             REV 07   710-013385   KA8303        MX SCB
FPC 0            REV 09   750-020452   KA8660        DPCE 40x 1GE X EQ
CPU              REV 06   710-013713   KA8185        DPC PMB
PIC 0            BUILTIN BUILTIN      10x 1GE(LAN) EQ
PIC 1            BUILTIN BUILTIN      10x 1GE(LAN) EQ
PIC 2            BUILTIN BUILTIN      10x 1GE(LAN) EQ
PIC 3            BUILTIN BUILTIN      10x 1GE(LAN) EQ
Fan Tray
Left Fan Tray

```

**show chassis hardware (MX480 Router with Enhanced MX SCB)**

```

user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number  Description
Chassis          REV 04   710-017414   JN10C7F7FAFB  MX480
Midplane         REV 02   710-017254   KB8459        MX480 Midplane
FPM Board        Rev 02   740-017330   QCS07519029   Front Panel Display
PEM 0            Rev 02   740-017330   QCS07519029   PS 1.2-1.7kW; 100-240V
AC in
PEM 1            Rev 02   740-017330   QCS07519041   PS 1.2-1.7kW; 100-240V
AC in
PEM 2            Rev 02   740-017330   QCS07519097   PS 1.2-1.7kW; 100-240V
AC in
Routing Engine 0 REV 07   740-013063   1000733381    RE-S-2000
Routing Engine 1 REV 07   740-013063   1000733540    RE-S-2000
CB 0             REV 07   710-013385   KA8022        Enhanced MX SCB
CB 1             REV 07   710-013385   KA8303        Enhanced MX SCB
FPC 0            REV 09   750-020452   KA8660        DPCE 40x 1GE X EQ
CPU              REV 06   710-013713   KA8185        DPC PMB
PIC 0            BUILTIN BUILTIN      10x 1GE(LAN) EQ
PIC 1            BUILTIN BUILTIN      10x 1GE(LAN) EQ
PIC 2            BUILTIN BUILTIN      10x 1GE(LAN) EQ
PIC 3            BUILTIN BUILTIN      10x 1GE(LAN) EQ
Fan Tray
Left Fan Tray

```

**show chassis hardware (MX480 Routers with MPC5E and Built-In OTN PIC)**

```

user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number  Description
Chassis          REV 05   710-017414   JN11C0338AFB  MX480
Midplane         REV 02   710-017254   ABAB8430      MX480 Midplane
FPM Board        Rev 02   740-017254   ZS8005        Front Panel Display
PEM 0            Rev 05   740-029970   QCS1024U089   PS 1.4-2.52kW; 90-264V

```

AC in				
PEM 1	Rev 10	740-029970	QCS1314U0FJ	PS 1.4-2.52kW; 90-264V
AC in				
PEM 2	Rev 07	740-029970	QCS1121U076	PS 1.4-2.52kW; 90-264V
AC in				
Routing Engine 0	REV 05	740-031116	9009092471	RE-S-1800x4
Routing Engine 1	REV 05	740-031116	9009097958	RE-S-1800x4
CB 0	REV 16	750-031391	CAAX0789	Enhanced MX SCB
CB 1	REV 16	750-031391	CAAX0856	Enhanced MX SCB
FPC 0	REV 32	750-028467	ABBP1782	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBP5410	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	983152A00038	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11F00211	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AQ72LPB	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AHNOWR5	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11J03627	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11F00300	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQ42WSS	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQ43HGC	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	ANAOND0	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	ANAONGF	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	ANAONG9	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	ANAOMP9	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AQA06CG	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	19T511100493	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	APR040J	SFP+-10G-SR
FPC 1	REV 26	750-046005	CACN1894	MPC5E 3D Q 2CGE+4XGE
CPU	REV 09	711-045719	CACN8698	RMPC PMB
PIC 0		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-031980	163363A03046	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJ40JS8	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP2 OTN
PIC 2		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-031980	153363A00593	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJ40JUJ	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0		NON-JNPR	UQC0B53	CFP2-100G-LR4-D
FPC 2	REV 26	750-046005	CACN1891	MPC5E 3D Q 2CGE+4XGE
CPU	REV 09	711-045719	CACN8694	RMPC PMB
PIC 0		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0		NON-JNPR	URA012A	SFP+-10G-LR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0		NON-JNPR	J13F47042	CFP2-100G-LR4-D
PIC 2		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-031980	AJC0BM3	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	11T511100917	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0		NON-JNPR	UQK07SU	CFP2-100G-LR4-D
FPC 3	REV 03	750-045372	CAAD9425	MPCE Type 3 3D
CPU	REV 08	711-035209	CAAD9094	HMPC PMB 2G
MIC 0	REV 14	750-033196	CAAW9204	1X100GE CXP
PIC 0		BUILTIN	BUILTIN	1X100GE CXP
Xcvr 0	REV 01	740-046563	XD16FC034	CFP2-100G-SR10
MIC 1	REV 19	750-033199	CAAJ1814	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	1X100GE CFP
FPC 4	REV 21.0.11	750-045715	CAAY3568	MPC5E 3D Q 24XGE+6XLGE
CPU	REV 07	711-045719	CAAW7430	RMPC PMB

PIC 0		BUILTIN	BUILTIN	12X10GE SFPP OTN
Xcvr 0	REV 01	740-031980	AP406NG	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AR41NLP	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11D05630	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	12X10GE SFPP OTN
PIC 2		BUILTIN	BUILTIN	3X40GE QSFP
PIC 3		BUILTIN	BUILTIN	3X40GE QSFP
WAN MEZZ	REV 12	750-049136	CACM6678	MPC5E 24XGE OTN Mezz
FPC 5	REV 11	750-045372	CABK7539	MPCE Type 3 3D
CPU	REV 08	711-035209	CABJ2466	HMPC PMB 2G
MIC 0	REV 19	750-033199	CAAJ9719	1X100GE CFP
PIC 0		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-035329	UP1020P	CFP-100G-SR10
MIC 1	REV 07	750-033196	YZ0797	1X100GE CXP
PIC 2		BUILTIN	BUILTIN	1X100GE CXP
Xcvr 0	REV 01	740-046563	XC42FC022	CFP2-100G-SR10
Fan Tray				Enhanced Left Fan Tray

### show chassis hardware detail (MX480 Routers with MPC5E and Built-In OTN PIC)

```

user@host> show chassis hardware detail
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN11C0338AFB  MX480
Midplane      REV 05   710-017414  ABAB8430      MX480 Midplane
FPM Board     REV 02   710-017254  ZS8005        Front Panel Display
PEM 0         Rev 05   740-029970  QCS1024U089   PS 1.4-2.52kW; 90-264V
AC in
PEM 1         Rev 10   740-029970  QCS1314U0FJ   PS 1.4-2.52kW; 90-264V
AC in
PEM 2         Rev 07   740-029970  QCS1121U076   PS 1.4-2.52kW; 90-264V
AC in
Routing Engine 0 REV 05   740-031116  9009092471     RE-S-1800x4
  ad0 3896 MB VRFCF14096DIHK1 VM4096MB 6862   Compact Flash
  ad1 30533 MB UGB94ARF32H0S3-KC UNIGEN-478612-001127 Disk 1
  usb0 (addr 1) EHCI root hub 0 Intel uhub0
  usb0 (addr 2) product 0x0020 32 vendor 0x8087 uhub1
  DIMM 0 SGU04G72H1BB2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 1 SGU04G72H1BB2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 2 SGU04G72H1BB2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 3 SGU04G72H1BB2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
Routing Engine 1 REV 05   740-031116  9009097958     RE-S-1800x4
  ad0 3896 MB VRFCF14096DIHK1 VM4096MB 6145   Compact Flash
  ad1 30533 MB UGB94ARF32H0S3-KC UNIGEN-499551-000273 Disk 1
CB 0          REV 16   750-031391  CAAX0789      Enhanced MX SCB
CB 1          REV 16   750-031391  CAAX0856      Enhanced MX SCB
FPC 0         REV 32   750-028467  ABBP1782      MPC 3D 16x 10GE
CPU           REV 10   711-029089  ABBP5410      AMPC PMB
PIC 0         BUILTIN  BUILTIN      4x 10GE(LAN) SFP+
  Xcvr 0      REV 01   740-021308  983152A00038  SFP+-10G-SR
  Xcvr 1      REV 01   740-031980  B11F00211     SFP+-10G-SR
  Xcvr 2      REV 01   740-031980  AQ72LPB       SFP+-10G-SR
  Xcvr 3      REV 01   740-031980  AHNOWR5       SFP+-10G-SR
PIC 1         BUILTIN  BUILTIN      4x 10GE(LAN) SFP+
  Xcvr 0      REV 01   740-031980  B11J03627     SFP+-10G-SR
  Xcvr 1      REV 01   740-031980  B11F00300     SFP+-10G-SR
  Xcvr 2      REV 01   740-021308  AQ42WSS       SFP+-10G-SR
  Xcvr 3      REV 01   740-021308  AQ43HGC       SFP+-10G-SR
PIC 2         BUILTIN  BUILTIN      4x 10GE(LAN) SFP+
  Xcvr 0      REV 01   740-021308  ANAONDO       SFP+-10G-SR
  Xcvr 1      REV 01   740-021308  ANAONGF       SFP+-10G-SR

```

Xcvr 2	REV 01	740-021308	ANAONG9	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	ANAOMP9	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AQA06CG	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	19T511100493	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	APR040J	SFP+-10G-SR
FPC 1	REV 26	750-046005	CACN1894	MPC5E 3D Q 2CGE+4XGE
CPU	REV 09	711-045719	CACN8698	RMPC PMB
PIC 0		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-031980	163363A03046	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJ40JS8	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP2 OTN
PIC 2		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-031980	153363A00593	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJ40JUJ	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0		NON-JNPR	UQC0B53	CFP2-100G-LR4-D
FPC 2	REV 26	750-046005	CACN1891	MPC5E 3D Q 2CGE+4XGE
CPU	REV 09	711-045719	CACN8694	RMPC PMB
PIC 0		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0		NON-JNPR	URA012A	SFP+-10G-LR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0		NON-JNPR	J13F47042	CFP2-100G-LR4-D
PIC 2		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-031980	AJCOBM3	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	11T511100917	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0		NON-JNPR	UQK07SU	CFP2-100G-LR4-D
FPC 3	REV 03	750-045372	CAAD9425	MPCE Type 3 3D
CPU	REV 08	711-035209	CAAD9094	HMPC PMB 2G
MIC 0	REV 14	750-033196	CAAW9204	1X100GE CXP
PIC 0		BUILTIN	BUILTIN	1X100GE CXP
Xcvr 0	REV 01	740-046563	XD16FC034	CFP2-100G-SR10
MIC 1	REV 19	750-033199	CAAJ1814	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	1X100GE CFP
FPC 4	REV 21.0.11	750-045715	CAAY3568	MPC5E 3D Q 24XGE+6XLGE
CPU	REV 07	711-045719	CAAW7430	RMPC PMB
PIC 0		BUILTIN	BUILTIN	12X10GE SFPP OTN
Xcvr 0	REV 01	740-031980	AP406NG	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AR41NLP	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11D05630	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	12X10GE SFPP OTN
PIC 2		BUILTIN	BUILTIN	3X40GE QSFPP
PIC 3		BUILTIN	BUILTIN	3X40GE QSFPP
WAN MEZZ	REV 12	750-049136	CACM6678	MPC5E 24XGE OTN Mezz
FPC 5	REV 11	750-045372	CABK7539	MPCE Type 3 3D
CPU	REV 08	711-035209	CABJ2466	HMPC PMB 2G
MIC 0	REV 19	750-033199	CAAJ9719	1X100GE CFP
PIC 0		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-035329	UP1020P	CFP-100G-SR10
MIC 1	REV 07	750-033196	YZ0797	1X100GE CXP
PIC 2		BUILTIN	BUILTIN	1X100GE CXP
Xcvr 0	REV 01	740-046563	XC42FC022	CFP2-100G-SR10
Fan Tray				Enhanced Left Fan Tray

### show chassis hardware extensive (MX480 Routers with MPC5E and Built-In OTN PIC)

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

```
Hardware inventory:
```

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



```

Chassis                                JN11C0338AFB      MX480
Jedec Code: 0x7fb0                    EEPROM Version: 0x02
                                           S/N: JN11C0338AFB
Assembly ID: 0x01fe                   Assembly Version: 00.00
Date: 00-00-0000                      Assembly Flags: 0x02
ID: MX480
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 01 fe 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 43 30 33 33 38 41 46 42 02 00 00 00
Address 0x30: 00 00 00 ff 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane                               REV 05 710-017414 ABAB8430 MX480 Midplane
Jedec Code: 0x7fb0                    EEPROM Version: 0x01
P/N: 710-017414                      S/N: ABAB8430
Assembly ID: 0x01fe                   Assembly Version: 01.05
Date: 12-13-2011                     Assembly Flags: 0x00
Version: REV 05
ID: MX480 Midplane                    FRU Model Number: CHAS-BP-MX480-S
Board Information Record:
Address 0x00: ad 01 08 00 00 23 9c fc 98 00 ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 01 fe 01 05 52 45 56 20 30 35 00 00
Address 0x10: 00 00 00 00 37 31 30 2d 30 31 37 34 31 34 00 00
Address 0x20: 53 2f 4e 20 41 42 41 42 38 34 33 30 00 0d 0c 07
Address 0x30: db ff ff ff ad 01 08 00 00 23 9c fc 98 00 ff ff
Address 0x40: ff ff ff ff 01 00 00 00 00 00 00 00 00 00 00 43
Address 0x50: 48 41 53 2d 42 50 2d 4d 58 34 38 30 2d 53 00 00
Address 0x60: 00 00 00 00 00 00 ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
FPM Board                             REV 02 710-017254 ZS8005 Front Panel Display
Jedec Code: 0x7fb0                    EEPROM Version: 0x01
P/N: 710-017254                      S/N: ZS8005
Assembly ID: 0x01ff                   Assembly Version: 01.02
Date: 11-21-2011                     Assembly Flags: 0x00
Version: REV 02
ID: Front Panel Display                FRU Model Number: CRAFT-MX480-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 01 ff 01 02 52 45 56 20 30 32 00 00
Address 0x10: 00 00 00 00 37 31 30 2d 30 31 37 32 35 34 00 00
Address 0x20: 53 2f 4e 20 5a 53 38 30 30 35 00 00 00 15 0b 07
Address 0x30: db ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 00 00 00 00 00 00 00 00 00 00 43
Address 0x50: 52 41 46 54 2d 4d 58 34 38 30 2d 53 00 00 00 00
Address 0x60: 00 00 00 00 00 00 ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
PEM 0                                 Rev 05 740-029970 QCS1024U089 PS 1.4-2.52kW; 90-264V
AC in
Jedec Code: 0x7fb0                    EEPROM Version: 0x01
P/N: 740-029970                      S/N: QCS1024U089
Assembly ID: 0x0432                   Assembly Version: 01.05
Date: 06-17-2010                     Assembly Flags: 0x00
Version: Rev 05
ID: PS 1.4-2.52kW; 90-264V AC in FRU Model Number: PWR-MX480-2520-AC-S

```

## Board Information Record:

Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff 00 00 00 00

## I2C Hex Data:

Address 0x00: 7f b0 01 ff 04 32 01 05 52 65 76 20 30 35 00 00

Address 0x10: 00 00 00 00 37 34 30 2d 30 32 39 39 37 30 00 00

Address 0x20: 51 43 53 31 30 32 34 55 30 38 39 00 00 11 06 07

Address 0x30: da ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff

Address 0x40: 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 50

Address 0x50: 57 52 2d 4d 58 34 38 30 2d 32 35 32 30 2d 41 43

Address 0x60: 2d 53 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

PEM 1 Rev 10 740-029970 QCS1314U0FJ PS 1.4-2.52kW; 90-264V

## AC in

Jedec Code: 0x7fb0 EEPROM Version: 0x01

P/N: 740-029970 S/N: QCS1314U0FJ

Assembly ID: 0x0432 Assembly Version: 01.10

Date: 04-04-2013 Assembly Flags: 0x00

Version: Rev 10

ID: PS 1.4-2.52kW; 90-264V AC in FRU Model Number: PWR-MX480-2520-AC-S

## Board Information Record:

Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff 00 00 00 00

## I2C Hex Data:

Address 0x00: 7f b0 01 ff 04 32 01 0a 52 65 76 20 31 30 00 00

Address 0x10: 00 00 00 00 37 34 30 2d 30 32 39 39 37 30 00 00

Address 0x20: 51 43 53 31 33 31 34 55 30 46 4a 00 00 04 04 07

Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff

Address 0x40: 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 50

Address 0x50: 57 52 2d 4d 58 34 38 30 2d 32 35 32 30 2d 41 43

Address 0x60: 2d 53 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

PEM 2 Rev 07 740-029970 QCS1121U076 PS 1.4-2.52kW; 90-264V

## AC in

Jedec Code: 0x7fb0 EEPROM Version: 0x01

P/N: 740-029970 S/N: QCS1121U076

Assembly ID: 0x0432 Assembly Version: 01.07

Date: 05-23-2011 Assembly Flags: 0x00

Version: Rev 07

ID: PS 1.4-2.52kW; 90-264V AC in FRU Model Number: PWR-MX480-2520-AC-S

## Board Information Record:

Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff 00 00 00 00

## I2C Hex Data:

Address 0x00: 7f b0 01 ff 04 32 01 07 52 65 76 20 30 37 00 00

Address 0x10: 00 00 00 00 37 34 30 2d 30 32 39 39 37 30 00 00

Address 0x20: 51 43 53 31 31 32 31 55 30 37 36 00 00 17 05 07

Address 0x30: db ff ff ff ff ff ff ff ff ff ff ff ff ff ff

Address 0x40: 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 50

Address 0x50: 57 52 2d 4d 58 34 38 30 2d 32 35 32 30 2d 41 43

Address 0x60: 2d 53 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

Routing Engine 0 REV 05 740-031116 9009092471 RE-S-1800x4

Jedec Code: 0x7fb0 EEPROM Version: 0x02

P/N: 740-031116 S/N: 9009092471

Assembly ID: 0x09c0 Assembly Version: 01.05

Date: 11-01-2011 Assembly Flags: 0x00

Version: REV 05 CLEI Code: COUCALDBAA

ID: RE-S-1800x4 FRU Model Number: RE-S-1800X4-16G-S

## Board Information Record:

Address 0x00: 54 32 30 32 37 43 41 2d 34 32 46 42 23 23 23 00

## I2C Hex Data:

Address 0x00: 7f b0 02 ff 09 c0 01 05 52 45 56 20 30 35 00 00

Address 0x10: 00 00 00 00 37 34 30 2d 30 33 31 31 31 36 00 00

```

Address 0x20: 39 30 30 39 30 39 32 34 37 31 00 00 00 01 0b 07
Address 0x30: db ff ff ff 54 32 30 32 37 43 41 2d 34 32 46 42
Address 0x40: 23 23 23 00 01 43 4f 55 43 41 4c 44 42 41 41 52
Address 0x50: 45 2d 53 2d 31 38 30 30 58 34 2d 31 36 47 2d 53
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 4b ff ff ff ff ff ff ff ff ff ff ff ff
ad0   3896 MB  VRFCF14096DIHK1      VM4096MB 6862      Compact Flash
ad1   30533 MB UGB94ARF32H0S3-KC    UNIGEN-478612-001127 Disk 1
usb0 (addr 1) EHCI root hub 0      Intel      uhub0
usb0 (addr 2) product 0x0020 32     vendor 0x8087 uhub1
DIMM 0      SGU04G72H1BB2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
DIMM 1      SGU04G72H1BB2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
DIMM 2      SGU04G72H1BB2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
DIMM 3      SGU04G72H1BB2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
Routing Engine 1 REV 05 740-031116 9009097958 RE-S-1800x4
Jedec Code: 0x7fb0      EEPROM Version: 0x02
P/N: 740-031116      S/N: 9009097958
Assembly ID: 0x09c0    Assembly Version: 01.05
Date: 02-06-2012      Assembly Flags: 0x00
Version: REV 05      CLEI Code: COUCALDBAA
ID: RE-S-1800x4      FRU Model Number: RE-S-1800X4-16G-S
Board Information Record:
Address 0x00: 54 32 30 32 37 43 41 2d 34 32 46 42 23 23 23 00
I2C Hex Data:
Address 0x00: 7f b0 02 ff 09 c0 01 05 52 45 56 20 30 35 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 33 31 31 31 36 00 00
Address 0x20: 39 30 30 39 30 39 37 39 35 38 00 00 00 06 02 07
Address 0x30: dc ff ff ff 54 32 30 32 37 43 41 2d 34 32 46 42
Address 0x40: 23 23 23 00 01 43 4f 55 43 41 4c 44 42 41 41 52
Address 0x50: 45 2d 53 2d 31 38 30 30 58 34 2d 31 36 47 2d 53
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 4b ff ff ff ff ff ff ff ff ff ff ff ff
ad0   3896 MB  VRFCF14096DIHK1      VM4096MB 6145      Compact Flash
ad1   30533 MB UGB94ARF32H0S3-KC    UNIGEN-499551-000273 Disk 1

```

...

### 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-EX
Xcvr 1        REV 01   740-017726   4814061       SFP-EX
Xcvr 5        REV 01   740-017726   6ZS184H31108  SFP-EX
Xcvr 9        REV 01   740-021340   76E245X00486  SFP-1000BASE-BX10-U
Fan Tray 0
Fan Tray 1    REV 03   740-014971   TP0850        Fan Tray

```

### show chassis hardware (MX960 Router with Enhanced MX SCB)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN1096805AFA  MX960

```

Midplane	REV 03	710-013698	TR0183	MX960 Backplane
Fan Extender	REV 02	710-018051	JY5227	Extended Cable Manager
FPM Board	REV 03	710-014974	JZ6876	Front Panel Display
PDM	Rev 03	740-013110	QCS11035023	Power Distribution Module
PEM 1	Rev 03	740-013682	QCS1109400L	PS 1.7kW; 200-240VAC in
PEM 2	Rev 03	740-013682	QCS11094015	PS 1.7kW; 200-240VAC in
PEM 3	Rev 03	740-013682	QCS11094012	PS 1.7kW; 200-240VAC in
Routing Engine 0	REV 06	740-013063	1000687969	RE-S-2000
Routing Engine 1	REV 06	740-013063	1000687955	RE-S-2000
CB 0	REV 11	750-031391	YZ6072	Enhanced MX SCB
CB 1	REV 11	750-031391	YZ6068	Enhanced MX SCB
CB 2	REV 11	750-031391	YZ6081	Enhanced MX SCB
FPC 0	REV 01	750-018122	KA5576	DPCE 40x 1GE R
CPU	REV 06	710-013713	KB3961	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011613	P9F18GF	SFP-SX
Xcvr 2	REV 01	740-011782	P9M0TL9	SFP-SX
Xcvr 7	REV 01	740-011782	P9P0XXH	SFP-SX
Xcvr 9	REV 01	740-011782	P9M0TN1	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011613	PAJ4UHC	SFP-SX
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011613	PFF2CD0	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3ZUT	SFP-SX
Xcvr 2	REV 01	740-011613	PFF2DDV	SFP-SX
Xcvr 5	REV 01	740-011613	P8E2SST	SFP-SX
Xcvr 9	REV 01	740-011782	PB8329N	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-026192	1U0201084503342	SFP-100BASE-BX10-U
Xcvr 1	REV 01	740-026193	1U1201084503313	SFP-100BASE-BX10-D
Xcvr 2	REV 01	740-011613	PAJ4Y5B	SFP-SX
Xcvr 6	REV 01	740-011782	P9M0U3M	SFP-SX
Xcvr 7	REV 01	740-011782	P9M0TLA	SFP-SX
FPC 1	REV 16	750-031089	YL0719	MPC Type 2 3D
CPU	REV 06	711-030884	YL1463	MPC PMB 2G
MIC 0	REV 07	750-028387	JR6500	3D 4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 01	740-014279	733019A00154	XFP-10G-LR
Xcvr 1	REV 02	740-014289	T09F55034	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 01	740-014279	913019B00791	XFP-10G-LR
Xcvr 1	REV 01	740-014289	98S803A90384	XFP-10G-SR
MIC 1	REV 24	750-028387	YJ3950	3D 4x 10GE XFP
PIC 2		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 02	740-014279	T10B36134	XFP-10G-LR
Xcvr 1	REV 01	740-014289	T07M86354	XFP-10G-SR
PIC 3		BUILTIN	BUILTIN	2x 10GE XFP
FPC 2	REV 08	710-014219	JY9654	DPCE 4x 10GE R
CPU	REV 06	710-013713	JZ6549	DPC PMB
PIC 0		BUILTIN	BUILTIN	1x 10GE(LAN/WAN)
PIC 1		BUILTIN	BUILTIN	1x 10GE(LAN/WAN)
PIC 2		BUILTIN	BUILTIN	1x 10GE(LAN/WAN)
Xcvr 0	REV 03	740-011571	C931BK028	XFP-10G-SR
PIC 3		BUILTIN	BUILTIN	1x 10GE(LAN/WAN)
FPC 3	REV 10	750-024199	XJ6692	MX FPC Type 3
CPU	REV 03	710-022351	XF5182	DPC PMB
PIC 0	REV 17	750-009553	RJ2945	4x OC-48 SONET
Xcvr 1	REV 01	740-011785	PCP3YLL	SFP-SR
Xcvr 3	REV 01	740-011785	PDSOMRY	SFP-SR
PIC 1	REV 32	750-003700	DP2113	1x OC-192 12xMM VSR
FPC 5	REV 25	750-028467	YM8256	MPC 3D 16x 10GE

CPU	REV 10	711-029089	YL3029	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 1	REV 01	740-031980	AHNOX1Z	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
FPC 7	REV 02	750-031092	JR6658	MPC Type 1 3D Q
CPU	REV 01	711-030884	JZ9038	MPC PMB 2G
MIC 0	REV 08	750-028392	JZ8737	3D 20x 1GE(LAN) SFP
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-011782	PBE2C6Y	SFP-SX
Xcvr 2		NON-JNPR	U8105N8	SFP-SX
Xcvr 4	REV 01	740-011613	PFM18EF	SFP-SX
Xcvr 7	REV 01	740-011613	PFF2AM8	SFP-SX
Xcvr 8	REV 01	740-011613	PFF2CT6	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-011782	PB82VHH	SFP-SX
Xcvr 1	REV 01	740-011613	PFF2CSW	SFP-SX
Xcvr 9	REV 01	740-011613	PFF2BY0	SFP-SX
QXM 0	REV 04	711-028408	JR6372	MPC QXM
FPC 8	REV 05	750-024387	JW9754	MX FPC Type 2
CPU	REV 03	710-022351	KF1651	DPC PMB
PIC 0	REV 08	750-014730	DM3664	4x OC-3 1x OC-12 SFP
Xcvr 0	REV 01	740-016065	81S290N00077	SFP-SR
Xcvr 1		NON-JNPR	2191844	SFP-SR
Xcvr 2	REV 01	740-011618	PD81EE5	SFP-IR
PIC 1	REV 08	750-014637	DM3671	4x OC-12-3 SFP
Xcvr 0	REV 01	740-011785	PCK3UNK	SFP-SR
Xcvr 3	REV 01	740-011785	PDSOMPZ	SFP-SR
FPC 10	REV 04	710-013699	JY4654	DPCE 40x 1GE R
CPU	REV 05	710-013713	JS9717	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 5	REV 01	740-011782	PAR1L72	SFP-SX
Xcvr 6	REV 01	740-011782	P8N1YQ4	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN)
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011782	P8Q2AVL	SFP-SX
Xcvr 5	REV 01	740-011782	PAR1L7B	SFP-SX
Xcvr 6	REV 01	740-011782	PAR1L2J	SFP-SX
Xcvr 8	REV 01	740-011782	P8N1YMY	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN)
Fan Tray 0	REV 03	740-014971	TP0567	Fan Tray
Fan Tray 1	REV 03	740-014971	TP0702	Fan Tray

### show chassis hardware models (MX960 Router with Enhanced MX SCB)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 03	710-013698	TR0183	CHAS-BP-MX960-S
Fan Extender	REV 02	710-018051	JY5227	ECM-MX960
FPM Board	REV 03	710-014974	JZ6876	CRAFT-MX960-S
Routing Engine 0	REV 06	740-013063	1000687969	RE-S-2000-4096-S
Routing Engine 1	REV 06	740-013063	1000687955	RE-S-2000-4096-S
CB 0	REV 11	750-031391	YZ6072	SCBE-MX-S
CB 1	REV 11	750-031391	YZ6068	SCBE-MX-S
CB 2	REV 11	750-031391	YZ6081	SCBE-MX-S
FPC 0	REV 01	750-018122	KA5576	DPCE-R-40GE-SFP
FPC 1	REV 16	750-031089	YL0719	MX-MPC2-3D
MIC 0	REV 07	750-028387	JR6500	MIC-3D-4XGE-XFP
MIC 1	REV 24	750-028387	YJ3950	MIC-3D-4XGE-XFP

FPC 2	REV 08	710-014219	JY9654	DPC-R-4XGE-XFP
FPC 3	REV 10	750-024199	XJ6692	MX-FPC3
PIC 0	REV 17	750-009553	RJ2945	PC-40C48-SON-SFP
PIC 1	REV 32	750-003700	DP2113	PC-10C192-SON-VSR
FPC 5	REV 25	750-028467	YM8256	MPC-3D-16XGE-SFPP
FPC 7	REV 02	750-031092	JR6658	MX-MPC1-3D-Q
MIC 0	REV 08	750-028392	JZ8737	MIC-3D-20GE-SFP
FPC 8	REV 05	750-024387	JW9754	MX-FPC2
PIC 0	REV 08	750-014730	DM3664	PB-40C3-10C12-SON2-SFP
PIC 1	REV 08	750-014637	DM3671	PB-40C3-40C12-SON-SFP
FPC 10	REV 04	710-013699	JY4654	DPC-R-40GE-SFP
Fan Tray 0	REV 03	740-014971	TP0567	FFANTRAY-MX960-S
Fan Tray 1	REV 03	740-014971	TP0702	FFANTRAY-MX960-S

### show chassis hardware (MX960 Router with MPC5EQ)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN1214852AFA	MX960
Midplane				MX960 Backplane
FPM Board	REV 03	710-014974	CAAZ9326	Front Panel Display
PDM	Rev 03	740-013110	QCS17025017	Power Distribution Module
PEM 0	Rev 10	740-027760	QCS1702N062	PS 4.1kW; 200-240V AC
in				
PEM 1	Rev 04	740-027760	QCS1422N02C	PS 4.1kW; 200-240V AC
in				
PEM 2	Rev 09	740-027760	QCS1614N01X	PS 4.1kW; 200-240V AC
in				
Routing Engine 0	REV 08	740-031116	9009131803	RE-S-1800x4
Routing Engine 1	REV 08	740-031116	9009124913	RE-S-1800x4
CB 0	REV 18	750-031391	CABF0579	Enhanced MX SCB
CB 1	REV 16	750-031391	CAAZ2471	Enhanced MX SCB
CB 2	REV 16	750-031391	CAAW9595	Enhanced MX SCB
FPC 0	REV 18	750-046005	CACE6574	MPC5E 3D Q 2CGE+4XGE
CPU	REV 09	711-045719	CACG8908	RMPC PMB
PIC 0		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-021308	AQA0DYT	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQGOMS7	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0	REV 01	740-046563	XD16FC03Z	CFP2-100G-SR10
PIC 2		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-021308	ANAONAJ	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQGOMRQ	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0	REV 01	740-049775	J13K72993	CFP2-100G-LR4
FPC 1	REV 11	750-045372	CABK8154	MPCE Type 3 3D
CPU	REV 08	711-035209	CABE7370	HMPC PMB 2G
MIC 0	REV 07	750-033307	CABD5255	10X10GE SFPP
PIC 0		BUILTIN	BUILTIN	10X10GE SFPP
Xcvr 0	REV 01	740-021308	AQ50319	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQ5035V	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQ502XJ	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQ43HHR	SFP+-10G-SR
Xcvr 4	REV 01	740-021308	AQ502YA	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	AQ502EU	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	AQ502HR	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	AQ502A6	SFP+-10G-SR
Xcvr 8	REV 01	740-021308	AQ43H8M	SFP+-10G-SR
MIC 1	REV 14	750-033196	CAAP1398	1X100GE CXP
PIC 2		BUILTIN	BUILTIN	1X100GE CXP

Xcvr 0	REV 01	740-046563	XD16FC064	CFP-100G-SR10
FPC 3	REV 35	750-028467	CAAT9156	MPC 3D 16x 10GE
CPU	REV 11	711-029089	CAAV4645	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AQ43HZ1	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQ43HZC	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQ43HD2	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQ502HN	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AQ43HGF	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQ501RZ	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQ5029V	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQ501X9	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AQ502ZN	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQ43H86	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQ502ZY	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQ502PZ	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AQ503E6	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQ502XN	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11F00213	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQ50336	SFP+-10G-SR
FPC 4	REV 18	750-046005	CACE6568	MPC5E 3D Q 2CGE+4XGE
CPU	REV 09	711-045719	CACG8900	RMPC PMB
PIC 0		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-021308	AQA095A	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQGOM1E	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0		NON-JNPR	FE13F000F	CFP2-100G-SR10
PIC 2		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-021308	AQGOLYC	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQGOLYB	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0	REV 01	740-048813	XD32FE00Z	CFP2-100G-SR10
FPC 5	REV 18	750-046005	CACE6577	MPC5E 3D Q 2CGE+4XGE
CPU	REV 09	711-045719	CACG8902	RMPC PMB
PIC 0		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-021308	AQGOMXE	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQGOLVY	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0	REV 01	740-046563	XD16FC03T	CFP2-100G-SR10
PIC 2		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-021308	AQGOLW1	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQGOLW3	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0		NON-JNPR	FE13F000J	CFP2-100G-SR10
FPC 7	REV 09	750-037355	CAAF0937	MPC4E 3D 2CGE+8XGE
CPU	REV 08	711-035209	CAAD8004	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-021308	ANA0MM3	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-035329	X000C163	CFP-100G-SR10
PIC 2		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-021308	AQGOMS6	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQGOMRX	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQGOM6Y	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQGOLZM	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-035329	X12J00499	CFP-100G-SR10
FPC 8	REV 39	750-045715	CACD1903	MPC5E 3D Q 24XGE+6XLGE



CPU	REV 09	711-045719	CACD1815	RMP	CMP
PIC 0		BUILTIN	BUILTIN	12X10GE	SFPP OTN
PIC 1		BUILTIN	BUILTIN	12X10GE	SFPP OTN
PIC 2		BUILTIN	BUILTIN	3X40GE	QSFPP
Xcvr 0	REV 01	740-046565	QC480289	QSFP+	-40G-SR4
Xcvr 1	REV 01	740-046565	QC480274	QSFP+	-40G-SR4
Xcvr 2	REV 01	740-046565	QD130190	QSFP+	-40G-SR4
PIC 3		BUILTIN	BUILTIN	3X40GE	QSFPP
Xcvr 0	REV 01	740-046565	QD130197	QSFP+	-40G-SR4
Xcvr 1	REV 01	740-046565	QD130180	QSFP+	-40G-SR4
Xcvr 2	REV 01	740-046565	QD130199	QSFP+	-40G-SR4
WAN MEZZ	REV 09	750-049136	CABN0415	MPC5E	24XGE OTN Mezz
FPC 9	REV 05	750-044444	CAAY9801	MPCE	Type 2 3D P
CPU	REV 04	711-038484	CAAW3673	MPCE	PMB 2G
MIC 0	REV 28	750-028387	CAAX1071	3D	4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	2x	10GE XFP
Xcvr 0		NON-JNPR	T12L92342	XFP	-10G-SR
Xcvr 1		NON-JNPR	T12L92303	XFP	-10G-SR
PIC 1		BUILTIN	BUILTIN	2x	10GE XFP
Xcvr 0		NON-JNPR	CC07BK02X	XFP	-10G-SR
QXM 0	REV 06	711-028408	CAAW4883	MPC	QXM
QXM 1	REV 06	711-028408	CAAW4603	MPC	QXM
FPC 10	REV 21.0.11	750-045715	CAAY3541	MPC5E	3D Q 24XGE+6XLGE
CPU	REV 07	711-045719	CAAW7426	RMP	CMP
PIC 0		BUILTIN	BUILTIN	12X10GE	SFPP
Xcvr 0	REV 01	740-031980	AHK01AP	SFP+	-10G-SR
Xcvr 1	REV 01	740-021308	AQ502ZU	SFP+	-10G-SR
Xcvr 2	REV 01	740-031980	AP41BLS	SFP+	-10G-SR
Xcvr 3	REV 01	740-021308	AQA08YA	SFP+	-10G-SR
Xcvr 4	REV 01	740-021308	AQA0K26	SFP+	-10G-SR
Xcvr 6	REV 01	740-021308	AQA06S3	SFP+	-10G-SR
Xcvr 7	REV 01	740-021308	AQA06AS	SFP+	-10G-SR
Xcvr 8	REV 01	740-021308	AQA053N	SFP+	-10G-SR
Xcvr 9	REV 01	740-021308	AQA0E97	SFP+	-10G-SR
Xcvr 10	REV 01	740-021308	AQA0GS4	SFP+	-10G-SR
Xcvr 11	REV 01	740-021308	AQA0JVA	SFP+	-10G-SR
PIC 1		BUILTIN	BUILTIN	12X10GE	SFPP
Xcvr 0	REV 01	740-021308	AQA057A	SFP+	-10G-SR
Xcvr 1	REV 01	740-021308	ANA0MLS	SFP+	-10G-SR
Xcvr 2	REV 01	740-021308	AQA093A	SFP+	-10G-SR
Xcvr 3	REV 01	740-021309	943153A00075	SFP+	-10G-LR
Xcvr 4	REV 01	740-021308	AQA077B	SFP+	-10G-SR
Xcvr 5	REV 01	740-021308	AQA0JSC	SFP+	-10G-SR
Xcvr 6	REV 01	740-021308	AQA0735	SFP+	-10G-SR
Xcvr 7	REV 01	740-021308	AQ5028N	SFP+	-10G-SR
Xcvr 8	REV 01	740-031980	AP40VN5	SFP+	-10G-SR
Xcvr 9	REV 01	740-021308	AQA0K0J	SFP+	-10G-SR
Xcvr 10	REV 01	740-021308	AQA07AP	SFP+	-10G-SR
Xcvr 11	REV 01	740-021308	AQA08YB	SFP+	-10G-SR
PIC 2		BUILTIN	BUILTIN	3X40GE	QSFPP
PIC 3		BUILTIN	BUILTIN	3X40GE	QSFPP
WAN MEZZ	REV 07	750-045717	CAAX3123	MPC5E	24XGE Mezz
FPC 11	REV 17	750-037355	CAAT3986	MPC4E	3D 2CGE+8XGE
CPU	REV 08	711-035209	CAAR3972	HMP	CMP 2G
PIC 0		BUILTIN	BUILTIN	4x10GE	SFPP
Xcvr 0	REV 01	740-021308	AQA0DSE	SFP+	-10G-SR
Xcvr 1	REV 01	740-021308	AQ501Y3	SFP+	-10G-SR
Xcvr 2	REV 01	740-021308	AQ501XU	SFP+	-10G-SR
Xcvr 3	REV 01	740-021308	AQ5036Y	SFP+	-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE	CFP
Xcvr 0		NON-JNPR	X12J00247	CFP	-100G-SR10

PIC 2		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-031980	ALQ1DKF	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJ403YA	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AP40TY0	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	ALQ14G0	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-035329	X12J00095	CFP-100G-SR10
Fan Tray 0	REV 08	740-031521	ACAF4219	Enhanced Fan Tray
Fan Tray 1	REV 08	740-031521	ACAF4225	Enhanced Fan Tray

### show chassis hardware detail (MX960 Router)

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user@host> show chassis hardware detail
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Midplane      REV 01    710-013698   AA6082         MX960
PIM           Rev 01    740-013110   000008         MX960 Midplane
Power Inlet Module
PEM 2
PEM 3         Rev 01    740-013682   000038         PS 1.7kW; 200-240VAC in
Routing Engine 0 REV 00    740-015113   1000617944     RE-S-1300
  ad0        245 MB  SanDisk SDCFB-256     111419E1805T1141 Compact Flash
  ad2        38154 MB FUJITSU MHT2040BH NR0WT5925N77    Hard Disk
CB 0          REV 05    710-013725   JK6947         MX960 Test SCB
FPC 4         REV 01    710-013305   JM7617         MX960 Test DPC
CPU
PIC 0
PIC 1
FPC 7         REV 01    710-013305   JL9634         MX960 Test DPC
CPU
PIC 0
Xcvr 0        NON-JNPR   MYBG65I82C     XFP-10G-SR
PIC 1
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

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### show chassis hardware detail (MX960 Router with MPC5EQ)

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user@host> show chassis hardware detail
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Midplane      REV 01    710-030012   ACAX3674       MX960 Backplane
FPM Board     REV 03    710-014974   CAAZ9326       Front Panel Display
PDM           Rev 03    740-013110   QCS17025017    Power Distribution Module
PEM 0         Rev 10    740-027760   QCS1702N062    PS 4.1kW; 200-240V AC
in
PEM 1         Rev 04    740-027760   QCS1422N02C    PS 4.1kW; 200-240V AC
in
PEM 2         Rev 09    740-027760   QCS1614N01X    PS 4.1kW; 200-240V AC
in
Routing Engine 0 REV 08    740-031116   9009131803     RE-S-1800x4
  ad0        3831 MB  UGB30SFA4000T1 SFA4000T1 000016CD Compact Flash
  ad1        30533 MB UGB94BPH32H0S1-KCI 11000061346    Disk 1
usb0 (addr 1) EHCI root hub 0      Intel      uhub0
usb0 (addr 2) product 0x0020 32 vendor 0x8087 uhub1
DIMM 0        VL31B5263F-F8SD DIE REV-0 PCB REV-0    MFR ID-ce80

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DIMM 1	VL31B5263F-F8SD DIE	REV-0 PCB REV-0	MFR ID-ce80
DIMM 2	VL31B5263F-F8SD DIE	REV-0 PCB REV-0	MFR ID-ce80
DIMM 3	VL31B5263F-F8SD DIE	REV-0 PCB REV-0	MFR ID-ce80
Routing Engine 1	REV 08 740-031116	9009124913	RE-S-1800x4
ad0 3831 MB	UGB30SFA4000T1	SFA4000T1 0000106D	Compact Flash
ad1 30533 MB	UGB94BPH32H0S1-KCI	11000052402	Disk 1
CB 0	REV 18 750-031391	CABF0579	Enhanced MX SCB
CB 1	REV 16 750-031391	CAAZ2471	Enhanced MX SCB
CB 2	REV 16 750-031391	CAAW9595	Enhanced MX SCB
FPC 0	REV 18 750-046005	CACE6574	MPC5E 3D Q 2CGE+4XGE
CPU	REV 09 711-045719	CACG8908	RMPM PMB
PIC 0	BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01 740-021308	AQA0DYT	SFP+-10G-SR
Xcvr 1	REV 01 740-021308	AQG0MS7	SFP+-10G-SR
PIC 1	BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0	REV 01 740-046563	XD16FC03Z	CFP2-100G-SR10
PIC 2	BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01 740-021308	ANA0NAJ	SFP+-10G-SR
Xcvr 1	REV 01 740-021308	AQG0MRQ	SFP+-10G-SR
PIC 3	BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0	REV 01 740-049775	J13K72993	CFP2-100G-LR4
FPC 1	REV 11 750-045372	CABK8154	MPCE Type 3 3D
CPU	REV 08 711-035209	CABE7370	HMPC PMB 2G
MIC 0	REV 07 750-033307	CABD5255	10X10GE SFPP
PIC 0	BUILTIN	BUILTIN	10X10GE SFPP
Xcvr 0	REV 01 740-021308	AQ50319	SFP+-10G-SR
Xcvr 1	REV 01 740-021308	AQ5035V	SFP+-10G-SR
Xcvr 2	REV 01 740-021308	AQ502XJ	SFP+-10G-SR
Xcvr 3	REV 01 740-021308	AQ43HHR	SFP+-10G-SR
Xcvr 4	REV 01 740-021308	AQ502YA	SFP+-10G-SR
Xcvr 5	REV 01 740-021308	AQ502EU	SFP+-10G-SR
Xcvr 6	REV 01 740-021308	AQ502HR	SFP+-10G-SR
Xcvr 7	REV 01 740-021308	AQ502A6	SFP+-10G-SR
Xcvr 8	REV 01 740-021308	AQ43H8M	SFP+-10G-SR
MIC 1	REV 14 750-033196	CAAP1398	1X100GE CXF
PIC 2	BUILTIN	BUILTIN	1X100GE CXF
Xcvr 0	REV 01 740-046563	XD16FC064	CFP2-100G-SR10
FPC 3	REV 35 750-028467	CAAT9156	MPC 3D 16x 10GE
CPU	REV 11 711-029089	CAAV4645	AMPC PMB
PIC 0	BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01 740-021308	AQ43HZ1	SFP+-10G-SR
Xcvr 1	REV 01 740-021308	AQ43HZC	SFP+-10G-SR
Xcvr 2	REV 01 740-021308	AQ43HD2	SFP+-10G-SR
Xcvr 3	REV 01 740-021308	AQ502HN	SFP+-10G-SR
PIC 1	BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01 740-021308	AQ43HGF	SFP+-10G-SR
Xcvr 1	REV 01 740-021308	AQ501RZ	SFP+-10G-SR
Xcvr 2	REV 01 740-021308	AQ5029V	SFP+-10G-SR
Xcvr 3	REV 01 740-021308	AQ501X9	SFP+-10G-SR
PIC 2	BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01 740-021308	AQ502ZN	SFP+-10G-SR
Xcvr 1	REV 01 740-021308	AQ43H86	SFP+-10G-SR
Xcvr 2	REV 01 740-021308	AQ502ZY	SFP+-10G-SR
Xcvr 3	REV 01 740-021308	AQ502PZ	SFP+-10G-SR
PIC 3	BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01 740-021308	AQ503E6	SFP+-10G-SR
Xcvr 1	REV 01 740-021308	AQ502XN	SFP+-10G-SR
Xcvr 2	REV 01 740-031980	B11F00213	SFP+-10G-SR
Xcvr 3	REV 01 740-021308	AQ50336	SFP+-10G-SR
FPC 4	REV 18 750-046005	CACE6568	MPC5E 3D Q 2CGE+4XGE
CPU	REV 09 711-045719	CACG8900	RMPM PMB

PIC 0		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-021308	AQA095A	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQGOM1E	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0		NON-JNPR	FE13F000F	CFP2-100G-SR10
PIC 2		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-021308	AQGOLYC	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQGOLYB	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0	REV 01	740-048813	XD32FE00Z	CFP2-100G-SR10
FPC 5	REV 18	750-046005	CACE6577	MPC5E 3D Q 2CGE+4XGE
CPU	REV 09	711-045719	CACG8902	RMPD PMB
PIC 0		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-021308	AQGOMXE	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQGOLVY	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0	REV 01	740-046563	XD16FC03T	CFP2-100G-SR10
PIC 2		BUILTIN	BUILTIN	2X10GE SFPP OTN
Xcvr 0	REV 01	740-021308	AQGOLW1	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQGOLW3	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0		NON-JNPR	FE13F000J	CFP2-100G-SR10
FPC 7	REV 09	750-037355	CAAF0937	MPC4E 3D 2CGE+8XGE
CPU	REV 08	711-035209	CAAD8004	HMPD PMB 2G
PIC 0		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-021308	ANAOMM3	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-035329	X000C163	CFP-100G-SR10
PIC 2		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-021308	AQGOMS6	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQGOMRX	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQGOM6Y	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQGOLZM	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-035329	X12J00499	CFP-100G-SR10
FPC 8	REV 39	750-045715	CACD1903	MPC5E 3D Q 24XGE+6XLGE
CPU	REV 09	711-045719	CACD1815	RMPD PMB
PIC 0		BUILTIN	BUILTIN	12X10GE SFPP OTN
PIC 1		BUILTIN	BUILTIN	12X10GE SFPP OTN
PIC 2		BUILTIN	BUILTIN	3X40GE QSFPP
Xcvr 0	REV 01	740-046565	QC480289	QSFP+-40G-SR4
Xcvr 1	REV 01	740-046565	QC480274	QSFP+-40G-SR4
Xcvr 2	REV 01	740-046565	QD130190	QSFP+-40G-SR4
PIC 3		BUILTIN	BUILTIN	3X40GE QSFPP
Xcvr 0	REV 01	740-046565	QD130197	QSFP+-40G-SR4
Xcvr 1	REV 01	740-046565	QD130180	QSFP+-40G-SR4
Xcvr 2	REV 01	740-046565	QD130199	QSFP+-40G-SR4
WAN MEZZ	REV 09	750-049136	CABN0415	MPC5E 24XGE OTN Mezz
FPC 9	REV 05	750-044444	CAAY9801	MPCE Type 2 3D P
CPU	REV 04	711-038484	CAAW3673	MPCE PMB 2G
MIC 0	REV 28	750-028387	CAAX1071	3D 4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0		NON-JNPR	T12L92342	XFP-10G-SR
Xcvr 1		NON-JNPR	T12L92303	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0		NON-JNPR	CC07BK02X	XFP-10G-SR
QXM 0	REV 06	711-028408	CAAW4883	MPC QXM
QXM 1	REV 06	711-028408	CAAW4603	MPC QXM
FPC 10	REV 21.0.11	750-045715	CAAY3541	MPC5E 3D Q 24XGE+6XLGE
CPU	REV 07	711-045719	CAAW7426	RMPD PMB
PIC 0		BUILTIN	BUILTIN	12X10GE SFPP

Xcvr 0	REV 01	740-031980	AHK01AP	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQ502ZU	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AP41BLS	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQA08YA	SFP+-10G-SR
Xcvr 4	REV 01	740-021308	AQA0K26	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	AQA06S3	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	AQA06AS	SFP+-10G-SR
Xcvr 8	REV 01	740-021308	AQA053N	SFP+-10G-SR
Xcvr 9	REV 01	740-021308	AQA0E97	SFP+-10G-SR
Xcvr 10	REV 01	740-021308	AQA0GS4	SFP+-10G-SR
Xcvr 11	REV 01	740-021308	AQA0JVA	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	12X10GE SFPP
Xcvr 0	REV 01	740-021308	AQA057A	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	ANA0MLS	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQA093A	SFP+-10G-SR
Xcvr 3	REV 01	740-021309	943153A00075	SFP+-10G-LR
Xcvr 4	REV 01	740-021308	AQA077B	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	AQA0JSC	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	AQA0735	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	AQ5028N	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	AP40VN5	SFP+-10G-SR
Xcvr 9	REV 01	740-021308	AQA0K0J	SFP+-10G-SR
Xcvr 10	REV 01	740-021308	AQA07AP	SFP+-10G-SR
Xcvr 11	REV 01	740-021308	AQA08YB	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	3X40GE QSFPP
PIC 3		BUILTIN	BUILTIN	3X40GE QSFPP
WAN MEZZ	REV 07	750-045717	CAAX3123	MPC5E 24XGE Mezz
FPC 11	REV 17	750-037355	CAAT3986	MPC4E 3D 2CGE+8XGE
CPU	REV 08	711-035209	CAAR3972	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-021308	AQA0DSE	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQ501Y3	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQ501XU	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQ5036Y	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0		NON-JNPR	X12J00247	CFP-100G-SR10
PIC 2		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-031980	ALQ1DKF	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJ403YA	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AP40TY0	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	ALQ14G0	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-035329	X12J00095	CFP-100G-SR10
Fan Tray 0	REV 08	740-031521	ACAF4219	Enhanced Fan Tray
Fan Tray 1	REV 08	740-031521	ACAF4225	Enhanced Fan Tray

### show chassis hardware extensive (MX960 Router with MPC5EQ)

```

user@host> show chassis hardware extensive
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Jedec Code:   0x7fb0          EEPROM Version: 0x02
S/N:          JN1214852AFA
Assembly ID:  0x0512          Assembly Version: 00.00
Date:         00-00-0000      Assembly Flags:  0x00
ID: MX960
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 12 00 00 00 00 00 00 00 00 00 00

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Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x20: 4a 4e 31 32 31 34 38 35 32 41 46 41 00 00 00 00
Address 0x30: 00 00 00 ff 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane          REV 01    710-030012    ACAX3674          MX960 Backplane
Jedec Code:      0x7fb0          EEPROM Version:    0x02
P/N:             710-030012      S/N:             ACAX3674
Assembly ID:     0x01df          Assembly Version: 01.01
Date:            01-19-2013      Assembly Flags:   0x00
Version:         REV 01          CLEI Code:       COM8T00CRB
ID: MX960 Backplane              FRU Model Number: CHAS-BP-MX960-S
Board Information Record:
Address 0x00: ad 01 08 00 54 e0 32 bc 68 00 ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 01 df 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 31 30 2d 30 33 30 30 31 32 00 00
Address 0x20: 53 2f 4e 20 41 43 41 58 33 36 37 34 00 13 01 07
Address 0x30: dd ff ff ff ad 01 08 00 54 e0 32 bc 68 00 ff ff
Address 0x40: ff ff ff ff 01 43 4f 4d 38 54 30 30 43 52 42 43
Address 0x50: 48 41 53 2d 42 50 2d 4d 58 39 36 30 2d 53 00 00
Address 0x60: 00 00 00 00 00 00 42 00 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff aa ff ff ff ff ff ff ff ff ff ff ff ff
FPM Board          REV 03    710-014974    CAAZ9326          Front Panel Display
Jedec Code:      0x7fb0          EEPROM Version:    0x01
P/N:             710-014974      S/N:             CAAZ9326
Assembly ID:     0x01e6          Assembly Version: 01.03
Date:            12-31-2012      Assembly Flags:   0x00
Version:         REV 03
ID: Front Panel Display          FRU Model Number: CRAFT-MX960-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 01 e6 01 03 52 45 56 20 30 33 00 00
Address 0x10: 00 00 00 00 37 31 30 2d 30 31 34 39 37 34 00 00
Address 0x20: 53 2f 4e 20 43 41 41 5a 39 33 32 36 00 1f 0c 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 00 00 00 00 00 00 00 00 00 00 43
Address 0x50: 52 41 46 54 2d 4d 58 39 36 30 2d 53 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
PDM                Rev 03    740-013110    QCS17025017      Power Distribution Module
Jedec Code:      0x7fb0          EEPROM Version:    0x01
P/N:             740-013110      S/N:             QCS17025017
Assembly ID:     0x0416          Assembly Version: 01.03
Date:            01-10-2013      Assembly Flags:   0x00
Version:         Rev 03
ID: Power Distribution Module
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff 00 00 00
I2C Hex Data:
Address 0x00: 7f b0 01 ff 04 16 01 03 52 65 76 20 30 33 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 31 33 31 31 30 00 00
Address 0x20: 51 43 53 31 37 30 32 35 30 31 37 00 00 0a 01 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

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PEM 0          Rev 10   740-027760   QCS1702N062       PS 4.1kW; 200-240V AC
in
Jedec Code:    0x7fb0          EEPROM Version:    0x01
P/N:           740-027760      S/N:              QCS1702N062
Assembly ID:   0x0430          Assembly Version: 01.10
Date:          01-15-2013      Assembly Flags:   0x00
Version:       Rev 10
ID: PS 4.1kW; 200-240V AC in   FRU Model Number: PWR-MX960-4100-AC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff 00 00 00 00
I2C Hex Data:
  Address 0x00: 7f b0 01 ff 04 30 01 0a 52 65 76 20 31 30 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 32 37 37 36 30 00 00
  Address 0x20: 51 43 53 31 37 30 32 4e 30 36 32 00 00 0f 01 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 50
  Address 0x50: 57 52 2d 4d 58 39 36 30 2d 34 31 30 30 2d 41 43
  Address 0x60: 2d 53 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

PEM 1          Rev 04   740-027760   QCS1422N02C       PS 4.1kW; 200-240V AC
in
Jedec Code:    0x7fb0          EEPROM Version:    0x01
P/N:           740-027760      S/N:              QCS1422N02C
Assembly ID:   0x0430          Assembly Version: 01.04
Date:          06-04-2010      Assembly Flags:   0x00
Version:       Rev 04
ID: PS 4.1kW; 200-240V AC in   FRU Model Number: PWR-MX960-4100-AC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff 00 00 00 00
I2C Hex Data:
  Address 0x00: 7f b0 01 ff 04 30 01 04 52 65 76 20 30 34 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 32 37 37 36 30 00 00
  Address 0x20: 51 43 53 31 34 32 32 4e 30 32 43 00 00 04 06 07
  Address 0x30: da ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 50
  Address 0x50: 57 52 2d 4d 58 39 36 30 2d 34 31 30 30 2d 41 43
  Address 0x60: 2d 53 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

PEM 2          Rev 09   740-027760   QCS1614N01X       PS 4.1kW; 200-240V AC
in
Jedec Code:    0x7fb0          EEPROM Version:    0x01
P/N:           740-027760      S/N:              QCS1614N01X
Assembly ID:   0x0430          Assembly Version: 01.09
Date:          04-07-2012      Assembly Flags:   0x00
Version:       Rev 09
ID: PS 4.1kW; 200-240V AC in   FRU Model Number: PWR-MX960-4100-AC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff 00 00 00 00
I2C Hex Data:
  Address 0x00: 7f b0 01 ff 04 30 01 09 52 65 76 20 30 39 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 32 37 37 36 30 00 00
  Address 0x20: 51 43 53 31 36 31 34 4e 30 31 58 00 00 07 04 07
  Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: 00 00 00 00 01 00 00 00 00 00 00 00 00 00 00 50
  Address 0x50: 57 52 2d 4d 58 39 36 30 2d 34 31 30 30 2d 41 43
  Address 0x60: 2d 53 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

Routing Engine 0 REV 08   740-031116   9009131803       RE-S-1800x4
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-031116      S/N:              9009131803
Assembly ID:   0x09c0          Assembly Version: 01.08

```

```

Date:          03-04-2013      Assembly Flags:    0x00
Version:       REV 08         CLEI Code:        COUCASKBAA
ID: RE-S-1800x4      FRU Model Number:  RE-S-1800X4-16G-S
Board Information Record:
Address 0x00: 54 32 30 32 37 44 42 2d 34 34 47 42 23 42 23 00
I2C Hex Data:
Address 0x00: 7f b0 02 ff 09 c0 01 08 52 45 56 20 30 38 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 33 31 31 31 36 00 00
Address 0x20: 39 30 30 39 31 33 31 38 30 33 00 00 00 04 03 07
Address 0x30: dd ff ff ff 54 32 30 32 37 44 42 2d 34 34 47 42
Address 0x40: 23 42 23 00 01 43 4f 55 43 41 53 4b 42 41 41 52
Address 0x50: 45 2d 53 2d 31 38 30 30 58 34 2d 31 36 47 2d 53
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 59 ff ff ff ff ff ff ff ff ff ff ff ff
ad0   3831 MB   UGB30SFA4000T1      SFA4000T1 000016CD Compact Flash
ad1   30533 MB  UGB94BPH32H0S1-KCI   11000061346      Disk 1
usb0 (addr 1)  EHCI root hub 0      Intel      uhub0
usb0 (addr 2)  product 0x0020 32     vendor 0x8087    uhub1
DIMM 0         VL31B5263F-F8SD DIE REV-0 PCB REV-0    MFR ID-ce80
DIMM 1         VL31B5263F-F8SD DIE REV-0 PCB REV-0    MFR ID-ce80
DIMM 2         VL31B5263F-F8SD DIE REV-0 PCB REV-0    MFR ID-ce80
DIMM 3         VL31B5263F-F8SD DIE REV-0 PCB REV-0    MFR ID-ce80
Routing Engine 1 REV 08   740-031116   9009124913      RE-S-1800x4
Jedec Code:    0x7fb0      EEPROM Version:   0x02
P/N:           740-031116   S/N:             9009124913
Assembly ID:   0x09c0      Assembly Version: 01.08
Date:          01-09-2013   Assembly Flags:   0x00
Version:       REV 08      CLEI Code:        COUCASKBAA
ID: RE-S-1800x4      FRU Model Number:  RE-S-1800X4-16G-S
Board Information Record:
Address 0x00: 54 32 30 32 37 44 42 2d 34 34 47 42 23 42 23 00
I2C Hex Data:
Address 0x00: 7f b0 02 ff 09 c0 01 08 52 45 56 20 30 38 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 33 31 31 31 36 00 00
Address 0x20: 39 30 30 39 31 32 34 39 31 33 00 00 00 09 01 07
Address 0x30: dd ff ff ff 54 32 30 32 37 44 42 2d 34 34 47 42
Address 0x40: 23 42 23 00 01 43 4f 55 43 41 53 4b 42 41 41 52
Address 0x50: 45 2d 53 2d 31 38 30 30 58 34 2d 31 36 47 2d 53
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 59 ff ff ff ff ff ff ff ff ff ff ff ff
ad0   3831 MB   UGB30SFA4000T1      SFA4000T1 0000106D Compact Flash
ad1   30533 MB  UGB94BPH32H0S1-KCI   11000052402      Disk 1
CB 0         REV 18   750-031391   CABF0579      Enhanced MX SCB
Jedec Code:    0x7fb0      EEPROM Version:   0x02
P/N:           750-031391   S/N:             CABF0579
Assembly ID:   0x09b0      Assembly Version: 01.18
Date:          04-15-2013   Assembly Flags:   0x00
Version:       REV 18      CLEI Code:        COUCASRBAA
ID: Enhanced MX SCB      FRU Model Number:  SCBE-MX-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 09 b0 01 12 52 45 56 20 31 38 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 31 33 39 31 00 00
Address 0x20: 53 2f 4e 20 43 41 42 46 30 35 37 39 00 0f 04 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 43 4f 55 43 41 53 52 42 41 41 53
Address 0x50: 43 42 45 2d 4d 58 2d 53 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 43 00 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 7d ff ff ff ff ff ff ff ff ff ff ff ff
CB 1         REV 16   750-031391   CAAZ2471      Enhanced MX SCB

```



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Jedec Code: 0x7fb0      EEPROM Version: 0x02
P/N: 750-031391        S/N: CAAZ2471
Assembly ID: 0x09b0     Assembly Version: 01.16
Date: 03-09-2013       Assembly Flags: 0x00
Version: REV 16         CLEI Code: COUCARCBAB
ID: Enhanced MX SCB    FRU Model Number: SCBE-MX-S

Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 09 b0 01 10 52 45 56 20 31 36 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 31 33 39 31 00 00
Address 0x20: 53 2f 4e 20 43 41 41 5a 32 34 37 31 00 09 03 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 43 4f 55 43 41 52 43 42 41 42 53
Address 0x50: 43 42 45 2d 4d 58 2d 53 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 42 00 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 6d ff ff ff ff ff ff ff ff ff ff ff ff

CB 2      REV 16      750-031391      CAAW9595      Enhanced MX SCB
Jedec Code: 0x7fb0      EEPROM Version: 0x02
P/N: 750-031391        S/N: CAAW9595
Assembly ID: 0x09b0     Assembly Version: 01.16
Date: 02-01-2013       Assembly Flags: 0x00
Version: REV 16         CLEI Code: COUCARCBAB
ID: Enhanced MX SCB    FRU Model Number: SCBE-MX-S

Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 09 b0 01 10 52 45 56 20 31 36 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 31 33 39 31 00 00
Address 0x20: 53 2f 4e 20 43 41 41 57 39 35 39 35 00 01 02 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 43 4f 55 43 41 52 43 42 41 42 53
Address 0x50: 43 42 45 2d 4d 58 2d 53 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 42 00 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 6d ff ff ff ff ff ff ff ff ff ff ff ff

FPC 0      REV 18      750-046005      CACE6574      MPC5E 3D Q 2CGE+4XGE
Jedec Code: 0x7fb0      EEPROM Version: 0x02
P/N: 750-046005        S/N: CACE6574
Assembly ID: 0x0b8c     Assembly Version: 01.18
Date: 11-20-2013       Assembly Flags: 0x00
Version: REV 18         CLEI Code: PROTOXCLEI
ID: MPC5E 3D Q 2CGE+4XGE FRU Model Number: PROTO-ASSEMBLY

Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 8c 01 12 52 45 56 20 31 38 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 34 36 30 30 35 00 00
Address 0x20: 53 2f 4e 20 43 41 43 45 36 35 37 34 00 14 0b 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff ff

CPU      REV 09      711-045719      CACG8908      RMPC PMB
Jedec Code: 0x7fb0      EEPROM Version: 0x02
P/N: 711-045719        S/N: CACG8908
Assembly ID: 0x0b85     Assembly Version: 01.09
Date: 11-13-2013       Assembly Flags: 0x00
Version: REV 09
ID: RMPC PMB
Board Information Record:

```

```

Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 85 01 09 52 45 56 20 30 39 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 34 35 37 31 39 00 00
Address 0x20: 53 2f 4e 20 43 41 43 47 38 39 30 38 00 0d 0b 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff ff 00 50 52 4f 54 4f 58 43 4c 45 49 50
Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff c2 00 00 00 00 00 00 00 00 00 00 00 00
PIC 0          BUILTIN          BUILTIN          2X10GE SFPP OTN
Jedec Code:    0x0000          EEPROM Version:    0x00
P/N:           BUILTIN          S/N:           BUILTIN
Assembly ID:   0x0a90          Assembly Version: 00.00
Date:          00-00-0000      Assembly Flags: 0x00
ID: 2X10GE SFPP OTN
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 00 00 00 00 0a 90 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 25 73 3a 20
Address 0x20: 42 55 49 4c 54 49 4e 00 25 73 3a 20 00 00 00 00
Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 c0 02 ae dc 00 00 00 00 0a 6e 00 00
Xcvr 0          REV 01      740-021308      AQA0DYT          SFP+-10G-SR
  Xcvr 1          REV 01      740-021308      AQG0MS7          SFP+-10G-SR
  PIC 1          BUILTIN          BUILTIN          1X100GE CFP2 OTN
Jedec Code:    0x0000          EEPROM Version:    0x00
P/N:           BUILTIN          S/N:           BUILTIN
Assembly ID:   0x0a6e          Assembly Version: 00.00
Date:          00-00-0000      Assembly Flags: 0x00
ID: 1X100GE CFP2 OTN
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 00 00 00 00 0a 6e 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 25 73 3a 20
Address 0x20: 42 55 49 4c 54 49 4e 00 25 73 3a 20 00 00 00 00
Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 c0 03 f3 8c 31 5c e7 80 00 00 00 02
  Xcvr 0          REV 01      740-046563      XD16FC03Z          CFP2-100G-SR10
  PIC 2          BUILTIN          BUILTIN          2X10GE SFPP OTN
Jedec Code:    0x0000          EEPROM Version:    0x00
P/N:           BUILTIN          S/N:           BUILTIN
Assembly ID:   0x0a90          Assembly Version: 00.00
Date:          00-00-0000      Assembly Flags: 0x00
ID: 2X10GE SFPP OTN
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 00 00 00 00 0a 90 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 25 73 3a 20
Address 0x20: 42 55 49 4c 54 49 4e 00 25 73 3a 20 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

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Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 c0 03 f5 6c 31 5c db 40 00 00 00 02
Xcvr 0      REV 01  740-021308  ANA0NAJ      SFP+-10G-SR
Xcvr 1      REV 01  740-021308  AQGOMRQ     SFP+-10G-SR
PIC 3              BUILTIN      BUILTIN      1X100GE CFP2 OTN
Jedec Code:  0x0000      EEPROM Version:  0x00
P/N:         BUILTIN      S/N:         BUILTIN
Assembly ID: 0x0a6e      Assembly Version: 00.00
Date:        00-00-0000   Assembly Flags: 0x00
ID: 1X100GE CFP2 OTN
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 00 00 00 00 0a 6e 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 25 73 3a 20
Address 0x20: 42 55 49 4c 54 49 4e 00 25 73 3a 20 00 00 00 00
Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 c0 03 ed ec 31 5c e2 e8 00 00 00 02
Xcvr 0      REV 01  740-049775  J13K72993   CFP2-100G-LR4
FPC 1      REV 11  750-045372  CABK8154    MPCE Type 3 3D
Jedec Code:  0x7fb0      EEPROM Version:  0x02
P/N:         750-045372   S/N:         CABK8154
Assembly ID: 0x09db      Assembly Version: 04.11
Date:        05-18-2013   Assembly Flags: 0x00
Version:     REV 11      CLEI Code:     COUIBBNBAA
ID: MPCE Type 3 3D      FRU Model Number: MX-MPC3E-3D
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 09 db 04 0b 52 45 56 20 31 31 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 34 35 33 37 32 00 00
Address 0x20: 53 2f 4e 20 43 41 42 4b 38 31 35 34 00 12 05 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 43 4f 55 49 42 42 4e 42 41 41 4d
Address 0x50: 58 2d 4d 50 43 33 45 2d 33 44 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 44 00 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff cf ff ff ff ff ff ff ff ff ff ff ff ff
CPU      REV 08  711-035209  CABE7370    HMPC PMB 2G
Jedec Code:  0x7fb0      EEPROM Version:  0x01
P/N:         711-035209   S/N:         CABE7370
Assembly ID: 0x0b04      Assembly Version: 01.08
Date:        05-08-2013   Assembly Flags: 0x00
Version:     REV 08
ID: HMPC PMB 2G
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 0b 04 01 08 52 45 56 20 30 38 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 33 35 32 30 39 00 00
Address 0x20: 53 2f 4e 20 43 41 42 45 37 33 37 30 00 08 05 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff ff
Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff 00 00 00 00 00 00 00 00 00 00 00 00
MIC 0      REV 07  750-033307  CABD5255    10X10GE SFPP
Jedec Code:  0x7fb0      EEPROM Version:  0x02

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P/N:          750-033307      S/N:          CABD5255
Assembly ID:  0x0a2a          Assembly Version: 02.07
Date:         04-25-2013      Assembly Flags:  0x00
Version:      REV 07          CLEI Code:       COUIBBJBAA
ID: 10X10GE SFPP              FRU Model Number: MIC3-3D-10XGE-SFPP

Board Information Record:
Address 0x00: 34 01 03 03 05 ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 fe 0a 2a 02 07 52 45 56 20 30 37 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 33 33 30 37 00 00
Address 0x20: 53 2f 4e 20 43 41 42 44 35 32 35 35 00 19 04 07
Address 0x30: dd ff ff ff 34 01 03 03 05 ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 43 4f 55 49 42 42 4a 42 41 41 4d
Address 0x50: 49 43 33 2d 33 44 2d 31 30 58 47 45 2d 53 46 50
Address 0x60: 50 00 00 00 00 00 41 00 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 82 c0 03 f0 bc 57 79 83 80 00 00 00 02

PIC 0          BUILTIN      BUILTIN      10X10GE SFPP
Xcvr 0         REV 01      740-021308    AQ50319      SFP+-10G-SR
    Xcvr 1      REV 01      740-021308    AQ5035V      SFP+-10G-SR
    Xcvr 2      REV 01      740-021308    AQ502XJ      SFP+-10G-SR
    Xcvr 3      REV 01      740-021308    AQ43HHR      SFP+-10G-SR
    Xcvr 4      REV 01      740-021308    AQ502YA      SFP+-10G-SR
    Xcvr 5      REV 01      740-021308    AQ502EU      SFP+-10G-SR
    Xcvr 6      REV 01      740-021308    AQ502HR      SFP+-10G-SR
    Xcvr 7      REV 01      740-021308    AQ502A6      SFP+-10G-SR
    Xcvr 8      REV 01      740-021308    AQ43H8M      SFP+-10G-SR
MIC 1          REV 14      750-033196    CAAP1398     1X100GE CXP
Jedec Code:    0x7fb0      EEPROM Version: 0x02
P/N:          750-033196      S/N:          CAAP1398
Assembly ID:  0x0a29          Assembly Version: 03.14
Date:         10-27-2012      Assembly Flags:  0x00
Version:      REV 14          CLEI Code:     COUIBBKBAA
ID: 1X100GE CXP              FRU Model Number: MIC3-3D-1X100GE-CXP

Board Information Record:
Address 0x00: 34 01 07 07 08 ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 fe 0a 29 03 0e 52 45 56 20 31 34 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 33 31 39 36 00 00
Address 0x20: 53 2f 4e 20 43 41 41 50 31 33 39 38 00 1b 0a 07
Address 0x30: dc ff ff ff 34 01 07 07 08 ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 43 4f 55 49 42 42 4b 42 41 41 4d
Address 0x50: 49 43 33 2d 33 44 2d 31 58 31 30 30 47 45 2d 43
Address 0x60: 58 50 00 00 00 00 41 00 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 96 c0 03 ef cc 57 79 85 08 00 00 00 02

PIC 2          BUILTIN      BUILTIN      1X100GE CXP
Xcvr 0         REV 01      740-046563    XD16FC064    CFP2-100G-SR10
FPC 3          REV 35      750-028467    CAAT9156     MPC 3D 16x 10GE
Jedec Code:    0x7fb0      EEPROM Version: 0x01
P/N:          750-028467      S/N:          CAAT9156
Assembly ID:  0x0997          Assembly Version: 01.35
Date:         12-17-2012      Assembly Flags:  0x00
Version:      REV 35
ID: MPC 3D 16x 10GE          FRU Model Number: MPC-3D-16XGE-SFPP

Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 09 97 01 23 52 45 56 20 33 35 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 32 38 34 36 37 00 00
Address 0x20: 53 2f 4e 20 43 41 41 54 39 31 35 36 00 11 0c 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 00 00 00 00 00 00 00 00 00 00 4d

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Address 0x50: 50 43 2d 33 44 2d 31 36 58 47 45 2d 53 46 50 50
Address 0x60: 00 00 00 00 00 00 ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
CPU          REV 11    711-029089    CAAV4645    AMPC PMB
Jedec Code:  0x7fb0    EEPROM Version: 0x01
P/N:         711-029089 S/N:         CAAV4645
Assembly ID: 0x0998    Assembly Version: 01.11
Date:        12-13-2012 Assembly Flags: 0x00
Version:     REV 11
ID: AMPC PMB
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 09 98 01 0b 52 45 56 20 31 31 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 32 39 30 38 39 00 00
Address 0x20: 53 2f 4e 20 43 41 41 56 34 36 34 35 00 0d 0c 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff 00 00 00 00 00 00 00 00 00 00 00 00
PIC 0          BUILTIN    BUILTIN    4x 10GE(LAN) SFP+
Jedec Code:  0x0000    EEPROM Version: 0x00
P/N:         BUILTIN    S/N:         BUILTIN
Assembly ID: 0x02fe    Assembly Version: 00.00
Date:        00-00-0000 Assembly Flags: 0x00
ID: 4x 10GE(LAN) SFP+
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 00 00 00 00 02 fe 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 25 73 3a 20
Address 0x20: 42 55 49 4c 54 49 4e 00 25 73 3a 20 00 00 00 00
Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 c0 02 6b 94 00 00 00 00 02 fe 00 00
Xcvr 0      REV 01    740-021308    AQ43HZ1    SFP+-10G-SR
Xcvr 1      REV 01    740-021308    AQ43HZC    SFP+-10G-SR
Xcvr 2      REV 01    740-021308    AQ43HD2    SFP+-10G-SR
Xcvr 3      REV 01    740-021308    AQ502HN    SFP+-10G-SR
PIC 1          BUILTIN    BUILTIN    4x 10GE(LAN) SFP+
Jedec Code:  0x0000    EEPROM Version: 0x00
P/N:         BUILTIN    S/N:         BUILTIN
Assembly ID: 0x02fe    Assembly Version: 00.00
Date:        00-00-0000 Assembly Flags: 0x00
ID: 4x 10GE(LAN) SFP+
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 00 00 00 00 02 fe 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 25 73 3a 20
Address 0x20: 42 55 49 4c 54 49 4e 00 25 73 3a 20 00 00 00 00
Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 c0 02 ac 0c 00 00 00 00 02 fe 00 00
Xcvr 0      REV 01    740-021308    AQ43HGF    SFP+-10G-SR
Xcvr 1      REV 01    740-021308    AQ501RZ    SFP+-10G-SR

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Xcvr 2      REV 01  740-021308  AQ5029V      SFP+-10G-SR
Xcvr 3      REV 01  740-021308  AQ501X9      SFP+-10G-SR
PIC 2       BUILTIN  BUILTIN      4x 10GE(LAN) SFP+
Jedec Code: 0x0000      EEPROM Version: 0x00
P/N:        BUILTIN      S/N:         BUILTIN
Assembly ID: 0x02fe      Assembly Version: 00.00
Date:       00-00-0000    Assembly Flags: 0x00
.....

```

### show chassis hardware models (MX960 Router with MPC5EQ)

```

user@host> show chassis hardware models
Hardware inventory:
Item          Version  Part number  Serial number  FRU model number
Midplane      REV 01  710-030012  ACAX3674      CHAS-BP-MX960-S
FPM Board     REV 03  710-014974  CAAZ9326      CRAFT-MX960-S
PEM 0         Rev 10  740-027760  QCS1702N062   PWR-MX960-4100-AC-S
PEM 1         Rev 04  740-027760  QCS1422N02C   PWR-MX960-4100-AC-S
PEM 2         Rev 09  740-027760  QCS1614N01X   PWR-MX960-4100-AC-S
Routing Engine 0 REV 08  740-031116  9009131803    RE-S-1800X4-16G-S
Routing Engine 1 REV 08  740-031116  9009124913    RE-S-1800X4-16G-S
CB 0          REV 18  750-031391  CABF0579      SCBE-MX-S
CB 1          REV 16  750-031391  CAAZ2471      SCBE-MX-S
CB 2          REV 16  750-031391  CAAW9595      SCBE-MX-S
FPC 0         REV 18  750-046005  CACE6574      PROTO-ASSEMBLY
FPC 1         REV 11  750-045372  CABK8154      MX-MPC3E-3D
MIC 0         REV 07  750-033307  CABD5255      MIC3-3D-10XGE-SFPP
MIC 1         REV 14  750-033196  CAAP1398      MIC3-3D-1X100GE-CXP
FPC 3         REV 35  750-028467  CAAT9156      MPC-3D-16XGE-SFPP
FPC 4         REV 18  750-046005  CACE6568      PROTO-ASSEMBLY
FPC 5         REV 18  750-046005  CACE6577      PROTO-ASSEMBLY
FPC 7         REV 09  750-037355  CAAF0937      MPC4E-2CGE-8XGE
FPC 8         REV 39  750-045715  CACD1903      PROTO-ASSEMBLY
FPC 9         REV 05  750-044444  CAAY9801      MX-MPC2E-3D-P
MIC 0         REV 28  750-028387  CAAX1071      MIC-3D-4XGE-XFP
FPC 10        REV 21.0.11 750-045715  CAAY3541      PROTO-ASSEMBLY
FPC 11        REV 17  750-037355  CAAT3986      MPC4E-3D-2CGE-8XGE
Fan Tray 0    REV 08  740-031521  ACAF4219      FFANTRAY-MX960-HC-S
Fan Tray 1    REV 08  740-031521  ACAF4225      FFANTRAY-MX960-HC-S

```

### show chassis hardware clei-models (MX960 Router with MPC5EQ)

```

user@host> show chassis hardware clei-models
Hardware inventory:
Item          Version  Part number  CLEI code      FRU model number
Midplane      REV 01  710-030012  COM8T00CRB     CHAS-BP-MX960-S
FPM Board     REV 03  710-014974  CAAZ9326      CRAFT-MX960-S
PEM 0         Rev 10  740-027760  QCS1702N062   PWR-MX960-4100-AC-S
PEM 1         Rev 04  740-027760  QCS1422N02C   PWR-MX960-4100-AC-S
PEM 2         Rev 09  740-027760  QCS1614N01X   PWR-MX960-4100-AC-S
Routing Engine 0 REV 08  740-031116  COUCASKBAA     RE-S-1800X4-16G-S
Routing Engine 1 REV 08  740-031116  COUCASKBAA     RE-S-1800X4-16G-S
CB 0          REV 18  750-031391  COUCASRBAA     SCBE-MX-S
CB 1          REV 16  750-031391  COUCARCBAB     SCBE-MX-S
CB 2          REV 16  750-031391  COUCARCBAB     SCBE-MX-S
FPC 0         REV 18  750-046005  PROTOXCLEI     PROTO-ASSEMBLY
FPC 1         REV 11  750-045372  COUIBBNBAA     MX-MPC3E-3D
MIC 0         REV 07  750-033307  COUIBBJBAA     MIC3-3D-10XGE-SFPP
MIC 1         REV 14  750-033196  COUIBBKBAA     MIC3-3D-1X100GE-CXP
FPC 3         REV 35  750-028467  PROTOXCLEI     MPC-3D-16XGE-SFPP
FPC 4         REV 18  750-046005  PROTOXCLEI     PROTO-ASSEMBLY

```

FPC 5	REV 18	750-046005	PROTOXCLEI	PROTO-ASSEMBLY
FPC 7	REV 09	750-037355	PROTOXCLEI	MPC4E-2CGE-8XGE
FPC 8	REV 39	750-045715	PROTOXCLEI	PROTO-ASSEMBLY
FPC 9	REV 05	750-044444	COUIBBGBAA	MX-MPC2E-3D-P
MIC 0	REV 28	750-028387	COUIA16BAA	MIC-3D-4XGE-XFP
FPC 10	REV 21.0.11	750-045715	PROTOXCLEI	PROTO-ASSEMBLY
FPC 11	REV 17	750-037355	IPU3A4DHAA	MPC4E-3D-2CGE-8XGE
Fan Tray 0	REV 08	740-031521		FFANTRAY-MX960-HC-S
Fan Tray 1	REV 08	740-031521		FFANTRAY-MX960-HC-S

### show chassis hardware (MX960 Router with MPC3E and 100-Gigabit DWDM OTN MIC)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN123F6D9AFA	MX960
Midplane	REV 04	750-047849	ACRC8764	Enhanced MX960 Backplane
FPM Board	REV 03	710-014974	CACS4395	Front Panel Display
PDM	Rev 03	740-013110	QCS1809500Z	Power Distribution Module
PEM 0	Rev 08	740-029344	QCS1817V0LK	DC 4.1kW Power Entry
Module				
PEM 1	Rev 08	740-029344	QCS1814V01F	DC 4.1kW Power Entry
Module				
PEM 2	Rev 08	740-029344	QCS1810V1EW	DC 4.1kW Power Entry
Module				
PEM 3	Rev 08	740-029344	QCS1810V1K5	DC 4.1kW Power Entry
Module				
Routing Engine 0	REV 11	740-031116	9013103483	RE-S-1800x4
Routing Engine 1	REV 10	740-031116	9009198513	RE-S-1800x4
CB 0	REV 23	750-031391	CADW3218	Enhanced MX SCB
CB 1	REV 14	750-031391	ABBK5220	Enhanced MX SCB
FPC 1	REV 14	750-045372	CADK0464	MPCE Type 3 3D
CPU	REV 10	711-035209	CADM9839	HMPC PMB 2G
MIC 0	REV 19	750-033199	CAAE5870	1X100GE CFP
PIC 0		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-032210	UTHOH0W	CFP-100G-LR4
FPC 2	REV 14	750-045372	CADN3262	MPCE Type 3 3D
CPU	REV 10	711-035209	CADN8129	HMPC PMB 2G
FPC 3	REV 14	750-045372	CADH0146	MPCE Type 3 3D
CPU	REV 10	711-035209	CADT2458	HMPC PMB 2G
MIC 0	REV 03	750-057666	CADP1386	1X100GE DWDM CFP2-ACO
PIC 0		BUILTIN	BUILTIN	1X100GE DWDM CFP2-ACO
Xcvr 0	REV 01	740-062357	SMD5136.1	OTN-100G-LH
FPC 4	REV 18	750-045372	CAEV5668	MPCE Type 3 3D
CPU	REV 10	711-035209	CAET7827	HMPC PMB 2G
FPC 7	REV 14	750-045372	CADJ1947	MPCE Type 3 3D
CPU	REV 10	711-035209	CADJ1561	HMPC PMB 2G
MIC 0	REV 05	750-057666	CAEB5763	1X100GE DWDM CFP2-ACO
PIC 0		BUILTIN	BUILTIN	1X100GE DWDM CFP2-ACO
Xcvr 0	REV 01	740-062357	1DJBZ052002	OTN-100G-LH
FPC 8	REV 14	750-045372	CADK0485	MPCE Type 3 3D
CPU	REV 10	711-035209	CADM9828	HMPC PMB 2G
MIC 0	REV 03	750-057666	CADP1390	1X100GE DWDM CFP2-ACO
PIC 0		BUILTIN	BUILTIN	1X100GE DWDM CFP2-ACO
FPC 9	REV 14	750-045372	CADJ1936	MPCE Type 3 3D
CPU	REV 10	711-035209	CADJ1566	HMPC PMB 2G
MIC 0	REV 14	750-057666	CAFF7544	1X100GE DWDM CFP2-ACO
PIC 0		BUILTIN	BUILTIN	1X100GE DWDM CFP2-ACO
Xcvr 0	REV 01	740-062357	1DJBZ05100K	OTN-100G-LH
FPC 10	REV 14	750-054901	CADJ3846	MPC3E NG HQoS
CPU	REV 11	711-045719	CADN5471	RMPC PMB

MIC 0	REV 05	750-057666	CAEB5760	1X100GE DWDM CFP2-ACO
PIC 0		BUILTIN	BUILTIN	1X100GE DWDM CFP2-ACO
Xcvr 0	REV 01	740-062357	SMD5091.1	CFP-Loopback
Fan Tray 0	REV 08	740-031521	ACDB4083	Enhanced Fan Tray
Fan Tray 1	REV 08	740-031521	ACDB3995	Enhanced Fan Tray

### show chassis hardware clei-models(MX960 Router with MPC3E and 100-Gigabit DWDM OTN MIC)

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

Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 04	750-047849	CMMJA10BRA	CHAS-BP3-MX960-S
FPM Board	REV 03	710-014974		CRAFT-MX960-S
PEM 0	Rev 08	740-029344		PWR-MX960-4100-DC-S
PEM 1	Rev 08	740-029344		PWR-MX960-4100-DC-S
PEM 2	Rev 08	740-029344		PWR-MX960-4100-DC-S
PEM 3	Rev 08	740-029344		PWR-MX960-4100-DC-S
Routing Engine 0	REV 11	740-031116	COUCASYBAB	RE-S-1800X4-16G-S
Routing Engine 1	REV 10	740-031116	COUCASYBAA	RE-S-1800X4-16G-S
CB 0	REV 23	750-031391	COUCATXBAA	SCBE-MX-S
CB 1	REV 14	750-031391	COUCARCBAA	SCBE-MX-S
FPC 1	REV 14	750-045372	COUIBBNBAB	MX-MPC3E-3D
MIC 0	REV 19	750-033199	COUIBA8BAA	MIC3-3D-1X100GE-CFP
FPC 2	REV 14	750-045372	COUIBBNBAB	MX-MPC3E-3D
FPC 3	REV 14	750-045372	COUIBBNBAB	MX-MPC3E-3D
MIC 0	REV 03	750-057666	PROTOXCLEI	PROTO-ASSEMBLY
FPC 4	REV 18	750-045372	COUIBBNBAB	MX-MPC3E-3D
FPC 7	REV 14	750-045372	COUIBBNBAB	MX-MPC3E-3D
MIC 0	REV 05	750-057666	PROTOXCLEI	PROTO-ASSEMBLY
FPC 8	REV 14	750-045372	COUIBBNBAB	MX-MPC3E-3D
MIC 0	REV 03	750-057666	PROTOXCLEI	PROTO-ASSEMBLY
FPC 9	REV 14	750-045372	COUIBBNBAB	MX-MPC3E-3D
MIC 0	REV 14	750-057666	PROTOXCLEI	PROTO-ASSEMBLY
FPC 10	REV 14	750-054901	PROTOXCLEI	PROTO-ASSEMBLY
MIC 0	REV 05	750-057666	PROTOXCLEI	PROTO-ASSEMBLY
Fan Tray 0	REV 08	740-031521		FFANTRAY-MX960-HC-S
Fan Tray 1	REV 08	740-031521		FFANTRAY-MX960-HC-S

### show chassis hardware (PTX3000 Router with 5-port 100-Gigabit DWDM OTN PIC)

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN123AC42AJC	PTX3000
Midplane	REV 22	750-044645	ACLP6640	Backplane
FPM	REV 07	760-044663	ACMX2146	Front Panel Display
PSM 1	REV 02	740-044980	1EDD3080169	DC 12V Power Supply
PSM 2	REV 06	740-044981	1EDK5040563	AC 12V Power Supply
PSM 3	REV 06	740-044981	1EDK5040313	AC 12V Power Supply
PSM 4	REV 04	740-044980	1EDJ3330088	DC 12V Power Supply
Routing Engine 0	REV 12	740-026942	P737A-006029	RE-DUO-2600
CB 0	REV 18	750-044656	ACMZ3179	Control Board
FPC 2	REV 06	750-057064	ACAM6098	FPC3-SFF-PTX-1X
CPU		BUILTIN	BUILTIN	SMPC PMB
PIC 0	REV 17	750-059747	ACNW3510	5X100GE DWDM CFP2-ACO
Xcvr 0	REV 01	740-062357	1DJBZ040003	OTN-100G-LH
Xcvr 2	REV 01	740-062357	1DJBZ044004	OTN-100G-LH
Xcvr 3	REV 01	740-062357	1DJBZ03500P	OTN-100G-LH
Xcvr 4	REV 01	740-062357	1DJBZ03700C	OTN-100G-LH
FPC 4	REV 12	750-057064	ACAM7153	FPC3-SFF-PTX-1X
CPU		BUILTIN	BUILTIN	SMPC PMB



PIC 0	REV 17	750-059747	ACNW3511	5X100GE DWDM CFP2-ACO
Xcvr 0	REV 01	740-061663	47	OTN-100G-LH
Xcvr 1	REV 01	740-061663	39	OTN-100G-LH
Xcvr 2	REV 01	740-062357	1DJBZ044002	OTN-100G-LH
Xcvr 3	REV 01	740-062357	1DJBZ03700G	OTN-100G-LH
Xcvr 4	REV 01	740-062357	1DJBZ041001	OTN-100G-LH
FPC 8	REV 11	750-057064	ACAM6808	FPC3-SFF-PTX-1X
CPU		BUILTIN	BUILTIN	SMPC PMB
PIC 0	REV 17	750-059747	ACNW3508	5X100GE DWDM CFP2-ACO
Xcvr 0	REV 01	740-061663	194	OTN-100G-LH
Xcvr 1	REV 01	740-061663	168	OTN-100G-LH
Xcvr 2	REV 01	740-061663	52	OTN-100G-LH
Xcvr 3	REV 01	740-061663	85	OTN-100G-LH
Xcvr 4	REV 01	740-061663	218	OTN-100G-LH
SIB 0	REV 03	750-057067	ACAM8513	SIB3-SFF-PTX
SIB 1	REV 01	750-057067	ACAM5918	SIB3-SFF-PTX
SIB 2	REV 01	711-057066	ACAM4325	SIB3-SFF-PTX
SIB 3	REV 01	711-057066	ACAM4328	SIB3-SFF-PTX
SIB 4	REV 01	711-057066	ACAM4349	SIB3-SFF-PTX
SIB 5	REV 01	711-057066	ACAM4323	SIB3-SFF-PTX
SIB 6	REV 01	711-057066	ACAM4344	SIB3-SFF-PTX
SIB 7	REV 01	750-057067	ACAM4346	SIB3-SFF-PTX
SIB 8	REV 01	750-057067	ACAM5911	SIB3-SFF-PTX
Fan Tray 0	REV 13	760-044659	ACMP6395	Fan Tray (Exhaust)
Fan Tray 1	REV 13	760-044659	ACMZ6957	Fan Tray (Exhaust)

#### show chassis hardware clei-models (PTX3000 Router with 5-port 100-Gigabit DWDM OTN PIC)

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

Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 22	750-044645	IPMVN10FRA	CHAS-MP-PTX3000-S
FPM	REV 07	760-044663	IPUCBE5CAA	FPD-SFF-PTX-S
PSM 1	REV 02	740-044980	PROTOPWRDC	PSM-SFF-PTX-DC-2200-S
PSM 2	REV 06	740-044981	IPUPAKOKAB	PSM-SFF-PTX-AC-S
PSM 3	REV 06	740-044981	IPUPAKOKAB	PSM-SFF-PTX-AC-S
PSM 4	REV 04	740-044980	IPUPAK1KAA	PSM-SFF-PTX-DC-S
Routing Engine 0	REV 12	740-026942		RE-DUO-C2600-16G-S
CB 0	REV 18	750-044656	IPUCBE6CAB	CB-SFF-PTX-S
FPC 2	REV 06	750-057064	PROTOXCLEI	PROTO-ASSEMBLY
PIC 0	REV 17	750-059747	IPU3BC5HAA	PTX-5-100G-WDM
FPC 4	REV 12	750-057064		
PIC 0	REV 17	750-059747	IPU3BC5HAA	PTX-5-100G-WDM
FPC 8	REV 11	750-057064		
PIC 0	REV 17	750-059747	IPU3BC5HAA	PTX-5-100G-WDM
SIB 0	REV 03	750-057067	PROTOXCLEI	PROTO-ASSEMBLY
SIB 1	REV 01	750-057067	PROTOXCLEI	PROTO-ASSEMBLY
SIB 2	REV 01	711-057066	PROTOXCLEI	PROTO-ASSEMBLY
SIB 3	REV 01	711-057066	PROTOXCLEI	PROTO-ASSEMBLY
SIB 4	REV 01	711-057066	PROTOXCLEI	PROTO-ASSEMBLY
SIB 5	REV 01	711-057066	PROTOXCLEI	PROTO-ASSEMBLY
SIB 6	REV 01	711-057066	PROTOXCLEI	PROTO-ASSEMBLY
SIB 7	REV 01	750-057067	PROTOXCLEI	PROTO-ASSEMBLY
SIB 8	REV 01	750-057067	PROTOXCLEI	PROTO-ASSEMBLY
Fan Tray 0	REV 13	760-044659	IPUCBE8CAA	FAN-SFF-PTX-S
Fan Tray 1	REV 13	760-044659	IPUCBE8CAA	FAN-SFF-PTX-S

#### show chassis hardware (MX2010 Router)

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

## Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11E3217AFK	MX2010
Midplane	REV 01	750-044636	ABAB8506	Lower Backplane
Midplane 1	REV 01	711-044557	ZY8296	Upper Backplane
PMP	REV 03	711-032426	ACAJ1388	Power Midplane
FPM Board	REV 06	711-032349	ZX8744	Front Panel Display
PSM 4	REV 0C	740-033727	VK00254	DC 52V Power Supply
Module				
PSM 5	REV 0B	740-033727	VG00015	DC 52V Power Supply
Module				
PSM 6	REV 0B	740-033727	VH00097	DC 52V Power Supply
Module				
PSM 7	REV 0C	740-033727	VJ00151	DC 52V Power Supply
Module				
PSM 8	REV 0C	740-033727	VJ00149	DC 52V Power Supply
Module				
PDM 0	REV 0B	740-038109	WA00008	DC Power Dist Module
PDM 1	REV 0B	740-038109	WA00014	DC Power Dist Module
Routing Engine 0	REV 02	740-041821	9009094134	RE-S-1800x4
Routing Engine 1	REV 02	740-041821	9009094141	RE-S-1800x4
CB 0	REV 08	750-040257	CAAB3491	Control Board
CB 1	REV 08	750-040257	CAAB3489	Control Board
SPMB 0	REV 02	711-041855	CAAA6135	PMB Board
SPMB 1	REV 02	711-041855	CAAA6137	PMB Board
SFB 0	REV 06	711-032385	ZV1828	Switch Fabric Board
SFB 1	REV 07	711-032385	ZZ2568	Switch Fabric Board
SFB 2	REV 07	711-032385	ZZ2563	Switch Fabric Board
SFB 3	REV 07	711-032385	ZZ2564	Switch Fabric Board
SFB 4	REV 07	711-032385	ZZ2580	Switch Fabric Board
SFB 5	REV 07	711-032385	ZZ2579	Switch Fabric Board
SFB 6	REV 07	711-032385	CAAB4882	Switch Fabric Board
SFB 7	REV 07	711-032385	CAAB4898	Switch Fabric Board
FPC 0	REV 33	750-028467	CAAB1919	MPC 3D 16x 10GE
CPU	REV 11	711-029089	CAAB7174	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMH02RE	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMH038C	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AMH0390	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AMG0SUA	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMH0579	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMG0SGP	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AMH04SV	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AMH04X3	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMH0135	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMH02NC	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AMH02XB	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AMH02PN	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMH057Y	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMG0JHE	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AMH02HT	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AMH04V4	SFP+-10G-SR
FPC 1	REV 21	750-033205	ZG5027	MPC Type 3
CPU	REV 04	711-035209	YT4780	HMPM PMB 2G
MIC 0	REV 03	750-033307	ZV6299	10X10GE SFPP
PIC 0		BUILTIN	BUILTIN	10X10GE SFPP
Xcvr 0	REV 01	740-031980	083363A00410	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	083363A00334	SFP+-10G-SR

Xcvr 2	REV 01	740-031980	113363A00125	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	083363A00953	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AHR013D	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJ40JUR	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJ40JKL	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJ30ECK	SFP+-10G-SR
Xcvr 8	REV 01	740-021308	19T511100864	SFP+-10G-SR
Xcvr 9	REV 01	740-021308	19T511100868	SFP+-10G-SR
MIC 1	REV 03	750-033307	ZV6268	10X10GE SFPP
PIC 2		BUILTIN	BUILTIN	10X10GE SFPP
Xcvr 0	REV 01	740-031980	AJC0JML	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJ403PC	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJ10N25	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJ40JF4	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AJ40JSJ	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJ403V7	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJ40JN3	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJ40JSU	SFP+-10G-SR
Xcvr 8	REV 01	740-021308	19T511100468	SFP+-10G-SR
Xcvr 9	REV 01	740-021308	19T511101363	SFP+-10G-SR
FPC 8	REV 22	750-031089	ZT9746	MPC Type 2 3D
CPU	REV 06	711-030884	ZS1271	MPC PMB 2G
MIC 0	REV 26	750-028392	ABBS1150	3D 20x 1GE(LAN) SFP
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-031851	PLG023C	SFP-SX
Xcvr 1	REV 01	740-031851	PLG09C6	SFP-SX
Xcvr 2	REV 02	740-011613	AM0950SF9L7	SFP-SX
Xcvr 3	REV 02	740-011613	AM1001SFN1H	SFP-SX
Xcvr 4	REV 02	740-011613	AM1001SFM9D	SFP-SX
Xcvr 5	REV 02	740-011613	AM1001SFLTJ	SFP-SX
Xcvr 6	REV 01	740-031851	AC1108S03L9	SFP-SX
Xcvr 7	REV 01	740-031851	AC1102S00NC	SFP-SX
Xcvr 8	REV 01	740-031851	AC1102S00MX	SFP-SX
Xcvr 9	REV 01	740-031851	AC1102S0085	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-031851	AC1102S00KU	SFP-SX
Xcvr 1	REV 01	740-031851	AC1102S00NG	SFP-SX
Xcvr 2	REV 01	740-031851	AC1102S00K3	SFP-SX
Xcvr 3	REV 01	740-031851	AC1102S008R	SFP-SX
Xcvr 4	REV 01	740-031851	AM1107SUFVJ	SFP-SX
Xcvr 5	REV 01	740-031851	AC1108S03LG	SFP-SX
MIC 1	REV 26	750-028387	ABBR9582	3D 4x 10GE XFP
PIC 2		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0		NON-JNPR	T10A91703	XFP-10G-SR
Xcvr 1		NON-JNPR	T09L42604	XFP-10G-SR
PIC 3		BUILTIN	BUILTIN	2x 10GE XFP
FPC 9	REV 11	750-036284	ZL3591	MPC 3D 16x 10GE EM
CPU	REV 10	711-029089	ZL0513	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	1YT517101825	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	1YT517101821	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	1YT517101682	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	ALQ13R6	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	1YT517101828	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	1YT517101716	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	1YT517101732	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	ALPOTR1	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	1YT517101741	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	1YT517101829	SFP+-10G-SR

Xcvr 2	REV 01	740-031980	1YT517101669	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	ALQ14E3	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	1YT517101826	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	1YT517101817	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	1YT517101735	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	ALQ159A	SFP+-10G-SR
ADC 0	REV 05	750-043596	CAAC2073	Adapter Card
ADC 1	REV 01	750-043596	ZV4117	Adapter Card
ADC 8	REV 01	750-043596	ZV4107	Adapter Card
ADC 9	REV 02	750-043596	ZW1555	Adapter Card
Fan Tray 0	REV 2A	760-046960	ACAY0015	172mm FanTray - 6 Fans
Fan Tray 1	REV 2A	760-046960	ACAY0019	172mm FanTray - 6 Fans
Fan Tray 2	REV 2A	760-046960	ACAY0020	172mm FanTray - 6 Fans
Fan Tray 3	REV 2A	760-046960	ACAY0021	172mm FanTray - 6 Fans

### show chassis hardware detail (MX2010 Router)

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user@host > show chassis hardware detail
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN11E233DAFK  MX2010
Midplane      REV 26   750-044636   ABAB9357      Lower Backplane
Midplane 1    REV 01   711-044557   ABAB8643      Upper Backplane
PMP            REV 04   711-032426   ACAJ1677      Power Midplane
FPM Board      REV 08   760-044634   ABBV9726      Front Panel Display
PSM 0          REV 01   740-045050   1E02224000P   DC 52V Power Supply
Module
PSM 1          REV 01   740-045050   1E02224000M   DC 52V Power Supply
Module
PSM 2          REV 01   740-045050   1E022240010   DC 52V Power Supply
Module
PSM 3          REV 01   740-045050   1E02224000G   DC 52V Power Supply
Module
PSM 4          REV 01   740-045050   1E022240013   DC 52V Power Supply
Module
PSM 5          REV 01   740-045050   1E022240007   DC 52V Power Supply
Module
PSM 6          REV 01   740-045050   1E02224001C   DC 52V Power Supply
Module
PSM 7          REV 01   740-045050   1E02224001D   DC 52V Power Supply
Module
PSM 8          REV 01   740-045050   1E02224001B   DC 52V Power Supply
Module
PDM 0          REV 01   740-045234   1E262250067   DC Power Dist Module
Routing Engine 0 REV 02   740-041821   9009099704    RE-S-1800x4
  ad0    3831 MB  UGB30SFA4000T1 SFA4000T1 00000651 Compact Flash
  ad1    30533 MB UGB94BPH32H0S1-KCI 11000019592 Disk 1
  usb0 (addr 1) EHCI root hub 0 Intel uhub0
  usb0 (addr 2) product 0x0020 32 vendor 0x8087 uhub1
  DIMM 0    SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 1    SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 2    SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 3    SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
Routing Engine 1 REV 02   740-041821   9009099706    RE-S-1800x4
  ad0    3998 MB  Virtium - TuffDrive VCF P1T0200262860208 114 Compact Flash
  ad1    30533 MB  UGB94ARF32H0S3-KC UNIGEN-499551-000404 Disk 1
  CB 0      REV 13   750-040257   CAAF8436      Control Board
  CB 1      REV 13   750-040257   CAAF8434      Control Board
  SPMB 0    REV 02   711-041855   ABBV3825      PMB Board
  SPMB 1    REV 02   711-041855   ABBV3833      PMB Board

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SFB 0	REV 05	711-044466	ABBX5682	Switch Fabric Board
SFB 1	REV 05	711-044466	ABBX5676	Switch Fabric Board
SFB 2	REV 05	711-044466	ABBX5665	Switch Fabric Board
SFB 3	REV 05	711-044466	ABBX5699	Switch Fabric Board
SFB 4	REV 05	711-044466	ABBX5603	Switch Fabric Board
SFB 5	REV 05	711-044466	ABBX5587	Switch Fabric Board
SFB 6	REV 05	711-044466	ABBX5607	Switch Fabric Board
SFB 7	REV 05	711-044466	ABBX5669	Switch Fabric Board
FPC 0	REV 09	750-037355	CAAF0924	MPC Type 4-2
CPU	REV 08	711-035209	CAAB9842	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-021308	19T511101656	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AMA04RU	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	193363A00558	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B10M00202	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0		NON-JNPR	X12J00328	CFP-100G-SR10
PIC 2		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-031980	AMA088W	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B10L04211	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	19T511101602	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B10L04151	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0		NON-JNPR	X12J00332	CFP-100G-SR10
FPC 1	REV 18	750-033205	ZE0128	MPC Type 3
CPU	REV 06	711-035209	ZG5431	HMPC PMB 2G
MIC 0	REV 15	750-033199	ZP6435	1X100GE CFP
PIC 0		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-032210	J11E46118	CFP-100G-LR4
MIC 1	REV 15	750-033199	ZP6442	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-032210	UMN03T4	CFP-100G-LR4
FPC 2	REV 16	750-037358	CAAL1001	MPC Type 4-1
CPU	REV 08	711-035209	CAAK7927	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	193363A00589	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00028	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	193363A00376	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00016	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	193363A00499	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	973152A00039	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11E01239	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	973152A00058	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	B10M00075	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00014	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AMA0638	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00063	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AMA0629	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	973152A00053	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	193363A00344	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	973152A00046	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	AMA062M	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00080	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	193363A00580	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00064	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	093363A01494	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	973152A00020	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	123363A00047	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	973152A00072	SFP+-10G-SR

PIC 3		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-021308	03DZ06A01033	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00022	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	03DZ06A01026	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00013	SFP+-10G-SR
Xcvr 4	REV 01	740-021308	03DZ06A01028	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	973152A00079	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	03DZ06A01018	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	973152A00025	SFP+-10G-SR
FPC 3	REV 33	750-028467	CAAF5400	MPC 3D 16x 10GE
CPU	REV 11	711-029089	CAAH7626	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00066	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00021	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	973152A00062	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00027	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00065	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00069	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	973152A00026	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00003	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00035	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00004	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	973152A00049	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00055	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00010	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00001	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	973152A00073	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00012	SFP+-10G-SR
FPC 4	REV 21	750-033205	ZG5028	MPC Type 3
CPU	REV 05	711-035209	YX3911	HMPD PMB 2G
MIC 0	REV 03	750-036233	ZL2036	2X40GE QSFP
PIC 0		BUILTIN	BUILTIN	2X40GE QSFP
Xcvr 0	REV 01	740-032986	QB220708	QSFP+-40G-SR4
Xcvr 1	REV 01	740-032986	QB220735	QSFP+-40G-SR4
MIC 1	REV 03	750-036233	ZL2028	2X40GE QSFP
PIC 2		BUILTIN	BUILTIN	2X40GE QSFP
Xcvr 0	REV 01	740-032986	QB220727	QSFP+-40G-SR4
Xcvr 1	REV 01	740-032986	QB220715	QSFP+-40G-SR4
FPC 5	REV 11	750-037358	CAAE2196	MPC Type 4-1
CPU	REV 08	711-035209	CAAD9074	HMPD PMB 2G
PIC 0		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	AMA062S	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AMA062P	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AMA052R	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AMA0632	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	193363A00564	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	193363A00229	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	193363A00363	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	193363A00278	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	AMA04CC	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AD0927A001W	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AMA04N2	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AMA062U	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	193363A00491	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	183363A01511	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	193363A00565	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	193363A00405	SFP+-10G-SR

PIC 2			BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	AMA07QX	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	AMA06MS	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	193363A00318	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	193363A00402	SFP+-10G-SR	
Xcvr 4	REV 01	740-031980	193363A00174	SFP+-10G-SR	
Xcvr 5	REV 01	740-031980	193363A00388	SFP+-10G-SR	
Xcvr 6	REV 01	740-031980	193363A00377	SFP+-10G-SR	
Xcvr 7	REV 01	740-031980	193363A00234	SFP+-10G-SR	
PIC 3			BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	AMA062T	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	193363A00550	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	193363A00364	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	AMA0630	SFP+-10G-SR	
Xcvr 4	REV 01	740-031980	193363A00509	SFP+-10G-SR	
Xcvr 5	REV 01	740-031980	193363A00459	SFP+-10G-SR	
Xcvr 6	REV 01	740-031980	113363A00191	SFP+-10G-SR	
Xcvr 7	REV 01	740-031980	193363A00352	SFP+-10G-SR	
FPC 6	REV 33	750-028467	CAAF5552	MPC 3D 16x 10GE	
CPU	REV 11	711-029089	CAAH7601	AMPC PMB	
PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AD0927A0036	SFP+-10G-SR	
Xcvr 1	REV 01	740-021308	AD0927A003M	SFP+-10G-SR	
Xcvr 2	REV 01	740-021308	AD0927A003G	SFP+-10G-SR	
Xcvr 3	REV 01	740-021308	AD0927A0031	SFP+-10G-SR	
PIC 1			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	193363A00331	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	193363A00325	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	193363A00417	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	183363A02509	SFP+-10G-SR	
PIC 2			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	T09K75140	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	B11A04356	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	B11K01952	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	B11K01914	SFP+-10G-SR	
PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	T09K75157	SFP+-10G-SR	
Xcvr 1	REV 01	740-021308	T09K75194	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	B11K01926	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	B11K01936	SFP+-10G-SR	
FPC 7	REV 16	750-037358	CAAL1012	MPC Type 4-1	
CPU	REV 08	711-035209	CAAJ3851	HMPC PMB 2G	
PIC 0			BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	AMA04NK	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	B11F00260	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	B11E02192	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	AMA04CP	SFP+-10G-SR	
Xcvr 4	REV 01	740-031980	AJ40JKK	SFP+-10G-SR	
Xcvr 5	REV 01	740-031980	B11F00238	SFP+-10G-SR	
Xcvr 6	REV 01	740-031980	B10M00275	SFP+-10G-SR	
Xcvr 7	REV 01	740-031980	193363A00211	SFP+-10G-SR	
PIC 1			BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	B11D05577	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	B11G00586	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	AMA08B7	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	AMA04Q0	SFP+-10G-SR	
Xcvr 4	REV 01	740-031980	B11D05840	SFP+-10G-SR	
Xcvr 5	REV 01	740-031980	B11E00467	SFP+-10G-SR	
Xcvr 6	REV 01	740-031980	B11E00029	SFP+-10G-SR	
Xcvr 7	REV 01	740-021308	19T511101712	SFP+-10G-SR	
PIC 2			BUILTIN	BUILTIN	8X10GE SFPP

Xcvr 0	REV 01	740-031980	193363A00568	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B10M00166	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B10M00212	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11D05823	SFP+-10G-SR
Xcvr 4	REV 01	740-021308	03DZ06A01005	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	03DZ06A01003	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	03DZ06A01009	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	03DZ06A01004	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-021308	03DZ06A01017	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	03DZ06A01016	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	03DZ06A01024	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	03DZ06A01008	SFP+-10G-SR
Xcvr 4	REV 01	740-030658	AD0946A02UH	SFP+-10G-USR
Xcvr 5	REV 01	740-021308	T09J67913	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	AD0837ES09G	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	03DZ06A01015	SFP+-10G-SR
FPC 8	REV 03	750-045372	CAAD3111	MPC Type 3
CPU	REV 08	711-035209	CAAD8033	HMPC PMB 2G
MIC 0	REV 03	750-036233	ZL2032	2X40GE QSFP
PIC 0		BUILTIN	BUILTIN	2X40GE QSFP
Xcvr 0	REV 01	740-032986	QB230273	QSFP+-40G-SR4
Xcvr 1	REV 01	740-032986	QB230254	QSFP+-40G-SR4
MIC 1	REV 03	750-036233	ZL2021	2X40GE QSFP
PIC 2		BUILTIN	BUILTIN	2X40GE QSFP
Xcvr 0	REV 01	740-032986	QB390962	QSFP+-40G-SR4
Xcvr 1	REV 01	740-032986	QB390960	QSFP+-40G-SR4
FPC 9	REV 09	750-037355	CAAF1531	MPC Type 4-2
CPU	REV 08	711-035209	CAAB9927	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-031980	193363A00525	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	193363A00504	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	193363A00368	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJ40JSS	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-031980	123363A00042	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B10M00023	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJ802EM	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11E02348	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP
ADC 0	REV 13	750-043596	ABBX5532	Adapter Card
ADC 1	REV 13	750-043596	ABBX5550	Adapter Card
ADC 2	REV 13	750-043596	ABBX5571	Adapter Card
ADC 3	REV 13	750-043596	ABBX5568	Adapter Card
ADC 4	REV 13	750-043596	ABBX5556	Adapter Card
ADC 5	REV 13	750-043596	ABBX5553	Adapter Card
ADC 6	REV 13	750-043596	ABBX5541	Adapter Card
ADC 7	REV 13	750-043596	ABBX5578	Adapter Card
ADC 8	REV 13	750-043596	ABBX5560	Adapter Card
ADC 9	REV 07	750-043596	ABBV7188	Adapter Card
Fan Tray 0	REV 03	760-046960	ACAY0127	172mm FanTray - 6 Fans
Fan Tray 1	REV 2A	760-046960	ACAY0068	172mm FanTray - 6 Fans
Fan Tray 2	REV 2A	760-046960	ACAY0072	172mm FanTray - 6 Fans
Fan Tray 3	REV 2A	760-046960	ACAY0070	172mm FanTray - 6 Fans

## show chassis hardware extensive (MX2010 Router)

user@host &gt; show chassis hardware extensive

Hardware inventory:

Item	Version	Part number	Serial number	Description
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Chassis                                JN11E233DAFK      MX2010
Jedec Code: 0x7fb0                    EEPROM Version: 0x02
                                           S/N:           JN11E233DAFK
Assembly ID: 0x0557                   Assembly Version: 00.00
Date: 00-00-0000                      Assembly Flags: 0x00
ID: MX2010
Board Information Record:
  Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 05 57 00 00 00 00 00 00 00 00 00 00
  Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x20: 4a 4e 31 31 45 32 33 33 44 41 46 4b 00 00 00 00
  Address 0x30: 00 00 00 ff 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane  REV 26  750-044636  ABAB9357  Lower Backplane
Jedec Code: 0x7fb0                    EEPROM Version: 0x02
P/N: 750-044636                      S/N: ABAB9357
Assembly ID: 0x0b66                   Assembly Version: 01.26
Date: 08-28-2012                      Assembly Flags: 0x00
Version: REV 26                       CLEI Code: PROTOXCLEI
ID: Lower Backplane                  FRU Model Number: PROTO-ASSEMBLY
Board Information Record:
  Address 0x00: ad 01 08 00 2c 21 72 70 a0 00 ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 0b 66 01 1a 52 45 56 20 32 36 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 34 34 36 33 36 00 00
  Address 0x20: 53 2f 4e 20 41 42 41 42 39 33 35 37 00 1c 08 07
  Address 0x30: dc ff ff ff ad 01 08 00 2c 21 72 70 a0 00 ff ff
  Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
  Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff ff
Midplane 1  REV 01  711-044557  ABAB8643  Upper Backplane
Jedec Code: 0x7fb0                    EEPROM Version: 0x01
P/N: 711-044557                      S/N: ABAB8643
Assembly ID: 0x0b65                   Assembly Version: 01.01
Date: 07-27-2012                      Assembly Flags: 0x00
Version: REV 01
ID: Upper Backplane
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 01 ff 0b 65 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 31 31 2d 30 34 34 35 35 37 00 00
  Address 0x20: 53 2f 4e 20 41 42 41 42 38 36 34 33 00 1b 07 07
  Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff ff
  Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
PMP  REV 04  711-032426  ACAJ1677  Power Midplane
Jedec Code: 0x7fb0                    EEPROM Version: 0x01
P/N: 711-032426                      S/N: ACAJ1677
Assembly ID: 0x045d                   Assembly Version: 01.04
Date: 07-20-2012                      Assembly Flags: 0x00
Version: REV 04
ID: Power Midplane
Board Information Record:

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Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 04 5d 01 04 52 45 56 20 30 34 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 33 32 34 32 36 00 00
Address 0x20: 53 2f 4e 20 41 43 41 4a 31 36 37 37 00 14 07 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff
Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff

FPM Board          REV 08    760-044634    ABBV9726          Front Panel Display
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:          760-044634          S/N:          ABBV9726
Assembly ID:  0x0b64          Assembly Version:  01.08
Date:         09-10-2012        Assembly Flags:    0x00
Version:      REV 08          CLEI Code:        IPMYA4EJRA
ID: Front Panel Display          FRU Model Number:  MX2010-CRAFT-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 64 01 08 52 45 56 20 30 38 00 00
Address 0x10: 00 00 00 00 37 36 30 2d 30 34 34 36 33 34 00 00
Address 0x20: 53 2f 4e 20 41 42 42 56 39 37 32 36 00 0a 09 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 4d 59 41 34 45 4a 52 41 4d
Address 0x50: 58 32 30 31 30 2d 43 52 41 46 54 2d 53 00 00 00
Address 0x60: 00 00 00 00 00 00 41 00 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 93 ff ff ff ff ff ff ff ff ff ff ff ff

PSM 0              REV 01    740-045050    1E02224000P      DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:          740-045050          S/N:          1E02224000P
Assembly ID:  0x0478          Assembly Version:  01.01
Date:         12-06-2012        Assembly Flags:    0x00
Version:      REV 01          CLEI Code:        XXXXXXXXXX
ID: DC 52V Power Supply Module  FRU Model Number:  MX2000-PSM-HC-DC-S-A
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 34 35 30 35 30 00 00
Address 0x20: 31 45 30 32 32 32 34 30 30 30 50 00 00 06 0c 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 58 58 58 58 58 58 58 58 58 58 4d
Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 48 43 2d 44 43 2d
Address 0x60: 53 2d 41 00 00 00 31 30 31 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 4a 00 00 00 00 00 00 00 00 00 00 00 00

PSM 1              REV 01    740-045050    1E02224000M      DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:          740-045050          S/N:          1E02224000M
Assembly ID:  0x0478          Assembly Version:  01.01
Date:         12-06-2012        Assembly Flags:    0x00
Version:      REV 01          CLEI Code:        XXXXXXXXXX
ID: DC 52V Power Supply Module  FRU Model Number:  MX2000-PSM-HC-DC-S-A
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 34 35 30 35 30 00 00
Address 0x20: 31 45 30 32 32 32 34 30 30 30 4d 00 00 06 0c 07

```

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Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 58 58 58 58 58 58 58 58 58 58 4d
Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 48 43 2d 44 43 2d
Address 0x60: 53 2d 41 00 00 00 31 30 31 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 4a 00 00 00 00 00 00 00 00 00 00 00 00
...
PDM 0          REV 01  740-045234  1E262250067          DC Power Dist Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-045234      S/N:           1E262250067
Assembly ID:   0x047b          Assembly Version: 01.01
Date:          06-28-2012      Assembly Flags: 0x00
Version:       REV 01          CLEI Code:     IPUPAJSKAA
ID: DC Power Dist Module      FRU Model Number: MX2000-PDM-DC-S-A
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 7b 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 34 35 32 33 34 00 00
Address 0x20: 31 45 32 36 32 32 35 30 30 36 37 00 00 1c 06 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 55 50 41 4a 53 4b 41 41 4d
Address 0x50: 58 32 30 30 30 2d 50 44 4d 2d 44 43 2d 53 2d 41
Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 89 00 00 00 00 00 00 00 00 00 00 00 00
Routing Engine 0 REV 02  740-041821  9009099704          RE-S-1800x4
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-041821      S/N:           9009099704
Assembly ID:   0x09c0          Assembly Version: 01.02
Date:          03-15-2012      Assembly Flags: 0x00
Version:       REV 02
ID: RE-S-1800x4          FRU Model Number: RE-S-1800X4-16G-S
Board Information Record:
Address 0x00: 54 32 30 32 37 44 41 2d 34 34 47 42 23 41 23 00
I2C Hex Data:
Address 0x00: 7f b0 02 ff 09 c0 01 02 52 45 56 20 30 32 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 34 31 38 32 31 00 00
Address 0x20: 39 30 30 39 30 39 39 37 30 34 00 00 00 0f 03 07
Address 0x30: dc ff ff ff 54 32 30 32 37 44 41 2d 34 34 47 42
Address 0x40: 23 41 23 00 01 00 00 00 00 00 00 00 00 00 00 52
Address 0x50: 45 2d 53 2d 31 38 30 30 58 34 2d 31 36 47 2d 53
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 8c ff ff ff ff ff ff ff ff ff ff ff ff
ad0  3831 MB  UGB30SFA4000T1      SFA4000T1 00000651 Compact Flash
ad1  30533 MB UGB94BPH32H0S1-KCI  11000019592      Disk 1
usb0 (addr 1) EHCI root hub 0      Intel      uhub0
usb0 (addr 2) product 0x0020 32     vendor 0x8087    uhub1
DIMM 0      SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
DIMM 1      SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
DIMM 2      SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
DIMM 3      SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
Routing Engine 1 REV 02  740-041821  9009099706          RE-S-1800x4
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-041821      S/N:           9009099706
Assembly ID:   0x09c0          Assembly Version: 01.02
Date:          02-23-2012      Assembly Flags: 0x00
Version:       REV 02
ID: RE-S-1800x4          FRU Model Number: RE-S-1800X4-16G-S
Board Information Record:
Address 0x00: 54 32 30 32 37 44 41 2d 34 34 47 42 23 41 23 00
I2C Hex Data:
Address 0x00: 7f b0 02 ff 09 c0 01 02 52 45 56 20 30 32 00 00

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Address 0x10: 00 00 00 00 37 34 30 2d 30 34 31 38 32 31 00 00
Address 0x20: 39 30 30 39 30 39 37 30 36 00 00 00 17 02 07
Address 0x30: dc ff ff ff 54 32 30 32 37 44 41 2d 34 34 47 42
Address 0x40: 23 41 23 00 01 00 00 00 00 00 00 00 00 00 52
Address 0x50: 45 2d 53 2d 31 38 30 30 58 34 2d 31 36 47 2d 53
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 8c ff ff ff ff ff ff ff ff ff ff ff ff
ad0    3998 MB  Virtium - TuffDrive VCF P1T0200262860208 114 Compact Flash
ad1    30533 MB UGB94ARF32H0S3-KC UNIGEN-499551-000404 Disk 1
CB 0          REV 13    750-040257    CAAF8436          Control Board
Jedec Code:   0x7fb0          EEPROM Version:   0x02
P/N:          750-040257      S/N:          CAAF8436
Assembly ID:  0x0b26          Assembly Version: 01.13
Date:         08-29-2012      Assembly Flags: 0x00
Version:      REV 13          CLEI Code:     PROTOXCLEI
ID: Control Board          FRU Model Number: PROTO-ASSEMBLY
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 26 01 0d 52 45 56 20 31 33 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 34 30 32 35 37 00 00
Address 0x20: 53 2f 4e 20 43 41 41 46 38 34 33 36 00 1d 08 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff ff
...
SPMB 0        REV 02    711-041855    ABBV3825          PMB Board
Jedec Code:   0x7fb0          EEPROM Version:   0x01
P/N:          711-041855      S/N:          ABBV3825
Assembly ID:  0x0b29          Assembly Version: 01.02
Date:         08-14-2012      Assembly Flags: 0x00
Version:      REV 02
ID: PMB Board
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 0b 29 01 02 52 45 56 20 30 32 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 34 31 38 35 35 00 00
Address 0x20: 53 2f 4e 20 41 42 42 56 33 38 32 35 00 0e 08 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff ff
Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff 00 00 00 00 00 00 00 00 00 00 00 00
...
SFB 0          REV 05    711-044466    ABBX5682          Switch Fabric Board
Jedec Code:   0x7fb0          EEPROM Version:   0x02
P/N:          711-044466      S/N:          ABBX5682
Assembly ID:  0x0b25          Assembly Version: 01.05
Date:         09-07-2012      Assembly Flags: 0x00
Version:      REV 05          CLEI Code:     PROTOXCLEI
ID: Switch Fabric Board      FRU Model Number: PROTO-ASSEMBLY
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 25 01 05 52 45 56 20 30 35 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 34 34 34 36 36 00 00
Address 0x20: 53 2f 4e 20 41 42 42 58 35 36 38 32 00 07 09 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff

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Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff c2 00 00 00 01 00 00 00 00 00 00 48 00
...
FPC 0          REV 09   750-037355   CAAF0924          MPC Type 4-2
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           750-037355      S/N:              CAAF0924
Assembly ID:   0x0b4e          Assembly Version:  01.09
Date:          05-21-2012      Assembly Flags:    0x00
Version:       REV 09          CLEI Code:         PROTOXCLEI
ID: MPC Type 4-2              FRU Model Number: MPC4E-2CGE-8XGE
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 0b 4e 01 09 52 45 56 20 30 39 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 33 35 35 00 00
  Address 0x20: 53 2f 4e 20 43 41 41 46 30 39 32 34 00 15 05 07
  Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 4d
  Address 0x50: 50 43 34 45 2d 32 43 47 45 2d 38 58 47 45 00 00
  Address 0x60: 00 00 00 00 00 00 30 39 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff c6 ff ff ff ff ff ff ff ff ff ff ff ff
CPU          REV 08   711-035209   CAAB9842          HMPC PMB 2G
Jedec Code:    0x7fb0          EEPROM Version:    0x01
P/N:           711-035209      S/N:              CAAB9842
Assembly ID:   0x0b04          Assembly Version:  01.08
Date:          05-17-2012      Assembly Flags:    0x00
Version:       REV 08
ID: HMPC PMB 2G
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 01 ff 0b 04 01 08 52 45 56 20 30 38 00 00
  Address 0x10: 00 00 00 00 37 31 31 2d 30 33 35 32 30 39 00 00
  Address 0x20: 53 2f 4e 20 43 41 41 42 39 38 34 32 00 11 05 07
  Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff ff
  Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x70: ff ff ff ff 00 00 00 00 00 00 00 00 00 00 00 00
PIC 0          BUILTIN   BUILTIN          4x10GE SFPP
Jedec Code:    0x0000          EEPROM Version:    0x00
P/N:           BUILTIN         S/N:              BUILTIN
Assembly ID:   0x0a53          Assembly Version:  00.00
Date:          00-00-0000      Assembly Flags:    0x00
ID: 4x10GE SFPP
Board Information Record:
  Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
  Address 0x00: 00 00 00 00 0a 53 00 00 00 00 00 00 00 00 00 00
  Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 4d 58 43 00
  Address 0x20: 42 55 49 4c 54 49 4e 00 4d 58 43 00 00 00 00 00
  Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 c0 02 ae 64 00 00 00 00 0a 52 00 00
  Xcvr 0       REV 01   740-021308   19T511101656      SFP+-10G-SR
  Xcvr 1       REV 01   740-031980   AMA04RU            SFP+-10G-SR
  Xcvr 2       REV 01   740-031980   193363A00558      SFP+-10G-SR

```

```

Xcvr 3      REV 01  740-031980  B10M00202      SFP+-10G-SR
...
ADC 0      REV 13  750-043596  ABBX5532      Adapter Card
Jedec Code: 0x7fb0      EEPROM Version: 0x02
P/N:      750-043596      S/N:      ABBX5532
Assembly ID: 0x0b3d      Assembly Version: 01.13
Date:      09-12-2012      Assembly Flags: 0x00
Version:    REV 13      CLEI Code:  IPUCBA8CAA
ID: Adapter Card      FRU Model Number: MX2000-LC-ADAPTER
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 3d 01 0d 52 45 56 20 31 33 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 34 33 35 39 36 00 00
Address 0x20: 53 2f 4e 20 41 42 42 58 35 35 33 32 00 0c 09 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 55 43 42 41 38 43 41 41 4d
Address 0x50: 58 32 30 30 30 2d 4c 43 2d 41 44 41 50 54 45 52
Address 0x60: 00 00 00 00 00 00 41 00 00 ff ff ff ff ff ff
Address 0x70: ff ff ff 3a 00 00 00 00 00 00 00 00 00 00 00
...

```

#### show chassis hardware models (MX2010 Router)

```

user@host > show chassis hardware models
Hardware inventory:
Item          Version  Part number  Serial number  FRU model number
FPM Board     REV 06  711-032349  ZX8744        711-032349
PSM 4         REV 0C  740-033727  VK00254      00000000000000000000000000000000
PSM 5         REV 0B  740-033727  VG00015      00000000000000000000000000000000
PSM 6         REV 0B  740-033727  VH00097      00000000000000000000000000000000
PSM 7         REV 0C  740-033727  VJ00151      00000000000000000000000000000000
PSM 8         REV 0C  740-033727  VJ00149      00000000000000000000000000000000
PDM 0         REV 0B  740-038109  WA00008      711-032385
PDM 1         REV 0B  740-038109  WA00014      711-032385
Routing Engine 0 REV 02  740-041821  9009094134   RE-S-1800X4-16G-S
Routing Engine 1 REV 02  740-041821  9009094141   RE-S-1800X4-16G-S
CB 0          REV 08  750-040257  CAAB3491     750-040257
CB 1          REV 08  750-040257  CAAB3489     750-040257
SFB 0         REV 06  711-032385  ZV1828       711-032385
SFB 1         REV 07  711-032385  ZZ2568       711-032385
SFB 2         REV 07  711-032385  ZZ2563       711-032385
SFB 3         REV 07  711-032385  ZZ2564       711-032385
SFB 4         REV 07  711-032385  ZZ2580       711-032385
SFB 5         REV 07  711-032385  ZZ2579       711-0323856
SFB 6         REV 07  711-032385  CAAB4882     711-044170
SFB 7         REV 07  711-032385  CAAB4898     711-044170
FPC 0         REV 33  750-028467  CAAB1919     MPC-3D-16XGE-SFPP
FPC 1         REV 21  750-033205  ZG5027       MX-MPC3-3D
  MIC 0       REV 03  750-033307  ZV6299       MIC3-3D-10XGE-SFPP
  MIC 1       REV 03  750-033307  ZV6268       MIC3-3D-10XGE-SFPP
FPC 8         REV 22  750-031089  ZT9746       MX-MPC2-3D
  MIC 0       REV 26  750-028392  ABB51150     MIC-3D-20GE-SFP
  MIC 1       REV 26  750-028387  ABBR9582     MIC-3D-4XGE-XFP
FPC 9         REV 11  750-036284  ZL3591       MPCE-3D-16XGE-SFPP
ADC 0         REV 05  750-043596  CAAC2073     750-043596
ADC 1         REV 01  750-043596  ZV4117       750-043596
ADC 8         REV 01  750-043596  ZV4107       750-043596
ADC 9         REV 02  750-043596  ZW1555       750-043596
Fan Tray 0    REV 2A  760-046960  ACAY0015
Fan Tray 1    REV 2A  760-046960  ACAY0019

```

```

Fan Tray 2      REV 2A  760-046960  ACAY0020
Fan Tray 3      REV 2A  760-046960  ACAY0021

```

### show chassis hardware clei-models (MX2010 Routers)

```

user@host > show chassis hardware clei-models
Hardware inventory:
Item                Version  Part number  CLEI code  FRU model number
FPM Board           REV 06  711-032349  PROTOXCLEI  711-032349
PSM 4               REV 0C  740-033727  0000000000  000000000000000000000000
PSM 5               REV 0B  740-033727  0000000000  000000000000000000000000
PSM 6               REV 0B  740-033727  0000000000  000000000000000000000000
PSM 7               REV 0C  740-033727  0000000000  000000000000000000000000
PSM 8               REV 0C  740-033727  0000000000  000000000000000000000000
PDM 0               REV 0B  740-038109
PDM 1               REV 0B  740-038109
Routing Engine 0    REV 02  740-041821  RE-S-1800X4-16G-S
Routing Engine 1    REV 02  740-041821  RE-S-1800X4-16G-S
CB 0                REV 08  750-040257  PROTOXCLEI  750-040257
CB 1                REV 08  750-040257  PROTOXCLEI  750-040257
SFB 0               REV 06  711-032385  PROTOXCLEI  711-032385
SFB 1               REV 07  711-032385  PROTOXCLEI  711-032385
SFB 2               REV 07  711-032385  PROTOXCLEI  711-032385
SFB 3               REV 07  711-032385  PROTOXCLEI  711-032385
SFB 4               REV 07  711-032385  PROTOXCLEI  711-032385
SFB 5               REV 07  711-032385  PROTOXCLEI  711-0323856
SFB 6               REV 07  711-032385  PROTOXCLEI  711-044170
SFB 7               REV 07  711-032385  PROTOXCLEI  711-044170
FPC 0               REV 33  750-028467  MPC-3D-16XGE-SFPP
FPC 1               REV 21  750-033205  MX-MPC3-3D
    MIC 0           REV 03  750-033307  PROTOXCLEI  MIC3-3D-10XGE-SFPP
    MIC 1           REV 03  750-033307  PROTOXCLEI  MIC3-3D-10XGE-SFPP
FPC 8               REV 22  750-031089  COUIBAYBAA  MX-MPC2-3D
    MIC 0           REV 26  750-028392  COUIA15BAA  MIC-3D-20GE-SFP
    MIC 1           REV 26  750-028387  COUIA16BAA  MIC-3D-4XGE-XFP
FPC 9               REV 11  750-036284  CMUIACGBAA  MPCE-3D-16XGE-SFPP
ADC 0               REV 05  750-043596  PROTOXCLEI  750-043596
ADC 1               REV 01  750-043596  PROTOXCLEI  750-043596
ADC 8               REV 01  750-043596  PROTOXCLEI  750-043596
ADC 9               REV 02  750-043596  PROTOXCLEI  750-043596
Fan Tray 0          REV 2A  760-046960
Fan Tray 1          REV 2A  760-046960
Fan Tray 2          REV 2A  760-046960
Fan Tray 3          REV 2A  760-046960

```

### show chassis hardware (MX2010 Routers with MPC6E and OTN MIC)

```

user@host> show chassis hardware
Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              REV 35  750-044636  JN11C9AFEAFK  MX2010
Midplane             REV 02  711-044557  ABAB9188      Lower Backplane
Midplane 1           REV 04  711-032426  ACAJ2432      Upper Backplane
PMP                  REV 09  760-044634  ABCA4314      Power Midplane
FPM Board            REV 01  740-050037  1EDB321015C   Front Panel Display
PSM 0                REV 01  740-050037  1EDB321015J   DC 52V Power Supply
Module
PSM 1                REV 01  740-050037  1EDB321015J   DC 52V Power Supply
Module
PSM 2                REV 01  740-050037  1EDB32000K8   DC 52V Power Supply
Module

```

PSM 3 Module	REV 01	740-050037	1EDB32101JW	DC 52V Power Supply
PSM 4 Module	REV 01	740-050037	1EDB321015G	DC 52V Power Supply
PSM 5 Module	REV 01	740-050037	1EDB32101HH	DC 52V Power Supply
PSM 6 Module	REV 01	740-050037	1EDB32101HD	DC 52V Power Supply
PSM 7 Module	REV 01	740-050037	1EDB321015F	DC 52V Power Supply
PSM 8 Module	REV 01	740-050037	1EDB321015B	DC 52V Power Supply
PDM 0	REV 03	740-045234	1EFA3220433	DC Power Dist Module
PDM 1	REV 03	740-045234	1EFA3220425	DC Power Dist Module
Routing Engine 0	REV 02	740-041821	9009115685	RE-S-1800x4
Routing Engine 1	REV 02	740-041821	9009099711	RE-S-1800x4
CB 0	REV 23	750-040257	CABE8395	Control Board
CB 1	REV 12	750-040257	CAAD9499	Control Board
SPMB 0	REV 02	711-041855	ABCG8426	PMB Board
SPMB 1	REV 02	711-041855	ABBS1481	PMB Board
SFB 0	REV 06	711-044466	ABCD5013	Switch Fabric Board
SFB 1	REV 06	711-044466	ABCD5160	Switch Fabric Board
SFB 2	REV 06	711-044466	ABCD5175	Switch Fabric Board
SFB 3	REV 06	711-044466	ABCD4938	Switch Fabric Board
SFB 4	REV 06	711-044466	ABCD4944	Switch Fabric Board
SFB 5	REV 06	711-044466	ABCD4968	Switch Fabric Board
SFB 6	REV 06	711-044466	ABCD5267	Switch Fabric Board
SFB 7	REV 06	711-044466	ABCD4997	Switch Fabric Board
FPC 0 CPU	REV 59	750-044130	ABCT7676	MPC6E 3D
XLM 0	REV 10	711-045719	ABCK8527	RMPD PMB
XLM 1	REV 13	711-046638	ABCT7810	MPC6E XL
FPC 2 CPU	REV 13	711-046638	ABCT7811	MPC6E XL
MIC 0	REV 27	750-033205	ZL6014	MPCE Type 3 3D
PIC 0	REV 07	711-035209	ZK9068	HMPD PMB 2G
Xcvr 0	REV 14	750-033196	CAAW9214	1X100GE CXP
MIC 1		BUILTIN	BUILTIN	1X100GE CXP
PIC 2	REV 01	740-046563	XC49FC030	CFP2-100G-SR10
FPC 3 CPU	REV 18	750-033199	CAAC3231	1X100GE CFP
XLM 0		BUILTIN	BUILTIN	1X100GE CFP
XLM 1	REV 59	750-044130	ABCT7682	MPC6E 3D
FPC 4 CPU	REV 10	711-045719	ABCK8531	RMPD PMB
XLM 0	REV 13	711-046638	ABCT7818	MPC6E XL
XLM 1	REV 13	711-046638	ABCT7819	MPC6E XL
FPC 5 CPU	REV 33	750-044130	ABBY9278	MPC6E 3D
XLM 0	REV 09	711-045719	ABBY8677	RMPD PMB
XLM 1	REV 06.2.00	711-046638	ABBY8844	MPC6E XL
FPC 6 CPU	REV 06.2.00	711-046638	ABBY8830	MPC6E XL
PIC 0	REV 59	750-044130	ABCT7675	MPC6E 3D
Xcvr 0	REV 10	711-045719	ABCK8526	RMPD PMB
PIC 1	REV 13	711-046638	ABCT7808	MPC6E XL
Xcvr 0	REV 13	711-046638	ABCT7809	MPC6E XL
Xcvr 1	REV 30	750-028467	ZM4986	MPC 3D 16x 10GE
Xcvr 2	REV 10	711-029089	ZP6541	AMPC PMB
Xcvr 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 2	REV 01	740-021308	AQ43GAC	SFP+-10G-SR
		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
	REV 01	740-031980	ALMOA6D	SFP+-10G-SR
	REV 01	740-031980	AQFORB3	SFP+-10G-SR
	REV 01	740-031980	153363A00333	SFP+-10G-SR
	REV 01	740-021308	AN10KYE	SFP+-10G-SR
		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+



Xcvr 0	REV 01	740-021308	APK04YM	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AQFOH44	SFP+-10G-SR
FPC 8	REV 38	750-031090	CABF7313	MPC Type 2 3D EQ
CPU	REV 08	711-030884	CABE6727	MPC PMB 2G
MIC 0	REV 18	750-028380	YK8253	3D 2x 10GE XFP
PIC 0		BUILTIN	BUILTIN	1x 10GE XFP
Xcvr 0	REV 03	740-014289	AD1148M00TP	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	1x 10GE XFP
QXM 0	REV 06	711-028408	CABC5614	MPC QXM
QXM 1	REV 06	711-028408	CABC5550	MPC QXM
FPC 9	REV 39	750-044130	ABCK1652	MPC6E 3D
CPU	REV 09	711-045719	ABCK1655	RMPC PMB
MIC 0	REV 09	750-049457	ABCP1230	2X100GE CFP2 OTN
PIC 0		BUILTIN	BUILTIN	2X100GE CFP2 OTN
Xcvr 0		NON-JNPR	37300222WP0002	CFP2-100G-LR4-D
Xcvr 1		NON-JNPR	FD46F001Y	CFP2-100G-SR10
MIC 1	REV 07	750-049457	ABCV6662	2X100GE CFP2 OTN
PIC 1		BUILTIN	BUILTIN	2X100GE CFP2 OTN
Xcvr 0		NON-JNPR	UQD0014	CFP2-100G-LR4-D
Xcvr 1		NON-JNPR	J13J68335	CFP2-100G-LR4-D
XLM 0	REV 07.2.00	711-046638	ABCK5491	MPC6E XL
XLM 1	REV 07.2.00	711-046638	ABCK5475	MPC6E XL
ADC 1	REV 17	750-043596	ABCG9023	Adapter Card
ADC 2	REV 01	750-043596	ZV4079	Adapter Card
ADC 6	REV 17	750-043596	ABCG8866	Adapter Card
ADC 8	REV 17	750-043596	ABCA8993	Adapter Card
Fan Tray 0	REV 06	760-046960	ACAY0354	172mm FanTray - 6 Fans
Fan Tray 1	REV 06	760-046960	ACAY0831	172mm FanTray - 6 Fans
Fan Tray 2	REV 06	760-046960	ACAY0892	172mm FanTray - 6 Fans
Fan Tray 3	REV 06	760-046960	ACAY0839	172mm FanTray - 6 Fans

### show chassis hardware detail (MX2010 Routers with MPC6E and OTN MIC)

```

user@host> show chassis hardware detail
Hardware inventory:

```

Item	Version	Part number	Serial number	Description
Chassis			JN11C9AFEAFK	MX2010
Midplane	REV 35	750-044636	ABAB9188	Lower Backplane
Midplane 1	REV 02	711-044557	ABAB8729	Upper Backplane
PMP	REV 04	711-032426	ACAJ2432	Power Midplane
FPM Board	REV 09	760-044634	ABCA4314	Front Panel Display
PSM 0	REV 01	740-050037	1EDB321015C	DC 52V Power Supply
Module				
PSM 1	REV 01	740-050037	1EDB321015J	DC 52V Power Supply
Module				
PSM 2	REV 01	740-050037	1EDB32000K8	DC 52V Power Supply
Module				
PSM 3	REV 01	740-050037	1EDB32101JW	DC 52V Power Supply
Module				
PSM 4	REV 01	740-050037	1EDB321015G	DC 52V Power Supply
Module				
PSM 5	REV 01	740-050037	1EDB32101HH	DC 52V Power Supply
Module				
PSM 6	REV 01	740-050037	1EDB32101HD	DC 52V Power Supply
Module				
PSM 7	REV 01	740-050037	1EDB321015F	DC 52V Power Supply
Module				
PSM 8	REV 01	740-050037	1EDB321015B	DC 52V Power Supply
Module				
PDM 0	REV 03	740-045234	1EFA3220433	DC Power Dist Module

PDM 1	REV 03	740-045234	1EFA3220425	DC Power Dist Module
Routing Engine 0	REV 02	740-041821	9009115685	RE-S-1800x4
ad0 3998 MB	Virtium - TuffDrive	VCF P1T0200274310822	191 Compact Flash	
ad1 30533 MB	UGB94BPH32H0S1-KCI	11000043190	Disk 1	
usb0 (addr 1)	EHCI root hub 0	Intel	uhub0	
usb0 (addr 2)	product 0x0020 32	vendor 0x8087	uhub1	
DIMM 0	VL31B5263F-F8SD DIE	REV-0 PCB REV-0	MFR ID-ce80	
DIMM 1	VL31B5263F-F8SD DIE	REV-0 PCB REV-0	MFR ID-ce80	
DIMM 2	VL31B5263F-F8SD DIE	REV-0 PCB REV-0	MFR ID-ce80	
DIMM 3	VL31B5263F-F8SD DIE	REV-0 PCB REV-0	MFR ID-ce80	
Routing Engine 1	REV 02	740-041821	9009099711	RE-S-1800x4
ad0 3998 MB	Virtium - TuffDrive	VCF P1T0200262860208	30 Compact Flash	
ad1 30533 MB	UGB94ARF32H0S3-KC	UNIGEN-499551-000146	Disk 1	
CB 0	REV 23	750-040257	CABE8395	Control Board
CB 1	REV 12	750-040257	CAAD9499	Control Board
SPMB 0	REV 02	711-041855	ABCG8426	PMB Board
SPMB 1	REV 02	711-041855	ABBS1481	PMB Board
SFB 0	REV 06	711-044466	ABCD5013	Switch Fabric Board
SFB 1	REV 06	711-044466	ABCD5160	Switch Fabric Board
SFB 2	REV 06	711-044466	ABCD5175	Switch Fabric Board
SFB 3	REV 06	711-044466	ABCD4938	Switch Fabric Board
SFB 4	REV 06	711-044466	ABCD4944	Switch Fabric Board
SFB 5	REV 06	711-044466	ABCD4968	Switch Fabric Board
SFB 6	REV 06	711-044466	ABCD5267	Switch Fabric Board
SFB 7	REV 06	711-044466	ABCD4997	Switch Fabric Board
FPC 0	REV 59	750-044130	ABCT7676	MPC6E 3D
CPU	REV 10	711-045719	ABCK8527	RMPD PMB
XLM 0	REV 13	711-046638	ABCT7810	MPC6E XL
XLM 1	REV 13	711-046638	ABCT7811	MPC6E XL
FPC 2	REV 27	750-033205	ZL6014	MPCE Type 3 3D
CPU	REV 07	711-035209	ZK9068	HMPD PMB 2G
MIC 0	REV 14	750-033196	CAAW9214	1X100GE CXP
PIC 0		BUILTIN	BUILTIN	1X100GE CXP
Xcvr 0	REV 01	740-046563	XC49FC030	CFP2-100G-SR10
MIC 1	REV 18	750-033199	CAAC3231	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	1X100GE CFP
FPC 3	REV 59	750-044130	ABCT7682	MPC6E 3D
CPU	REV 10	711-045719	ABCK8531	RMPD PMB
XLM 0	REV 13	711-046638	ABCT7818	MPC6E XL
XLM 1	REV 13	711-046638	ABCT7819	MPC6E XL
FPC 4	REV 33	750-044130	ABBY9278	MPC6E 3D
CPU	REV 09	711-045719	ABBY8677	RMPD PMB
XLM 0	REV 06.2.00	711-046638	ABBY8844	MPC6E XL
XLM 1	REV 06.2.00	711-046638	ABBY8830	MPC6E XL
FPC 5	REV 59	750-044130	ABCT7675	MPC6E 3D
CPU	REV 10	711-045719	ABCK8526	RMPD PMB
XLM 0	REV 13	711-046638	ABCT7808	MPC6E XL
XLM 1	REV 13	711-046638	ABCT7809	MPC6E XL
FPC 6	REV 30	750-028467	ZM4986	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ZP6541	AMPD PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AQ43GAC	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	ALMOA6D	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AQFORB3	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	153363A00333	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AN10KYE	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	APK04YM	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AQFOH44	SFP+-10G-SR

FPC 8	REV 38	750-031090	CABF7313	MPC Type 2 3D EQ
CPU	REV 08	711-030884	CABE6727	MPC PMB 2G
MIC 0	REV 18	750-028380	YK8253	3D 2x 10GE XFP
PIC 0		BUILTIN	BUILTIN	1x 10GE XFP
Xcvr 0	REV 03	740-014289	AD1148M00TP	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	1x 10GE XFP
QXM 0	REV 06	711-028408	CABC5614	MPC QXM
QXM 1	REV 06	711-028408	CABC5550	MPC QXM
FPC 9	REV 39	750-044130	ABCK1652	MPC6E 3D
CPU	REV 09	711-045719	ABCK1655	RMPC PMB
MIC 0	REV 09	750-049457	ABCP1230	2X100GE CFP2 OTN
PIC 0		BUILTIN	BUILTIN	2X100GE CFP2 OTN
Xcvr 0		NON-JNPR	37300222WP0002	CFP2-100G-LR4-D
Xcvr 1		NON-JNPR	FD46F001Y	CFP2-100G-SR10
MIC 1	REV 07	750-049457	ABCV6662	2X100GE CFP2 OTN
PIC 1		BUILTIN	BUILTIN	2X100GE CFP2 OTN
Xcvr 0		NON-JNPR	UQD0014	CFP2-100G-LR4-D
Xcvr 1		NON-JNPR	J13J68335	CFP2-100G-LR4-D
XLM 0	REV 07.2.00	711-046638	ABCK5491	MPC6E XL
XLM 1	REV 07.2.00	711-046638	ABCK5475	MPC6E XL
ADC 1	REV 17	750-043596	ABCG9023	Adapter Card
ADC 2	REV 01	750-043596	ZV4079	Adapter Card
ADC 6	REV 17	750-043596	ABCG8866	Adapter Card
ADC 8	REV 17	750-043596	ABCA8993	Adapter Card
Fan Tray 0	REV 06	760-046960	ACAY0354	172mm FanTray - 6 Fans
Fan Tray 1	REV 06	760-046960	ACAY0831	172mm FanTray - 6 Fans
Fan Tray 2	REV 06	760-046960	ACAY0892	172mm FanTray - 6 Fans
Fan Tray 3	REV 06	760-046960	ACAY0839	172mm FanTray - 6 Fans

#### show chassis hardware extensive (MX2010 Routers with MPC6E and OTN MIC)

```

user@host> show chassis hardware extensive
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Jedec Code:   0x7fb0          EEPROM Version: 0x02
S/N:          JN11C9AFEAFK
Assembly ID:  0x0557          Assembly Version: 00.00
Date:         00-00-0000      Assembly Flags:  0x00
ID: MX2010
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 7f b0 02 ff 05 57 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x20: 4a 4e 31 31 43 39 41 46 45 41 46 4b 00 00 00 00
Address 0x30: 00 00 00 ff 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane      REV 35      750-044636  ABAB9188      Lower Backplane
Jedec Code:   0x7fb0          EEPROM Version: 0x02
P/N:          750-044636      S/N:          ABAB9188
Assembly ID:  0x0b66          Assembly Version: 01.35
Date:         06-21-2013      Assembly Flags: 0x00
Version:      REV 35          CLEI Code:    IPMU810ARA
ID: Lower Backplane          FRU Model Number: CHAS-BP-MX2010-S
Board Information Record:
Address 0x00: ad 01 08 00 3c 8a b0 38 68 00 ff ff ff ff ff ff
I2C Hex Data:

```

```

Address 0x00: 7f b0 02 ff 0b 66 01 23 52 45 56 20 33 35 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 34 34 36 33 36 00 00
Address 0x20: 53 2f 4e 20 41 42 41 42 39 31 38 38 00 15 06 07
Address 0x30: dd ff ff ff ad 01 08 00 3c 8a b0 38 68 00 ff ff
Address 0x40: ff ff ff ff 01 49 50 4d 55 38 31 30 41 52 41 43
Address 0x50: 48 41 53 2d 42 50 2d 4d 58 32 30 31 30 2d 53 00
Address 0x60: 00 00 00 00 00 00 30 36 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff f8 ff ff ff ff ff ff ff ff ff ff ff ff
Midplane 1      REV 02   711-044557   ABAB8729      Upper Backplane
Jedec Code:    0x7fb0      EEPROM Version:    0x01
P/N:           711-044557   S/N:              ABAB8729
Assembly ID:   0x0b65      Assembly Version:  01.02
Date:          03-21-2013   Assembly Flags:    0x00
Version:       REV 02
ID: Upper Backplane
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 0b 65 01 02 52 45 56 20 30 32 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 34 34 35 35 37 00 00
Address 0x20: 53 2f 4e 20 41 42 41 42 38 37 32 39 00 15 03 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 00 00 00 00 00 00 00 00 00 00 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 ff ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
PMP            REV 04   711-032426   ACAJ2432      Power Midplane
Jedec Code:    0x7fb0      EEPROM Version:    0x01
P/N:           711-032426   S/N:              ACAJ2432
Assembly ID:   0x045d      Assembly Version:  01.04
Date:          03-28-2013   Assembly Flags:    0x00
Version:       REV 04
ID: Power Midplane
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 04 5d 01 04 52 45 56 20 30 34 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 33 32 34 32 36 00 00
Address 0x20: 53 2f 4e 20 41 43 41 4a 32 34 33 32 00 1c 03 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 00 00 00 00 00 00 00 00 00 00 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 ff ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
FPM Board      REV 09   760-044634   ABCA4314      Front Panel Display
Jedec Code:    0x7fb0      EEPROM Version:    0x02
P/N:           760-044634   S/N:              ABCA4314
Assembly ID:   0x0b64      Assembly Version:  01.09
Date:          03-28-2013   Assembly Flags:    0x00
Version:       REV 09      CLEI Code:         IPMYA4EJRA
ID: Front Panel Display    FRU Model Number:  MX2010-CRAFT-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 64 01 09 52 45 56 20 30 39 00 00
Address 0x10: 00 00 00 00 37 36 30 2d 30 34 34 36 33 34 00 00
Address 0x20: 53 2f 4e 20 41 42 43 41 34 33 31 34 00 1c 03 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 4d 59 41 34 45 4a 52 41 4d
Address 0x50: 58 32 30 31 30 2d 43 52 41 46 54 2d 53 00 00 00
Address 0x60: 00 00 00 00 00 00 41 00 00 ff ff ff ff ff ff ff

```

```

Address 0x70: ff ff ff 93 ff ff ff ff ff ff ff ff ff ff ff
PSM 0          REV 01  740-050037  1EDB321015C      DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:          740-050037      S/N:              1EDB321015C
Assembly ID:   0x0478          Assembly Version:  01.01
Date:         05-28-2013      Assembly Flags:    0x00
Version:      REV 01          CLEI Code:         IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
Address 0x20: 31 45 44 42 33 32 31 30 31 35 43 00 00 1c 05 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
Address 0x60: 00 00 00 00 00 00 00 00 31 30 31 ff ff ff ff ff
Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 1          REV 01  740-050037  1EDB321015J      DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:          740-050037      S/N:              1EDB321015J
Assembly ID:   0x0478          Assembly Version:  01.01
Date:         05-28-2013      Assembly Flags:    0x00
Version:      REV 01          CLEI Code:         IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
Address 0x20: 31 45 44 42 33 32 31 30 31 35 4a 00 00 1c 05 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
Address 0x60: 00 00 00 00 00 00 00 00 31 30 31 ff ff ff ff ff
Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 2          REV 01  740-050037  1EDB32000K8      DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:          740-050037      S/N:              1EDB32000K8
Assembly ID:   0x0478          Assembly Version:  01.01
Date:         05-23-2013      Assembly Flags:    0x00
Version:      REV 01          CLEI Code:         IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
Address 0x20: 31 45 44 42 33 32 30 30 30 4b 38 00 00 17 05 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
Address 0x60: 00 00 00 00 00 00 00 00 31 30 31 ff ff ff ff ff
Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 3          REV 01  740-050037  1EDB32101JW      DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02

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```

P/N:          740-050037      S/N:          1EDB32101JW
Assembly ID:  0x0478         Assembly Version: 01.01
Date:         05-30-2013     Assembly Flags:  0x00
Version:      REV 01         CLEI Code:       IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
  Address 0x20: 31 45 44 42 33 32 31 30 31 4a 57 00 00 1e 05 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
  Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 4          REV 01    740-050037    1EDB321015G    DC 52V Power Supply
Module
Jedec Code:    0x7fb0      EEPROM Version: 0x02
P/N:          740-050037   S/N:          1EDB321015G
Assembly ID:   0x0478     Assembly Version: 01.01
Date:         05-28-2013  Assembly Flags: 0x00
Version:      REV 01     CLEI Code:    IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
  Address 0x20: 31 45 44 42 33 32 31 30 31 35 47 00 00 1c 05 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
  Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 5          REV 01    740-050037    1EDB32101HH    DC 52V Power Supply
Module
Jedec Code:    0x7fb0      EEPROM Version: 0x02
P/N:          740-050037   S/N:          1EDB32101HH
Assembly ID:   0x0478     Assembly Version: 01.01
Date:         05-30-2013  Assembly Flags: 0x00
Version:      REV 01     CLEI Code:    IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
  Address 0x20: 31 45 44 42 33 32 31 30 31 48 48 00 00 1e 05 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
  Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 6          REV 01    740-050037    1EDB32101HD    DC 52V Power Supply
Module
Jedec Code:    0x7fb0      EEPROM Version: 0x02
P/N:          740-050037   S/N:          1EDB32101HD
Assembly ID:   0x0478     Assembly Version: 01.01
Date:         05-30-2013  Assembly Flags: 0x00
Version:      REV 01     CLEI Code:    IPUPAKRKAA

```

```

ID: DC 52V Power Supply Module  FRU Model Number:  MX2000-PSM-DC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
  Address 0x20: 31 45 44 42 33 32 31 30 31 48 44 00 00 1e 05 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
  Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 7          REV 01   740-050037   1EDB321015F   DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:  0x02
P/N:           740-050037      S/N:             1EDB321015F
Assembly ID:   0x0478          Assembly Version: 01.01
Date:          05-28-2013      Assembly Flags:   0x00
Version:       REV 01          CLEI Code:        IPUPAKRKAA
ID: DC 52V Power Supply Module  FRU Model Number:  MX2000-PSM-DC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
  Address 0x20: 31 45 44 42 33 32 31 30 31 35 46 00 00 1c 05 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
  Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 8          REV 01   740-050037   1EDB321015B   DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:  0x02
P/N:           740-050037      S/N:             1EDB321015B
Assembly ID:   0x0478          Assembly Version: 01.01
Date:          05-28-2013      Assembly Flags:   0x00
Version:       REV 01          CLEI Code:        IPUPAKRKAA
ID: DC 52V Power Supply Module  FRU Model Number:  MX2000-PSM-DC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
  Address 0x20: 31 45 44 42 33 32 31 30 31 35 42 00 00 1c 05 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
  Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PDM 0          REV 03   740-045234   1EFA3220433   DC Power Dist Module
Jedec Code:    0x7fb0          EEPROM Version:  0x02
P/N:           740-045234      S/N:             1EFA3220433
Assembly ID:   0x047b          Assembly Version: 01.03
Date:          05-30-2013      Assembly Flags:   0x00
Version:       REV 03          CLEI Code:        IPUPAJSKAA
ID: DC Power Dist Module       FRU Model Number:  MX2000-PDM-DC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 7b 01 03 52 45 56 20 30 33 00 00

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Address 0x10: 00 00 00 00 37 34 30 2d 30 34 35 32 33 34 00 00
Address 0x20: 31 45 46 41 33 32 32 30 34 33 33 00 00 1e 05 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 55 50 41 4a 53 4b 41 41 4d
Address 0x50: 58 32 30 30 30 2d 50 44 4d 2d 44 43 2d 53 00 00
Address 0x60: 00 00 00 00 00 00 31 30 33 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 1d 00 00 00 00 00 00 00 00 00 00 00 00
PDM 1          REV 03    740-045234    1EFA3220425    DC Power Dist Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-045234      S/N:              1EFA3220425
Assembly ID:   0x047b          Assembly Version:  01.03
Date:          05-30-2013      Assembly Flags:    0x00
Version:       REV 03          CLEI Code:         IPUPAJSKAA
ID: DC Power Dist Module      FRU Model Number:  MX2000-PDM-DC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
..

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### show chassis hardware (MX2020 Router)

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user@host > show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN11E2227AFJ  MX2020
Midplane      REV 27    750-040240    ABAB9384      Lower Power Midplane
Midplane 1    REV 04    711-032386    ABAB9386      Upper Backplane
PMP 1         REV 05    711-032428    ACAJ1579      Upper Power Midplane
PMP 0         REV 04    711-032426    ACAJ1524      Lower Power Midplane
FPM Board     REV 06    760-040242    ABBT8837      Front Panel Display
PSM 0         REV 01    740-045050    1E022240056   DC 52V Power Supply
Module
PSM 1         REV 01    740-045050    1E022240054   DC 52V Power Supply
Module
PSM 2         REV 01    740-045050    1E02224005H   DC 52V Power Supply
Module
PSM 3         REV 01    740-045050    1E022240053   DC 52V Power Supply
Module
PSM 4         REV 01    740-045050    1E02224004K   DC 52V Power Supply
Module
PSM 7         REV 01    740-045050    1E02224006W   DC 52V Power Supply
Module
PSM 8         REV 01    740-045050    1E022240062   DC 52V Power Supply
Module
PSM 9         REV 01    740-045050    1E02224005B   DC 52V Power Supply
Module
PSM 10        REV 01    740-045050    1E02224005A   DC 52V Power Supply
Module
PSM 11        REV 01    740-045050    1E022240052   DC 52V Power Supply
Module
PSM 12        REV 01    740-045050    1E022240051   DC 52V Power Supply
Module
PSM 13        REV 01    740-045050    1E022240058   DC 52V Power Supply
Module
PSM 14        REV 01    740-045050    1E02224004L   DC 52V Power Supply
Module
PSM 15        REV 01    740-045050    1E02224005M   DC 52V Power Supply
Module
PSM 16        REV 01    740-045050    1E02224006S   DC 52V Power Supply
Module
PSM 17        REV 01    740-045050    1E02224005Z   DC 52V Power Supply
Module

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PDM 0	REV 01	740-045234	1E012150033	DC Power Dist Module
PDM 1	REV 01	740-045234	1E012150027	DC Power Dist Module
PDM 2	REV 01	740-045234	1E012150028	DC Power Dist Module
PDM 3	REV 01	740-045234	1E012150045	DC Power Dist Module
Routing Engine 0	REV 02	740-041821	9009089704	RE-S-1800x4
Routing Engine 1	REV 02	740-041821	9009094138	RE-S-1800x4
CB 0	REV 14	750-040257	CAAF8430	Control Board
CB 1	REV 08	750-040257	CAAB3482	Control Board
SPMB 0	REV 01	711-041855	ZS2290	PMB Board
SPMB 1	REV 02	711-041855	CAA6141	PMB Board
SFB 0	REV 03	711-044466	ABBV6789	Switch Fabric Board
SFB 1	REV 05	711-044466	ABBX5666	Switch Fabric Board
SFB 2	REV 05	711-044466	ABBX5678	Switch Fabric Board
SFB 3	REV 05	711-044466	ABBX5687	Switch Fabric Board
SFB 4	REV 05	711-044466	ABBX5609	Switch Fabric Board
SFB 5	REV 05	711-044466	ABBX5675	Switch Fabric Board
SFB 6	REV 03	711-044466	ABBV6805	Switch Fabric Board
SFB 7	REV 05	711-044466	ABBX5701	Switch Fabric Board
FPC 0	REV 30	750-028467	ABBN0284	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0507	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00990	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E04357	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01327	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04375	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02760	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02904	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E03963	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00756	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04418	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01077	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01128	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01253	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E01140	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01626	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01075	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01177	SFP+-10G-USR
FPC 1	REV 30	750-028467	ABBN0208	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBJ1084	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04745	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01570	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E04388	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01439	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04739	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01869	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01675	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01901	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01346	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01288	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01824	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04312	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02811	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E03847	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01495	SFP+-10G-USR

Xcvr 3	REV 01	740-030658	B11F01265	SFP+-10G-USR
FPC 2	REV 30	750-028467	ZM5111	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ZP6607	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LJA	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MFZ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKL	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KF4	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80FBJ	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MM2	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LJV	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NXV	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N1H	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLS	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80FL5	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL9	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NG2	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80KDU	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80MG1	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80MM0	SFP+-10G-SR
FPC 3	REV 30	750-028467	ABBN0302	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0495	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01581	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01176	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01251	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02752	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00786	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01020	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01023	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02819	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02812	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11D04437	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01279	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01333	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00978	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01018	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01784	SFP+-10G-USR
Xcvr 3	REV 01	740-031980	AK80NKP	SFP+-10G-SR
FPC 4	REV 30	750-028467	ABBN0308	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBJ1095	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04305	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01147	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01195	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01743	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01892	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02880	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00725	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01057	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02816	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11C04501	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E02764	SFP+-10G-USR

Xcvr 3	REV 01	740-030658	B11E00789	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01250	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02847	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00787	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E03803	SFP+-10G-USR
FPC 5	REV 30	750-028467	ABBN0316	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBJ1082	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00523	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01848	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01865	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00540	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00422	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00428	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K00423	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K01855	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K01847	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00526	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K00529	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00525	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00425	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00530	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01851	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00528	SFP+-10G-SR
FPC 6	REV 32	750-028467	ABBN6832	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6534	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MB4	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FQ6	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N1F	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLQ	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80KDR	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FGJ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N5G	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KD8	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LET	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80N1X	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NRF	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL2	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N3D	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MRB	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LEQ	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LER	SFP+-10G-SR
FPC 7	REV 32	750-028467	ABBN6811	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7288	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NK8	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80LJG	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LBU	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N21	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEU	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLM	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NL6	SFP+-10G-SR

Xcvr 3	REV 01	740-031980	AK80LES	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEN	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80ME0	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LMG	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80MM1	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MG7	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80KF9	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NRQ	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLE	SFP+-10G-SR
FPC 8	REV 23	750-028467	YN2977	MPC 3D 16x 10GE
CPU	REV 10	711-029089	YP1856	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00875	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00851	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00772	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00882	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00735	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00169	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00726	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00077	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00168	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00676	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00732	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00091	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00725	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00642	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00871	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00853	SFP+-10G-SR
FPC 9	REV 32	750-028467	ABBN6798	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6556	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	9ZDZ06A00055	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00239	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AD0915E003K	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AD0915E003A	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MRC	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NL5	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKN	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N3U	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N1T	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJ808DJ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NG4	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80FND	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80FKQ	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLT	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKR	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LKM	SFP+-10G-SR
FPC 10	REV 32	750-028467	ABBN6813	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6542	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NA3	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLF	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80MRH	SFP+-10G-SR

Xcvr 3	REV 01	740-031980	AK80KE4	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00030	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80L9H	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80ME8	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLR	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NG1	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MCA	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LFC	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LEM	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N9X	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80LAC	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LF2	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N8T	SFP+-10G-SR
FPC 11	REV 30	750-028467	ABBN0281	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0526	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01326	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E03973	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00950	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00674	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00775	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E04461	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01074	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02821	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04501	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00757	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01623	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01022	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04359	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02751	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E02736	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01178	SFP+-10G-USR
FPC 12	REV 32	750-028467	ABBN6796	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7259	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K01856	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01853	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01863	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02863	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02668	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02881	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01671	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02627	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02725	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02692	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02730	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03081	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02736	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02568	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02747	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02579	SFP+-10G-SR
FPC 13	REV 30	750-028467	ABBN0270	MPC 3D 16x 10GE

CPU	REV 10	711-029089	ABBJ0966	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NL1	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NXW	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KD2	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80FMD	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NKQ	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MGH	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N38	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL7	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEL	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NKD	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KCY	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LHK	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80M5J	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MBE	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NLG	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LFH	SFP+-10G-SR
FPC 14	REV 32	750-028467	ABBN6790	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6515	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LZM	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MCC	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KCM	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KE0	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021310	C10F99155	SFP+-10G-LRM
Xcvr 1	REV 01	740-021310	C10F99049	SFP+-10G-LRM
Xcvr 2	REV 01	740-021310	C10F99128	SFP+-10G-LRM
Xcvr 3	REV 01	740-021310	C10F99169	SFP+-10G-LRM
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LF3	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02597	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A03060	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03057	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEX	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FEU	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80FNM	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AJQ0Q5G	SFP+-10G-SR
FPC 15	REV 32	750-028467	ABBN6791	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7289	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00424	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01849	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01862	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K01852	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00427	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00430	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01854	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00426	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00429	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01864	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01850	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00522	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+

Xcvr 0	REV 01	740-030658	B11E01144	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00985	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00796	SFP+-10G-USR
Xcvr 3	REV 01	740-031980	B11K01866	SFP+-10G-SR
FPC 16	REV 30	750-028467	ABBM4592	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0465	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01435	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01052	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01328	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01254	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02738	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02881	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01624	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00889	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02883	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00681	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E04306	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02813	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01801	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02753	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01156	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04324	SFP+-10G-USR
FPC 17	REV 32	750-028467	ABBN6810	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7237	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02638	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02082	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01674	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03058	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03048	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02729	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02566	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02567	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02878	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02739	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01959	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02660	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02731	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02588	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02673	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02654	SFP+-10G-SR
FPC 18	REV 30	750-028467	ABBM4739	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0487	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02569	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02886	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A03082	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	133363A00297	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02726	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A03050	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02884	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03076	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+

Xcvr 0	REV 01	740-031980	163363A02581	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02873	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02582	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03083	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031981	UL70BU6	SFP+-10G-LR
Xcvr 1	REV 01	740-031981	UL50QC6	SFP+-10G-LR
Xcvr 2	REV 01	740-031981	UL708N6	SFP+-10G-LR
Xcvr 3	REV 01	740-031981	UL603KK	SFP+-10G-LR
FPC 19	REV 32	750-028467	ABBN6827	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6508	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A01688	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A01724	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01773	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02593	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03061	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A03056	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02669	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03070	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02572	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02697	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02585	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03052	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02591	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02649	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02577	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02698	SFP+-10G-SR
ADC 0	REV 13	750-043596	ABBX5561	Adapter Card
ADC 1	REV 13	750-043596	ABBX5546	Adapter Card
ADC 2	REV 13	750-043596	ABBX5535	Adapter Card
ADC 3	REV 13	750-043596	ABBX5552	Adapter Card
ADC 4	REV 13	750-043596	ABBX5581	Adapter Card
ADC 5	REV 13	750-043596	ABBX5545	Adapter Card
ADC 6	REV 13	750-043596	ABBX5554	Adapter Card
ADC 7	REV 07	750-043596	ABBV7194	Adapter Card
ADC 8	REV 07	750-043596	ABBV7251	Adapter Card
ADC 9	REV 07	750-043596	ABBV7202	Adapter Card
ADC 10	REV 13	750-043596	ABBX5538	Adapter Card
ADC 11	REV 13	750-043596	ABBX5566	Adapter Card
ADC 12	REV 13	750-043596	ABBX5542	Adapter Card
ADC 13	REV 13	750-043596	ABBX5539	Adapter Card
ADC 14	REV 13	750-043596	ABBX5555	Adapter Card
ADC 15	REV 13	750-043596	ABBX5557	Adapter Card
ADC 16	REV 13	750-043596	ABBX5536	Adapter Card
ADC 17	REV 13	750-043596	ABBX5559	Adapter Card
ADC 18	REV 13	750-043596	ABBX5537	Adapter Card
ADC 19	REV 11	750-043596	ABBW5685	Adapter Card
Fan Tray 0	REV 2A	760-046960	ACAY0030	172mm FanTray - 6 Fans
Fan Tray 1	REV 2A	760-046960	ACAY0039	172mm FanTray - 6 Fans
Fan Tray 2	REV 2A	760-046960	ACAY0033	172mm FanTray - 6 Fans
Fan Tray 3	REV 2A	760-046960	ACAY0062	172mm FanTray - 6 Fans

## show chassis hardware detail (MX2020 Router)

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Hardware inventory:

Item	Version	Part number	Serial number	Description
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Chassis			JN11E2227AFJ	MX2020
Midplane	REV 27	750-040240	ABAB9384	Lower Power Midplane
Midplane 1	REV 04	711-032386	ABAB9386	Upper Backplane
PMP 1	REV 05	711-032428	ACAJ1821	Upper Power Midplane
PMP 0	REV 04	711-032426	ACAJ1524	Lower Power Midplane
FPM Board	REV 06	760-040242	ABBT8837	Front Panel Display
PSM 0	REV 01	740-045050	1E02224006G	DC 52V Power Supply
Module				
PSM 1	REV 01	740-045050	1E022240053	DC 52V Power Supply
Module				
PSM 2	REV 01	740-045050	1E02224004K	DC 52V Power Supply
Module				
PSM 3	REV 01	740-045050	1E022240056	DC 52V Power Supply
Module				
PSM 4	REV 01	740-045050	1E022240054	DC 52V Power Supply
Module				
PSM 5	REV 01	740-045050	1E02224005H	DC 52V Power Supply
Module				
PSM 6	REV 01	740-045050	1E02224006S	DC 52V Power Supply
Module				
PSM 7	REV 01	740-045050	1E02224005M	DC 52V Power Supply
Module				
PSM 8	REV 01	740-045050	1E022240062	DC 52V Power Supply
Module				
PSM 9	REV 03	740-045050	1EDB2350095	DC 52V Power Supply
Module				
PSM 10	REV 03	740-045050	1EDB235009L	DC 52V Power Supply
Module				
PSM 11	REV 03	740-045050	1EDB2350092	DC 52V Power Supply
Module				
PSM 12	REV 03	740-045050	1EDB23500AT	DC 52V Power Supply
Module				
PSM 13	REV 03	740-045050	1EDB2350094	DC 52V Power Supply
Module				
PSM 15	REV 03	740-045050	1EDB235008X	DC 52V Power Supply
Module				
PDM 0	REV 01	740-045234	1E012150033	DC Power Dist Module
PDM 1	REV 01	740-045234	1E012150027	DC Power Dist Module
PDM 2	REV 01	740-045234	1E262250072	DC Power Dist Module
Routing Engine 0	REV 02	740-041821	9009094138	RE-S-1800x4
ad0 3998 MB		Virtium - TuffDisk	VCF3 20110825A021D0000064	Compact Flash
ad1 30533 MB		UGB94ARF32H0S3-KC	UNIGEN-499551-000347	Disk 1
usb0 (addr 1)		EHCI root hub 0	Intel	uhub0
usb0 (addr 2)		product 0x0020 32	vendor 0x8087	uhub1
DIMM 0		SGU04G72H1BD2SA-BB	DIE REV-52 PCB REV-54	MFR ID-ce80
DIMM 1		SGU04G72H1BD2SA-BB	DIE REV-52 PCB REV-54	MFR ID-ce80
DIMM 2		SGU04G72H1BD2SA-BB	DIE REV-52 PCB REV-54	MFR ID-ce80
DIMM 3		SGU04G72H1BD2SA-BB	DIE REV-52 PCB REV-54	MFR ID-ce80
Routing Engine 1	REV 02	740-041821	9009089709	RE-S-1800x4
ad0 3831 MB		UGB30SFA4000T1	SFA4000T1 00000113	Compact Flash
ad1 30533 MB		UGB94ARF32H0S3-KC	UNIGEN-478612-001044	Disk 1
CB 0	REV 08	750-040257	CAAB3482	Control Board
CB 1	REV 04	750-040257	ZT2864	Control Board
SPMB 0	REV 02	711-041855	CAAA6141	PMB Board
SPMB 1	REV 01	711-041855	ZS2275	PMB Board
SFB 0	REV 05	711-044466	ABBT2161	Switch Fabric Board
SFB 1	REV 05	711-044466	ABBT2159	Switch Fabric Board
SFB 2	REV 05	711-044466	ABBX3718	Switch Fabric Board
SFB 3	REV 05	711-044466	ABBT2152	Switch Fabric Board
SFB 4	REV 05	711-044466	ABBT2160	Switch Fabric Board
SFB 5	REV 05	711-044466	ABBT2145	Switch Fabric Board

SFB 6	REV 05	711-044466	ABBT2150	Switch Fabric Board
SFB 7	REV 05	711-044466	ABBT2163	Switch Fabric Board
FPC 0	REV 30	750-028467	ABBN0284	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0507	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00990	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E04357	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01327	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04375	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02760	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02904	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E03963	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00756	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04418	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01077	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01128	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01253	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E01140	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01626	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01075	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01177	SFP+-10G-USR
FPC 1	REV 30	750-028467	ABBN0308	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBJ1095	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04305	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01147	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01195	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01743	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01892	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02880	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00725	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01057	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02816	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11C04501	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E02764	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00789	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01250	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02847	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00787	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E03803	SFP+-10G-USR
FPC 2	REV 30	750-028467	ABBN0316	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBJ1082	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00523	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01848	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01865	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00540	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00422	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00428	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K00423	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K01855	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K01847	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00526	SFP+-10G-SR

Xcvr 2	REV 01	740-031980	B11K00529	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00525	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00425	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00530	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01851	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00528	SFP+-10G-SR
FPC 3	REV 32	750-028467	ABBN6832	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6534	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MB4	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FQ6	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N1F	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLQ	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80KDR	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FGJ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N5G	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KD8	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LET	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80N1X	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NRF	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL2	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N3D	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MRB	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LEQ	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LER	SFP+-10G-SR
FPC 4	REV 32	750-028467	ABBN6811	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7288	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NK8	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80LJG	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LBU	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N21	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEU	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLM	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NL6	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LES	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEN	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80ME0	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LMG	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80MM1	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MG7	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80KF9	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NRQ	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLE	SFP+-10G-SR
FPC 5	REV 32	750-028467	ABBN6791	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7289	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00424	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01849	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01862	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K01852	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP
Xcvr 0	REV 01	740-031980	B11K00427	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00430	SFP+-10G-SR

Xcvr 2	REV 01	740-031980	B11K01854	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00426	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00429	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01864	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01850	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00522	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E01144	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00985	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00796	SFP+-10G-USR
Xcvr 3	REV 01	740-031980	B11K01866	SFP+-10G-SR
FPC 6	REV 30	750-028467	ABBM4592	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0465	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01435	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01052	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01328	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01254	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02738	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02881	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01624	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00889	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02883	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00681	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E04306	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02813	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01801	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02753	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01156	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04324	SFP+-10G-USR
FPC 7	REV 32	750-028467	ABBN6810	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7237	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03058	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02082	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01674	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02638	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03048	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02729	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02566	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02567	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02878	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02739	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01959	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02660	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02731	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02588	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02673	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02654	SFP+-10G-SR
FPC 8	REV 30	750-028467	ABBM4739	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0487	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02569	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02886	SFP+-10G-SR

Xcvr 2	REV 01	740-031980	163363A03082	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	133363A00297	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02726	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A03050	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02884	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03076	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02581	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02873	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02582	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03083	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031981	UL70BU6	SFP+-10G-LR
Xcvr 1	REV 01	740-031981	UL50QC6	SFP+-10G-LR
Xcvr 2	REV 01	740-031981	UL708N6	SFP+-10G-LR
Xcvr 3	REV 01	740-031981	UL603KK	SFP+-10G-LR
FPC 9	REV 32	750-028467	ABBN6827	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6508	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A01688	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A01724	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01773	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02593	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03061	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A03056	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02669	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03070	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02572	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02697	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02585	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03052	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02591	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02649	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02577	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02698	SFP+-10G-SR
FPC 10	REV 30	750-028467	ABBN0302	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0495	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01581	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01176	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01251	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02752	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00786	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01020	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01023	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02819	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02812	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11D04437	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01279	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01333	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00978	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01018	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01784	SFP+-10G-USR
Xcvr 3	REV 01	740-031980	AK80NKP	SFP+-10G-SR

FPC 11	REV 32	750-028467	ABBN6790	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6515	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LZM	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MCC	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KCM	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KE0	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021310	C10F99155	SFP+-10G-LRM
Xcvr 1	REV 01	740-021310	C10F99049	SFP+-10G-LRM
Xcvr 2	REV 01	740-021310	C10F99128	SFP+-10G-LRM
Xcvr 3	REV 01	740-021310	C10F99169	SFP+-10G-LRM
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LF3	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02597	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A03060	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03057	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEX	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FEU	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80FNM	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AJQ0Q5G	SFP+-10G-SR
FPC 12	REV 30	750-028467	ZM5111	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ZP6607	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LJA	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MFZ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKL	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KF4	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80FBJ	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MM2	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LJV	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NXV	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N1H	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLS	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80FL5	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL9	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NG2	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80KDU	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80MG1	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80MM0	SFP+-10G-SR
FPC 13	REV 30	750-028467	ABBN0208	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABB11084	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04745	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01570	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E04388	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01439	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04739	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01869	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01675	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01901	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01346	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01288	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01824	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04312	SFP+-10G-USR

PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02811	SFP+-10G-USR	
Xcvr 1	REV 01	740-030658	B11E03847	SFP+-10G-USR	
Xcvr 2	REV 01	740-030658	B11F01495	SFP+-10G-USR	
Xcvr 3	REV 01	740-030658	B11F01265	SFP+-10G-USR	
FPC 14	REV 23	750-028467	YN2977	MPC 3D 16x 10GE	
CPU	REV 10	711-029089	YP1856	AMPC PMB	
PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00875	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	183363A00851	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	183363A00772	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	183363A00882	SFP+-10G-SR	
PIC 1			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00735	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	183363A00169	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	183363A00726	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	183363A00077	SFP+-10G-SR	
PIC 2			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00168	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	183363A00676	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	183363A00732	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	183363A00091	SFP+-10G-SR	
PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00725	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	183363A00642	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	183363A00871	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	183363A00853	SFP+-10G-SR	
FPC 15	REV 32	750-028467	ABBN6798	MPC 3D 16x 10GE	
CPU	REV 10	711-029089	ABBK6556	AMPC PMB	
PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	9ZDZ06A00055	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	183363A00239	SFP+-10G-SR	
Xcvr 2	REV 01	740-021308	AD0915E003K	SFP+-10G-SR	
Xcvr 3	REV 01	740-021308	AD0915E003A	SFP+-10G-SR	
PIC 1			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MRC	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	AK80NL5	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	AK80NKN	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	AK80N3U	SFP+-10G-SR	
PIC 2			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N1T	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	AJ808DJ	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	AK80NG4	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	AK80FND	SFP+-10G-SR	
PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80FKQ	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	AK80NLT	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	AK80NKR	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	AK80LKM	SFP+-10G-SR	
FPC 16	REV 30	750-028467	ABBN0270	MPC 3D 16x 10GE	
CPU	REV 10	711-029089	ABBJ0966	AMPC PMB	
PIC 0			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NL1	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	AK80NXW	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	AK80KD2	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	AK80FMD	SFP+-10G-SR	
PIC 1			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NKQ	SFP+-10G-SR	
Xcvr 1	REV 01	740-031980	AK80MGH	SFP+-10G-SR	
Xcvr 2	REV 01	740-031980	AK80N38	SFP+-10G-SR	
Xcvr 3	REV 01	740-031980	AK80NL7	SFP+-10G-SR	

PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80M5J	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NKD	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KCY	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LHK	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEL	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MBE	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NLG	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LFH	SFP+-10G-SR
FPC 17	REV 32	750-028467	ABBN6796	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7259	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K01856	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01853	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01863	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02863	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02668	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02881	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01671	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02627	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02725	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02692	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02730	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03081	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02736	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02568	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02747	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02579	SFP+-10G-SR
FPC 18	REV 30	750-028467	ABBN0281	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0526	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01326	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E03973	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00950	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00674	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00775	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E04461	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01074	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02821	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04501	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00757	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01623	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01022	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04359	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02751	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E02736	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01178	SFP+-10G-USR
FPC 19	REV 32	750-028467	ABBN6813	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN6542	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NA3	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLF	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80MRH	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KE4	SFP+-10G-SR



PIC 1			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00030		SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80L9H		SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80ME8		SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLR		SFP+-10G-SR
PIC 2			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NG1		SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MCA		SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LFC		SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LEM		SFP+-10G-SR
PIC 3			BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N9X		SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80LAC		SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LF2		SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N8T		SFP+-10G-SR
ADC 0	REV 13	750-043596	ABBX5561		Adapter Card
ADC 1	REV 13	750-043596	ABBX5546		Adapter Card
ADC 2	REV 13	750-043596	ABBX5535		Adapter Card
ADC 3	REV 13	750-043596	ABBX5552		Adapter Card
ADC 4	REV 13	750-043596	ABBX5581		Adapter Card
ADC 5	REV 13	750-043596	ABBX5545		Adapter Card
ADC 6	REV 13	750-043596	ABBX5554		Adapter Card
ADC 7	REV 07	750-043596	ABBV7194		Adapter Card
ADC 8	REV 07	750-043596	ABBV7251		Adapter Card
ADC 9	REV 07	750-043596	ABBV7202		Adapter Card
ADC 10	REV 13	750-043596	ABBX5579		Adapter Card
ADC 11	REV 13	750-043596	ABBX5548		Adapter Card
ADC 12	REV 13	750-043596	ABBX5575		Adapter Card
ADC 13	REV 13	750-043596	ABBX5539		Adapter Card
ADC 14	REV 13	750-043596	ABBX5555		Adapter Card
ADC 15	REV 13	750-043596	ABBX5557		Adapter Card
ADC 16	REV 13	750-043596	ABBX5536		Adapter Card
ADC 17	REV 13	750-043596	ABBX5559		Adapter Card
ADC 18	REV 13	750-043596	ABBX5537		Adapter Card
ADC 19	REV 11	750-043596	ABBW5685		Adapter Card
Fan Tray 0	REV 04	760-046960	ACAY0090		172mm FanTray - 6 Fans
Fan Tray 1	REV 04	760-046960	ACAY0088		172mm FanTray - 6 Fans
Fan Tray 2	REV 04	760-046960	ACAY0089		172mm FanTray - 6 Fans
Fan Tray 3	REV 04	760-046960	ACAY0108		172mm FanTray - 6 Fans

### show chassis hardware models (MX2020 Router)

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Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 27	750-040240	ABAB9384	750-040240
FPM Board	REV 06	760-040242	ABBT8837	760-040242
PSM 0	REV 01	740-045050	1E02224006G	MX2000-PSM-HC-DC-S-A
PSM 1	REV 01	740-045050	1E022240053	MX2000-PSM-HC-DC-S-A
PSM 2	REV 01	740-045050	1E02224004K	MX2000-PSM-HC-DC-S-A
PSM 3	REV 01	740-045050	1E022240056	MX2000-PSM-HC-DC-S-A
PSM 4	REV 01	740-045050	1E022240054	MX2000-PSM-HC-DC-S-A
PSM 5	REV 01	740-045050	1E02224005H	MX2000-PSM-HC-DC-S-A
PSM 6	REV 01	740-045050	1E02224006S	MX2000-PSM-HC-DC-S-A
PSM 7	REV 01	740-045050	1E02224005M	MX2000-PSM-HC-DC-S-A
PSM 8	REV 01	740-045050	1E022240062	MX2000-PSM-HC-DC-S-A
PSM 9	REV 03	740-045050	1EDB2350095	MX2000-PSM-DC-S-A
PSM 10	REV 03	740-045050	1EDB235009L	MX2000-PSM-DC-S-A
PSM 11	REV 03	740-045050	1EDB2350092	MX2000-PSM-DC-S-A
PSM 12	REV 03	740-045050	1EDB23500AT	MX2000-PSM-DC-S-A
PSM 13	REV 03	740-045050	1EDB2350094	MX2000-PSM-DC-S-A

PSM 15	REV 03	740-045050	1EDB235008X	MX2000-PSM-DC-S-A
PDM 0	REV 01	740-045234	1E012150033	
PDM 1	REV 01	740-045234	1E012150027	
PDM 2	REV 01	740-045234	1E262250072	MX2000-PDM-DC-S-A
Routing Engine 0	REV 02	740-041821	9009094138	RE-S-1800X4-16G-S
Routing Engine 1	REV 02	740-041821	9009089709	RE-S-1800X4-16G-S
CB 0	REV 08	750-040257	CAAB3482	750-040257
CB 1	REV 04	750-040257	ZT2864	750-040257
SFB 0	REV 05	711-044466	ABBT2161	MX2000-SFB-S
SFB 1	REV 05	711-044466	ABBT2159	MX2000-SFB-S
SFB 2	REV 05	711-044466	ABBX3718	MX2000-SFB-S
SFB 4	REV 05	711-044466	ABBT2160	MX2000-SFB-S
SFB 5	REV 05	711-044466	ABBT2145	MX2000-SFB-S
SFB 7	REV 05	711-044466	ABBT2163	MX2000-SFB-S
FPC 0	REV 30	750-028467	ABBN0284	MPC-3D-16XGE-SFPP
FPC 1	REV 30	750-028467	ABBN0308	MPC-3D-16XGE-SFPP
FPC 2	REV 30	750-028467	ABBN0316	MPC-3D-16XGE-SFPP
FPC 3	REV 32	750-028467	ABBN6832	MPC-3D-16XGE-SFPP
FPC 4	REV 32	750-028467	ABBN6811	MPC-3D-16XGE-SFPP
FPC 5	REV 32	750-028467	ABBN6791	MPC-3D-16XGE-SFPP
FPC 6	REV 30	750-028467	ABBM4592	MPC-3D-16XGE-SFPP
FPC 7	REV 32	750-028467	ABBN6810	MPC-3D-16XGE-SFPP
FPC 8	REV 30	750-028467	ABBM4739	MPC-3D-16XGE-SFPP
FPC 9	REV 32	750-028467	ABBN6827	MPC-3D-16XGE-SFPP
FPC 10	REV 30	750-028467	ABBN0302	MPC-3D-16XGE-SFPP
FPC 11	REV 32	750-028467	ABBN6790	MPC-3D-16XGE-SFPP
FPC 12	REV 30	750-028467	ZM5111	MPC-3D-16XGE-SFPP
FPC 13	REV 30	750-028467	ABBN0208	MPC-3D-16XGE-SFPP
FPC 14	REV 23	750-028467	YN2977	MPC-3D-16XGE-SFPP
FPC 15	REV 32	750-028467	ABBN6798	MPC-3D-16XGE-SFPP
FPC 16	REV 30	750-028467	ABBN0270	MPC-3D-16XGE-SFPP
FPC 17	REV 32	750-028467	ABBN6796	MPC-3D-16XGE-SFPP
FPC 18	REV 30	750-028467	ABBN0281	MPC-3D-16XGE-SFPP
FPC 19	REV 32	750-028467	ABBN6813	MPC-3D-16XGE-SFPP
ADC 0	REV 13	750-043596	ABBX5561	PROTO-ASSEMBLY
ADC 1	REV 13	750-043596	ABBX5546	PROTO-ASSEMBLY
ADC 2	REV 13	750-043596	ABBX5535	MX2000-LC-ADAPTER
ADC 3	REV 13	750-043596	ABBX5552	MX2000-LC-ADAPTER
ADC 4	REV 13	750-043596	ABBX5581	MX2000-LC-ADAPTER
ADC 5	REV 13	750-043596	ABBX5545	PROTO-ASSEMBLY
ADC 6	REV 13	750-043596	ABBX5554	PROTO-ASSEMBLY
ADC 7	REV 07	750-043596	ABBV7194	MX2000-LC-ADAPTER
ADC 8	REV 07	750-043596	ABBV7251	MX2000-LC-ADAPTER
ADC 9	REV 07	750-043596	ABBV7202	MX2000-LC-ADAPTER
ADC 10	REV 13	750-043596	ABBX5579	MX2000-LC-ADAPTER
ADC 12	REV 13	750-043596	ABBX5575	MX2000-LC-ADAPTER
ADC 13	REV 13	750-043596	ABBX5539	PROTO-ASSEMBLY
ADC 14	REV 13	750-043596	ABBX5555	PROTO-ASSEMBLY
ADC 15	REV 13	750-043596	ABBX5557	MX2000-LC-ADAPTER
ADC 16	REV 13	750-043596	ABBX5536	PROTO-ASSEMBLY
ADC 17	REV 13	750-043596	ABBX5559	PROTO-ASSEMBLY
ADC 18	REV 13	750-043596	ABBX5537	PROTO-ASSEMBLY
ADC 19	REV 11	750-043596	ABBW5685	PROTO-ASSEMBLY
Fan Tray 0	REV 04	760-046960	ACAY0090	
Fan Tray 1	REV 04	760-046960	ACAY0088	
Fan Tray 2	REV 04	760-046960	ACAY0089	
Fan Tray 3	REV 04	760-046960	ACAY0108	

### show chassis hardware clei-models (MX2020 Router)

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user@ host > show chassis hardware clei-models
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## Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 27	750-040240	PROTOXCLEI	750-040240
FPM Board	REV 06	760-040242	PROTOXCLEI	760-040242
PSM 0	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 1	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 2	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 3	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 4	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 5	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 6	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 7	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 8	REV 01	740-045050	IPUPAJMKAA	MX2000-PSM-HC-DC-S-A
PSM 9	REV 03	740-045050	IPUPAJMKAA	MX2000-PSM-DC-S-A
PSM 10	REV 03	740-045050	IPUPAJMKAA	MX2000-PSM-DC-S-A
PSM 11	REV 03	740-045050	IPUPAJMKAA	MX2000-PSM-DC-S-A
PSM 12	REV 03	740-045050	IPUPAJMKAA	MX2000-PSM-DC-S-A
PSM 13	REV 03	740-045050	IPUPAJMKAA	MX2000-PSM-DC-S-A
PSM 15	REV 03	740-045050	IPUPAJMKAA	MX2000-PSM-DC-S-A
PDM 0	REV 01	740-045234		
PDM 1	REV 01	740-045234		
PDM 2	REV 01	740-045234	IPUPAJSKAA	MX2000-PDM-DC-S-A
Routing Engine 0	REV 02	740-041821		RE-S-1800X4-16G-S
Routing Engine 1	REV 02	740-041821		RE-S-1800X4-16G-S
CB 0	REV 08	750-040257	PROTOXCLEI	750-040257
CB 1	REV 04	750-040257	PROTOXCLEI	750-040257
SFB 0	REV 05	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 1	REV 05	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 2	REV 05	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 4	REV 05	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 5	REV 05	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 7	REV 05	711-044466	IPUCBA6CAA	MX2000-SFB-S
FPC 0	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 1	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 2	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 3	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 4	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 5	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 6	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 7	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 8	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 9	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 10	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 11	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 12	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 13	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 14	REV 23	750-028467		MPC-3D-16XGE-SFPP
FPC 15	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 16	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 17	REV 32	750-028467		MPC-3D-16XGE-SFPP
FPC 18	REV 30	750-028467		MPC-3D-16XGE-SFPP
FPC 19	REV 32	750-028467		MPC-3D-16XGE-SFPP
ADC 0	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 1	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 2	REV 13	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 3	REV 13	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 4	REV 13	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 5	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 6	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 7	REV 07	750-043596	PROTOXCLEI	MX2000-LC-ADAPTER
ADC 8	REV 07	750-043596	PROTOXCLEI	MX2000-LC-ADAPTER

ADC 9	REV 07	750-043596	PROTOXCLEI	MX2000-LC-ADAPTER
ADC 10	REV 13	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 12	REV 13	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 13	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 14	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 15	REV 13	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 16	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 17	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 18	REV 13	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
ADC 19	REV 11	750-043596	PROTOXCLEI	PROTO-ASSEMBLY
Fan Tray 0	REV 04	760-046960		
Fan Tray 1	REV 04	760-046960		
Fan Tray 2	REV 04	760-046960		
Fan Tray 3	REV 04	760-046960		

### show chassis hardware (MX2020 Router with MPC5EQ and MPC6E)

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user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN120BADBAFJ  MX2020
Midplane      REV 51   750-040240   ABAB9243      Lower Backplane
Midplane 1    REV 04   711-032386   ABAB9399      Upper Backplane
PMP 1         REV 05   711-032428   ACAJ2541      Upper Power Midplane
PMP 0         REV 04   711-032426   ACAJ2194      Lower Power Midplane
FPM Board     REV 13   760-040242   ABCA8835      Front Panel Display
PSM 0         REV 01   740-050037   1EDB32403L5   DC 52V Power Supply
Module
PSM 1         REV 01   740-050037   1EDB32403L3   DC 52V Power Supply
Module
PSM 2         REV 01   740-050037   1EDB32403KM   DC 52V Power Supply
Module
PSM 3         REV 01   740-050037   1EDB3130079   DC 52V Power Supply
Module
PSM 4         REV 01   740-050037   1EDB3130077   DC 52V Power Supply
Module
PSM 5         REV 01   740-050037   1EDB3130020   DC 52V Power Supply
Module
PSM 6         REV 01   740-050037   1EDB313009S   DC 52V Power Supply
Module
PSM 7         REV 01   740-050037   1EDB313008E   DC 52V Power Supply
Module
PSM 8         REV 01   740-050037   1EDB3130063   DC 52V Power Supply
Module
PSM 12        REV 01   740-050037   1EDB3130026   DC 52V Power Supply
Module
PSM 13        REV 01   740-050037   1EDB3130074   DC 52V Power Supply
Module
PSM 14        REV 01   740-050037   1EDB313009D   DC 52V Power Supply
Module
PSM 15        REV 01   740-050037   1EDB3130024   DC 52V Power Supply
Module
PSM 16        REV 01   740-050037   1EDB3130054   DC 52V Power Supply
Module
PSM 17        REV 01   740-050037   1EDB3130080   DC 52V Power Supply
Module
PDM 0         REV 03   740-045234   1EGA3170144   DC Power Dist Module
PDM 1         REV 03   740-045234   1EGA3170158   DC Power Dist Module
PDM 2         REV 03   740-045234   1EGA3170182   DC Power Dist Module
PDM 3         REV 03   740-045234   1EGA3170207   DC Power Dist Module
Routing Engine 0 REV 02   740-041821   9009112112    RE-S-1800x4

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Routing Engine 1	REV 02	740-041821	9009112087	RE-S-1800x4
CB 0	REV 23	750-040257	CABA2295	Control Board
CB 1	REV 23	750-040257	CABE8379	Control Board
SPMB 0	REV 02	711-041855	ABCE8851	PMB Board
SPMB 1	REV 02	711-041855	ABCE8839	PMB Board
SFB 0	REV 06	711-044466	ABCD5001	Switch Fabric Board
SFB 1	REV 06	711-044466	ABCD5034	Switch Fabric Board
SFB 2	REV 06	711-044466	ABCH3899	Switch Fabric Board
SFB 3	REV 06	711-044466	ABCD5020	Switch Fabric Board
SFB 4	REV 06	711-044466	ABCD4975	Switch Fabric Board
SFB 5	REV 06	711-044466	ABCH3881	Switch Fabric Board
SFB 6	REV 06	711-044466	ABCD5026	Switch Fabric Board
SFB 7	REV 06	711-044466	ABCD5032	Switch Fabric Board
FPC 0	REV 39	750-045715	CACD1902	MPC5E 3D Q 24XGE+6XLGE
CPU	REV 09	711-045719	CACB1933	RMPD PMB
PIC 0		BUILTIN	BUILTIN	12X10GE SFPP OTN
Xcvr 0	REV 01	740-031980	B11F00361	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	19T511101854	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	19T511100377	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	ANT0878	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	19T511100398	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	AQ4363J	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	19T511101377	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	ANT072M	SFP+-10G-SR
Xcvr 9	REV 01	740-021308	AG90C7N	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AM30M09	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B10E01016	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	12X10GE SFPP OTN
Xcvr 0	REV 01	740-031980	B10L04151	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	19T511101379	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQ5036J	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AG90C4M	SFP+-10G-SR
Xcvr 4	REV 01	740-021308	19T511101104	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	AQ502ZM	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	AN10KY2	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	AQ43G41	SFP+-10G-SR
Xcvr 8	REV 01	740-021308	AQ41F04	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AMS16N3	SFP+-10G-SR
Xcvr 10	REV 01	740-021308	AMH04Y3	SFP+-10G-SR
Xcvr 11	REV 01	740-021308	ANA093E	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	3X40GE QSFPP
PIC 3		BUILTIN	BUILTIN	3X40GE QSFPP
WAN MEZZ	REV 09	750-049136	CABN0410	MPC5E 24XGE OTN Mezz
FPC 1	REV 11	750-045372	CABK8112	MPCE Type 3 3D
CPU	REV 08	711-035209	CABJ6621	HMPD PMB 2G
MIC 0	REV 07	750-033307	CAAZ2897	10X10GE SFPP
PIC 0		BUILTIN	BUILTIN	10X10GE SFPP
Xcvr 0	REV 01	740-021308	AQ501VK	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQ501YC	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQ43HJF	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQ43H8D	SFP+-10G-SR
Xcvr 4	REV 01	740-021308	19T511100370	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	153363A00763	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	APH2LXB	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AMCOLVV	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B11F00230	SFP+-10G-SR
MIC 1	REV 14	750-033196	CAAP1390	1X100GE CXP
PIC 2		BUILTIN	BUILTIN	1X100GE CXP
Xcvr 0	REV 01	740-032166	XB11F000M	CFP2-100G-SR10
FPC 2	REV 17	750-037355	CAAS5826	MPC4E 3D 2CGE+8XGE
CPU	REV 08	711-035209	CAAR3986	HMPD PMB 2G

PIC 0		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-021308	T09F43722	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	ALP0KXF	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQ502FG	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQ502T7	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-035329	X12J00571	CFP-100G-SR10
PIC 2		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-031980	AJ71KEH	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11E01355	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11F00249	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP
FPC 3	REV 05	750-044444	CAAY9920	MPCE Type 2 3D P
CPU	REV 04	711-038484	CAAW3639	MPCE PMB 2G
MIC 0	REV 28	750-028387	CAAX1083	3D 4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0		NON-JNPR	CC07BK05B	XFP-10G-SR
Xcvr 1	REV 01	740-011571	C728XJ00U	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0		NON-JNPR	T12L92339	XFP-10G-SR
QXM 0	REV 06	711-028408	CAAW4915	MPC QXM
QXM 1	REV 06	711-028408	CAAW4894	MPC QXM
FPC 4	REV 18	750-046005	CACH5661	MPC5E 3D Q 2CGE+4XGE
CPU	REV 09	711-045719	CACF2880	RMPC PMB
PIC 0		BUILTIN	BUILTIN	2X10GE SFPP OTN
PIC 1		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0	REV 01	740-046563	XD16FC03Y	CFP2-100G-SR10
PIC 2		BUILTIN	BUILTIN	2X10GE SFPP OTN
PIC 3		BUILTIN	BUILTIN	1X100GE CFP2 OTN
Xcvr 0	REV 01	740-049775	J13K72997	CFP2-100G-LR4-D
FPC 5	REV 35	750-028467	CAAR2623	MPC 3D 16x 10GE
CPU	REV 11	711-029089	CAAR0491	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AQ5027T	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQ502J0	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQ5027S	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQ501Y7	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AQ501YB	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQ503EB	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQ43HJH	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQ43J0Y	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AQ50352	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQ501X6	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQ502NV	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQ502ZJ	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AQ502H4	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQ43HJK	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJ30CU7	SFP+-10G-SR
FPC 9	REV 30	750-044130	ABCF5773	MPC6E 3D
CPU	REV 09	711-045719	ABCF1270	RMPC PMB
MIC 0	REV 05	750-049457	ABCD7829	2X100GE CFP2 OTN
PIC 0		BUILTIN	BUILTIN	2X100GE CFP2 OTN
Xcvr 0		NON-JNPR	FE13F000K	CFP2-100G-SR10
Xcvr 1	REV 01	740-048813	XD32FE017	CFP2-100G-LR-D
MIC 1	REV 07	750-049457	ABCK2812	2X100GE CFP2 OTN
PIC 1		BUILTIN	BUILTIN	2X100GE CFP2 OTN
Xcvr 0	REV 01	740-048813	XD32FE018	CFP2-100G-SR10
Xcvr 1		NON-JNPR	FE13F000E	CFP2-100G-LR4-D

XLM 0	REV 05.2.00	711-046638	ABCF5915	MPC6E XL
XLM 1	REV 05.2.00	711-046638	ABCF5916	MPC6E XL
FPC 10	REV 36	750-044130	ABCS8602	MPC6E 3D
CPU	REV 09	711-045719	ABCS8779	RMPD PMB
MIC 0	REV 06	750-049979	ABCK2656	24X10GE SFPP OTN
PIC 0		BUILTIN	BUILTIN	24X10GE SFPP OTN
Xcvr 0	REV 01	740-021308	AQ43J08	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQE1Y2E	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQE1UW4	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQE1MQF	SFP+-10G-SR
Xcvr 4	REV 01	740-021308	AQGOMN1	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	AQE1L9M	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	AQGOMPD	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	AQE1Y2B	SFP+-10G-SR
Xcvr 8	REV 01	740-021308	AQGOLT5	SFP+-10G-SR
Xcvr 9	REV 01	740-021308	AQD2ET4	SFP+-10G-SR
Xcvr 10	REV 01	740-021308	AQGOMPC	SFP+-10G-SR
Xcvr 11	REV 01	740-021308	AQGOM63	SFP+-10G-SR
Xcvr 12	REV 01	740-021308	AQGOLT1	SFP+-10G-SR
Xcvr 13	REV 01	740-021308	AQGOM4L	SFP+-10G-SR
Xcvr 14	REV 01	740-021308	AQGOLS7	SFP+-10G-SR
Xcvr 15	REV 01	740-021308	AQE1MQB	SFP+-10G-SR
Xcvr 16	REV 01	740-021308	AQGOLZP	SFP+-10G-SR
Xcvr 17	REV 01	740-021308	AQE1LU9	SFP+-10G-SR
Xcvr 18	REV 01	740-021308	AQGOMRZ	SFP+-10G-SR
Xcvr 19	REV 01	740-021308	AQE1MQ9	SFP+-10G-SR
Xcvr 20	REV 01	740-021308	AQGOLRX	SFP+-10G-SR
Xcvr 21	REV 01	740-021308	AQE1UWD	SFP+-10G-SR
Xcvr 22	REV 01	740-021308	AQGOLT4	SFP+-10G-SR
Xcvr 23	REV 01	740-021308	AQE1MQL	SFP+-10G-SR
MIC 1	REV 12	750-050008	ABCK5372	4X100GE CXP
PIC 1		BUILTIN	BUILTIN	4X100GE CXP
Xcvr 3	REV 01	740-046563	XD16FC02Z	CFP2-100G-SR10
XLM 0	REV 07.2.00	711-046638	ABCK3481	MPC6E XL
XLM 1	REV 07.2.00	711-046638	ABCK4725	MPC6E XL
FPC 17	REV 28	750-044130	ABBZ3873	MPC6E 3D
CPU	REV 08	711-045719	ABBZ3770	RMPD PMB
MIC 0	REV 11	750-046535	ABCC7731	24X10GE SFPP
PIC 0		BUILTIN	BUILTIN	24X10GE SFPP
Xcvr 1	REV 01	740-021308	APK0543	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B10G01119	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQ502SX	SFP+-10G-SR
Xcvr 4	REV 01	740-021308	AQ43H84	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	AQ501TB	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	AQ502JZ	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	AQ502SC	SFP+-10G-SR
Xcvr 8	REV 01	740-021308	AQ502JW	SFP+-10G-SR
Xcvr 9	REV 01	740-021308	AQ502RM	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AHK013B	SFP+-10G-SR
Xcvr 11	REV 01	740-021308	AQGOMRT	SFP+-10G-SR
Xcvr 13	REV 01	740-031980	AMC0JTC	SFP+-10G-SR
Xcvr 14	REV 01	740-021308	ANAOMQ0	SFP+-10G-SR
Xcvr 15	REV 01	740-021308	AQ502GS	SFP+-10G-SR
Xcvr 16	REV 01	740-021308	AQGOM0J	SFP+-10G-SR
Xcvr 17	REV 01	740-021308	AQGOMUR	SFP+-10G-SR
Xcvr 18	REV 01	740-021308	AQGOMRR	SFP+-10G-SR
Xcvr 19	REV 01	740-021308	AQGOM0F	SFP+-10G-SR
Xcvr 20	REV 01	740-021308	AQ50312	SFP+-10G-SR
Xcvr 21	REV 01	740-021308	AQ5032U	SFP+-10G-SR
Xcvr 22	REV 01	740-021308	APE17B5	SFP+-10G-SR
Xcvr 23	REV 01	740-021309	91D104A00011	SFP+-10G-LR

MIC 1	REV 03	750-050008	ABCC4522	4X100GE CXP
PIC 1		BUILTIN	BUILTIN	4X100GE CXP
Xcvr 0	REV 01	740-046563	XD16FC02U	CFP2-100G-SR10
Xcvr 1	REV 01	740-046563	XC42FC03K	CFP2-100G-SR10
Xcvr 2	REV 01	740-046563	XC42FC01Z	CFP2-100G-SR10
Xcvr 3	REV 01	740-046563	XC42FC02U	CFP2-100G-SR10
XLM 0	REV 04.2.00	711-046638	ABBZ3779	MPC6E XL
XLM 1	REV 04.2.00	711-046638	ABBZ3780	MPC6E XL
FPC 18	REV 39	750-045715	CACD1910	MPC5E 3D Q 24XGE+6XLGE
CPU	REV 09	711-045719	CACD1817	RMPD PMB
PIC 0		BUILTIN	BUILTIN	12X10GE SFPP OTN
PIC 1		BUILTIN	BUILTIN	12X10GE SFPP OTN
PIC 2		BUILTIN	BUILTIN	3X40GE QSFPP
Xcvr 0	REV 01	740-046565	QD130194	QSFPP+-40G-SR4
Xcvr 1	REV 01	740-046565	QD130193	QSFPP+-40G-SR4
Xcvr 2	REV 01	740-046565	QD130196	QSFPP+-40G-SR4
PIC 3		BUILTIN	BUILTIN	3X40GE QSFPP
Xcvr 0	REV 01	740-046565	QD130191	QSFPP+-40G-SR4
Xcvr 1	REV 01	740-046565	QD130198	QSFPP+-40G-SR4
Xcvr 2	REV 01	740-046565	QD130192	QSFPP+-40G-SR4
WAN MEZZ	REV 09	750-049136	CABN0411	MPC5E 24XGE OTN Mezz
FPC 19	REV 39	750-045715	CACD1908	MPC5E 3D Q 24XGE+6XLGE
CPU	REV 09	711-045719	CACD1820	RMPD PMB
PIC 0		BUILTIN	BUILTIN	12X10GE SFPP OTN
Xcvr 0	REV 01	740-021308	AQA0EXJ	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AQG0M6D	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AQG0LW7	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AQA0JKB	SFP+-10G-SR
Xcvr 4	REV 01	740-021308	AQG0MTM	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	AQA07NE	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	AQG0M41	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	AQG0MU7	SFP+-10G-SR
Xcvr 8	REV 01	740-021308	AQG0MUG	SFP+-10G-SR
Xcvr 9	REV 01	740-021308	AQG0MMX	SFP+-10G-SR
Xcvr 10	REV 01	740-021308	AQG0M5K	SFP+-10G-SR
Xcvr 11	REV 01	740-021308	AQG0LVZ	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	12X10GE SFPP OTN
PIC 2		BUILTIN	BUILTIN	3X40GE QSFPP
PIC 3		BUILTIN	BUILTIN	3X40GE QSFPP
Xcvr 0	REV 01	740-046565	QD130242	QSFPP+-40G-SR4
Xcvr 1	REV 01	740-046565	QD130245	QSFPP+-40G-SR4
Xcvr 2	REV 01	740-046565	QD130613	QSFPP+-40G-SR4
WAN MEZZ	REV 09	750-049136	CABN0418	MPC5E 24XGE OTN Mezz
ADC 0	REV 17	750-043596	ABCD5378	Adapter Card
ADC 1	REV 17	750-043596	ABCD5465	Adapter Card
ADC 2	REV 17	750-043596	ABCD5431	Adapter Card
ADC 3	REV 17	750-043596	ABCD5356	Adapter Card
ADC 4	REV 02	750-043596	ZW1545	Adapter Card
ADC 5	REV 17	750-043596	ABCD5517	Adapter Card
ADC 18	REV 17	750-043596	ABCD5535	Adapter Card
ADC 19	REV 01	750-043596	ZV4127	Adapter Card
Fan Tray 0	REV 06	760-046960	ACAY0791	172mm FanTray - 6 Fans
Fan Tray 1	REV 06	760-046960	ACAY0788	172mm FanTray - 6 Fans
Fan Tray 2	REV 06	760-046960	ACAY0755	172mm FanTray - 6 Fans
Fan Tray 3	REV 06	760-046960	ACAY0441	172mm FanTray - 6 Fans

## show chassis hardware detail (MX2020 Router with MPC5EQ and MPC6E)

user@host&gt;show chassis hardware detail

Hardware inventory:

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



Chassis			JN120BADBAFJ	MX2020
Midplane	REV 51	750-040240	ABAB9243	Lower Backplane
Midplane 1	REV 04	711-032386	ABAB9399	Upper Backplane
PMP 1	REV 05	711-032428	ACAJ2541	Upper Power Midplane
PMP 0	REV 04	711-032426	ACAJ2194	Lower Power Midplane
FPM Board	REV 13	760-040242	ABCA8835	Front Panel Display
PSM 0	REV 01	740-050037	1EDB32403L5	DC 52V Power Supply
Module				
PSM 1	REV 01	740-050037	1EDB32403L3	DC 52V Power Supply
Module				
PSM 2	REV 01	740-050037	1EDB32403KM	DC 52V Power Supply
Module				
PSM 3	REV 01	740-050037	1EDB3130079	DC 52V Power Supply
Module				
PSM 4	REV 01	740-050037	1EDB3130077	DC 52V Power Supply
Module				
PSM 5	REV 01	740-050037	1EDB3130020	DC 52V Power Supply
Module				
PSM 6	REV 01	740-050037	1EDB313009S	DC 52V Power Supply
Module				
PSM 7	REV 01	740-050037	1EDB313008E	DC 52V Power Supply
Module				
PSM 8	REV 01	740-050037	1EDB3130063	DC 52V Power Supply
Module				
PSM 12	REV 01	740-050037	1EDB3130026	DC 52V Power Supply
Module				
PSM 13	REV 01	740-050037	1EDB3130074	DC 52V Power Supply
Module				
PSM 14	REV 01	740-050037	1EDB313009D	DC 52V Power Supply
Module				
PSM 15	REV 01	740-050037	1EDB3130024	DC 52V Power Supply
Module				
PSM 16	REV 01	740-050037	1EDB3130054	DC 52V Power Supply
Module				
PSM 17	REV 01	740-050037	1EDB3130080	DC 52V Power Supply
Module				
PDM 0	REV 03	740-045234	1EGA3170144	DC Power Dist Module
PDM 1	REV 03	740-045234	1EGA3170158	DC Power Dist Module
PDM 2	REV 03	740-045234	1EGA3170182	DC Power Dist Module
PDM 3	REV 03	740-045234	1EGA3170207	DC Power Dist Module
Routing Engine 0	REV 02	740-041821	9009112112	RE-S-1800x4
ad0 3998 MB		Virtium - TuffDrive	VCF P1T0200274310822	113 Compact Flash
ad1 30533 MB		UGB94BPH32H0S1-KCI	11000031656	Disk 1
usb0 (addr 1)		EHCI root hub 0	Intel	uhub0
usb0 (addr 2)		product 0x0020 32	vendor 0x8087	uhub1
DIMM 0		SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54	MFR ID-ce80	
DIMM 1		SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54	MFR ID-ce80	
DIMM 2		SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54	MFR ID-ce80	
DIMM 3		SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54	MFR ID-ce80	
Routing Engine 1	REV 02	740-041821	9009112087	RE-S-1800x4
ad0 3998 MB		Virtium - TuffDrive	VCF P1T0200274310822	366 Compact Flash
ad1 30533 MB		UGB94BPH32H0S1-KCI	11000039979	Disk 1
CB 0	REV 23	750-040257	CABA2295	Control Board
CB 1	REV 23	750-040257	CABE8379	Control Board
SPMB 0				
SPMB 1				
FPC 0	REV 39	750-045715	CACD1902	MPC5E 3D Q 24XGE+6XLGE
CPU				
FPC 1	REV 11	750-045372	CABK8112	MPCE Type 3 3D
CPU				
FPC 2	REV 17	750-037355	CAAS5826	MPC4E 3D 2CGE+8XGE

CPU				
FPC 3	REV 05	750-044444	CAAY9920	MPCE Type 2 3D P
CPU				
FPC 4	REV 18	750-046005	CACH5661	MPC5E 3D Q 2CGE+4XGE
CPU				
FPC 5	REV 35	750-028467	CAAR2623	MPC 3D 16x 10GE
CPU				
FPC 9	REV 30	750-044130	ABCF5773	MPC6E 3D
CPU				
FPC 10	REV 36	750-044130	ABCS8602	MPC6E 3D
CPU				
FPC 17	REV 28	750-044130	ABBZ3873	MPC6E 3D
CPU				
FPC 18	REV 39	750-045715	CACD1910	MPC5E 3D Q 24XGE+6XLGE
CPU				
FPC 19	REV 39	750-045715	CACD1908	MPC5E 3D Q 24XGE+6XLGE
CPU				
Fan Tray 0	REV 06	760-046960	ACAY0791	172mm FanTray - 6 Fans
Fan Tray 1	REV 06	760-046960	ACAY0788	172mm FanTray - 6 Fans
Fan Tray 2	REV 06	760-046960	ACAY0755	172mm FanTray - 6 Fans
Fan Tray 3	REV 06	760-046960	ACAY0441	172mm FanTray - 6 Fans

#### show chassis hardware extensive (MX2020 Router with MPC5EQ and MPC6E)

```

user@host> show chassis hardware extensive
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Jedec Code:   0x7fb0          EEPROM Version: 0x02
S/N:          JN120BADBAFJ
Assembly ID:  0x0557          Assembly Version: 00.00
Date:         00-00-0000      Assembly Flags:  0x00
ID: MX2020
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 7f b0 02 ff 05 57 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x20: 4a 4e 31 32 30 42 41 44 42 41 46 4a 00 00 00 00
Address 0x30: 00 00 00 ff 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane
Jedec Code:   0x7fb0          EEPROM Version: 0x02
P/N:         750-040240      S/N:          ABAB9243
Assembly ID:  0x0b22          Assembly Version: 01.51
Date:         05-30-2013      Assembly Flags: 0x00
Version:      REV 51          CLEI Code:    IPMU710ARA
ID: Lower Backplane          FRU Model Number: CHAS-BP-MX2020-S
Board Information Record:
Address 0x00: ad 01 10 00 4c 96 14 72 30 08 ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 22 01 33 52 45 56 20 35 31 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 34 30 32 34 30 00 00
Address 0x20: 53 2f 4e 20 41 42 41 42 39 32 34 33 00 1e 05 07
Address 0x30: dd ff ff ff ad 01 10 00 4c 96 14 72 30 08 ff ff
Address 0x40: ff ff ff ff 01 49 50 4d 55 37 31 30 41 52 41 43
Address 0x50: 48 41 53 2d 42 50 2d 4d 58 32 30 32 30 2d 53 00
Address 0x60: 00 00 00 00 00 00 41 00 00 ff ff ff ff ff ff ff

```

```

Address 0x70: ff ff ff d3 ff ff ff ff ff ff ff ff ff ff ff
Midplane 1      REV 04    711-032386    ABAB9399      Upper Backplane
Jedec Code:    0x7fb0      EEPROM Version: 0x01
P/N:          711-032386    S/N:          ABAB9399
Assembly ID:   0x0b23      Assembly Version: 01.04
Date:         10-22-2012    Assembly Flags: 0x00
Version:       REV 04
ID: Upper Backplane
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 fe 0b 23 01 04 52 45 56 20 30 34 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 33 32 33 38 36 00 00
Address 0x20: 53 2f 4e 20 41 42 41 42 39 33 39 39 00 16 0a 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff
Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
PMP 1          REV 05    711-032428    ACAJ2541      Upper Power Midplane
Jedec Code:    0x7fb0      EEPROM Version: 0x01
P/N:          711-032428    S/N:          ACAJ2541
Assembly ID:   0x045c      Assembly Version: 01.05
Date:         04-26-2013    Assembly Flags: 0x00
Version:       REV 05
ID: Upper Power Midplane
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 04 5c 01 05 52 45 56 20 30 35 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 33 32 34 32 38 00 00
Address 0x20: 53 2f 4e 20 41 43 41 4a 32 35 34 31 00 1a 04 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff
Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
PMP 0          REV 04    711-032426    ACAJ2194      Lower Power Midplane
Jedec Code:    0x7fb0      EEPROM Version: 0x01
P/N:          711-032426    S/N:          ACAJ2194
Assembly ID:   0x045d      Assembly Version: 01.04
Date:         01-29-2013    Assembly Flags: 0x00
Version:       REV 04
ID: Lower Power Midplane
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 04 5d 01 04 52 45 56 20 30 34 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 33 32 34 32 36 00 00
Address 0x20: 53 2f 4e 20 41 43 41 4a 32 31 39 34 00 1d 01 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff
Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
FPM Board      REV 13    760-040242    ABCA8835      Front Panel Display
Jedec Code:    0x7fb0      EEPROM Version: 0x02
P/N:          760-040242    S/N:          ABCA8835
Assembly ID:   0x0b24      Assembly Version: 01.13
Date:         04-13-2013    Assembly Flags: 0x00
Version:       REV 13      CLEI Code:     IPMYAESJRA

```

```

ID: Front Panel Display          FRU Model Number: MX2020-CRAFT-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 0b 24 01 0d 52 45 56 20 31 33 00 00
  Address 0x10: 00 00 00 00 37 36 30 2d 30 34 30 32 34 32 00 00
  Address 0x20: 53 2f 4e 20 41 42 43 41 38 38 33 35 00 0d 04 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 49 50 4d 59 41 45 35 4a 52 41 4d
  Address 0x50: 58 32 30 32 30 2d 43 52 41 46 54 2d 53 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 00 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 95 ff ff ff ff ff ff ff ff ff ff ff ff
PSM 0          REV 01   740-050037   1EDB32403L5   DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-050037      S/N:              1EDB32403L5
Assembly ID:   0x0478          Assembly Version:  01.01
Date:          06-21-2013      Assembly Flags:    0x00
Version:       REV 01          CLEI Code:         IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
  Address 0x20: 31 45 44 42 33 32 34 30 33 4c 35 00 00 15 06 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
  Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 1          REV 01   740-050037   1EDB32403L3   DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-050037      S/N:              1EDB32403L3
Assembly ID:   0x0478          Assembly Version:  01.01
Date:          06-21-2013      Assembly Flags:    0x00
Version:       REV 01          CLEI Code:         IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
  Address 0x20: 31 45 44 42 33 32 34 30 33 4c 33 00 00 15 06 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
  Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 2          REV 01   740-050037   1EDB32403KM   DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-050037      S/N:              1EDB32403KM
Assembly ID:   0x0478          Assembly Version:  01.01
Date:          06-21-2013      Assembly Flags:    0x00
Version:       REV 01          CLEI Code:         IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:

```

```

Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
Address 0x20: 31 45 44 42 33 32 34 30 33 4b 4d 00 00 15 06 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
Address 0x60: 00 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff
Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 3          REV 01   740-050037   1EDB3130079   DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:  0x02
P/N:           740-050037      S/N:             1EDB3130079
Assembly ID:   0x0478          Assembly Version: 01.01
Date:          05-16-2013      Assembly Flags:   0x00
Version:       REV 01          CLEI Code:        IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
Address 0x20: 31 45 44 42 33 31 33 30 30 37 39 00 00 10 05 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
Address 0x60: 00 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff
Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 4          REV 01   740-050037   1EDB3130077   DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:  0x02
P/N:           740-050037      S/N:             1EDB3130077
Assembly ID:   0x0478          Assembly Version: 01.01
Date:          05-17-2013      Assembly Flags:   0x00
Version:       REV 01          CLEI Code:        IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
Address 0x20: 31 45 44 42 33 31 33 30 30 37 37 00 00 11 05 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
Address 0x60: 00 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff
Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 5          REV 01   740-050037   1EDB3130020   DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:  0x02
P/N:           740-050037      S/N:             1EDB3130020
Assembly ID:   0x0478          Assembly Version: 01.01
Date:          05-16-2013      Assembly Flags:   0x00
Version:       REV 01          CLEI Code:        IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
Address 0x20: 31 45 44 42 33 31 33 30 30 32 30 00 00 10 05 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff

```

```

Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 6          REV 01   740-050037   1EDB313009S   DC 52V Power Supply
Module
Jedec Code:   0x7fb0           EEPROM Version:   0x02
P/N:          740-050037       S/N:              1EDB313009S
Assembly ID:  0x0478           Assembly Version: 01.01
Date:         05-17-2013       Assembly Flags:   0x00
Version:      REV 01           CLEI Code:        IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
Address 0x20: 31 45 44 42 33 31 33 30 30 39 53 00 00 11 05 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 7          REV 01   740-050037   1EDB313008E   DC 52V Power Supply
Module
Jedec Code:   0x7fb0           EEPROM Version:   0x02
P/N:          740-050037       S/N:              1EDB313008E
Assembly ID:  0x0478           Assembly Version: 01.01
Date:         05-17-2013       Assembly Flags:   0x00
Version:      REV 01           CLEI Code:        IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
Address 0x20: 31 45 44 42 33 31 33 30 30 38 45 00 00 11 05 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 8          REV 01   740-050037   1EDB3130063   DC 52V Power Supply
Module
Jedec Code:   0x7fb0           EEPROM Version:   0x02
P/N:          740-050037       S/N:              1EDB3130063
Assembly ID:  0x0478           Assembly Version: 01.01
Date:         05-17-2013       Assembly Flags:   0x00
Version:      REV 01           CLEI Code:        IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
Address 0x20: 31 45 44 42 33 31 33 30 30 36 33 00 00 11 05 07
Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00

```

```

PSM 12          REV 01   740-050037   1EDB3130026       DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-050037      S/N:              1EDB3130026
Assembly ID:   0x0478          Assembly Version:  01.01
Date:          05-16-2013      Assembly Flags:    0x00
Version:       REV 01          CLEI Code:         IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
  Address 0x20: 31 45 44 42 33 31 33 30 30 32 36 00 00 10 05 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
  Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 13          REV 01   740-050037   1EDB3130074       DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-050037      S/N:              1EDB3130074
Assembly ID:   0x0478          Assembly Version:  01.01
Date:          05-17-2013      Assembly Flags:    0x00
Version:       REV 01          CLEI Code:         IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
  Address 0x20: 31 45 44 42 33 31 33 30 30 37 34 00 00 11 05 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
  Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 14          REV 01   740-050037   1EDB313009D       DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-050037      S/N:              1EDB313009D
Assembly ID:   0x0478          Assembly Version:  01.01
Date:          05-17-2013      Assembly Flags:    0x00
Version:       REV 01          CLEI Code:         IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 35 30 30 33 37 00 00
  Address 0x20: 31 45 44 42 33 31 33 30 30 39 44 00 00 11 05 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 44 43 2d 53 00 00
  Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 2a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 15          REV 01   740-050037   1EDB3130024       DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-050037      S/N:              1EDB3130024

```

```

Assembly ID: 0x0478          Assembly Version: 01.01
Date:          05-16-2013    Assembly Flags: 0x00
Version:       REV 01        CLEI Code:      IPUPAKRKAA
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-DC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
...

```

### show chassis hardware models (MX2020 Routers with MPC5EQ and MPC6E)

```

user@host> show chassis hardware models
Hardware inventory:

```

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 51	750-040240	ABAB9243	CHAS-BP-MX2020-S
FPM Board	REV 13	760-040242	ABCA8835	MX2020-CRAFT-S
PSM 0	REV 01	740-050037	1EDB32403L5	MX2000-PSM-DC-S
PSM 1	REV 01	740-050037	1EDB32403L3	MX2000-PSM-DC-S
PSM 2	REV 01	740-050037	1EDB32403KM	MX2000-PSM-DC-S
PSM 3	REV 01	740-050037	1EDB3130079	MX2000-PSM-DC-S
PSM 4	REV 01	740-050037	1EDB3130077	MX2000-PSM-DC-S
PSM 5	REV 01	740-050037	1EDB3130020	MX2000-PSM-DC-S
PSM 6	REV 01	740-050037	1EDB313009S	MX2000-PSM-DC-S
PSM 7	REV 01	740-050037	1EDB313008E	MX2000-PSM-DC-S
PSM 8	REV 01	740-050037	1EDB3130063	MX2000-PSM-DC-S
PSM 12	REV 01	740-050037	1EDB3130026	MX2000-PSM-DC-S
PSM 13	REV 01	740-050037	1EDB3130074	MX2000-PSM-DC-S
PSM 14	REV 01	740-050037	1EDB313009D	MX2000-PSM-DC-S
PSM 15	REV 01	740-050037	1EDB3130024	MX2000-PSM-DC-S
PSM 16	REV 01	740-050037	1EDB3130054	MX2000-PSM-DC-S
PSM 17	REV 01	740-050037	1EDB3130080	MX2000-PSM-DC-S
PDM 0	REV 03	740-045234	1EGA3170144	MX2000-PDM-DC-S
PDM 1	REV 03	740-045234	1EGA3170158	MX2000-PDM-DC-S
PDM 2	REV 03	740-045234	1EGA3170182	MX2000-PDM-DC-S
PDM 3	REV 03	740-045234	1EGA3170207	MX2000-PDM-DC-S
Routing Engine 0	REV 02	740-041821	9009112112	RE-MX2000-1800X4-S
Routing Engine 1	REV 02	740-041821	9009112087	RE-MX2000-1800X4-S
CB 0	REV 23	750-040257	CABA2295	RE-MX2000-1800X4-S
CB 1	REV 23	750-040257	CABE8379	RE-MX2000-1800X4-S
SFB 0	REV 06	711-044466	ABCD5001	MX2000-SFB-S
SFB 1	REV 06	711-044466	ABCD5034	MX2000-SFB-S
SFB 2	REV 06	711-044466	ABCH3899	MX2000-SFB-S
SFB 3	REV 06	711-044466	ABCD5020	MX2000-SFB-S
SFB 4	REV 06	711-044466	ABCD4975	MX2000-SFB-S
SFB 5	REV 06	711-044466	ABCH3881	MX2000-SFB-S
SFB 6	REV 06	711-044466	ABCD5026	MX2000-SFB-S
SFB 7	REV 06	711-044466	ABCD5032	MX2000-SFB-S
FPC 0	REV 39	750-045715	CACD1902	PROTO-ASSEMBLY
FPC 1	REV 11	750-045372	CABK8112	MX-MPC3E-3D
FPC 2	REV 17	750-037355	CAAS5826	MPC4E-3D-2CGE-8XGE
FPC 3	REV 05	750-044444	CAAY9920	MX-MPC2E-3D-P
FPC 4	REV 18	750-046005	CACH5661	PROTO-ASSEMBLY
FPC 5	REV 35	750-028467	CAAR2623	MPC-3D-16XGE-SFPP
FPC 9	REV 30	750-044130	ABCF5773	PROTO-ASSEMBLY
FPC 10	REV 36	750-044130	ABCS8602	PROTO-ASSEMBLY
FPC 17	REV 28	750-044130	ABBZ3873	PROTO-ASSEMBLY
FPC 18	REV 39	750-045715	CACD1910	PROTO-ASSEMBLY
FPC 19	REV 39	750-045715	CACD1908	PROTO-ASSEMBLY
ADC 0	REV 17	750-043596	ABCD5378	MX2000-LC-ADAPTER
ADC 1	REV 17	750-043596	ABCD5465	MX2000-LC-ADAPTER



ADC 2	REV 17	750-043596	ABCD5431	MX2000-LC-ADAPTER
ADC 3	REV 17	750-043596	ABCD5356	MX2000-LC-ADAPTER
ADC 4	REV 02	750-043596	ZW1545	750-043596
ADC 5	REV 17	750-043596	ABCD5517	MX2000-LC-ADAPTER
ADC 18	REV 17	750-043596	ABCD5535	MX2000-LC-ADAPTER
ADC 19	REV 01	750-043596	ZV4127	750-043596
Fan Tray 0	REV 06	760-046960	ACAY0791	MX2000-FANTRAY-S
Fan Tray 1	REV 06	760-046960	ACAY0788	MX2000-FANTRAY-S
Fan Tray 2	REV 06	760-046960	ACAY0755	MX2000-FANTRAY-S
Fan Tray 3	REV 06	760-046960	ACAY0441	MX2000-FANTRAY-S

### show chassis hardware clei-models (MX2020 Router with MPC5EQ and MPC6E)

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

```
Hardware inventory:
```

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 51	750-040240	IPMU710ARA	CHAS-BP-MX2020-S
FPM Board	REV 13	760-040242	IPMYAE5JRA	MX2020-CRAFT-S
PSM 0	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PSM 1	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PSM 2	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PSM 3	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PSM 4	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PSM 5	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PSM 6	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PSM 7	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PSM 8	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PSM 12	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PSM 13	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PSM 14	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PSM 15	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PSM 16	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PSM 17	REV 01	740-050037	IPUPAKRKAA	MX2000-PSM-DC-S
PDM 0	REV 03	740-045234	IPUPAJSKAA	MX2000-PDM-DC-S
PDM 1	REV 03	740-045234	IPUPAJSKAA	MX2000-PDM-DC-S
PDM 2	REV 03	740-045234	IPUPAJSKAA	MX2000-PDM-DC-S
PDM 3	REV 03	740-045234	IPUPAJSKAA	MX2000-PDM-DC-S
CB 0	REV 23	750-040257	IPUCBA7CTA	RE-MX2000-1800X4-S
CB 1	REV 23	750-040257	IPUCBA7CTA	RE-MX2000-1800X4-S
SFB 0	REV 06	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 1	REV 06	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 2	REV 06	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 3	REV 06	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 4	REV 06	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 5	REV 06	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 6	REV 06	711-044466	IPUCBA6CAA	MX2000-SFB-S
SFB 7	REV 06	711-044466	IPUCBA6CAA	MX2000-SFB-S
FPC 0	REV 39	750-045715	PROTOXCLEI	PROTO-ASSEMBLY
FPC 1	REV 11	750-045372	COUIBBNBAA	MX-MPC3E-3D
FPC 2	REV 17	750-037355	IPU3A4DHAA	MPC4E-3D-2CGE-8XGE
FPC 3	REV 05	750-044444	COUIBBGBAA	MX-MPC2E-3D-P
MIC 0	REV 28	750-028387	COUIA16BAA	MIC-3D-4XGE-XFP
FPC 4	REV 18	750-046005	PROTOXCLEI	PROTO-ASSEMBLY
FPC 5	REV 35	750-028467		MPC-3D-16XGE-SFPP
FPC 9	REV 30	750-044130	PROTOXCLEI	PROTO-ASSEMBLY
MIC 0	REV 05	750-049457	PROTOXCLEI	PROTO-ASSEMBLY
FPC 10	REV 36	750-044130	PROTOXCLEI	PROTO-ASSEMBLY
MIC 0	REV 06	750-049979	PROTOXCLEI	PROTO-ASSEMBLY
MIC 1	REV 12	750-050008	PROTOXCLEI	PROTO-ASSEMBLY
FPC 17	REV 28	750-044130	PROTOXCLEI	PROTO-ASSEMBLY
MIC 1	REV 03	750-050008	PROTOXCLEI	PROTO-ASSEMBLY

FPC 18	REV 39	750-045715	PROTOXCLEI	PROTO-ASSEMBLY
FPC 19	REV 39	750-045715	PROTOXCLEI	PROTO-ASSEMBLY
ADC 0	REV 17	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 1	REV 17	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 2	REV 17	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 3	REV 17	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 4	REV 02	750-043596	PROTOXCLEI	750-043596
ADC 5	REV 17	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 18	REV 17	750-043596	IPUCBA8CAA	MX2000-LC-ADAPTER
ADC 19	REV 01	750-043596	PROTOXCLEI	750-043596
Fan Tray 0	REV 06	760-046960	IPUCBA5CAA	MX2000-FANTRAY-S
Fan Tray 1	REV 06	760-046960	IPUCBA5CAA	MX2000-FANTRAY-S
Fan Tray 2	REV 06	760-046960	IPUCBA5CAA	MX2000-FANTRAY-S
Fan Tray 3	REV 06	760-046960	IPUCBA5CAA	MX2000-FANTRAY-S

### show chassis hardware (MX Series routers with ATM MIC)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN115736EAFc  MX240
Midplane      REV 07   760-021404   ABAA5038       MX240 Backplane
FPM Board     REV 03   760-021392   ABBA2758       Front Panel Display
PEM 0         Rev 01   740-022697   QCS0937C07K    PS 1.2-1.7kW; 100-240V
AC in
PEM 1         Rev 01   740-022697   QCS0939C04X    PS 1.2-1.7kW; 100-240V
AC in
PEM 2         Rev 01   740-022697   QCS0937C06B    PS 1.2-1.7kW; 100-240V
AC in
PEM 3         Rev 01   740-022697   QCS0937C07U    PS 1.2-1.7kW; 100-240V
AC in
Routing Engine 0 REV 12   740-013063   9009042291     RE-S-2000
Routing Engine 1 REV 12   740-013063   9009042266     RE-S-2000
CB 0          REV 06   710-021523   ABBC1435       MX SCB
CB 1          REV 06   710-021523   ABBC1497       MX SCB
FPC 2         REV 14   750-031088   YH8446         MPC Type 2 3D Q
CPU           REV 06   711-030884   YH9612         MPC PMB 2G
MIC 0
MIC 1         REV 10   750-036132   ZP7062         2xOC12/8xOC3 CC-CE
PIC 2         BUILTIN  BUILTIN       2xOC12/8xOC3 CC-CE

Xcvr 0        NON-JNPR  23393-00492   UNKNOWN
Xcvr 1        NON-JNPR  23393-00500   UNKNOWN
Xcvr 2        NON-JNPR  23393-00912   UNKNOWN
Xcvr 3        REV 01   740-015638   22216-00575   Load SFP
Xcvr 4        REV 01   740-015638   24145-00110   Load SFP
Xcvr 5        REV 01   740-015638   24145-00016   Load SFP
Xcvr 6        REV 01   740-015638   24145-00175   Load SFP
Xcvr 7        NON-JNPR  23393-00627   UNKNOWN
QXM 0         REV 05   711-028408   YF4681         MPC QXM
QXM 1         REV 05   711-028408   YF4817         MPC QXM
Fan Tray 0    REV 01   710-021113   XL3645         MX240 Fan Tray

```

### show chassis hardware (MX240, MX480, MX960 routers with Application Services Modular Line Card)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN11D969BAFA  MX960
Midplane      REV 03   710-013698   ACAA2362       MX960 Backplane

```

FPM Board	REV 03	710-014974	ZR0639	Front Panel Display
PDM	Rev 03	740-013110	QCS152250SX	Power Distribution Module
PEM 0	Rev 10	740-013683	QCS1512718W	DC Power Entry Module
PEM 1	Rev 10	740-013683	QCS1512702Y	DC Power Entry Module
Routing Engine 0	REV 15	740-013063	9012024667	RE-S-2000
Routing Engine 1	REV 15	740-013063	9012024649	RE-S-2000
CB 0	REV 14	750-031391	ZJ7749	Enhanced MX SCB
CB 1	REV 14	750-031391	ZJ7750	Enhanced MX SCB
CB 2	REV 14	750-031391	ZY9233	Enhanced MX SCB
FPC 0	REV 17	750-031089	YR7434	MPC Type 2 3D
CPU				
FPC 1	REV 11	750-037207	ZW9727	AS-MCC
CPU	REV 04	711-038173	ZW4817	AS-MCC-PMB
MIC 0	REV 01	750-037214	ZH3764	AS-MSC
PIC 0		BUILTIN	BUILTIN	AS-MSC
MIC 1	REV 01	711-028408	JZ9200	AS-MXC
PIC 2		BUILTIN	BUILTIN	AS-MXC
FPC 4	REV 30	750-028467	ABBN0232	MPC 3D 16x 10GE
CPU				
FPC 5	REV 04	750-037207	ZK9074	AS-MCC
CPU				
Fan Tray 0	REV 05	740-014971	VT5683	Fan Tray
Fan Tray 1	REV 05	740-014971	VT5684	Fan Tray

### show chassis hardware extensive (MX240, MX480, MX960 Routers with Application Services Modular Line Card)

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

```
ID: AS-MCC                                FRU Model Number: 750-037207
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 37 01 0b 52 45 56 20 31 31 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 32 30 37 00 00
Address 0x20: 53 2f 4e 20 5a 57 39 37 32 37 00 00 00 11 02 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 37
Address 0x50: 35 30 2d 30 33 37 32 30 37 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 31 31 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 5e ff ff ff ff ff ff ff ff ff ff ff ff
CPU                                REV 04 711-038173 ZW4817 AS-MCC-PMB
Jedec Code: 0x7fb0                EEPROM Version: 0x02
P/N: 711-038173                  S/N: ZW4817
Assembly ID: 0x0b38              Assembly Version: 01.04
Date: 12-30-2011                Assembly Flags: 0x00
Version: REV 04
ID: AS-MCC-PMB
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 38 01 04 52 45 56 20 30 34 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 33 38 31 37 33 00 00
Address 0x20: 53 2f 4e 20 5a 57 34 38 31 37 00 00 00 1e 0c 07
Address 0x30: db ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 50 52 4f 54 4f 58 43 4c 45 49 37
Address 0x50: 31 31 2d 30 33 38 31 37 33 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 30 34 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 60 00 00 00 00 00 00 00 00 00 00 00 00
MIC 0                                REV 01 750-037214 ZH3764 AS-MSC
Jedec Code: 0x7fb0                EEPROM Version: 0x02
P/N: 750-037214                  S/N: ZH3764
```

```

Assembly ID: 0x0a44          Assembly Version: 01.01
Date: 07-04-2011           Assembly Flags: 0x00
Version: REV 01
ID: AS-MSC
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff I2C Hex Data:
Address 0x00: 7f b0 02 ff 0a 44 01 01 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 32 31 34 00 00
Address 0x20: 53 2f 4e 20 5a 48 33 37 36 34 00 00 00 04 07 07
Address 0x30: db ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 ff ff ff ff ff
Address 0x70: ff ff ff f6 c0 03 e1 bc 00 00 00 00 00 00 00 00
PIC 0          BUILTIN      BUILTIN      AS-MSC
FPC 4          REV 30      750-028467    ABBN0232    MPC 3D 16x 10GE
Jedec Code: 0x7fb0          EEPROM Version: 0x01

```

### show chassis hardware (MX480 Router with MPC4E)

```

user@host> show chassis hardware
Hardware inventory:

```

Item	Version	Part number	Serial number	Description
Chassis			JN10FF57BAFB	MX480
Midplane	REV 05	750-047849	Good	MX480 Midplane
FPM Board	REV 02	710-017254	KG2066	Front Panel Display
PEM 0	Rev 03	740-017330	QCS081590BJ	PS 1.2-1.7kW; 100-240V
AC in				
PEM 1	Rev 03	740-017330	QCS0815908Z	PS 1.2-1.7kW; 100-240V
AC in				
PEM 2	Rev 03	740-029970	QCS1001U001	PS 1.4-2.52kW; 90-264V
AC in				
Routing Engine 0	REV 05	740-031116	9009089502	RE-S-1800x4
Routing Engine 1	REV 05	740-031116	9009089624	RE-S-1800x4
CB 0	REV 02	750-031391	YE8506	Enhanced MX SCB
CB 1	REV 14	750-031391	ZK8265	Enhanced MX SCB
FPC 2	REV 05	750-037358	ZT0638	MPC4E 3D 32XGE
CPU	REV 07	711-035209	ZK3187	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	8X10GE SFPP
PIC 1		BUILTIN	BUILTIN	8X10GE SFPP
PIC 2		BUILTIN	BUILTIN	8X10GE SFPP
PIC 3		BUILTIN	BUILTIN	8X10GE SFPP
FPC 3	REV 06	750-037355	CAAB1144	MPC4E 3D 2CGE+8XGE
CPU	REV 08	711-035209	CAAB1278	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-031980	B11E01439	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11D05809	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0		NON-JNPR	D5418	UNKNOWN
PIC 2		BUILTIN	BUILTIN	4x10GE SFPP
PIC 3		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0		NON-JNPR	X12J00362	CFP-100G-SR10
FPC 4	REV 12.3.10	750-033205	YR9445	MPCE Type 3 3D
CPU				
Fan Tray				Enhanced Left Fan Tray

### show chassis hardware (MX2020 Router with MPC4E)

```

user@host> show chassis hardware
Hardware inventory:

```

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

Chassis			JN11E188CAFJ	MX2020
Midplane	REV 04	711-032387	ABAC7474	Lower Backplane
Midplane 1	REV 04	711-032386	ABAC7408	Upper Backplane
PMP 1	REV 03	711-032428	ACAJ1137	Upper Power Midplane
PMP 0	REV 03	711-032426	ACAJ1016	Lower Power Midplane
FPM Board	REV 06	760-040242	ABBT8832	Front Panel Display
PSM 3	REV 0C	740-033727	VK00255	DC 52V Power Supply
Module				
PSM 4	REV 0C	740-033727	VJ00148	DC 52V Power Supply
Module				
PSM 5	REV 0C	740-033727	VK00207	DC 52V Power Supply
Module				
PSM 6	REV 0C	740-033727	VK00319	DC 52V Power Supply
Module				
PSM 7	REV 0C	740-033727	VK00264	DC 52V Power Supply
Module				
PSM 8	REV 0B	740-033727	VG00025	DC 52V Power Supply
Module				
PSM 13	REV 0C	740-033727	VK00274	DC 52V Power Supply
Module				
PSM 14	REV 0C	740-033727	VJ00167	DC 52V Power Supply
Module				
PSM 15	REV 0C	740-033727	VK00299	DC 52V Power Supply
Module				
PSM 16	REV 0C	740-033727	VK00213	DC 52V Power Supply
Module				
PSM 17	REV 0C	740-033727	VK00253	DC 52V Power Supply
Module				
PDM 0	REV 0B	740-038109	VJ00040	DC Power Dist Module
PDM 2	REV 0B	740-038109	VJ00025	DC Power Dist Module
Routing Engine 0	REV 02	740-041821	9009089735	RE-S-1800x4
Routing Engine 1	REV 02	740-041821	9009089731	RE-S-1800x4
CB 0	REV 04	750-040257	ZT2846	Control Board
CB 1	REV 04	750-040257	ZT2877	Control Board
SPMB 0	REV 01	711-041855	ZS2282	PMB Board
SPMB 1	REV 01	711-041855	ZS2261	PMB Board
SFB 0	REV 07	711-032385	ZZ2582	Switch Fabric Board
SFB 1	REV 04	711-032385	ZV4229	Switch Fabric Board
SFB 2	REV 07	711-032385	CAAB4902	Switch Fabric Board
SFB 3	REV 07	711-032385	CAAB4891	Switch Fabric Board
SFB 4	REV 07	711-032385	CAAB4883	Switch Fabric Board
SFB 5	REV 07	711-032385	CAAB4889	Switch Fabric Board
SFB 6	REV 06	711-032385	ZV1818	Switch Fabric Board
SFB 7	REV 07	711-032385	CAAB4897	Switch Fabric Board
FPC 0	REV 34	750-031090	ZT9799	MPC Type 2 3D EQ
CPU	REV 06	711-030884	ZS1122	MPC PMB 2G
MIC 0	REV 11	750-033535	CAAD7674	MIC-3D-10C192-XFP
PIC 0		BUILTIN	BUILTIN	MIC-3D-10C192-XFP
Xcvr 0	REV 01	740-014279	753019A00404	XFP-0C192-SR
MIC 1	REV 14	750-031967	ZM6103	MIC-3D-80C30C12-40C48
PIC 2		BUILTIN	BUILTIN	MIC-3D-80C30C12-40C48
Xcvr 0	REV 01	740-011615	PEF1AZP	SFP-IR
Xcvr 1	REV 01	740-011615	PEF1AZN	SFP-IR
Xcvr 2	REV 01	740-021308	ANA0N8S	SFP+-10G-SR
QXM 0	REV 06	711-028408	ZT9339	MPC QXM
QXM 1	REV 06	711-028408	ZT9237	MPC QXM
FPC 9	REV 34	750-031090	ZT9770	MPC Type 2 3D EQ
CPU	REV 06	711-030884	ZS1302	MPC PMB 2G
MIC 0	REV 24	750-028387	YJ3950	3D 4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0		NON-JNPR	T09M52516	XFP-10G-SR

Xcvr 1		NON-JNPR	CA49BK095	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 02	740-014289	C834XU01T	XFP-10G-SR
Xcvr 1		NON-JNPR	T09M52515	XFP-10G-SR
MIC 1	REV 11	750-033535	CAAD7681	MIC-3D-10C192-XFP
PIC 2		BUILTIN	BUILTIN	MIC-3D-10C192-XFP
Xcvr 0	REV 01	740-014279	KBQ02BE	XFP-OC192-SR
QXM 0	REV 06	711-028408	ZT9151	MPC QXM
QXM 1	REV 06	711-028408	ZT9116	MPC QXM
FPC 10	REV 27	750-033205	ZL6215	MPCE Type 3 3D
CPU	REV 07	711-035209	ZK9038	HMPC PMB 2G
MIC 0	REV 18	750-028380	YG6885	3D 2x 10GE XFP
PIC 0		BUILTIN	BUILTIN	1x 10GE XFP
Xcvr 0	REV 01	740-014289	C706XU0AG	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	1x 10GE XFP
Xcvr 0	REV 02	740-014289	T08L84366	XFP-10G-SR
FPC 14	REV 09	750-037355	CAAF1534	MPC4E 3D 2CGE+8XGE
CPU	REV 08	711-035209	CAAB9879	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-021308	21T511100436	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AHPOGPM	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	123363A00032	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	19T511100477	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0		NON-JNPR	X12J00260	CFP-100G-SR10
PIC 2		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-021308	21T511104086	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	21T511104627	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	21T511104644	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP
FPC 19	REV 32	750-028467	ZR2008	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ZT6933	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	19T511100291	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMH02VE	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	23T511102128	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMS15PP	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	123363A00716	SFP+-10G-SR
ADC 0	REV 05	750-043596	CAAC2072	Adapter Card
ADC 9	REV 01	750-043596	ZV4111	Adapter Card
ADC 10	REV 05	750-043596	CAAC2058	Adapter Card
ADC 14	REV 02	750-043596	ZW1561	Adapter Card
ADC 19	REV 01	750-043596	ZV4127	Adapter Card
Fan Tray 0	REV 03	760-046960	ACAY0124	172mm FanTray - 6 Fans
Fan Tray 1	REV 2A	760-046960	ACAY0022	172mm FanTray - 6 Fans
Fan Tray 2	REV 2A	760-046960	ACAY0023	172mm FanTray - 6 Fans
Fan Tray 3	REV 2A	760-046960	ACAY0025	172mm FanTray - 6 Fans

show chassis hardware (MX5, MX10, MX40, MX80, MX240, MX480, and MX960 Routers with Enhanced 20-Port Gigabit Ethernet MIC)

user@host> show chassis hardware

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			F3434	MX80-P
Midplane	REV 01	711-044315	ZK2681	MX80-P
PEM 0	Rev 04	740-028288	VE05267	AC Power Entry Module
PEM 1	Rev 04	740-028288	VE05270	AC Power Entry Module

Routing Engine		BUILTIN	BUILTIN	Routing Engine
TFEB 0		BUILTIN	BUILTIN	Forwarding Engine
Processor				
QXM 0	REV 05	711-028408	ZK0952	MPC QXM
FPC 0		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0		BUILTIN	BUILTIN	4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	4x 10GE XFP
FPC 1		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0	REV 02	750-049846	CAAV2153	3D 20x 1GE(LAN)-E,SFP
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) -E SFP
Xcvr 0	REV 01	740-011613	AM0816S9B81	SFP-SX
Xcvr 1	REV 02	740-011613	AM0925SBLK7	SFP-SX
Xcvr 2	REV 01	740-011613	UAQ0005	SFP-SX
Xcvr 3	REV 01	740-011613	UAQ000C	SFP-SX
Xcvr 4	REV 01	740-011613	P9F195E	SFP-SX
Xcvr 5	REV 01	740-011613	UAQ0003	SFP-SX
Xcvr 6	REV 01	740-031851	AM1041SU1LD	SFP-SX
Xcvr 8	REV 02	740-013111	B101501	SFP-T
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) -E SFP
Xcvr 0	REV 01	740-011613	PFM1ML7	SFP-SX
Xcvr 4	REV 01	740-011613	PE729P6	SFP-SX
Xcvr 6	REV 02	740-011613	AM1014SGC84	SFP-SX
Xcvr 9	REV 01	740-011613	AM0812S8UK3	SFP-SX
MIC 1	REV 26	750-028392	ZY0187	3D 20x 1GE(LAN) SFP
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-011613	P9F1AN9	SFP-SX
Xcvr 5	REV 02	740-011613	AM1003SFUF4	SFP-SX
Xcvr 9	REV 01	740-031851	AM1041SU1LM	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 4	REV 01	740-011613	PAJ4MYT	SFP-SX
Xcvr 7	+	NON-JNPR	XG32A024	SFP-SX
Xcvr 8		NON-JNPR	PFROV6J	SFP-SX
Xcvr 9	REV 01	740-031851	AM1041SU02U	SFP-SX
Fan Tray				

### show chassis hardware models (MX5, MX10, MX40, MX80, MX240, MX480, and MX960 Routers with Enhanced 20-Port Gigabit Ethernet MIC)

```

user@host> show chassis hardware models
Hardware inventory:
Item          Version  Part number  Serial number  FRU model number
PEM 0         Rev 04    740-028288  VE05267       PWR-MX80-AC-S
PEM 1         Rev 04    740-028288  VE05270       PWR-MX80-AC-S
Routing Engine
TFEB 0
FPC 0
FPC 1
  MIC 0       REV 02    750-049846  CAAV2153      MIC-3D-20GE-SFP-E
  MIC 1       REV 26    750-028392  ZY0187        MIC-3D-20GE-SFP
Fan Tray
FANTRAY-MX80-S

```

### show chassis hardware (T320 Router)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Midplane      REV 04    710-004339  BC1436        T320 Backplane
FPM GBUS      REV 03    710-004461  BC1407        T320 FPM Board
FPM Display   REV 04    710-002897  BE0763        FPM Display
CIP           REV 05    710-002895  BB2311        T Series CIP

```

PEM 0	Rev 01	740-004359	NB12546	Power Entry Module
SCG 0	REV 06	710-004455	AY4522	T320 Sonet
Clock Gen.				
Routing Engine 0				unknown
CB 0	REV 13	710-002728	BC1577	T Series
Control Board				
CB 1	REV 13	710-002728	BC1595	T Series
Control Board				
FPC 1	REV 09	710-007531	HS1572	FPC Type 2
CPU	REV 15	710-001726	HR8763	FPC CPU
PIC 0	REV 01	750-010618	CB5579	4x G/E SFP,
1000 BASE				
SFP 0	REV 01	740-007326	P5809Z1	SFP-SX
SFP 1	REV 01	740-007326	P4Q10XU	SFP-SX
SFP 2		NON-JNPR	RA45020031	SFP-SX
SFP 3		NON-JNPR	RA45020032	SFP-SX
PIC 1	REV 01	750-010618	CD9587	4x G/E SFP,
1000 BASE				
SFP 0		NON-JNPR	P5A08QZ	SFP-T
SFP 1	REV 01	740-007326	P4Q133K	SFP-SX
SFP 2	REV 01	740-007326	P5809YY	SFP-SX
SFP 3	REV 01	740-007327	4C81704	SFP-LX
MMB 1	REV 03	710-005555	HR9401	MMB-288mbit
PPB 0	REV 04	710-003758	HR2886	PPB Type 2
FPC 2	REV 07	710-005860	HP2392	FPC Type 1
CPU	REV 14	710-001726	HP7797	FPC CPU
PIC 0	REV 02	750-007643	HM0853	1x G/E QPP,
1000 BASE				
SFP 0	REV 01	740-007326	P11E9JJ	SFP-SX
MMB 1	REV 02	710-005555	HN2379	MMB-288mbit
PPB 0	REV 04	710-003758	HP8092	PPB Type 2
FPC 3	REV 07	710-005860	HP2393	FPC Type 1
CPU	REV 14	710-001726	HP0968	FPC CPU
PIC 0	REV 01	750-010240	CB5363	1x G/E SFP,
1000 BASE				
SFP 0	REV 01	740-007326	P4R0PNH	SFP-SX
PIC 1	REV 03	750-003034	HD2832	4x OC-3 SONET,
SMIR				
MMB 1	REV 02	710-005555	HN6307	MMB-288mbit
PPB 0	REV 04	710-003758	HP5051	PPB Type 2
FPC 4	REV 01	710-010845	JD3872	FPC Type 4
CPU	REV 02	710-011481	JB6042	FPC CPU
5	REV 01	710-005802	BC1566	FPC Type 2
CPU	REV 09	710-001726	AY4922	FPC CPU
PIC 0	REV 02	750-008155	BE2114	2x G/E QPP,
1000 BASE				
SFP 0	REV 01	740-007326	P4R0PMQ	SFP-SX
SFP 1	REV 01	740-007326	P4R0PN9	SFP-SX
PIC 1	REV 01	750-008155	BE2116	2x G/E QPP,
1000 BASE				
SFP 0	REV 01	740-007326	P4R0PNZ	SFP-SX
SFP 1		NON-JNPR	2908	SFP-T
MMB 1	REV 01	710-005555	AZ2246	MMB-288mbit
PPB 0	REV 03	710-003758	AY4839	PPB Type 2
FPC 7	REV 01	710-005803	AZ2123	FPC Type 3
...				

### show chassis hardware (T640 Router)

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



## Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			19182	T640
Midplane	REV 04	710-002726	AX5608	T640 Backplane
FPM GBUS	REV 02	710-002901	HE3064	T640 FPM Board
FPM Display	REV 02	710-002897	HE7864	FPM Display
CIP	REV 05	710-002895	HA5024	T Series CIP
PEM 0	Rev 02	740-029522	VH26235	AC PEM 10kW US
PEM 1	Rev 02	740-029522	VH26230	AC PEM 10kW US
SCG 0	REV 03	710-003423	HA4508	T640 Sonet Clock Gen.
Routing Engine 0	REV 02	740-005022	210865700483	RE-3.0 (RE-600)
CB 0	REV 01	710-002728	HD3044	T Series Control Board
FPC 2	REV 04	710-001721	HD5572	FPC Type 3
CPU	REV 06	710-001726	HA4712	FPC CPU
PIC 1	REV 03	750-009567	HV2331	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-009898	USC202R103	XENPAK-SR
PIC 2	REV 03	750-009567	HV2332	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-011268	USC202R112	XENPAK-ZR
PIC 3	REV 03	750-009567	HX4416	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-012056	434TC004	XENPAK-CX4
PIC 4	REV 03	750-009567	HX4420	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-012058	434TC124	XENPAK-LX4
FPC 5	REV 01	710-013553	JE4839	E2-FPC Type 1
CPU	REV 01	710-013569	JW9163	FPC CPU
PIC 0	REV 01	750-009567	HX4419	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-009898	USC202RT05	XENPAK-LR
PIC 1	REV 03	750-009567	HN7426	1x 10GE(LAN),XENPAK
SFP 0	REV 01	740-009550	03L90051	XENPAK-ER
PIC 2	REV 03	750-009467	HT7423	1x 10GE(LAN),XENPAK
SFP 0		NON-JNPR		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&gt; show chassis hardware models

## Hardware inventory:

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

## show chassis hardware extensive (T640 Router)

```

user@host> show chassis hardware extensive
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Jedec Code:   0x7fb0          EEPROM Version: 0x01
P/N:          .....          S/N:           .....
Assembly ID:  0x0507          Assembly Version: 00.00
Date:         00-00-0000      Assembly Flags:  0x00
Version:      .....
ID: Gibson LCC Chassis
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 7f b0 01 ff 05 07 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x20: ff ff ff ff ff ff ff ff ff ff ff ff 00 00 00 00
Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane      REV 04    710-002726  AX5633
Jedec Code:   0x7fb0          EEPROM Version: 0x01
P/N:          710-002726.      S/N:           AX5633.
Assembly ID:  0x0127          Assembly Version: 01.04
Date:         06-27-2001      Assembly Flags:  0x00
Version:      REV 04.....
ID: Gibson Backplane
Board Information Record:
Address 0x00: ad 01 08 00 00 90 69 0e f8 00 ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 01 27 01 04 52 45 56 20 30 34 00 00
Address 0x10: 00 00 00 00 37 31 30 2d 30 30 32 37 32 36 00 00
Address 0x20: 53 2f 4e 20 41 58 35 36 33 33 00 00 00 1b 06 07
Address 0x30: d1 ff ff ff ad 01 08 00 00 90 69 0e f8 00 ff ff
Address 0x40: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
FPM GBUS      REV 02    710-002901  HE3245
...
FPM Display   REV 02    710-002897  HA4873
...
CIP           REV 05    710-002895  HA4729
...
PEM 1         RevX02    740-002595  MD21815          Power Entry Module
...
SCG 0         REV 04    710-003423  HF6023
...
SCG 1         REV 04    710-003423  HF6061
...
Routing Engine 0 REV 01    740-005022  210865700292    RE-3.0
...
CB 0          REV 06    710-002728  HE3614
...
FPC 1         REV 01    710-002385  HE3009          FPC Type 1
...
              REV 06    710-001726  HC0010

```

## show chassis hardware (T4000 Router)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Midplane      REV 01    710-027486  RC8355          T-series Backplane

```

FPM GBUS	REV 13	710-002901	BBAE0927	T640 FPM Board
FPM Display	REV 01	710-021387	EF6764	T1600 FPM Display
CIP	REV 06	710-002895	BBAD9210	T-series CIP
PEM 0	REV 01	740-036442	VA00016	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAD7248	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAE3874	T640 Sonet Clock Gen.
Routing Engine 0	REV 05	740-026941	P737F-002248	RE-DUO-1800
Routing Engine 1	REV 06	740-026941	P737F-002653	RE-DUO-1800
CB 0	REV 09	710-022597	ED0295	LCC Control Board
CB 1	REV 09	710-022597	EA6050	LCC Control Board
FPC 0	REV 26	750-032819	EK1173	FPC Type 5-3D
CPU	REV 12	711-030686	EJ8584	SNG PMB
PIC 0	REV 07	750-034624	EF6837	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	123363A01145	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	123363A01147	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01P3	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B10M03256	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AJJ01M2	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	123363A01137	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJJ01PN	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJJ01NW	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	123363A01139	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJJ01KE	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	123363A01336	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B10M01325	SFP+-10G-SR
PIC 1	REV 07	750-034624	EF6800	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	AJJ01SA	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJJ01QZ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJH0217	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJJ01TE	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AJJ01KV	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJJ01MU	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJJ01R0	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJJ01TC	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	AJJ0364	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJD0GV3	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B10M03343	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AJJ01QJ	SFP+-10G-SR
LMB 0	REV 05	711-034381	EJ8490	Type-0 LMB
LMB 1	REV 04	711-035774	EJ8517	Type-1 LMB
LMB 2	REV 05	711-034381	EJ8489	Type-0 LMB
FPC 3	REV 07	750-032819	EG3637	FPC Type 5-3D
CPU	REV 09	711-030686	EG0150	SNG PMB
PIC 0	REV 08	750-035293	EF3657	1x100GE
Xcvr 0	REV 01	740-032210	C22CQNJ	CFP-100G-LR4
PIC 1	REV 10	750-034624	BBAN4098	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	B11J04902	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11J04891	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01MX	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11J04183	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B11J04894	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J04184	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11J04897	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11J04899	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	AJJ01TV	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	B11J04057	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AJJ01M4	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B11J04905	SFP+-10G-SR
LMB 0	REV 04	711-034381	EG1524	Type-0 LMB
LMB 1	REV 03	711-035774	EG0345	Type-1 LMB
LMB 2	REV 04	711-034381	EG1522	Type-0 LMB

FPC 5	REV 03	710-033871	BBAJ0768	FPC Type 4-ES
CPU	REV 11	710-016744	BBAH9342	ST-PMB2
PIC 0	REV 09	750-029262	EE6789	100GE
PIC 1	REV 03	750-034781	EE6655	100GE CFP
Xcvr 0	REV 01	740-032210	J11A22334	CFP-100G-LR4
BRIDGE 0	REV 03	711-029995	EE6572	100GE Bridge Board
MMB 0	REV 07	710-025563	BBAJ4657	ST-MMB2
MMB 1	REV 07	710-025563	BBAJ3073	ST-MMB2
FPC 6	REV 05	750-010153	EF4936	FPC Type 5-3D
CPU	REV 06	711-030686	EF4189	SNG PMB
PIC 0	REV 10	750-034624	BBAN4109	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	B11J04895	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11J04898	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11J04021	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11J04903	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B11J04311	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J04059	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11J04016	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11J04017	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B11J04887	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	B11J04297	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B11J04893	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B11J04022	SFP+-10G-SR
PIC 1	REV 02	750-034624	EE3711	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	AJH033X	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJJ01N0	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01SV	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJJ032L	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B10M01593	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJD0FF1	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJJ01NU	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	123363A01305	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B10M00361	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJJ01M7	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AJJ032X	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AJJ01PG	SFP+-10G-SR
LMB 0	REV 04	711-034381	EF3838	Type-0 LMB
LMB 1	REV 03	711-035774	EF3821	Type-1 LMB
LMB 2	REV 04	711-034381	EF3834	Type-0 LMB
SPMB 0	REV 05	710-023321	ED1990	LCC Switch CPU
SPMB 1	REV 05	710-023321	EA2768	LCC Switch CPU
SIB 0	REV 02	711-036340	EF8802	SIB-HC-3D
SIB 1	REV 07	711-036340	EG2286	SIB-HC-3D
SIB 2	REV 07	711-036340	EG2252	SIB-HC-3D
SIB 3	REV 02	711-036340	EF1358	SIB-HC-3D
SIB 4	REV 02	711-036340	EF8806	SIB-HC-3D
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
-- Rev 2				
Fan Tray 2				Rear Fan Tray -- Rev 3

### show chassis hardware (T4000 Router with 16-GB Line Card Chassis (LCC) Routing Engine)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN11BDF2CAHA	T1600
Midplane	REV 01	710-027486	ACAJ0774	T640 Backplane
FPM GBUS	REV 13	710-002901	BBAL6812	T640 FPM Board
FPM Display	REV 04	710-021387	BBAP2679	T1600 FPM Display
CIP	REV 06	710-002895	BBAP4758	T-series CIP

PEM 0	Rev 03	740-026384	XF86421	Power Entry Module 3x80
PEM 1	Rev 03	740-026384	XF86429	Power Entry Module 3x80
SCG 0	REV 18	710-003423	BBAP1896	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAN8659	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	740-042243	737F-002238	RE-DUO-1800-16G
Routing Engine 1	REV 01	740-042243	737F-002403	RE-DUO-1800-16G
CB 1	REV 11	710-022597	EK4526	LCC Control Board
CB 1	REV 11	710-022597	EK4527	LCC Control Board
FPC 0	REV 05	710-033871	EK5644	FPC Type 4-ES
CPU	REV 11	710-016744	EK3428	ST-PMB2
PIC 0	REV 20	750-017405	EJ3041	4x 10GE (LAN/WAN) XFP
PIC 1	REV 17	750-026962	EH7536	10x10GE (LAN/WAN) SFPP
MMB 0	REV 07	710-025563	EK6039	ST-MMB2
MMB 1	REV 07	710-025563	EK6086	ST-MMB2
FPC 1	REV 05	710-033871	EK6583	FPC Type 4-ES
CPU	REV 11	710-016744	EK3401	ST-PMB2
PIC 0	REV 17	750-026962	EJ8948	10x10GE (LAN/WAN) SFPP
MMB 0	REV 07	710-025563	EK6202	ST-MMB2
MMB 1	REV 07	710-025563	EK6112	ST-MMB2
SPMB 1	REV 05	710-023321	EK4900	LCC Switch CPU
SIB 0	REV 11	710-013074	EK5958	SIB-I8-SF
SIB 1	REV 11	710-013074	EK4606	SIB-I8-SF
SIB 2	REV 11	710-013074	EK5971	SIB-I8-SF
SIB 3	REV 11	710-013074	EK4609	SIB-I8-SF
SIB 4	REV 11	710-013074	EK4602	SIB-I8-SF
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 2

#### show chassis hardware (T4000 Router with LSR FPC)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN1173A24AHA  T4000
FPC 3         REV     750-048373  AN7797         FPC Type 5-LSR
CPU          REV 10   711-030686  AN6649         SNG PMB
PIC 0        REV 07   750-034624  EF6830         12x10GE (LAN/WAN) SFPP

```

#### show chassis hardware clei-models (T4000 Router)

```

user@host> show chassis hardware clei-models
Hardware inventory:
Item          Version  Part number  CLEI code      FRU model number
Midplane      REV 01   710-027486  IPMJ700DRD     CHAS-BP-T1600-S
FPM Display   REV 01   710-021387  CRAFT-T1600-S  CRAFT-T1600-S
CIP           REV 06   710-002895  CIP-L-T640-S   CIP-L-T640-S
PEM 0         REV 01   740-036442  IPUPAG6KAA     PWR-T-6-60-DC
SCG 0         REV 18   710-003423  SCG-T-S        SCG-T-S
SCG 1         REV 18   710-003423  SCG-T-S        SCG-T-S
Routing Engine 0 REV 05   740-026941  RE-DUO-C1800-8G-S RE-DUO-C1800-8G-S
Routing Engine 1 REV 06   740-026941  RE-DUO-C1800-8G-S RE-DUO-C1800-8G-S
CB 0          REV 09   710-022597  CB-LCC-S       CB-LCC-S
CB 1          REV 09   710-022597  CB-LCC-S       CB-LCC-S
FPC 3
PIC 0         REV 08   750-035293  XXXXXXXXBB     PF-1CGE-CFP
PIC 1         REV 10   750-034624  XXXXXXXXCC     PF-12XGE-SFPP
FPC 5         REV 03   710-033871  IPUCAMBCTD     T1600-FPC4-ES
PIC 1         REV 03   750-034781  IPUIBKLMAA     PD-1CE-CFP-FPC4
FPC 6
PIC 0         REV 10   750-034624  XXXXXXXXCC     PF-12XGE-SFPP

```

Fan Tray 0	FANTRAY-T-S
Fan Tray 1	FANTRAY-T4000-S
Fan Tray 2	FANTRAY-TXP-R-S

**show chassis hardware detail (T4000 Router)**

```

user@host> show chassis hardware detail
Hardware inventory:

```

Item	Version	Part number	Serial number	Description
Chassis			JN1172F25AHA	T4000
Midplane	REV 01	710-027486	RC8355	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAE0927	T640 FPM Board
FPM Display	REV 01	710-021387	EF6764	T1600 FPM Display
CIP	REV 06	710-002895	BBAD9210	T-series CIP
PEM 0	REV 01	740-036442	VA00016	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAD7248	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAE3874	T640 Sonet Clock Gen.
Routing Engine 0	REV 05	740-026941	P737F-002248	RE-DUO-1800
ad0 3823 MB	SMART CF		2009121602A661576157	Compact Flash
ad1 59690 MB	STEC MACH-8 SSD		STM000103FDB	Disk 1
Routing Engine 1	REV 06	740-026941	P737F-002653	RE-DUO-1800
ad0 3823 MB	SMART CF		201011150153F52CF52C	Compact Flash
ad1 62720 MB	SMART Lite SATA Drive		2010110900150A880A88	Disk 1
CB 0	REV 09	710-022597	ED0295	LCC Control Board
CB 1	REV 09	710-022597	EA6050	LCC Control Board
FPC 0	REV 26	750-032819	EK1173	FPC Type 5-3D
CPU	REV 12	711-030686	EJ8584	SNG PMB
PIC 0	REV 07	750-034624	EF6837	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	123363A01145	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	123363A01147	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01P3	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B10M03256	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AJJ01M2	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	123363A01137	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJJ01PN	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJJ01NW	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	123363A01139	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJJ01KE	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	123363A01336	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B10M01325	SFP+-10G-SR
PIC 1	REV 07	750-034624	EF6800	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	AJJ01SA	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJJ01QZ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJH0217	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJJ01TE	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AJJ01KV	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJJ01MU	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJJ01R0	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJJ01TC	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	AJJ0364	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJD0GV3	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B10M03343	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AJJ01QJ	SFP+-10G-SR
LMB 0	REV 05	711-034381	EJ8490	Type-0 LMB
LMB 1	REV 04	711-035774	EJ8517	Type-1 LMB
LMB 2	REV 05	711-034381	EJ8489	Type-0 LMB
FPC 3	REV 07	750-032819	EG3637	FPC Type 5-3D
CPU	REV 09	711-030686	EG0150	SNG PMB
PIC 0	REV 08	750-035293	EF3657	1x100GE
Xcvr 0	REV 01	740-032210	C22CQNJ	CFP-100G-LR4
PIC 1	REV 10	750-034624	BBAN4098	12x10GE (LAN/WAN) SFPP

Xcvr 0	REV 01	740-031980	B11J04902	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11J04891	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01MX	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11J04183	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B11J04894	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J04184	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11J04897	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11J04899	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	AJJ01TV	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	B11J04057	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AJJ01M4	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B11J04905	SFP+-10G-SR
LMB 0	REV 04	711-034381	EG1524	Type-0 LMB
LMB 1	REV 03	711-035774	EG0345	Type-1 LMB
LMB 2	REV 04	711-034381	EG1522	Type-0 LMB
FPC 5	REV 03	710-033871	BBAJ0768	FPC Type 4-ES
CPU	REV 11	710-016744	BBAH9342	ST-PMB2
PIC 0	REV 09	750-029262	EE6789	100GE
PIC 1	REV 03	750-034781	EE6655	100GE CFP
Xcvr 0	REV 01	740-032210	J11A22334	CFP-100G-LR4
BRIDGE 0	REV 03	711-029995	EE6572	100GE Bridge Board
MMB 0	REV 07	710-025563	BBAJ4657	ST-MMB2
MMB 1	REV 07	710-025563	BBAJ3073	ST-MMB2
FPC 6	REV 05	750-010153	EF4936	FPC Type 5-3D
CPU	REV 06	711-030686	EF4189	SNG PMB
PIC 0	REV 10	750-034624	BBAN4109	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	B11J04895	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11J04898	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11J04021	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11J04903	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B11J04311	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J04059	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11J04016	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11J04017	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B11J04887	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	B11J04297	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B11J04893	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B11J04022	SFP+-10G-SR
PIC 1	REV 02	750-034624	EE3711	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	AJH033X	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJJ01N0	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01SV	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJJ032L	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B10M01593	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJD0FF1	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJJ01NU	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	123363A01305	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B10M00361	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJJ01M7	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AJJ032X	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AJJ01PG	SFP+-10G-SR
LMB 0	REV 04	711-034381	EF3838	Type-0 LMB
LMB 1	REV 03	711-035774	EF3821	Type-1 LMB
LMB 2	REV 04	711-034381	EF3834	Type-0 LMB
SPMB 0	REV 05	710-023321	ED1990	LCC Switch CPU
SPMB 1	REV 05	710-023321	EA2768	LCC Switch CPU
SIB 0	REV 02	711-036340	EF8802	SIB-HC-3D
SIB 1	REV 07	711-036340	EG2286	SIB-HC-3D
SIB 2	REV 07	711-036340	EG2252	SIB-HC-3D
SIB 3	REV 02	711-036340	EF1358	SIB-HC-3D
SIB 4	REV 02	711-036340	EF8806	SIB-HC-3D

Fan Tray 0  
Fan Tray 1  
-- Rev 2  
Fan Tray 2

Front Top Fan Tray  
Front Bottom Fan Tray  
  
Rear Fan Tray -- Rev 3

### show chassis hardware models (T4000 Router)

user@host> show chassis hardware models

Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 01	710-027486	RC8355	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	EF6764	CRAFT-T1600-S
CIP	REV 06	710-002895	BBAD9210	CIP-L-T640-S
PEM 0	REV 01	740-036442	VA00016	PWR-T-6-60-DC
SCG 0	REV 18	710-003423	BBAD7248	SCG-T-S
SCG 1	REV 18	710-003423	BBAE3874	SCG-T-S
Routing Engine 0	REV 05	740-026941	P737F-002248	RE-DUO-C1800-8G-S
Routing Engine 1	REV 06	740-026941	P737F-002653	RE-DUO-C1800-8G-S
CB 0	REV 09	710-022597	ED0295	CB-LCC-S
CB 1	REV 09	710-022597	EA6050	CB-LCC-S
FPC 3				
PIC 0	REV 08	750-035293	EF3657	PF-1CGE-CFP
PIC 1	REV 10	750-034624	BBAN4098	PF-12XGE-SFPP
FPC 5	REV 03	710-033871	BBAJ0768	T1600-FPC4-ES
PIC 1	REV 03	750-034781	EE6655	PD-1CE-CFP-FPC4
FPC 6				
PIC 0	REV 10	750-034624	BBAN4109	PF-12XGE-SFPP
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T4000-S
Fan Tray 2				FAN-REAR-TXP-LCC

### show chassis hardware lcc (TX Matrix Router)

user@host> show chassis hardware lcc 0

lcc0-re0:

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			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			B2703	T1600
Midplane	REV 03	710-005608	RC4137	T640 Backplane
FPM GBUS	REV 10	710-002901	DT7062	T640 FPM Board
FPM Display	REV 05	710-002897	DS3067	FPM Display
CIP	REV 06	710-002895	DT3386	T-series CIP
PEM 0	Rev 07	740-017906	UA26344	Power Entry Module 3x80
PEM 1	Rev 18	740-002595	UF38441	Power Entry Module
SCG 0	REV 15	710-003423	DV0941	T640 Sonet Clock Gen.
Routing Engine 0	REV 08	740-014082	9009014502	RE-A-2000
Routing Engine 1	REV 07	740-014082	9009009591	RE-A-2000
CB 0	REV 05	710-007655	JA9360	Control Board (CB-T)
CB 1	REV 03	710-017707	DT3251	Control Board (CB-T)
FPC 0	REV 07	710-013558	DR4253	E2-FPC Type 2
CPU	REV 05	710-013563	DS3902	FPC CPU-Enhanced
PIC 0	REV 01	750-010618	CB5446	4x G/E SFP, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F11CW	SFP-SX
Xcvr 1	REV 01	740-011613	P9F15C2	SFP-SX
Xcvr 2	REV 01	740-011782	PB94K0L	SFP-SX

PIC 1	REV 06	750-001900	HB6399	1x OC-48 SONET, SMSR
PIC 2	REV 14	750-001901	AP1092	4x OC-12 SONET, SMIR
PIC 3	REV 07	750-001900	AR8275	1x OC-48 SONET, SMSR
MMB 1	REV 07	710-010171	DS1524	MMB-5M3-288mbit
FPC 1	REV 06	710-013553	DL9067	E2-FPC Type 1
CPU	REV 04	710-013563	DM1685	FPC CPU-Enhanced
PIC 0	REV 08	750-001072	AB1688	1x G/E, 1000 BASE-SX
PIC 1	REV 10	750-012266	JX5519	4x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011613	AM0812S8UK6	SFP-SX
Xcvr 2	REV 01	740-011613	AM0812S8UK1	SFP-SX
Xcvr 3	REV 01	740-011782	P8N1YHG	SFP-SX
PIC 2	REV 22	750-005634	DP0083	1x CHOC12 IQ SONET, SMIR
MMB 1	REV 07	710-008923	DN1862	MMB 3M 288-bit
FPC 2	REV 01	710-005548	HJ9899	FPC Type 3
CPU	REV 06	710-001726	HC0586	FPC CPU
PIC 0	REV 16	750-007141	NC9660	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011613	AM0812S8XAR	SFP-SX
Xcvr 1	REV 01	740-011782	P920E7B	SFP-SX
Xcvr 2	REV 01	740-011613	AM0812S8XAU	SFP-SX
Xcvr 4	REV 01	740-011613	AM0812S8XAK	SFP-SX
Xcvr 5	REV 01	740-011613	AM0812S8XAA	SFP-SX
Xcvr 6	REV 01	740-011613	PAJ4NKY	SFP-SX
Xcvr 7	REV 01	740-011613	AM0812S8UJW	SFP-SX
Xcvr 8	REV 01	740-011782	PB81X89	SFP-SX
Xcvr 9	REV 01	740-011613	AM0812S8UJX	SFP-SX
PIC 1	REV 06	750-015217	DK3280	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011782	P8P0A3T	SFP-SX
Xcvr 1	REV 01	740-013111	5090002	SFP-T
Xcvr 2	REV 01	740-011613	AM0814S93BQ	SFP-SX
Xcvr 4		NON-JNPR	PDE0FAN	SFP-SX
Xcvr 5	REV 01	740-011782	P8Q20XY	SFP-SX
Xcvr 6	REV 01	740-011613	AM0812S8UJV	SFP-SX
Xcvr 7	REV 01	740-011613	AM0812S8UP7	SFP-SX
PIC 2	REV 05	750-004695	HT4383	1x Tunnel
PIC 3	REV 17	750-009553	RL0204	4x OC-48 SONET
Xcvr 0	REV 01	740-011785	PDS3T23	SFP-SR
Xcvr 1	REV 01	740-011785	P6Q0F3E	SFP-SR
MMB 0	REV 03	710-004047	HD5843	MMB-288mbit
MMB 1	REV 03	710-004047	HE3208	MMB-288mbit
PPB 0	REV 02	710-002845	HA4524	PPB Type 3
PPB 1	REV 02	710-002845	HA4766	PPB Type 3
FPC 3	REV 01	710-010154	HR0863	E-FPC Type 3
CPU	REV 01	710-010169	HN3422	FPC CPU-Enhanced
PIC 0	REV 07	750-012793	WF5096	1x 10GE(LAN/WAN) IQ2
Xcvr 0		NON-JNPR	M64294TP	XFP-10G-LR
PIC 1	REV 25	750-007141	DV2127	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011613	PFA6LTJ	SFP-SX
Xcvr 1	REV 01	740-011782	P9P0XV4	SFP-SX
Xcvr 2	REV 01	740-011782	P9M0TNX	SFP-SX
Xcvr 4	REV 01	740-011782	P9B0TTP	SFP-SX
Xcvr 5		NON-JNPR	PBS4LED	SFP-SX
PIC 2	REV 17	750-009553	RL0212	4x OC-48 SONET
Xcvr 0	REV 01	740-011785	PDS3T8G	SFP-SR
PIC 3	REV 32	750-003700	DL1279	1x OC-192 12xMM VSR
MMB 0	REV 01	710-010171	HR0821	MMB-288mbit
MMB 1	REV 01	710-010171	HR0818	MMB-288mbit
FPC 4	REV 16	710-013037	EB4919	FPC Type 4-ES
CPU	REV 09	710-016744	BBAA4382	ST-PMB2

PIC 0	REV 03	711-029996	EB1569	100GE
PIC 1	REV 05	711-029999	EB9983	100GE CFP
Xcvr 0	REV 0	740-032210	J10G80746	CFP-100G-LR4
BRIDGE 0	REV 02	711-029995	EB2235	100GE Bridge Board
MMB 0	REV 04	710-025563	BBAA7112	ST-MMB2
MMB 1	REV 04	710-025563	BBAA7149	ST-MMB2
FPC 5	REV 02	710-013037	DE3407	FPC Type 4-ES
CPU	REV 04	710-016744	DA2124	ST-PMB2
PIC 0	REV 16	750-012518	DF2554	4x OC-192 SONET XFP
Xcvr 0	REV 01	740-014279	AA0745N1FX8	XFP-OC192-SR
Xcvr 1	REV 01	740-014279	AA0748N1HN5	XFP-OC192-SR
Xcvr 2	REV 01	740-014279	AA0748N1HT6	XFP-OC192-SR
Xcvr 3	REV 01	740-014279	AA0744N1EC9	XFP-OC192-SR
PIC 1	REV 01	750-010850	JA0329	1x OC-768 SONET SR
MMB 0	REV 04	710-016036	DE9577	ST-MMB2
MMB 1	REV 04	710-016036	DK4060	ST-MMB2
FPC 6	REV 14	710-013037	DV1431	FPC Type 4-ES
CPU	REV 09	710-016744	DT9020	ST-PMB2
PIC 0	REV 11	750-017405	DM6261	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 01	740-014289	C701XU05Q	XFP-10G-SR
Xcvr 1	REV 01	740-014279	AA0748N1HPT	XFP-10G-LR
Xcvr 2	REV 01	740-014289	T08E19189	XFP-10G-SR
Xcvr 3	REV 01	740-014289	C715XU058	XFP-10G-SR
PIC 1	REV 13	750-017405	DP8772	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 02	740-011571	C850XJ037	XFP-10G-SR
Xcvr 1	REV 02	740-014289	C839XU0L9	XFP-10G-SR
Xcvr 2	REV 02	740-014289	C834XU05A	XFP-10G-SR
Xcvr 3	REV 02	740-014289	C810XU0CE	XFP-10G-SR
MMB 0	REV 01	710-025563	DT8454	ST-MMB2
MMB 1	REV 01	710-025563	DT8366	ST-MMB2
FPC 7	REV 09	710-007529	HZ7624	FPC Type 3
CPU	REV 15	710-001726	HZ1413	FPC CPU
PIC 0	REV 10	750-012793	DM5627	1x 10GE(LAN/WAN) IQ2
Xcvr 0	REV 02	740-011571	C831XJ062	XFP-10G-SR
PIC 1	REV 01	750-015217	JT6762	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011782	P8Q25JU	SFP-SX
Xcvr 1	REV 01	740-011782	P9B0U0K	SFP-SX
PIC 2	REV 01	750-015217	JS4268	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011613	AM0812S8XBZ	SFP-SX
Xcvr 1	REV 01	740-011613	AM0812S8XAP	SFP-SX
Xcvr 2	REV 01	740-011613	AM0812S8XBY	SFP-SX
Xcvr 3	REV 01	740-011613	AM0812S8XBX	SFP-SX
Xcvr 4	REV 01	740-011613	P9F1652	SFP-SX
Xcvr 5	REV 01	740-011782	P8Q21YC	SFP-SX
Xcvr 6	REV 01	740-011782	P8Q27HQ	SFP-SX
Xcvr 7	REV 01	740-011613	P8E2SSU	SFP-SX
PIC 3	REV 15	750-009450	NB6790	1x OC-192 SM SR2
MMB 0	REV 03	710-005555	HZ3450	MMB-288mbit
MMB 1	REV 03	710-005555	HZ3415	MMB-288mbit
PPB 0	REV 04	710-002845	HP0887	PPB Type 3
PPB 1	REV 04	710-002845	HW5255	PPB Type 3
SPMB 0	REV 10	710-003229	HX3699	T-series Switch CPU
SPMB 1	REV 12	710-003229	DT3091	T-series Switch CPU
SIB 0	REV 07	710-013074	DS4747	SIB-I8-SF
SIB 1	REV 07	710-013074	DS4942	SIB-I8-SF
SIB 2	REV 07	710-013074	DS4965	SIB-I8-SF
SIB 3	REV 07	710-013074	DS4990	SIB-I8-SF
SIB 4	REV 07	710-013074	DS4944	SIB-I8-SF
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 2

## show chassis hardware (TX Matrix Plus Router)

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user@host> show chassis hardware
sfc0-re0:
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Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN113186EAHB	TXP
Midplane	REV 05	710-022574	TS3822	SFC Midplane
FPM Display	REV 03	710-024027	DW4701	TXP FPM Display
CIP 0	REV 05	710-023792	DW7998	TXP CIP
CIP 1	REV 05	710-023792	DW7999	TXP CIP
PEM 0	Rev 04	740-027463	UM26367	Power Entry Module
PEM 1	Rev 04	740-027463	UM26346	Power Entry Module
Routing Engine 0	REV 06	740-026942	737A-1081	RE-DUO-2600
Routing Engine 1	REV 06	740-026942	737A-1043	RE-DUO-2600
CB 0	REV 05	710-022606	DW4435	SFC Control Board
CB 1	REV 09	710-022606	DW6100	SFC Control Board
SPMB 0		BUILTIN		SFC Switch CPU
SPMB 1		BUILTIN		SFC Switch CPU
SIB F13 0	REV 04	750-024564	DW5764	F13 SIB
B Board	REV 03	710-023431	DW9053	F13 SIB Mezz
SIB F13 3	REV 04	750-024564	DW5785	F13 SIB
B Board	REV 03	710-023431	DW9030	F13 SIB Mezz
SIB F13 6				
SIB F13 8	REV 04	750-024564	DW5752	F13 SIB
B Board	REV 03	710-023431	DW9051	F13 SIB Mezz
SIB F13 11	REV 04	750-024564	DW5782	F13 SIB
B Board	REV 03	710-023431	DW9058	F13 SIB Mezz
SIB F13 12	REV 03	750-024564	DT9466	F13 SIB
B Board	REV 02	710-023431	DT6556	F13 SIB Mezz
SIB F2S 0/0	REV 05	710-022603	DW7898	F2S SIB
B Board	REV 05	710-023787	DW7625	F2S SIB Mezz
SIB F2S 0/2	REV 05	710-022603	DW7811	F2S SIB
B Board	REV 05	710-023787	DW7550	F2S SIB Mezz
SIB F2S 0/4	REV 04	710-022603	DW4873	F2S SIB
B Board	REV 05	710-023787	DW8509	F2S SIB Mezz
SIB F2S 0/6	REV 04	710-022603	DW4867	F2S SIB
B Board	REV 05	710-023787	DW8472	F2S SIB Mezz
SIB F2S 1/0	REV 04	710-022603	DW4871	F2S SIB
B Board	REV 05	710-023787	DW8497	F2S SIB Mezz
SIB F2S 1/2	REV 05	710-022603	DW7868	F2S SIB
B Board	REV 05	710-023787	DW7551	F2S SIB Mezz
SIB F2S 1/4	REV 04	710-022603	DW4854	F2S SIB
B Board	REV 05	710-023787	DW8496	F2S SIB Mezz
SIB F2S 1/6	REV 05	710-022603	DW7889	F2S SIB
B Board	REV 05	710-023787	DW7496	F2S SIB Mezz
SIB F2S 2/0	REV 04	710-022603	DW4852	F2S SIB
B Board	REV 05	710-023787	DW8498	F2S SIB Mezz
SIB F2S 2/2	REV 04	710-022603	DW4845	F2S SIB
B Board	REV 05	710-023787	DW8457	F2S SIB Mezz
SIB F2S 2/4	REV 05	710-022603	DW7802	F2S SIB
B Board	REV 05	710-023787	DW7562	F2S SIB Mezz
SIB F2S 2/6	REV 04	710-022603	DW4822	F2S SIB
B Board	REV 05	710-023787	DW8467	F2S SIB Mezz
SIB F2S 3/0	REV 05	710-022603	DW7815	F2S SIB
B Board	REV 05	710-023787	DW7518	F2S SIB Mezz
SIB F2S 3/2	REV 03	710-022603	DV0068	F2S SIB
B Board	REV 03	710-023787	DT9974	F2S SIB Mezz
SIB F2S 3/4	REV 05	710-022603	DW7874	F2S SIB
B Board	REV 05	710-023787	DW7601	F2S SIB Mezz

SIB F2S 3/6	REV 03	710-022603	DV0033	F2S SIB
B Board	REV 03	710-023787	DT9969	F2S SIB Mezz
SIB F2S 4/0	REV 03	710-022603	DV0043	F2S SIB
B Board	REV 03	710-023787	DT9948	F2S SIB Mezz
SIB F2S 4/2	REV 05	710-022603	DW5446	F2S SIB
B Board	REV 05	710-023787	DW7611	F2S SIB Mezz
SIB F2S 4/4	REV 04	710-022603	DW4826	F2S SIB
B Board	REV 05	710-023787	DW8458	F2S SIB Mezz
SIB F2S 4/6	REV 03	710-022603	DV0026	F2S SIB
B Board	REV 03	710-023787	DT9963	F2S SIB Mezz
Fan Tray 0	REV 02	760-024497	DR8290	Front Fan Tray
Fan Tray 1	REV 02	760-024497	DR8293	Front Fan Tray
Fan Tray 2	REV 05	760-024502	DR8280	Rear Fan Tray
Fan Tray 3				
Fan Tray 4	REV 05	760-024502	DR8276	Rear Fan Tray
Fan Tray 5	REV 02	760-024502	DP5643	Rear Fan Tray

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lcc0-re0:
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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			JN11036F8AHA	T1600
Midplane	REV 03	710-017247	RC3799	T-series Backplane
FPM GBUS	REV 10	710-002901	DP7009	T640 FPM Board
FPM Display	REV 01	710-021387	DN7026	T1600 FPM Display
CIP	REV 06	710-002895	DP6024	T-series CIP
PEM 1	Rev 02	740-023211	WA50019	Power Entry Module 4x60A
SCG 0	REV 15	710-003423	DR6757	T640 Sonet Clock Gen.
SCG 1	REV 15	710-003423	DS2225	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	740-026941	737F-1040	RE-DUO-1800
Routing Engine 1	REV 01	740-026941	737F-1016	RE-DUO-1800
CB 0	REV 06	710-022597	DX4011	LCC Control Board
CB 1	REV 06	710-022597	DX4017	LCC Control Board
FPC 1	REV 07	710-013035	DN5847	FPC Type 3-ES
CPU	REV 08	710-016744	DP2570	ST-PMB2
PIC 0	REV 05	750-015217	DB0418	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011782	P8Q27ZG	SFP-SX
Xcvr 1		NON-JNPR	PDA1U0D	SFP-SX
Xcvr 2	REV 01	740-011613	P9F1ALW	SFP-SX
Xcvr 3	REV 01	740-011782	PBA403V	SFP-SX
Xcvr 4		NON-JNPR	PDE09DP	SFP-SX
Xcvr 5	REV 01	740-011782	PCH2P4K	SFP-SX
Xcvr 6	REV 01	740-011782	PB94K0F	SFP-SX
Xcvr 7	REV 01	740-011782	PBA2R2A	SFP-SX
PIC 1	REV 03	750-004424	HJ4020	1x 10GE(LAN), DWDM
PIC 2	REV 01	750-003336	HG6073	4x OC-48 SONET, SMSR
MMB 0	REV 04	710-016036	DP3401	ST-MMB2
FPC 3	REV 12	710-013037	DR1169	FPC Type 4-ES
CPU	REV 08	710-016744	DP9429	ST-PMB2
PIC 0	REV 02	750-010850	JA0332	1x OC-768 SONET SR
MMB 0	REV 04	710-016036	DR0628	ST-MMB2
MMB 1	REV 04	710-016036	DR0592	ST-MMB2
FPC 4	REV 05	710-021534	DR7350	FPC Type 1-ES
CPU	REV 08	710-016744	DP8096	ST-PMB2
PIC 0	REV 04	750-014627	DP9171	4x OC-3 1x OC-12 SFP
Xcvr 0	REV 02	740-011615	PDE2RVR	SFP-SR
PIC 1	REV 22	750-005634	DS5815	1x CHOC12 IQ SONET, SMIR
PIC 2	REV 09	750-002911	CF4539	4x F/E, 100 BASE-TX
PIC 3	REV 08	750-021652	DR2827	1x CHOC12 IQE SONET
Xcvr 0		NON-JNPR	8	UNKNOWN

MMB 0	REV 04	710-016036	DR0809	ST-MMB2
FPC 5	REV 07	710-007529	HS5608	FPC Type 3
CPU	REV 15	710-001726	HX4351	FPC CPU
PIC 0	REV 14	750-009567	WJ8961	1x 10GE(LAN), XENPAK
Xcvr 0	REV 01	740-013170	J05K05961	XENPAK-LR
PIC 1	REV 16	750-007141	JJ8146	10x 1GE(LAN), 1000 BASE
Xcvr 1	REV 01	740-011613	P9F117T	SFP-SX
Xcvr 2	REV 01	740-011782	PBA2VCL	SFP-SX
Xcvr 3	REV 01	740-011782	PB83DRB	SFP-SX
Xcvr 4	REV 01	740-011613	AM0812S8UP8	SFP-SX
PIC 2	REV 12	750-009567	WF3566	1x 10GE(LAN), XENPAK
Xcvr 0	REV 02	740-013170	T07C94489	XENPAK-LR
MMB 0	REV 03	710-005555	HZ1907	MMB-288mbit
MMB 1	REV 03	710-005555	HW5283	MMB-288mbit
PPB 0	REV 04	710-002845	HZ7717	PPB Type 3
PPB 1	REV 04	710-002845	HS0110	PPB Type 3
FPC 6	REV 07	710-013035	DP7486	FPC Type 3-ES
CPU	REV 08	710-016744	DP2545	ST-PMB2
PIC 0	REV 09	750-009567	NE6323	1x 10GE(LAN), XENPAK
Xcvr 0	REV 02	740-013170	T09C71959	XENPAK-LR
PIC 1	REV 06	750-015217	DN4775	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011782	P7E0T6M	SFP-SX
Xcvr 1	REV 01	740-011613	AM0812S8XAY	SFP-SX
Xcvr 2	REV 01	740-011782	P7E0T6J	SFP-SX
Xcvr 3	REV 01	740-011782	PCH2P7D	SFP-SX
Xcvr 4	REV 01	740-011782	P9B0QYT	SFP-SX
Xcvr 5	REV 01	740-011613	AM0812S8WQJ	SFP-SX
Xcvr 6	REV 02	740-013111	9301220	SFP-T
Xcvr 7	REV 01	740-011782	P9B0TZ5	SFP-SX
PIC 2	REV 06	750-015217	DM6747	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011613	PAP0ZB2	SFP-SX
Xcvr 1	REV 01	740-013111	70191002	SFP-T
Xcvr 6	REV 01	740-011782	PBA29H8	SFP-SX
Xcvr 7	REV 01	740-011613	AM0812S8WQG	SFP-SX
MMB 0	REV 04	710-016036	DP3238	ST-MMB2
FPC 7	REV 03	710-021540	DV3154	FPC Type 2-ES
CPU	REV 09	710-016744	DT9053	ST-PMB2
PIC 0	REV 13	750-001901	HB4225	4x OC-12 SONET, SMIR
PIC 1	REV 05	750-001900	AD3644	1x OC-48 SONET, SMSR
PIC 2	REV 10	750-008155	HV0335	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011782	PCH2UKF	SFP-SX
Xcvr 1	REV 01	740-011782	PCH2V19	SFP-SX
PIC 3	REV 03	750-014638	JS9493	1x OC-48-12-3 SFP
Xcvr 0	REV 01	740-011785	P6Q0ENK	SFP-SR
MMB 0	REV 05	710-016036	DP3323	ST-MMB2
SPMB 0	REV 04	710-023321	DX3004	LCC Switch CPU
SPMB 1	REV 04	710-023321	DX3009	LCC Switch CPU
SIB 0	REV 07	710-022594	DW4195	LCC SIB
B Board	REV 07	710-023185	DW3930	LCC SIB Mezz
SIB 1	REV 07	710-022594	DW4179	LCC SIB
B Board	REV 07	710-023185	DW3919	LCC SIB Mezz
SIB 2				
SIB 3	REV 06	710-022594	DT8251	LCC SIB
B Board	REV 06	710-023185	DT5792	LCC SIB Mezz
SIB 4	REV 08	710-022594	DW8014	LCC SIB
B Board	REV 07	710-023185	DW3917	LCC SIB Mezz
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 3

```
lcc1-re0:
```

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Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN1102270AHA	T1600
Midplane	REV 04	710-017247	RC5358	T-series Backplane
FPM GBUS	REV 10	710-002901	DS3443	T640 FPM Board
FPM Display	REV 01	710-021387	DS6411	T1600 FPM Display
CIP	REV 06	710-002895	DS4235	T-series CIP
PEM 0	Rev 02	740-023211	VM82438	Power Entry Module 4x60A
SCG 0	REV 15	710-003423	DS6649	T640 Sonet Clock Gen.
SCG 1	REV 15	710-003423	DR6775	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	740-026941	737F-1083	RE-DUO-1800
Routing Engine 1	REV 01	740-026941	737F-1104	RE-DUO-1800
CB 0	REV 06	710-022597	DW8542	LCC Control Board
CB 1	REV 06	710-022597	DW8530	LCC Control Board
FPC 0	REV 02	710-010845	JE2392	FPC Type 4
CPU	REV 02	710-011481	JF6820	FPC CPU-Enhanced
PIC 0	REV 11	750-017405	DP7259	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 01	740-014279	AA0741N1C8T	XFP-10G-LR
Xcvr 1	REV 01	740-014279	AA0746N1GAM	XFP-10G-LR
Xcvr 2	REV 01	740-014279	AA0747N1H0B	XFP-10G-LR
Xcvr 3	REV 01	740-014279	AA0748N1HZ5	XFP-10G-LR
MMB 0	REV 03	710-010842	HY7601	ST-MMB
FPC 1	REV 16	710-013037	BBAA7398	FPC Type 4-ES
CPU	REV 09	710-016744	BBAA2329	ST-PMB2
PIC 0	REV 03	711-029996	EB1575	100GE
PIC 1	REV 06	750-034781	EB9980	100GE CFP
MMB 0	REV 04	710-025563	BBAA5325	ST-MMB2
MMB 1	REV 04	710-025563	BBAA5444	ST-MMB2
FPC 2	REV 16	710-013037	BBAA7185	FPC Type 4-ES
CPU	REV 09	710-016744	BBAA3522	ST-PMB2
PIC 0	REV 03	711-029996	EB1557	100GE
PIC 1	REV 05	750-034781	EB4660	100GE CFP
Xcvr 0	REV 0	740-032210	J10F73666	CFP-100G-LR4
BRIDGE 0	REV 02	711-029995	EB2237	100GE Bridge Board
MMB 0	REV 04	710-025563	BBAA5347	ST-MMB2
MMB 1	REV 04	710-025563	BBAA5401	ST-MMB2
FPC 3	REV 10	710-021534	DZ0941	FPC Type 1-ES
CPU	REV 09	710-016744	DY6364	ST-PMB2
PIC 0	REV 13	750-012266	DK9192	4x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011613	AM0812S8WVD	SFP-SX
Xcvr 1		NON-JNPR	PDD63Q4	SFP-SX
Xcvr 2		NON-JNPR	PDE4G54	SFP-SX
Xcvr 3		NON-JNPR	PD40MAG	SFP-SX
PIC 1	REV 01	750-007641	HJ2003	1x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	AM0812S8WVG	SFP-SX
PIC 3	REV 17	750-007444	JB6873	1x CHSTM1 IQ SDH, SMIR
MMB 0	REV 04	710-025563	DZ0281	ST-MMB2
FPC 4	REV 06	710-013035	DK0614	FPC Type 3-ES
CPU	REV 07	710-016744	DK1616	ST-PMB2
PIC 0	REV 22	750-007141	DM1870	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011782	PCL3UKW	SFP-SX
Xcvr 1	REV 01	740-011782	P7E0T73	SFP-SX
Xcvr 2	REV 01	740-007326	P4T0WLR	SFP-SX
Xcvr 3	REV 01	740-011782	PAR1LRL	SFP-SX
Xcvr 4	REV 01	740-011782	P9M0U3Z	SFP-SX
Xcvr 5	REV 01	740-011782	P9M0U0C	SFP-SX
Xcvr 6	REV 01	740-011782	P9M0TLG	SFP-SX
Xcvr 7	REV 01	740-011782	P9M0U0F	SFP-SX

Xcvr 8	REV 01	740-011613	PFA6LAP	SFP-SX
Xcvr 9	REV 01	740-011782	PCH2POU	SFP-SX
PIC 1	REV 16	750-009450	CV2565	1x OC-192 SM SR2
PIC 2	REV 05	750-004424	HH3057	1x 10GE(LAN),10GBASE-LR
PIC 3	REV 12	750-013423	DP0403	MultiServices 500
MMB 0	REV 04	710-016036	DK1988	ST-MMB2
FPC 5	REV 07	710-013560	DR0004	E2-FPC Type 3
CPU	REV 05	710-013563	DR0089	FPC CPU-Enhanced
PIC 0	REV 11	750-012793	DR6107	1x 10GE(LAN/WAN) IQ2
Xcvr 0	REV 01	740-014289	C743XU074	XFP-10G-SR
PIC 1	REV 01	750-004695	HD5980	1x Tunnel
PIC 2	REV 32	750-003700	DL3770	1x OC-192 12xMM VSR
PIC 3	REV 12	750-009553	WB8901	4x OC-48 SONET
Xcvr 0	REV 01	740-011785	P9D1GTQ	SFP-SR
Xcvr 1	REV 01	740-011785	PDSOMMB	SFP-SR
Xcvr 3	REV 01	740-011785	PDE1KXP	SFP-SR
MMB 0	REV 07	710-010171	DP7374	MMB-5M3-288mbit
MMB 1	REV 07	710-010171	DP7404	MMB-5M3-288mbit
FPC 6	REV 07	710-013035	DM0994	FPC Type 3-ES
CPU	REV 07	710-016744	DM3651	ST-PMB2
PIC 0	REV 07	750-015217	DN4743	8x 1GE(TYPE3), IQ2
Xcvr 3	REV 01	740-011613	AM0812S8XB0	SFP-SX
Xcvr 4	REV 01	740-011782	PB829RB	SFP-SX
Xcvr 5	REV 01	740-011782	P8J1SYX	SFP-SX
PIC 1	REV 03	750-003336	HJ9954	4x OC-48 SONET, SMSR
PIC 3	REV 02	750-012793	JM7665	1x 10GE(LAN/WAN) IQ2
MMB 0	REV 04	710-016036	DN6913	ST-MMB2
FPC 7	REV 08	710-010845	JM3958	FPC Type 4
CPU	REV 04	710-011481	JK3669	FPC CPU-Enhanced
PIC 0	REV 11	750-017405	DP8837	4x 10GE (LAN/WAN) XFP
Xcvr 1	REV 01	740-014279	753019A00277	XFP-10G-LR
Xcvr 2	REV 02	740-011571	C850XJ00P	XFP-10G-SR
Xcvr 3	REV 01	740-014279	AA0813N1RTG	XFP-10G-LR
MMB 0	REV 04	710-010842	JN1971	ST-MMB
SPMB 0	REV 04	710-023321	DW3629	LCC Switch CPU
SPMB 1	REV 04	710-023321	DW3621	LCC Switch CPU
SIB 0	REV 07	710-022594	DW4200	LCC SIB
B Board	REV 07	710-023185	DW3932	LCC SIB Mezz
SIB 1	REV 07	710-022594	DW4193	LCC SIB
B Board	REV 07	710-023185	DW3904	LCC SIB Mezz
SIB 2				
SIB 3	REV 07	710-022594	DW4210	LCC SIB
B Board	REV 06	710-023185	DT5780	LCC SIB Mezz
SIB 4	REV 08	710-022594	DW8019	LCC SIB
B Board	REV 06	710-023185	DT5795	LCC SIB Mezz
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 3

### show chassis hardware sfc (TX Matrix Plus Router)

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

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Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN112F007AHB	TXP
Midplane	REV 05	710-022574	TS4027	SFC Midplane
FPM Display	REV 03	710-024027	DX0282	TXP FPM Display
CIP 0	REV 04	710-023792	DW4889	TXP CIP



CIP 1	REV 04	710-023792	DW4887	TXP CIP
PEM 0	Rev 07	740-027463	UM26368	Power Entry Module
Routing Engine 0	REV 01	740-026942	737A-1064	SFC RE
Routing Engine 1	REV 01	740-026942	737A-1082	SFC RE
CB 0	REV 09	710-022606	DW6099	SFC Control Board
CB 1	REV 09	710-022606	DW6096	SFC Control Board
SPMB 0		BUILTIN		SFC Switch CPU
SPMB 1		BUILTIN		SFC Switch CPU
SIB F13 0	REV 04	710-022600	DX0841	F13 SIB
B Board	REV 03	710-023431	DX0966	F13 SIB Mezz
SIB F13 1	REV 04	750-024564	DW5776	F13 SIB
B Board	REV 03	710-023431	DW9028	F13 SIB
SIB F13 3	REV 04	750-024564	DW5762	F13 SIB
B Board	REV 03	710-023431	DW9059	F13 SIB
SIB F13 4	REV 04	750-024564	DW5797	F13 SIB
B Board	REV 03	710-023431	DW9041	F13 SIB
SIB F13 6	REV 04	750-024564	DW5770	F13 SIB
B Board	REV 03	710-023431	DW9079	F13 SIB Mezz
SIB F13 7	REV 04	750-024564	DW5758	F13 SIB
B Board	REV 03	710-023431	DW9047	F13 SIB
SIB F13 8	REV 04	750-024564	DW5761	F13 SIB
B Board	REV 03	710-023431	DW9043	F13 SIB Mezz
SIB F13 9	REV 04	750-024564	DW5754	F13 SIB
B Board	REV 03	710-023431	DW9078	F13 SIB Mezz
SIB F13 11	REV 04	710-022600	DX0826	F13 SIB
B Board	REV 03	710-023431	DX0967	F13 SIB Mezz
SIB F13 12	REV 04	750-024564	DW5794	F13 SIB
B Board	REV 03	710-023431	DW9044	F13 SIB Mezz
SIB F2S 0/0	REV 05	710-022603	DW7897	F2S SIB
B Board	REV 05	710-023787	DW7657	NEO PMB
SIB F2S 0/2	REV 05	710-022603	DW7833	F2S SIB
B Board	REV 05	710-023787	DW7526	NEO PMB
SIB F2S 0/4	REV 05	710-022603	DW7875	F2S SIB
B Board	REV 05	710-023787	DW7588	NEO PMB
SIB F2S 0/6	REV 05	710-022603	DW7860	F2S SIB
B Board	REV 05	710-023787	DW7589	NEO PMB
SIB F2S 1/0	REV 04	710-022603	DW4820	F2S SIB
B Board	REV 05	710-023787	DW8510	NEO PMB
SIB F2S 1/2	REV 05	710-022603	DW7849	F2S SIB
B Board	REV 05	710-023787	DW7525	NEO PMB
SIB F2S 1/4	REV 05	710-022603	DW7927	F2S SIB
B Board	REV 05	710-023787	DW7556	F2S SIB Mezz
SIB F2S 1/6	REV 05	710-022603	DW7866	F2S SIB
B Board	REV 05	710-023787	DW7651	NEO PMB
SIB F2S 2/0	REV 05	710-022603	DW7880	F2S SIB
B Board	REV 05	710-023787	DW7523	NEO PMB
SIB F2S 2/2	REV 05	710-022603	DW7895	F2S SIB
B Board	REV 05	710-023787	DW7591	NEO PMB
SIB F2S 2/4	REV 05	710-022603	DW7907	F2S SIB
B Board	REV 05	710-023787	DW7590	NEO PMB
SIB F2S 2/6	REV 05	710-022603	DW7785	F2S SIB
B Board	REV 05	710-023787	DW7524	NEO PMB
SIB F2S 3/0	REV 05	710-022603	DW7782	F2S SIB
B Board	REV 05	710-023787	DW7634	NEO PMB
SIB F2S 3/2	REV 05	710-022603	DW7793	F2S SIB
B Board	REV 05	710-023787	DW7548	NEO PMB
SIB F2S 3/4	REV 05	710-022603	DW7779	F2S SIB
B Board	REV 05	710-023787	DW7587	NEO PMB
SIB F2S 3/6	REV 05	710-022603	DW7930	F2S SIB
B Board	REV 05	710-023787	DW7505	NEO PMB
SIB F2S 4/0	REV 05	710-022603	DW7867	F2S SIB

B Board	REV 05	710-023787	DW7656	NEO PMB
SIB F2S 4/2	REV 05	710-022603	DW7917	F2S SIB
B Board	REV 05	710-023787	DW7640	NEO PMB
SIB F2S 4/4	REV 05	710-022603	DW7929	F2S SIB
B Board	REV 05	710-023787	DW7643	NEO PMB
SIB F2S 4/6	REV 05	710-022603	DW7870	F2S SIB
B Board	REV 05	710-023787	DW7635	NEO PMB
Fan Tray 0	REV 06	760-024497	DV7831	Front Fan Tray
Fan Tray 1	REV 06	760-024497	DV9614	Front Fan Tray
Fan Tray 2	REV 06	760-024502	DV9618	Rear Fan Tray
Fan Tray 3	REV 06	760-024502	DV9616	Rear Fan Tray
Fan Tray 4	REV 06	760-024502	DV7807	Rear Fan Tray
Fan Tray 5	REV 06	760-024502	DV7828	Rear Fan Tray

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

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

#### ----- Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN112F007AHB	TXP
Jedec Code:	0x7fb0	EEPROM Version:	0x02	
		S/N:	JN112F007AHB	
Assembly ID:	0x052c	Assembly Version:	00.00	
Date:	00-00-0000	Assembly Flags:	0x00	
ID:	TXP			

#### Board Information Record:

Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

#### I2C Hex Data:

Address 0x00: 7f b0 02 ff 05 2c 00 00 00 00 00 00 00 00 00 00  
 Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
 Address 0x20: 4a 4e 31 31 32 46 30 30 37 41 48 42 00 00 00 00  
 Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
 Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
 Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
 Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
 Address 0x70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Midplane	REV 05	710-022574	TS4027	SFC Midplane
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Jedec Code:	0x7fb0	EEPROM Version:	0x01
P/N:	710-022574	S/N:	TS4027
Assembly ID:	0x0962	Assembly Version:	01.05
Date:	03-23-2009	Assembly Flags:	0x00
Version:	REV 05		

ID: SFC Midplane

#### Board Information Record:

Address 0x00: ad 01 ff ff 00 1d b5 14 00 00 ff ff ff ff ff ff

#### I2C Hex Data:

Address 0x00: 7f b0 01 ff 09 62 01 05 52 45 56 20 30 35 00 00  
 Address 0x10: 00 00 00 00 37 31 30 2d 30 32 32 35 37 34 00 00  
 Address 0x20: 53 2f 4e 20 54 53 34 30 32 37 00 00 00 17 03 07  
 Address 0x30: d9 ff ff ff ad 01 ff ff 00 1d b5 14 00 00 ff ff  
 Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff  
 Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff  
 Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff  
 Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff

FPM Display	REV 03	710-024027	DX0282	TXP FPM Display
-------------	--------	------------	--------	-----------------

Jedec Code:	0x7fb0	EEPROM Version:	0x01
P/N:	710-024027	S/N:	DX0282
Assembly ID:	0x096c	Assembly Version:	01.03
Date:	02-10-2009	Assembly Flags:	0x00

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Version:          REV 03
ID: TXP FPM Display          FRU Model Number:  CRAFT-TXP
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 01 ff 09 6c 01 03 52 45 56 20 30 33 00 00
  Address 0x10: 00 00 00 00 37 31 30 2d 30 32 34 30 32 37 00 00
  Address 0x20: 53 2f 4e 20 44 58 30 32 38 32 00 00 00 0a 02 07
  Address 0x30: d9 ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 00 00 00 00 00 00 00 00 00 00 43
  Address 0x50: 52 41 46 54 2d 54 58 50 00 00 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 ff ff ff ff ff ff ff ff ff
  Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
CIP 0              REV 04      710-023792    DW4889          TXP CIP
Jedec Code:       0x7fb0          EEPROM Version:  0x01
P/N:              710-023792      S/N:             DW4889
Assembly ID:      0x0969          Assembly Version: 01.04
Date:             01-26-2009      Assembly Flags:  0x00
Version:          REV 04
ID: TXP CIP              FRU Model Number:  CIP-TXP
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff

```

#### show chassis hardware clei-models (TX Matrix Plus Router)

```

user@host> show chassis hardware clei-models
sfc0-re0:
-----
Hardware inventory:

```

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 05	710-022574		CHAS-BP-TXP-S
FPM Display	REV 03	710-024027		CRAFT-TXP-S
CIP 0	REV 05	710-023792		CIP-TXP-S
CIP 1	REV 05	710-023792		CIP-TXP-S
PEM 0	Rev 04	740-027463	IPUPAFGKTA	PWR-TXP-7-60-DC
PEM 1	Rev 04	740-027463	IPUPAFGKTA	PWR-TXP-7-60-DC
Routing Engine 0	REV 06	740-026942		RE-DUO-C2600-16G-S
Routing Engine 1	REV 06	740-026942		RE-DUO-C2600-16G-S
CB 0	REV 05	710-022606		CB-TXP-S
CB 1	REV 09	710-022606		CB-TXP-S
SIB F13 0	REV 04	750-024564		SIB-TXP-F13
SIB F13 3	REV 04	750-024564		SIB-TXP-F13
SIB F13 8	REV 04	750-024564		SIB-TXP-F13
SIB F13 11	REV 04	750-024564		SIB-TXP-F13
SIB F13 12	REV 03	750-024564		SIB-TXP-F13
SIB F2S 0/0	REV 05	710-022603		SIB-TXP-F2S-S
SIB F2S 0/2	REV 05	710-022603		SIB-TXP-F2S-S
SIB F2S 0/4	REV 04	710-022603		SIB-TXP-F2S-S
SIB F2S 0/6	REV 04	710-022603		SIB-TXP-F2S-S
SIB F2S 1/0	REV 04	710-022603		SIB-TXP-F2S-S
SIB F2S 1/2	REV 05	710-022603		SIB-TXP-F2S-S
SIB F2S 1/4	REV 04	710-022603		SIB-TXP-F2S-S
SIB F2S 1/6	REV 05	710-022603		SIB-TXP-F2S-S
SIB F2S 2/0	REV 04	710-022603		SIB-TXP-F2S-S
SIB F2S 2/2	REV 04	710-022603		SIB-TXP-F2S-S
SIB F2S 2/4	REV 05	710-022603		SIB-TXP-F2S-S
SIB F2S 2/6	REV 04	710-022603		SIB-TXP-F2S-S
SIB F2S 3/0	REV 05	710-022603		SIB-TXP-F2S-S
SIB F2S 3/2	REV 03	710-022603		SIB-TXP-F2S-S
SIB F2S 3/4	REV 05	710-022603		SIB-TXP-F2S-S
SIB F2S 3/6	REV 03	710-022603		SIB-TXP-F2S-S

SIB F2S 4/0	REV 03	710-022603	SIB-TXP-F2S-S
SIB F2S 4/2	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 4/4	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 4/6	REV 03	710-022603	SIB-TXP-F2S-S
Fan Tray 0	REV 02	760-024497	FANTRAY-TXP-H-S
Fan Tray 1	REV 02	760-024497	FANTRAY-TXP-H-S
Fan Tray 2	REV 05	760-024502	FANTRAY-TXP-V-S
Fan Tray 3			
Fan Tray 4	REV 05	760-024502	FANTRAY-TXP-V-S
Fan Tray 5	REV 02	760-024502	FANTRAY-TXP-V-S

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Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 03	710-017247		CHAS-BP-T1600-S
FPM Display	REV 01	710-021387		CRAFT-T1600-S
CIP	REV 06	710-002895		CIP-L-T640-S
PEM 1	Rev 02	740-023211	IPUPAC8KTA	PWR-T1600-4-60-DC-S
SCG 0	REV 15	710-003423		SCG-T-S
SCG 1	REV 15	710-003423		SCG-T-S
Routing Engine 0	REV 01	740-026941		RE-DUO-C1800-8G-S
Routing Engine 1	REV 01	740-026941		RE-DUO-C1800-8G-S
CB 0	REV 06	710-022597		CB-LCC-S
CB 1	REV 06	710-022597		CB-LCC-S
FPC 1	REV 07	710-013035		T640-FPC3-ES
PIC 0	REV 05	750-015217		PC-8GE-TYPE3-SFP-IQ2
PIC 1	REV 03	750-004424		PC-1XGE-LR
PIC 2	REV 01	750-003336		PC-40C48-SON-SMSR
FPC 3	REV 12	710-013037		T1600-FPC4-ES
PIC 0	REV 02	750-010850		PD-10C768-SON-SR
FPC 4	REV 05	710-021534		T640-FPC1-ES
PIC 0	REV 04	750-014627		PB-40C3-10C12-SON-SFP
PIC 1	REV 22	750-005634		PB-1CHOC12SMIR-QPP
PIC 2	REV 09	750-002911		PB-4FE-TX
PIC 3	REV 08	750-021652		PB-1CHOC12-STM4-IQE-SFP
FPC 5	REV 07	710-007529		T640-FPC3
PIC 0	REV 14	750-009567		PC-1XGE-XENPAK
PIC 1	REV 16	750-007141		PC-10GE-SFP
PIC 2	REV 12	750-009567		PC-1XGE-XENPAK
FPC 6	REV 07	710-013035		T640-FPC3-ES
PIC 0	REV 09	750-009567		PC-1XGE-XENPAK
PIC 1	REV 06	750-015217		PC-8GE-TYPE3-SFP-IQ2
PIC 2	REV 06	750-015217		PC-8GE-TYPE3-SFP-IQ2
FPC 7	REV 03	710-021540		T640-FPC2-ES
PIC 0	REV 13	750-001901		PB-40C12-SON-SMIR
PIC 1	REV 05	750-001900		PB-10C48-SON-SMSR
PIC 2	REV 10	750-008155		PB-2GE-SFP-QPP
PIC 3	REV 03	750-014638		PB-10C48-SON-B-SFP
SIB 0	REV 07	710-022594		SIB-TXP-T1600-S
SIB 1	REV 07	710-022594		SIB-TXP-T1600-S
SIB 3	REV 06	710-022594		SIB-TXP-T1600-S
SIB 4	REV 08	710-022594		SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

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Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
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Midplane	REV 04	710-017247	IPUPAC8KTA	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387		CRAFT-T1600-S
CIP	REV 06	710-002895		CIP-L-T640-S
PEM 0	Rev 02	740-023211		PWR-T1600-4-60-DC-S
SCG 0	REV 15	710-003423		SCG-T-S
SCG 1	REV 15	710-003423		SCG-T-S
Routing Engine 0	REV 01	740-026941		RE-DUO-C1800-8G-S
Routing Engine 1	REV 01	740-026941		RE-DUO-C1800-8G-S
CB 0	REV 06	710-022597		CB-LCC-S
CB 1	REV 06	710-022597		CB-LCC-S
FPC 0	REV 02	710-010845		T640-FPC4-ES
PIC 0	REV 11	750-017405		PD-4XGE-XFP
FPC 1	REV 16	710-013037		T1600-FPC4-ES
PIC 1	REV 06	750-034781		PD-1CE-CFP
FPC 2	REV 16	710-013037		T1600-FPC4-ES
PIC 1	REV 05	750-034781		PD-1CE-CFP
FPC 3	REV 10	710-021534		T640-FPC1-ES
PIC 0	REV 13	750-012266		PB-4GE-TYPE1-SFP-IQ2
PIC 1	REV 01	750-007641		PE-1GE-SFP-QPP
PIC 3	REV 17	750-007444		PB-1CHSTM1-SMIR-QPP
FPC 4	REV 06	710-013035		T640-FPC3-ES
PIC 0	REV 22	750-007141		PC-10GE-SFP
PIC 1	REV 16	750-009450		PC-10C192-SON-SR2
PIC 2	REV 05	750-004424		PC-1XGE-LR
PIC 3	REV 12	750-013423		PC-MS-500-3
FPC 5	REV 07	710-013560		T640-FPC3-E2
PIC 0	REV 11	750-012793		PC-1XGE-TYPE3-XFP-IQ2
PIC 1	REV 01	750-004695		PC-TUNNEL
PIC 2	REV 32	750-003700		PC-10C192-SON-VSR
PIC 3	REV 12	750-009553		PC-40C48-SON-SFP
FPC 6	REV 07	710-013035		T640-FPC3-ES
PIC 0	REV 07	750-015217		PC-8GE-TYPE3-SFP-IQ2
PIC 1	REV 03	750-003336		PC-40C48-SON-SMSR
PIC 3	REV 02	750-012793		PC-1XGE-TYPE3-XFP-IQ2
FPC 7	REV 08	710-010845		T640-FPC4-ES
PIC 0	REV 11	750-017405		PD-4XGE-XFP
SIB 0	REV 07	710-022594		SIB-TXP-T1600-S
SIB 1	REV 07	710-022594		SIB-TXP-T1600-S
SIB 3	REV 07	710-022594		SIB-TXP-T1600-S
SIB 4	REV 08	710-022594		SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

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

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#### Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN111B023AHB	TXP
Midplane	REV 01	710-022574	TR7990	SFC Midplane
FPM Display	REV 03	710-024027	DW4699	TXP FPM Display
CIP 0	REV 01	710-023792	DR1437	TXP CIP
CIP 1	REV 02	710-023792	DS4564	TXP CIP
PEM 0	Rev 07	740-027463	UM26360	Power Entry Module
Routing Engine 0	REV 01	740-026942	737A-1024	SFC RE
ad0	3887 MB SMART CF		200811050193CEB1CEB1	Compact Flash
ad1	30533 MB SAMSUNG	MCBQE32G8MPP-0V	SY814A0762	Disk 1
Routing Engine 1	REV 01	740-026942	737A-1024	SFC RE

ad0	3887 MB	SMART CF		20081105004C19A019A0	Compact Flash
ad1	30533 MB	SAMSUNG	MCBQE32G8MPP-0V	SY814A0794	Disk 1
CB 0		REV 03	710-022606	DR7134	SFC Control Board
CB 1		REV 01	710-022606	DP8890	SFC Control Board
SPMB 0			BUILTIN		SFC Switch CPU
SPMB 1			BUILTIN		SFC Switch CPU
SIB F13 0		REV 03	750-024564	DT9478	F13 SIB
B Board		REV 02	710-023431	DT6554	F13 SIB
SIB F13 1		REV 03	750-024564	DT9454	F13 SIB
B Board		REV 02	710-023431	DT6551	F13 SIB
SIB F2S 0/0		REV 02	710-022603	DT2838	F2S SIB
B Board		REV 02	710-023787	DT1725	NEO PMB
SIB F2S 0/2		REV 02	710-022603	DT2824	F2S SIB
B Board		REV 02	710-023787	DT1706	NEO PMB
SIB F2S 0/4		REV 02	710-022603	DT2822	F2S SIB
B Board		REV 02	710-023787	DT1696	NEO PMB
SIB F2S 0/6		REV 02	710-022603	DT2823	F2S SIB
B Board		REV 02	710-023787	DT1717	NEO PMB
SIB F2S 1/0		REV 03	710-022603	DV0059	F2S SIB
B Board		REV 03	710-023787	DT9942	NEO PMB
SIB F2S 1/2		REV 02	710-022603	DT2826	F2S SIB
B Board		REV 02	710-023787	DT1713	NEO PMB
SIB F2S 1/4		REV 03	710-022603	DV0092	F2S SIB
B Board		REV 03	710-023787	DV0000	NEO PMB
SIB F2S 1/6		REV 03	710-022603	DV0079	F2S SIB
B Board		REV 03	710-023787	DT9972	NEO PMB
SIB F2S 2/0		REV 03	710-022603	DV0100	F2S SIB
B Board		REV 03	710-023787	DT9925	NEO PMB
SIB F2S 2/2		REV 03	710-022603	DV0050	F2S SIB
B Board		REV 03	710-023787	DV0005	NEO PMB
SIB F2S 2/4		REV 03	710-022603	DV0097	F2S SIB
B Board		REV 03	710-023787	DT9936	NEO PMB
Fan Tray 0		REV 02	760-024497	DR8286	Front Fan Tray
Fan Tray 1		REV 06	760-024497	DV9624	Front Fan Tray
Fan Tray 2		REV 02	760-024502	DR8259	Rear Fan Tray
Fan Tray 3		REV 02	760-024502	DR8270	Rear Fan Tray
Fan Tray 4		REV 02	760-024502	DR8284	Rear Fan Tray
Fan Tray 5		REV 06	760-024502	DV7813	Rear Fan Tray

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Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN1101F27AHA	T1600
Midplane	REV 04	710-017247	RC5317	T Series Backplane
FPM GBUS	REV 10	710-002901	DS8197	T640 FPM Board
FPM Display	REV 01	710-021387	DS6433	T1600 FPM Display
CIP	REV 06	710-002895	DS1493	T Series CIP
PEM 0	Rev 08	740-017906	UD26601	Power Entry Module 3x80
SCG 0	REV 15	710-003423	DP5847	T640 Sonet Clock Gen.
SCG 1	REV 15	710-003423	DR0924	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	740-026942	737F-1024	LCC RE
ad0	3887 MB	SMART CF		2008110502B63E513E51 Compact Flash
ad1	30533 MB	SAMSUNG	MCBQE32G8MPP-0V	SY814A1208 Disk 1
Routing Engine 1	REV 01	740-026942	737F-1024	LCC RE
ad0	3887 MB	SMART CF		2008110500F9A8A8A8A8 Compact Flash
ad1	30533 MB	SAMSUNG	MCBQE32G8MPP-0V	SY814A1076 Disk 1
CB 0	REV 05	710-022597	DV4264	LCC Control Board
CB 1	REV 03	710-022597	DP8558	LCC Control Board
FPC 0	REV 14	710-013037	DS9967	FPC Type 4-ES
CPU	REV 08	710-016744	DS3989	ST-PMB2

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

#### show chassis hardware models (TX Matrix Plus Router)

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Hardware inventory:
Item          Version  Part number  Serial number  FRU model number
FPM Display   REV 03   710-024027   DX0282         CRAFT-TXP
CIP 0         REV 04   710-023792   DW4889         CIP-TXP
CIP 1         REV 04   710-023792   DW4887         CIP-TXP
PEM 0         Rev 07   740-027463   UM26368        yyyyyyyyyyyyyyyyyyyyyyyy
Routing Engine 0 REV 01   740-026942   737A-1064      RE-TXP-SFC-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
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SIB F2S 3/0	REV 05	710-022603	DW7782	
SIB F2S 3/2	REV 05	710-022603	DW7793	
SIB F2S 3/4	REV 05	710-022603	DW7779	
SIB F2S 3/6	REV 05	710-022603	DW7930	
SIB F2S 4/0	REV 05	710-022603	DW7867	
SIB F2S 4/2	REV 05	710-022603	DW7917	
SIB F2S 4/4	REV 05	710-022603	DW7929	
SIB F2S 4/6	REV 05	710-022603	DW7870	
Fan Tray 0	REV 06	760-024497	DV7831	FANTRAY-TXP-F
Fan Tray 1	REV 06	760-024497	DV9614	FANTRAY-TXP-F
Fan Tray 2	REV 06	760-024502	DV9618	FANTRAY-TXP-R
Fan Tray 3	REV 06	760-024502	DV9616	FANTRAY-TXP-R
Fan Tray 4	REV 06	760-024502	DV7807	FANTRAY-TXP-R
Fan Tray 5	REV 06	760-024502	DV7828	FANTRAY-TXP-R

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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

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Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 04	710-017247	RC5361	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	DS6430	CRAFT-T1600-S
CIP	REV 06	710-002895	DS4239	CIP-L-T640-S
PEM 0	Rev 08	740-017906	UD26649	PWR-T1600-3-80-DC-S
SCG 0	REV 15	710-003423	DP5820	SCG-T-S
CB 0	REV 06	710-022597	DW8523	CB-LCC
CB 1	REV 06	710-022597	DW8528	CB-LCC
FPC 4	REV 12	710-013037	DP8509	T1600-FPC4-ES
PIC 0	REV 11	750-017405	DP8808	PD-4XGE-XFP
PIC 1	REV 11	750-017405	DP7263	PD-4XGE-XFP
FPC 6	REV 14	710-013037	DS9961	T1600-FPC4-ES



PIC 0	REV 13	750-017405	DS5532	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS7639	PD-4XGE-XFP
FPC 7	REV 03	710-013035	DF5564	T1600-FPC3-ES
PIC 0	REV 16	750-007141	JJ8063	PC-10GE-SFP
SIB 0	REV 08	710-022594	DW8035	SIB-TXP-T1600-S
SIB 1	REV 10	710-022594	DX7672	SIB-TXP-T1600-S
SIB 2	REV 08	710-022594	DW8060	SIB-TXP-T1600-S
SIB 3	REV 08	710-022594	DW8072	SIB-TXP-T1600-S
SIB 4	REV 08	710-022594	DW8043	SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

lcc2-re0:

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Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 03	710-017247	RC3956	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	DN7030	CRAFT-T1600-S
CIP	REV 06	710-002895	DM3962	CIP-L-T640-S
PEM 0	Rev 08	740-017906	UD26519	PWR-T1600-3-80-DC-S
PEM 1	Rev 07	740-017906	UC26601	PWR-T1600-3-80-DC-S
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:

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Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 04	710-017247	RC5319	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	DS6402	CRAFT-T1600-S
CIP	REV 06	710-002895	DR9973	CIP-L-T640-S
PEM 0	Rev 07	740-017906	UC26496	PWR-T1600-3-80-DC-S
PEM 1	Rev 07	740-017906	UC26599	PWR-T1600-3-80-DC-S
SCG 0	REV 15	710-003423	DP5831	SCG-T-S
CB 0	REV 06	710-022597	DW8533	CB-LCC
CB 1	REV 06	710-022597	DW8538	CB-LCC
FPC 0	REV 14	710-013037	DS5345	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS7641	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS5479	PD-4XGE-XFP
FPC 1	REV 14	710-013037	DS7338	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS7631	PD-4XGE-XFP

PIC 1	REV 13	750-017405	DS7632	PD-4XGE-XFP
FPC 2	REV 14	710-013037	DS9962	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS7581	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS7627	PD-4XGE-XFP
FPC 4	REV 10	710-010845	JZ6573	T640-FPC4-ES
PIC 0	REV 14	750-012518	JT5124	PD-40C192-SON-XFP
FPC 5	REV 14	710-013037	DT0016	T1600-FPC4-ES
PIC 0	REV 14	750-012518	JY9918	PD-40C192-SON-XFP
FPC 7	REV 07	710-013035	DM0967	T1600-FPC3-ES
PIC 0	REV 16	750-007141	JJ8059	PC-10GE-SFP
PIC 1	REV 13	750-004695	DM5712	PC-TUNNEL
SIB 0	REV 07	710-022594	DW4174	SIB-TXP-T1600-S
SIB 1	REV 07	710-022594	DW4207	SIB-TXP-T1600-S
SIB 2	REV 06	710-022594	DT8231	SIB-TXP-T1600-S
SIB 3	REV 07	710-022594	DW4175	SIB-TXP-T1600-S
SIB 4	REV 07	710-022594	DW4209	SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

## show chassis hardware (TX Matrix Plus Router with 3D SIBs)

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user@host> show chassis hardware
sfc0-re0:
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Hardware inventory:				
Item	Version	Part number	Serial number	Description
Chassis			JN11CAAA4AHB	TXP
Midplane	REV 05	710-022574	ABAC4696	SFC Midplane
FPM Display	REV 09	710-024027	EH3138	TXP FPM Display
CIP 0	REV 12	710-023792	EF6349	TXP CIP
CIP 1	REV 12	710-023792	EG5294	TXP CIP
PEM 0	Rev 06	740-027463	XH04595	Power Entry Module
PEM 1	Rev 06	740-027463	XH04592	Power Entry Module
Routing Engine 0	REV 07	740-026942	P737A-002541	RE-DUO-2600
Routing Engine 1	REV 07	740-026942	P737A-002602	RE-DUO-2600
CB 0	REV 15	710-022606	EH4376	SFC Control Board
CB 1	REV 15	710-022606	EH4379	SFC Control Board
SPMB 0		BUILTIN		SFC Switch CPU
SPMB 1		BUILTIN		SFC Switch CPU
SIB F13 0	REV 10	750-035002	EM9305	F13 SIB 3D
B Board	REV 06	711-035082	EM9667	F13 SIB 3D Mezz
P Board	REV 05	711-043544	EM9708	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB34FB00S	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01H	CXP Module
Xcvr 4	REV 01	740-047547	XB34FB02W	CXP Module
Xcvr 6	REV 01	740-047547	XB34FB01T	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB00W	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01S	CXP Module
Xcvr 12	REV 01	740-047547	XB34FB03H	CXP Module
Xcvr 14	REV 01	740-047547	XB34FB023	CXP Module
SIB F13 3	REV 01	710-035001	EJ2612	F13 SIB 3D
B Board	REV 01	711-035082	EJ3815	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2678	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB04C	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB00Z	CXP Module
Xcvr 4	REV 01	740-047547	XB47FB036	CXP Module
Xcvr 6	REV 01	740-047547	XB47FB029	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02N	CXP Module
Xcvr 10	REV 01	740-047547	XB42FB0CS	CXP Module
Xcvr 12	REV 01	740-047547	XB47FB01X	CXP Module

Xcvr 14	REV 01	740-047547	XB48FB02F	CXP Module
SIB F13 6	REV 05	750-035002	EK2675	F13 SIB 3D
B Board	REV 03	711-035082	EK2612	F13 SIB 3D Mezz
P Board	REV 04	711-043544	EK1179	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB01T	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB02M	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB031	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB04P	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02T	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01V	CXP Module
Xcvr 12	REV 01	740-047547	XB48FB02C	CXP Module
Xcvr 14		NON-JNPR		No Module
SIB F13 12	REV 01	710-035001	EJ2631	F13 SIB 3D
B Board	REV 01	711-035082	EJ3808	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2676	F13 SIB 3D Power
SIB F2S 0/0	REV 01	711-034977	EH9829	F2S SIB 3D
B Board	REV 01	711-034979	EH9927	F2S SIB 3D Mezz
SIB F2S 0/2	REV 01	711-034977	EH9791	F2S SIB 3D
B Board	REV 01	711-034979	EH9852	F2S SIB 3D Mezz
SIB F2S 0/4	REV 01	711-034977	EH9803	F2S SIB 3D
B Board	REV 01	711-034979	EH9915	F2S SIB 3D Mezz
SIB F2S 0/6	REV 01	711-034977	EH9763	F2S SIB 3D
B Board	REV 01	711-034979	EH9880	F2S SIB 3D Mezz
SIB F2S 1/0	REV 01	711-034977	EH9757	F2S SIB 3D
B Board	REV 01	711-034979	EH9889	F2S SIB 3D Mezz
SIB F2S 1/2	REV 01	711-034977	EH9815	F2S SIB 3D
B Board	REV 01	711-034979	EH9890	F2S SIB 3D Mezz
SIB F2S 1/4	REV 08	750-034978	EN1954	F2S SIB 3D
B Board	REV 02	711-034979	EN1436	F2S SIB 3D Mezz
SIB F2S 1/6	REV 01	711-034977	EJ7054	F2S SIB 3D
B Board	REV 01	711-034979	EJ8238	F2S SIB 3D Mezz
SIB F2S 2/0	REV 01	711-034977	EH9830	F2S SIB 3D
B Board	REV 01	711-034979	EH9844	F2S SIB 3D Mezz
SIB F2S 2/2	REV 01	711-034977	EH9818	F2S SIB 3D
B Board	REV 01	711-034979	EH9888	F2S SIB 3D Mezz
SIB F2S 2/4	REV 01	711-034977	EH9795	F2S SIB 3D
B Board	REV 01	711-034979	EH9869	F2S SIB 3D Mezz
SIB F2S 2/6	REV 01	711-034977	EJ7026	F2S SIB 3D
B Board	REV 01	711-034979	EJ8273	F2S SIB 3D Mezz
SIB F2S 3/0	REV 01	711-034977	EH9811	F2S SIB 3D
B Board	REV 01	711-034979	EH9892	F2S SIB 3D Mezz
SIB F2S 3/2	REV 01	711-034977	EH9812	F2S SIB 3D
B Board	REV 01	711-034979	EH9877	F2S SIB 3D Mezz
SIB F2S 3/4	REV 08	750-034978	EN1947	F2S SIB 3D
B Board	REV 02	711-034979	EN1471	F2S SIB 3D Mezz
Fan Tray 0	REV 10	760-024497	EH3313	Front Fan Tray
Fan Tray 1	REV 10	760-024497	EH3290	Front Fan Tray
Fan Tray 2	REV 10	760-024502	EH3292	Rear Fan Tray
Fan Tray 3	REV 10	760-024502	EH3287	Rear Fan Tray
Fan Tray 4	REV 10	760-024502	EH3286	Rear Fan Tray
Fan Tray 5	REV 10	760-024502	EH3285	Rear Fan Tray

1cc0-re0:

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Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11B23FEAHA	T1600
Midplane	REV 01	710-027486	RC9787	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAG5132	T640 FPM Board
FPM Display	REV 04	710-021387	BBAL9612	T1600 FPM Display
CIP	REV 06	710-002895	BBAN0605	T-series CIP

PEM 0	REV 05	740-036442	1G022060143	Power Entry Module 6x60
PEM 1	REV 05	740-036442	1G022060011	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAL7318	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAL7255	T640 Sonet Clock Gen.
Routing Engine 0	REV 07	740-026941	P737F-002933	RE-DUO-1800
Routing Engine 1	REV 06	740-026941	P737F-002749	RE-DUO-1800
CB 0	REV 11	710-022597	EH3611	LCC Control Board
CB 1	REV 11	710-022597	EH4798	LCC Control Board
FPC 5	REV 17	710-013037	BBAC5333	FPC Type 4-ES
CPU	REV 10	710-016744	BBAB7619	ST-PMB2
PIC 0	REV 18	750-017405	BBAE3420	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 03	740-014289	T10C90659	XFP-10G-SR
MMB 0	REV 05	710-025563	BBAB9538	ST-MMB2
MMB 1	REV 05	710-025563	BBAB9502	ST-MMB2
FPC 7	REV 01	750-045173	BBAV0032	FPC Type 5-3D
CPU				
SPMB 0	REV 05	710-023321	EG9434	LCC Switch CPU
SPMB 1	REV 05	710-023321	EH3878	LCC Switch CPU
SIB 0	REV 01	750-041657	EH7997	LCC SIB 3D
B Board	REV 01	711-042424	EH7674	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB014	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB05A	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB052	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB01B	CXP Module
SIB 1	REV 01	750-041657	EH8023	LCC SIB 3D
B Board	REV 01	711-042424	EH7659	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05J	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01E	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB01J	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB02S	CXP Module
SIB 2	REV 03	750-041657	EJ6554	LCC SIB 3D
B Board	REV 02	711-042424	EJ5756	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB34FB01Z	CXP Module
Xcvr 2	REV 01	740-047547	XB34FB013	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB04Z	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB05N	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 4

lcc2-re0:

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Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11B3975AHA	T1600
Midplane	REV 01	710-027486	RC9826	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAG5124	T640 FPM Board
FPM Display	REV 03	710-021387	BBAJ1112	T1600 FPM Display
CIP	REV 06	710-002895	BBAL3744	T-series CIP
PEM 0	REV 05	740-036442	1G022060081	Power Entry Module 6x60
PEM 1	REV 05	740-036442	1G022060188	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAH8775	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAL7272	T640 Sonet Clock Gen.
Routing Engine 0	REV 07	740-026941	P737F-002992	RE-DUO-1800
Routing Engine 1	REV 07	740-026941	P737F-002938	RE-DUO-1800
CB 0	REV 11	710-022597	EH4805	LCC Control Board
CB 1	REV 11	710-022597	EH4786	LCC Control Board
FPC 1	REV 01	710-033873	BBAH0320	FPC Type 3-ES
CPU	REV 11	710-016744	BBAF3281	ST-PMB2
MMB 0	REV 06	710-025563	BBAF5061	ST-MMB2
FPC 5	REV 04	710-033871	BBAM5070	FPC Type 4-ES

CPU	REV 11	710-016744	BBAM6653	ST-PMB2
PIC 1	REV 20	750-017405	BBAM1296	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 03	740-014289	T10B42981	XFP-10G-SR
MMB 0	REV 07	710-025563	BBAN2631	ST-MMB2
MMB 1	REV 07	710-025563	BBAN2538	ST-MMB2
SPMB 0	REV 05	710-023321	EH3903	LCC Switch CPU
SPMB 1	REV 05	710-023321	EH3902	LCC Switch CPU
SIB 0	REV 01	750-041657	EH8019	LCC SIB 3D
B Board	REV 01	711-042424	EH7680	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB04F	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB04S	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB04B	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB043	CXP Module
SIB 1	REV 01	750-041657	EH8012	LCC SIB 3D
B Board	REV 01	711-042424	EH7658	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05E	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01Z	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB018	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB054	CXP Module
SIB 2	REV 01	750-041657	EH7993	LCC SIB 3D
B Board	REV 01	711-042424	EH7678	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05C	CXP Module
Xcvr 2	REV 01	740-047547	XB47FB00N	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB05U	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB05L	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 4

### show chassis hardware clei-models (TX Matrix Plus Router with 3D SIBs)

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user@host> show chassis hardware clei-models
sfc0-re0:
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Hardware inventory:				
Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 05	710-022574		CHAS-BP-TXP-S
FPM Display	REV 09	710-024027		CRAFT-TXP-S
CIP 0	REV 12	710-023792		CIP-TXP-S
CIP 1	REV 12	710-023792		CIP-TXP-S
PEM 0	Rev 06	740-027463	IPUPAFGKTA	PWR-TXP-7-60-DC-S
Routing Engine 0	REV 07	740-026942		RE-DUO-C2600-16G-S
Routing Engine 1	REV 07	740-026942		RE-DUO-C2600-16G-S
CB 0	REV 13	710-022606		CB-TXP-S
CB 1	REV 14	710-022606		CB-TXP-S
SIB F13 0	REV 10	750-035002	PROTOXCLEI	SIB-TXP-3D-F13-S
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 1	REV 10	750-035002	PROTOXCLEI	SIB-TXP-3D-F13-S
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D

Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
Xcvr 8	REV 01	740-048813		
Xcvr 10	REV 01	740-048813		
Xcvr 12	REV 01	740-048813		
Xcvr 14	REV 01	740-048813		
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D
Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 6	REV 16	750-035002	PROTOXCLEI	SIB-TXP-3D-F13
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 7	REV 10	750-035002	PROTOXCLEI	SIB-TXP-3D-F13-S
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D
Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
Xcvr 0	REV 01	740-048813		

Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 9	REV 16	750-035002	PROTOXCLEI	SIB-TXP-3D-F13
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D
Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 11	REV 10	750-035002	PROTOXCLEI	750-035002
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-048813		
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 12	REV 16	750-035002	PROTOXCLEI	SIB-TXP-3D-F13
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D
Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F2S 0/0	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 0/2	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 0/4	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 0/6	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 1/0	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 1/2	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 1/4	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 1/6	REV 08	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 2/0	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 2/2	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 2/4	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 2/6	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S

SIB F2S 3/0	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 3/2	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 3/4	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 3/6	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 4/0	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 4/2	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 4/4	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 4/6	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
Fan Tray 0	REV 10	760-024497		FANTRAY-TXP-H-S
Fan Tray 1	REV 10	760-024497		FANTRAY-TXP-H-S
Fan Tray 2	REV 10	760-024502		FANTRAY-TXP-V-S
Fan Tray 3	REV 10	760-024502		FANTRAY-TXP-V-S
Fan Tray 4	REV 10	760-024502		FANTRAY-TXP-V-S
Fan Tray 5	REV 10	760-024502		FANTRAY-TXP-V-S

lcc0-re0:

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Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 01	710-027486	IPMJ700DRD	CHAS-BP-T1600-S
FPM Display	REV 04	710-021387		CRAFT-T1600-S
CIP	REV 06	710-002895		CIP-L-T640-S
PEM 0	REV 05	740-036442	IPUPAG6KAA	PWR-T-6-60-DC-S
PEM 1	REV 05	740-036442	IPUPAG6KAA	PWR-T-6-60-DC-S
SCG 0	REV 18	710-003423		SCG-T-S
SCG 1	REV 18	710-003423		SCG-T-S
Routing Engine 0	REV 10	740-026941		RE-DUO-C1800-8G-S
Routing Engine 1	REV 07	740-026941		RE-DUO-C1800-8G-S
CB 0	REV 11	710-022597		CB-LCC-S
CB 1	REV 11	710-022597		CB-LCC-S
FPC 0	REV 01	750-045173	IP9IAL4DAB	T4000-FPC5-3D
PIC 0	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
PIC 1	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
FPC 3	REV 01	750-045173	IP9IAL4DAB	T4000-FPC5-3D
PIC 0	REV 13	750-033423	XXXXXXXXDD	PF-12-24XGE-SFPP
FPC 4	REV 02	750-045173	IP9IAL4DAC	T4000-FPC5-3D
PIC 0	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
PIC 1	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
FPC 5	REV 01	750-045173	IP9IAL4DAB	T4000-FPC5-3D
PIC 0	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
PIC 1	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
FPC 6	REV 01	750-045173	IP9IAL4DAB	T4000-FPC5-3D
PIC 0	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
PIC 1	REV 10	750-035293	IP9IAL3DAA	PF-1CGE-CFP
SIB 0	REV 06	750-041657	PROTOXCLEI	SIB-TXP-3D-LCC
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
SIB 1	REV 06	750-041657	PROTOXCLEI	SIB-TXP-3D-LCC
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		



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Xcvr 7          REV 01  740-048813
SIB 2           REV 06  750-041657  PROTOXCLEI  SIB-TXP-3D-LCC
Xcvr 0          REV 01  740-048813
Xcvr 1          REV 01  740-048813
Xcvr 2          REV 01  740-048813
Xcvr 3          REV 01  740-048813
Xcvr 4          REV 01  740-048813
Xcvr 5          REV 01  740-048813
Xcvr 6          REV 01  740-048813
Xcvr 7          REV 01  740-048813
SIB 3           REV 07  750-041657  PROTOXCLEI  SIB-TXP-3D-LCC
Xcvr 0          REV 01  740-048813
Xcvr 1          REV 01  740-048813
Xcvr 2          REV 01  740-048813
Xcvr 3          REV 01  740-048813
Xcvr 4          REV 01  740-048813
Xcvr 5          REV 01  740-048813
Xcvr 6          REV 01  740-048813
Xcvr 7          REV 01  740-048813
SIB 4           REV 06  750-041657  PROTOXCLEI  SIB-TXP-3D-LCC
Xcvr 0          REV 01  740-048813
Xcvr 1          REV 01  740-048813
Xcvr 2          REV 01  740-048813
Xcvr 3          REV 01  740-048813
Xcvr 4          REV 01  740-048813
Xcvr 5          REV 01  740-048813
Xcvr 6          REV 01  740-048813
Xcvr 7          REV 01  740-048813
Fan Tray 0
Fan Tray 1
Fan Tray 2
[Output Truncated]
FANTRAY-T-S
FANTRAY-T-S
FANTRAY-TXP3D-LCC-R-S

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### show chassis hardware detail (TX Matrix Plus Router with 3D SIBs)

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user@host> show chassis hardware detail
sfc0-re0:
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Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Midplane      REV 05   710-022574   ABAC4696       SFC Midplane
FPM Display   REV 09   710-024027   EH3138         TXP FPM Display
CIP 0         REV 12   710-023792   EF6349         TXP CIP
CIP 1         REV 12   710-023792   EG5294         TXP CIP
PEM 0         Rev 06   740-027463   XH04595        Power Entry Module
PEM 1         Rev 06   740-027463   XH04592        Power Entry Module
Routing Engine 0 REV 07   740-026942   P737A-002541   RE-DUO-2600
  ad0 3823 MB SMART CF      2011030400062C132C13 Compact Flash
  ad1 62720 MB SMART Lite SATA Drive 201105100009A452A452 Disk 1
Routing Engine 1 REV 07   740-026942   P737A-002602   RE-DUO-2600
  ad0 3823 MB SMART CF      20110508085EE471E471 Compact Flash
  ad1 62720 MB SMART Lite SATA Drive 201110210089DF39DF39 Disk 1
CB 0          REV 15   710-022606   EH4376         SFC Control Board
CB 1          REV 15   710-022606   EH4379         SFC Control Board
SPMB 0        BUILTIN
SPMB 1        BUILTIN
SIB F13 0     REV 10   750-035002   EM9305         F13 SIB 3D
  B Board     REV 06   711-035082   EM9667         F13 SIB 3D Mezz
  P Board     REV 05   711-043544   EM9708         F13 SIB 3D Power
  Xcvr 0      REV 01   740-047547   XB34FB00S      CXP Module

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Xcvr 2	REV 01	740-047547	XB48FB01H	CXP Module
Xcvr 4	REV 01	740-047547	XB34FB02W	CXP Module
Xcvr 6	REV 01	740-047547	XB34FB01T	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB00W	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01S	CXP Module
Xcvr 12	REV 01	740-047547	XB34FB03H	CXP Module
Xcvr 14	REV 01	740-047547	XB34FB023	CXP Module
SIB F13 3	REV 01	710-035001	EJ2612	F13 SIB 3D
B Board	REV 01	711-035082	EJ3815	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2678	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB04C	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB00Z	CXP Module
Xcvr 4	REV 01	740-047547	XB47FB036	CXP Module
Xcvr 6	REV 01	740-047547	XB47FB029	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02N	CXP Module
Xcvr 10	REV 01	740-047547	XB42FB0CS	CXP Module
Xcvr 12	REV 01	740-047547	XB47FB01X	CXP Module
Xcvr 14	REV 01	740-047547	XB48FB02F	CXP Module
SIB F13 6	REV 05	750-035002	EK2675	F13 SIB 3D
B Board	REV 03	711-035082	EK2612	F13 SIB 3D Mezz
P Board	REV 04	711-043544	EK1179	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB01T	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB02M	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB031	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB04P	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02T	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01V	CXP Module
Xcvr 12	REV 01	740-047547	XB48FB02C	CXP Module
Xcvr 14		NON-JNPR		No Module
SIB F13 12	REV 01	710-035001	EJ2631	F13 SIB 3D
B Board	REV 01	711-035082	EJ3808	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2676	F13 SIB 3D Power
SIB F2S 0/0	REV 01	711-034977	EH9829	F2S SIB 3D
B Board	REV 01	711-034979	EH9927	F2S SIB 3D Mezz
SIB F2S 0/2	REV 01	711-034977	EH9791	F2S SIB 3D
B Board	REV 01	711-034979	EH9852	F2S SIB 3D Mezz
SIB F2S 0/4	REV 01	711-034977	EH9803	F2S SIB 3D
B Board	REV 01	711-034979	EH9915	F2S SIB 3D Mezz
SIB F2S 0/6	REV 01	711-034977	EH9763	F2S SIB 3D
B Board	REV 01	711-034979	EH9880	F2S SIB 3D Mezz
SIB F2S 1/0	REV 01	711-034977	EH9757	F2S SIB 3D
B Board	REV 01	711-034979	EH9889	F2S SIB 3D Mezz
SIB F2S 1/2	REV 01	711-034977	EH9815	F2S SIB 3D
B Board	REV 01	711-034979	EH9890	F2S SIB 3D Mezz
SIB F2S 1/4	REV 08	750-034978	EN1954	F2S SIB 3D
B Board	REV 02	711-034979	EN1436	F2S SIB 3D Mezz
SIB F2S 1/6	REV 01	711-034977	EJ7054	F2S SIB 3D
B Board	REV 01	711-034979	EJ8238	F2S SIB 3D Mezz
SIB F2S 2/0	REV 01	711-034977	EH9830	F2S SIB 3D
B Board	REV 01	711-034979	EH9844	F2S SIB 3D Mezz
SIB F2S 2/2	REV 01	711-034977	EH9818	F2S SIB 3D
B Board	REV 01	711-034979	EH9888	F2S SIB 3D Mezz
SIB F2S 2/4	REV 01	711-034977	EH9795	F2S SIB 3D
B Board	REV 01	711-034979	EH9869	F2S SIB 3D Mezz
SIB F2S 2/6	REV 01	711-034977	EJ7026	F2S SIB 3D
B Board	REV 01	711-034979	EJ8273	F2S SIB 3D Mezz
SIB F2S 3/0	REV 01	711-034977	EH9811	F2S SIB 3D
B Board	REV 01	711-034979	EH9892	F2S SIB 3D Mezz
SIB F2S 3/2	REV 01	711-034977	EH9812	F2S SIB 3D
B Board	REV 01	711-034979	EH9877	F2S SIB 3D Mezz
SIB F2S 3/4	REV 08	750-034978	EN1947	F2S SIB 3D

B Board	REV 02	711-034979	EN1471	F2S SIB 3D Mezz
Fan Tray 0	REV 10	760-024497	EH3313	Front Fan Tray
Fan Tray 1	REV 10	760-024497	EH3290	Front Fan Tray
Fan Tray 2	REV 10	760-024502	EH3292	Rear Fan Tray
Fan Tray 3	REV 10	760-024502	EH3287	Rear Fan Tray
Fan Tray 4	REV 10	760-024502	EH3286	Rear Fan Tray
Fan Tray 5	REV 10	760-024502	EH3285	Rear Fan Tray

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lcc0-re0:
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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			JN11B23FEAHA	T1600
Midplane	REV 01	710-027486	RC9787	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAG5132	T640 FPM Board
FPM Display	REV 04	710-021387	BBAL9612	T1600 FPM Display
CIP	REV 06	710-002895	BBAN0605	T-series CIP
PEM 0	REV 05	740-036442	1G022060143	Power Entry Module 6x60
PEM 1	REV 05	740-036442	1G022060011	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAL7318	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAL7255	T640 Sonet Clock Gen.
Routing Engine 0	REV 07	740-026941	P737F-002933	RE-DUO-1800
ad0 3823 MB	SMART CF		201103030490604E604E	Compact Flash
ad1 62720 MB	SMART Lite SATA Drive		20110729028B11D411D4	Disk 1
Routing Engine 1	REV 06	740-026941	P737F-002749	RE-DUO-1800
ad0 3823 MB	SMART CF		2011010504EB99649964	Compact Flash
ad1 62720 MB	SMART Lite SATA Drive		201102140058934A934A	Disk 1
CB 0	REV 11	710-022597	EH3611	LCC Control Board
CB 1	REV 11	710-022597	EH4798	LCC Control Board
FPC 5	REV 17	710-013037	BBAC5333	FPC Type 4-ES
CPU	REV 10	710-016744	BBAB7619	ST-PMB2
PIC 0	REV 18	750-017405	BBAE3420	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 03	740-014289	T10C90659	XFP-10G-SR
MMB 0	REV 05	710-025563	BBAB9538	ST-MMB2
MMB 1	REV 05	710-025563	BBAB9502	ST-MMB2
FPC 7	REV 01	750-045173	BBAV0032	FPC Type 5-3D
CPU				
SPMB 0	REV 05	710-023321	EG9434	LCC Switch CPU
SPMB 1	REV 05	710-023321	EH3878	LCC Switch CPU
SIB 0	REV 01	750-041657	EH7997	LCC SIB 3D
B Board	REV 01	711-042424	EH7674	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB014	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB05A	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB052	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB01B	CXP Module
SIB 1	REV 01	750-041657	EH8023	LCC SIB 3D
B Board	REV 01	711-042424	EH7659	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05J	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01E	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB01J	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB02S	CXP Module
SIB 2	REV 03	750-041657	EJ6554	LCC SIB 3D
B Board	REV 02	711-042424	EJ5756	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB34FB01Z	CXP Module
Xcvr 2	REV 01	740-047547	XB34FB013	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB04Z	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB05N	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 4

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lcc2-re0:
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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			JN1B3975AHA	T1600
Midplane	REV 01	710-027486	RC9826	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAG5124	T640 FPM Board
FPM Display	REV 03	710-021387	BBAJ1112	T1600 FPM Display
CIP	REV 06	710-002895	BBAL3744	T-series CIP
PEM 0	REV 05	740-036442	1G022060081	Power Entry Module 6x60
PEM 1	REV 05	740-036442	1G022060188	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAH8775	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAL7272	T640 Sonet Clock Gen.
Routing Engine 0	REV 07	740-026941	P737F-002992	RE-DUO-1800
ad0 3823 MB	SMART CF		201103030356329E329E	Compact Flash
ad1 62720 MB	SMART Lite SATA Drive		2011051000488D8B8D8B	Disk 1
Routing Engine 1	REV 07	740-026941	P737F-002938	RE-DUO-1800
ad0 3823 MB	SMART CF		20110304000F02680268	Compact Flash
ad1 62720 MB	SMART Lite SATA Drive		201105300A70F325F325	Disk 1
CB 0	REV 11	710-022597	EH4805	LCC Control Board
CB 1	REV 11	710-022597	EH4786	LCC Control Board
FPC 1	REV 01	710-033873	BBAH0320	FPC Type 3-ES
CPU	REV 11	710-016744	BBAF3281	ST-PMB2
MMB 0	REV 06	710-025563	BBAF5061	ST-MMB2
FPC 5	REV 04	710-033871	BBAM5070	FPC Type 4-ES
CPU	REV 11	710-016744	BBAM6653	ST-PMB2
PIC 1	REV 20	750-017405	BBAM1296	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 03	740-014289	T10B42981	XFP-10G-SR
MMB 0	REV 07	710-025563	BBAN2631	ST-MMB2
MMB 1	REV 07	710-025563	BBAN2538	ST-MMB2
SPMB 0	REV 05	710-023321	EH3903	LCC Switch CPU
SPMB 1	REV 05	710-023321	EH3902	LCC Switch CPU
SIB 0	REV 01	750-041657	EH8019	LCC SIB 3D
B Board	REV 01	711-042424	EH7680	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB04F	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB04S	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB04B	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB043	CXP Module
SIB 1	REV 01	750-041657	EH8012	LCC SIB 3D
B Board	REV 01	711-042424	EH7658	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05E	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01Z	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB018	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB054	CXP Module
SIB 2	REV 01	750-041657	EH7993	LCC SIB 3D
B Board	REV 01	711-042424	EH7678	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05C	CXP Module
Xcvr 2	REV 01	740-047547	XB47FB00N	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB05U	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB05L	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 4

#### show chassis hardware lcc (TX Matrix Plus Router with 3D SIBs)

```
user@host> show chassis hardware lcc 0
```

```
lcc0-re0:
```

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

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

Chassis			JN11B23FEAHA	T1600
Midplane	REV 01	710-027486	RC9787	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAG5132	T640 FPM Board
FPM Display	REV 04	710-021387	BBAL9612	T1600 FPM Display
CIP	REV 06	710-002895	BBAN0605	T-series CIP
PEM 0	REV 05	740-036442	1G022060143	Power Entry Module 6x60
PEM 1	REV 05	740-036442	1G022060011	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAL7318	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAL7255	T640 Sonet Clock Gen.
Routing Engine 0	REV 07	740-026941	P737F-002933	RE-DUO-1800
Routing Engine 1	REV 06	740-026941	P737F-002749	RE-DUO-1800
CB 0	REV 11	710-022597	EH3611	LCC Control Board
CB 1	REV 11	710-022597	EH4798	LCC Control Board
FPC 5	REV 17	710-013037	BBAC5333	FPC Type 4-ES
CPU	REV 10	710-016744	BBAB7619	ST-PMB2
PIC 0	REV 18	750-017405	BBAE3420	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 03	740-014289	T10C90659	XFP-10G-SR
MMB 0	REV 05	710-025563	BBAB9538	ST-MMB2
MMB 1	REV 05	710-025563	BBAB9502	ST-MMB2
FPC 7	REV 01	750-045173	BBAV0032	FPC Type 5-3D
CPU				
SPMB 0	REV 05	710-023321	EG9434	LCC Switch CPU
SPMB 1	REV 05	710-023321	EH3878	LCC Switch CPU
SIB 0	REV 01	750-041657	EH7997	LCC SIB 3D
B Board	REV 01	711-042424	EH7674	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB014	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB05A	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB052	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB01B	CXP Module
SIB 1	REV 01	750-041657	EH8023	LCC SIB 3D
B Board	REV 01	711-042424	EH7659	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05J	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01E	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB01J	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB02S	CXP Module
SIB 2	REV 03	750-041657	EJ6554	LCC SIB 3D
B Board	REV 02	711-042424	EJ5756	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB34FB01Z	CXP Module
Xcvr 2	REV 01	740-047547	XB34FB013	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB04Z	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB05N	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 4

### show chassis hardware sfc (TX Matrix Plus Router with 3D SIBs)

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

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

Item	Version	Part number	Serial number	Description
Chassis			JN11CAAAA4HB	TXP
Midplane	REV 05	710-022574	ABAC4696	SFC Midplane
FPM Display	REV 09	710-024027	EH3138	TXP FPM Display
CIP 0	REV 12	710-023792	EF6349	TXP CIP
CIP 1	REV 12	710-023792	EG5294	TXP CIP
PEM 0	Rev 06	740-027463	XH04595	Power Entry Module
PEM 1	Rev 06	740-027463	XH04592	Power Entry Module
Routing Engine 0	REV 07	740-026942	P737A-002541	RE-DUO-2600
Routing Engine 1	REV 07	740-026942	P737A-002602	RE-DUO-2600

CB 0	REV 15	710-022606	EH4376	SFC Control Board
CB 1	REV 15	710-022606	EH4379	SFC Control Board
SPMB 0		BUILTIN		SFC Switch CPU
SPMB 1		BUILTIN		SFC Switch CPU
SIB F13 0	REV 10	750-035002	EM9305	F13 SIB 3D
B Board	REV 06	711-035082	EM9667	F13 SIB 3D Mezz
P Board	REV 05	711-043544	EM9708	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB34FB00S	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01H	CXP Module
Xcvr 4	REV 01	740-047547	XB34FB02W	CXP Module
Xcvr 6	REV 01	740-047547	XB34FB01T	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB00W	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01S	CXP Module
Xcvr 12	REV 01	740-047547	XB34FB03H	CXP Module
Xcvr 14	REV 01	740-047547	XB34FB023	CXP Module
SIB F13 3	REV 01	710-035001	EJ2612	F13 SIB 3D
B Board	REV 01	711-035082	EJ3815	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2678	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB04C	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB00Z	CXP Module
Xcvr 4	REV 01	740-047547	XB47FB036	CXP Module
Xcvr 6	REV 01	740-047547	XB47FB029	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02N	CXP Module
Xcvr 10	REV 01	740-047547	XB42FB0CS	CXP Module
Xcvr 12	REV 01	740-047547	XB47FB01X	CXP Module
Xcvr 14	REV 01	740-047547	XB48FB02F	CXP Module
SIB F13 6	REV 05	750-035002	EK2675	F13 SIB 3D
B Board	REV 03	711-035082	EK2612	F13 SIB 3D Mezz
P Board	REV 04	711-043544	EK1179	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB01T	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB02M	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB031	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB04P	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02T	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01V	CXP Module
Xcvr 12	REV 01	740-047547	XB48FB02C	CXP Module
Xcvr 14		NON-JNPR		No Module
SIB F13 12	REV 01	710-035001	EJ2631	F13 SIB 3D
B Board	REV 01	711-035082	EJ3808	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2676	F13 SIB 3D Power
SIB F2S 0/0	REV 01	711-034977	EH9829	F2S SIB 3D
B Board	REV 01	711-034979	EH9927	F2S SIB 3D Mezz
SIB F2S 0/2	REV 01	711-034977	EH9791	F2S SIB 3D
B Board	REV 01	711-034979	EH9852	F2S SIB 3D Mezz
SIB F2S 0/4	REV 01	711-034977	EH9803	F2S SIB 3D
B Board	REV 01	711-034979	EH9915	F2S SIB 3D Mezz
SIB F2S 0/6	REV 01	711-034977	EH9763	F2S SIB 3D
B Board	REV 01	711-034979	EH9880	F2S SIB 3D Mezz
SIB F2S 1/0	REV 01	711-034977	EH9757	F2S SIB 3D
B Board	REV 01	711-034979	EH9889	F2S SIB 3D Mezz
SIB F2S 1/2	REV 01	711-034977	EH9815	F2S SIB 3D
B Board	REV 01	711-034979	EH9890	F2S SIB 3D Mezz
SIB F2S 1/4	REV 08	750-034978	EN1954	F2S SIB 3D
B Board	REV 02	711-034979	EN1436	F2S SIB 3D Mezz
SIB F2S 1/6	REV 01	711-034977	EJ7054	F2S SIB 3D
B Board	REV 01	711-034979	EJ8238	F2S SIB 3D Mezz
SIB F2S 2/0	REV 01	711-034977	EH9830	F2S SIB 3D
B Board	REV 01	711-034979	EH9844	F2S SIB 3D Mezz
SIB F2S 2/2	REV 01	711-034977	EH9818	F2S SIB 3D
B Board	REV 01	711-034979	EH9888	F2S SIB 3D Mezz
SIB F2S 2/4	REV 01	711-034977	EH9795	F2S SIB 3D

B Board	REV 01	711-034979	EH9869	F2S SIB 3D Mezz
SIB F2S 2/6	REV 01	711-034977	EJ7026	F2S SIB 3D
B Board	REV 01	711-034979	EJ8273	F2S SIB 3D Mezz
SIB F2S 3/0	REV 01	711-034977	EH9811	F2S SIB 3D
B Board	REV 01	711-034979	EH9892	F2S SIB 3D Mezz
SIB F2S 3/2	REV 01	711-034977	EH9812	F2S SIB 3D
B Board	REV 01	711-034979	EH9877	F2S SIB 3D Mezz
SIB F2S 3/4	REV 08	750-034978	EN1947	F2S SIB 3D
B Board	REV 02	711-034979	EN1471	F2S SIB 3D Mezz
Fan Tray 0	REV 10	760-024497	EH3313	Front Fan Tray
Fan Tray 1	REV 10	760-024497	EH3290	Front Fan Tray
Fan Tray 2	REV 10	760-024502	EH3292	Rear Fan Tray
Fan Tray 3	REV 10	760-024502	EH3287	Rear Fan Tray
Fan Tray 4	REV 10	760-024502	EH3286	Rear Fan Tray
Fan Tray 5	REV 10	760-024502	EH3285	Rear Fan Tray

### show chassis hardware (16-Port 10-Gigabit Ethernet MPC with SFP+ Optics [MX Series Routers])

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN112D865AFA	MX960
Midplane	REV 03	710-013698	TS3339	MX960 Backplane
FPM Board	REV 03	710-014974	WW6267	Front Panel Display
PDM	Rev 03	740-013110	QCS12485026	Power Distribution
Module				
PEM 0	Rev 04	740-013682	QCS12434086	PS 1.7kW; 200-240VAC
in				
PEM 1	Rev 04	740-013682	QCS1243408Z	PS 1.7kW; 200-240VAC
in				
PEM 2	Rev 04	740-013682	QCS1243407X	PS 1.7kW; 200-240VAC
in				
Routing Engine 0	REV 07	740-015113	9009009677	RE-S-1300
Routing Engine 1	REV 07	740-015113	9009011510	RE-S-1300
CB 0	REV 03	710-021523	XF0394	MX SCB
CB 1	REV 03	710-021523	XF0550	MX SCB
CB 2	REV 03	710-021523	XD7455	MX SCB
FPC 4	REV 02	750-028467	JR6127	MPC M 16x 10GE
CPU	REV 02	711-029089	JX0129	AS PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Fan Tray 0	REV 05	740-014971	TP9990	Fan Tray
Fan Tray 1	REV 05	740-014971	VS1709	Fan Tray

### show chassis hardware (MPC3E [MX Series Routers])

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN1101AFEAFB	MX480
Midplane	REV 05	710-017414	TR4444	MX480 Midplane
FPM Board	REV 02	710-017254	KG6056	Front Panel Display
PEM 0	Rev 03	740-017330	QCS082090FC	PS 1.2-1.7kW; 100-240V
PEM 1	Rev 03	740-017330	QCS082090FD	PS 1.2-1.7kW; 100-240V
Routing Engine 0	REV 07	740-013063	9009004124	RE-S-2000

Routing Engine 1	REV 07	740-013063	9009005569	RE-S-2000
CB 0	REV 07	710-021523	XZ3587	MX SCB
CB 1	REV 03	710-021523	KH8306	MX SCB
FPC 1	REV 04.1.07	750-033205	P1240	MPC Type 3
CPU	REV 01	711-035209	YL0504	HMPC PMB 2G
MIC 1	REV 10	750-033199	YX4495	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-032210	C22CQNE	CFP-100G-LR4
FPC 2	REV 26	750-016670	KH0045	DPCE 40x 1GE R EQ
CPU	REV 07	710-013713	KF5448	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 01	740-011613	PF21JHU	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 9	REV 01	740-011613	AM0813S8ZL6	SFP-SX
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 0	REV 02	740-011613	PGL2KYF	SFP-SX
Xcvr 2	REV 01	740-011613	AM0806S8N4P	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN) EQ
Xcvr 5	REV 01	740-011613	AM0815S967N	SFP-SX
Xcvr 7	REV 01	740-011613	AM0806S8N1X	SFP-SX
Xcvr 8	REV 01	740-011613	AM0815S967J	SFP-SX
Xcvr 9	REV 01	740-011613	AM0815S967M	SFP-SX
FPC 3	REV 12.2.09	750-033205	YR9443	MPC Type 3
CPU	REV 03	711-035209	YL6931	HMPC PMB 2G
MIC 0	REV 05	750-033199	YR3269	1X100GE CFP
PIC 0		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-032210	ULH0KG3	CFP-100G-LR4
MIC 1	REV 02	750-033199	YG3245	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-032210	ULH0KGF	CFP-100G-LR4
FPC 4	REV 12.3.09	750-033205	YR9437	MPC Type 3
CPU	REV 03	711-035209	YT5857	HMPC PMB 2G
MIC 0	REV 05	750-033199	YR3295	1X100GE CFP
PIC 0		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0		NON-JNPR	X12000187	CFP-100G-SR10
MIC 1	REV 10	750-033199	YX4518	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-035329	X12J00008	CFP-100G-SR10
FPC 5	REV 06	750-024884	JW9769	MPC Type 2 3D EQ
CPU	REV 02	711-028401	JR6158	MPC PMB 2G Proto
MIC 0	REV 05	750-028387	JR6197	3D 4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 01	740-014289	T07M71112	XFP-10G-SR
Xcvr 1	REV 02	740-014289	T08L85610	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	2x 10GE XFP
MIC 1	REV 22	750-028392	YM0053	3D 20x 1GE(LAN) SFP
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-011613	AM0703S005B	SFP-SX
Xcvr 1	REV 01	740-011613	E07L01352	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 5	REV 01	740-013111	6500217	SFP-T
Xcvr 9	REV 02	740-013111	8499527	SFP-T
Fan Tray				Left Fan Tray

The PIC number for MIC 1 always starts from 2 (even if the first MIC is a 1X100GE CFP or a legacy MIC).

#### show chassis hardware (QFX3500 Switches)

```
user@switch> show chassis hardware
```



## Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis				QFX3500
Routing Engine 0		BUILTIN	BUILTIN	QFX Routing Engine
FPC 0	REV 04	750-044071	BBAR3902	QFX3500-48S4Q-AFI
CPU		BUILTIN	BUILTIN	FPC CPU
PIC 0		BUILTIN	BUILTIN	48x 10G-SFP+
PIC 1		BUILTIN	BUILTIN	15x 10G-SFP+
MGMT BRD	REV 02	750-044063	BBAR0398	QFX3500-MGMT-SFP-AFO
Xcvr 0	REV 01	740-011614	AC0946S0BD1	SFP-LX10
Xcvr 1	REV 02	740-013111	A281922	SFP-T
Power Supply 0	Rev 04	740-032091	UI00677	JPSU-650W-AC-AFI
Power Supply 1	REV 00	740-041741	VJ00162	JPSU-650W-AC-AFO
Fan Tray 0				QFX Fan Tray, Back to
Front Airflow				
Fan Tray 1				QFX Fan Tray, Back to
Front Airflow				
Fan Tray 2				QFX Fan Tray, Back to
Front Airflow				

## show chassis hardware detail (QFX3500 Switches)

user@switch&gt; show chassis hardware detail

## Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN000TEST5	QFX3500
Routing Engine 0		BUILTIN	BUILTIN	QFX Routing Engine
FPC 0	REV 05	750-036931	EE0823	QFX3500-48S4Q-AFI
CPU		BUILTIN	BUILTIN	FPC CPU
PIC 0		BUILTIN	BUILTIN	48x 10G-SFP+
Xcvr 0	REV 01	740-030589	S99E270079	SFP+-10G-LPBK
Xcvr 1	REV 01	740-030589	S9AK450099	SFP+-10G-LPBK
Xcvr 2	REV 01	740-030589	S99E270078	SFP+-10G-LPBK
Xcvr 3	REV 01	740-030589	S9AK450098	SFP+-10G-LPBK
Xcvr 4	REV 01	740-030589	S99E270075	SFP+-10G-LPBK
Xcvr 5	REV 01	740-030589	S9AK450093	SFP+-10G-LPBK
Xcvr 6	REV 01	740-030589	S9AK450097	SFP+-10G-LPBK
Xcvr 7	REV 01	740-030589	S9AK450095	SFP+-10G-LPBK
Xcvr 8	REV 01	740-030589	S99E270072	SFP+-10G-LPBK
Xcvr 9	REV 01	740-030589	S99E270073	SFP+-10G-LPBK
Xcvr 10	REV 01	740-030589	S99E270080	SFP+-10G-LPBK
Xcvr 11	REV 01	740-030589	S9AK450169	SFP+-10G-LPBK
Xcvr 12	REV 01	740-030589	S99E270076	SFP+-10G-LPBK
Xcvr 13	REV 01	740-030589	S9AK450167	SFP+-10G-LPBK
Xcvr 14	REV 01	740-030589	S9AK450170	SFP+-10G-LPBK
Xcvr 15	REV 01	740-030589	S9AK450166	SFP+-10G-LPBK
Xcvr 16	REV 01	740-030589	S9AK450092	SFP+-10G-LPBK
Xcvr 17	REV 01	740-030589	S9AK450163	SFP+-10G-LPBK
Xcvr 18	REV 01	740-030589	S9AK450094	SFP+-10G-LPBK
Xcvr 19	REV 01	740-030589	S9AK450100	SFP+-10G-LPBK
Xcvr 20	REV 01	740-030589	S9AK450168	SFP+-10G-LPBK
Xcvr 21	REV 01	740-030589	S9AK450165	SFP+-10G-LPBK
Xcvr 22	REV 01	740-030589	S9AK450073	SFP+-10G-LPBK
Xcvr 23	REV 01	740-030589	S9AK450164	SFP+-10G-LPBK
Xcvr 24	REV 01	740-030589	S9AK450074	SFP+-10G-LPBK
Xcvr 25	REV 01	740-030589	SA62270195	SFP+-10G-LPBK
Xcvr 26	REV 01	740-030589	S9AK450078	SFP+-10G-LPBK
Xcvr 27	REV 01	740-030589	S9AK450024	SFP+-10G-LPBK
Xcvr 28	REV 01	740-030589	S9AK450027	SFP+-10G-LPBK

Xcvr 29	REV 01	740-030589	S9AK450080	SFP+-10G-LPBK
Xcvr 30	REV 01	740-030589	S9AK450030	SFP+-10G-LPBK
Xcvr 31	REV 01	740-030589	S9AK450025	SFP+-10G-LPBK
Xcvr 32	REV 01	740-030589	S9AK450023	SFP+-10G-LPBK
Xcvr 33	REV 01	740-030589	S9AK450075	SFP+-10G-LPBK
Xcvr 34	REV 01	740-030589	S9AK450161	SFP+-10G-LPBK
Xcvr 35	REV 01	740-030589	S9AK450071	SFP+-10G-LPBK
Xcvr 36	REV 01	740-030589	S9AK450072	SFP+-10G-LPBK
Xcvr 37	REV 01	740-030589	S9AK450022	SFP+-10G-LPBK
Xcvr 38	REV 01	740-030589	S9AK450021	SFP+-10G-LPBK
Xcvr 39	REV 01	740-030589	S9AK450175	SFP+-10G-LPBK
Xcvr 40	REV 01	740-030589	S9AK450162	SFP+-10G-LPBK
Xcvr 41	REV 01	740-030589	S99E270074	SFP+-10G-LPBK
Xcvr 42	REV 01	740-030589	S9AK450174	SFP+-10G-LPBK
Xcvr 43	REV 01	740-030589	S9AK450077	SFP+-10G-LPBK
Xcvr 44	REV 01	740-030589	S9AK450076	SFP+-10G-LPBK
Xcvr 45	REV 01	740-030589	S9AK450026	SFP+-10G-LPBK
Xcvr 46	REV 01	740-030589	S9AK450079	SFP+-10G-LPBK
Xcvr 47	REV 01	740-030589	S9AK450029	SFP+-10G-LPBK
PIC 1		BUILTIN	BUILTIN	15x 10G-SFP+
Xcvr 1	REV 01	740-032986	QA170087	QSFP+-40G-SR4
Xcvr 4	REV 01	740-032986	QA360442	QSFP+-40G-SR4
Xcvr 8	REV 01	740-032986	QA170091	QSFP+-40G-SR4
Xcvr 12	REV 01	740-032986	QA170042	QSFP+-40G-SR4
MGMT BRD	REV 08	750-036946	EE0731	QFX3500-MB
Power Supply 0	Rev 04	740-032091	UI00690	QFX PS 650W AC
Power Supply 1	Rev 04	740-032091	UI00679	QFX PS 650W AC
Fan Tray 0				QFX Fan Tray
Fan Tray 1				QFX Fan Tray

### show chassis hardware models (QFX3500 Switches)

```

user@switch> show chassis hardware models
Hardware inventory:
Item          Version  Part number  Serial number  FRU model number
Routing Engine 0      BUILTIN    BUILTIN
FPC 0          REV 02    711-032234  EC4074
Power Supply 0  PSMI 2C  11-d65800  --

```

### show chassis hardware clei-models (QFX3500 Switches)

```

user@switch> show chassis hardware clei-models
Hardware inventory:
Item          Version  Part number  CLEI code  FRU model number
Routing Engine 0      BUILTIN
FPC 0          REV 02    711-032234
Power Supply 0  PSMI 2C  11-d65800

```

### show chassis hardware clei-models (QFX5100 Switches)

```

user@switch> show chassis hardware clei-models
Hardware inventory:
Item          Version  Part number  CLEI code  FRU model number
Routing Engine 0      BUILTIN    CMMNV10BRA
FPC 0          REV 01    611-053010  CMMNV10BRA
PIC 0          BUILTIN    CMMNV10BRA
Power Supply 0  REV 03    740-053352  MUPABHBAA  JPSU-850W-AC-AFO
Power Supply 1  REV 03    740-053352  MUPABHBAA  JPSU-850W-AC-AFO
Fan Tray 0      QFX5100-96S-FANAFO
Fan Tray 1      QFX5100-96S-FANAFO
Fan Tray 2      QFX5100-96S-FANAFO

```

**show chassis hardware interconnect-device (QFabric Systems)**

```

user@switch> show chassis hardware interconnect-device interconnect1
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis       REV 07                BH0208188289  QFX_o1ive
Midplane      REV 07    750-021261  BH0208188289  QFX Midplane
CB 0          REV 07    750-021261  BH0208188289  QFXIC08-CB4S

```

**show chassis hardware node-device (QFabric Systems)**

```

user@switch> show chassis hardware node-device node1
Routing Engine 0  BUILTIN      BUILTIN      QFX Routing Engine
node1            REV 05    711-032234  ED3694      QFX3500-48S4Q-AFI

CPU              BUILTIN      BUILTIN      FPC CPU
PIC 0            BUILTIN      BUILTIN      48x 10G-SFP+
Xcvr 8          REV 01    740-030658  AD0946A028B  SFP+-10G-USR
...

```

**show chassis hardware (PTX5000 Packet Transport Router)**

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis       REV 03    711-031896  JN11D1FD7AJA  PTX5000
Midplane      REV 08    760-030647  EG1679        Midplane-8S
FPM           REV 05    740-032019  ZE00006       Front Panel Display
PDU 0         Rev 05    740-032022  ZJ00018       DC Power Dist Unit
PSM 0         Rev 05    740-032022  ZJ00018       DC 12V Power Supply
PSM 1         Rev 04    740-032022  ZC00052       DC 12V Power Supply
PSM 2         Rev 04    740-032022  ZD00051       DC 12V Power Supply
PSM 3         Rev 05    740-032022  ZJ00060       DC 12V Power Supply
CCG 0         REV 04    750-030653  EG3703        Clock Generator
CCG 1         REV 04    750-030653  EG3698        Clock Generator
Routing Engine 0 REV 05    740-026942  P737A-002231  RE-DUO-2600
Routing Engine 1 REV 06    740-026942  P737A-002438  RE-DUO-2600
CB 0          REV 08    750-030625  EG5519        Control Board
CB 1          REV 08    750-030625  EG5516        Control Board
FPC 0         REV 18    750-036844  EJ3080        FPC
CPU           REV 12    711-030686  EJ3260        SNG PMB
FPC 2         REV 13    750-036844  EG5065        FPC
CPU           REV 09    711-030686  EG4082        SNG PMB
PIC 0         REV 14    750-031913  EG5127        24x 10GE(LAN) SFP+
Xcvr 0        REV 01    740-031980  143363A00240  SFP+-10G-SR
Xcvr 1        REV 01    740-031981  UK90PZ1       SFP+-10G-LR
Xcvr 2        REV 01    740-031980  AD1141A04XH   SFP+-10G-SR
Xcvr 3        REV 01    740-031981  UK90Q46       SFP+-10G-LR
Xcvr 4        REV 01    740-031980  AD1141A04X4   SFP+-10G-SR
Xcvr 6        REV 01    740-031980  B11H02560     SFP+-10G-SR
Xcvr 7        REV 01    740-031980  B11C01589     SFP+-10G-SR
Xcvr 8        REV 01    740-031980  AD1141A04XF   SFP+-10G-SR
Xcvr 10       REV 01    740-031980  123363A01094  SFP+-10G-SR
Xcvr 11       REV 01    740-031980  AK80LKF       SFP+-10G-SR
Xcvr 12       REV 01    740-031980  183363A01528  SFP+-10G-SR
Xcvr 14       REV 01    740-031980  193363A01079  SFP+-10G-SR
Xcvr 15       REV 01    740-031980  AK80MC8       SFP+-10G-SR
Xcvr 16       REV 01    740-031980  AJC0BHC       SFP+-10G-SR
Xcvr 19       REV 01    740-021309  J08D26856     SFP+-10G-LR
Xcvr 21       REV 01    740-031980  AK80KCT       SFP+-10G-SR

```

Xcvr 22	REV 01	740-031981	UK90PZL	SFP+-10G-LR
Xcvr 23	REV 01	740-031980	AK80N1V	SFP+-10G-SR
FPC 3	REV 13	750-036844	EG5074	FPC
CPU	REV 09	711-030686	EG4064	SNG PMB
PIC 1	REV 10	750-031903	EG0325	SNG Load
FPC 5	REV 06	750-036844	EH3198	FPC
CPU				
PIC 0	REV 14	750-031913	EG5134	24x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LBH	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11B03724	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80FMH	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J00818	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	193363A00743	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11B06125	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B11H02529	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AK80LFB	SFP+-10G-SR
Xcvr 12	REV 01	740-031980	193363A01061	SFP+-10G-SR
Xcvr 15	REV 01	740-031980	B11J00687	SFP+-10G-SR
Xcvr 16	REV 01	740-031980	193363A00738	SFP+-10G-SR
Xcvr 18	REV 01	740-031980	AK80MQX	SFP+-10G-SR
Xcvr 19	REV 01	740-021309	J08C17257	SFP+-10G-LR
Xcvr 22	REV 01	740-031980	B11J00730	SFP+-10G-SR
Xcvr 23	REV 01	740-031980	AK80KEE	SFP+-10G-SR
PIC 1	REV 08	750-036710	EG3105	2x 40GE CFP
Xcvr 0	REV 01	740-034554	B260HLT	CFP-40G-LR4
Xcvr 1	REV 01	740-034554	B11C02847	CFP-40G-LR4
FPC 6	REV 18	750-036844	EJ4391	FPC
CPU	REV 12	711-030686	EJ3257	SNG PMB
FPC 7	REV 18	750-036844	EJ4382	FPC
CPU	REV 12	711-030686	EJ3238	SNG PMB
SPMB 0	REV 10	711-030686	EG5418	SNG PMB
SPMB 1	REV 09	711-030686	EG5373	SNG PMB
SIB 0	REV 07	750-030631	EG4858	SIB-I-8S
SIB 1	REV 07	750-030631	EG4872	SIB-I-8S
SIB 2	REV 07	750-030631	EG4866	SIB-I-8S
SIB 3	REV 07	750-030631	EG6011	SIB-I-8S
SIB 4	REV 07	750-030631	EG4907	SIB-I-8S
SIB 5	REV 07	750-030631	EG4879	SIB-I-8S
SIB 6	REV 07	750-030631	EG4864	SIB-I-8S
SIB 7	REV 07	750-030631	EG4899	SIB-I-8S
SIB 8	REV 07	750-030631	EG4880	SIB-I-8S
Fan Tray 0	REV 04	760-032784	EG1496	Vertical Fan Tray
Fan Tray 1	REV 04	760-030642	EG1335	Horizontal Fan Tray
Fan Tray 2	REV 02	760-030642	ED4952	Horizontal Fan Tray

#### show chassis hardware (PTX5000 Packet Transport Router with AC PSM and PDU)

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

Hardware inventory:				
Item	Version	Part number	Serial number	Description
Chassis			JN12223A6AJA	PTX5000
Midplane	REV 16	750-035893	ACRA1350	Midplane-8S
FPM	REV 12	760-030647	BBBD5625	Front Panel Display
PDU 0	Rev 01	740-048338	1GB83360005	High Capacity AC WYE PDU
PSM 0	Rev 01	740-048334	1GB43360074	High Capacity AC PSM
PSM 1	Rev 01	740-048334	1GB43360001	High Capacity AC PSM
PSM 2	Rev 01	740-048334	1GB43360104	High Capacity AC PSM
PSM 3	Rev 01	740-048334	1GB43360042	High Capacity AC PSM
PSM 4	Rev 01	740-048334	1GB43360068	High Capacity AC PSM
PSM 5	Rev 01	740-048334	1GB43360080	High Capacity AC PSM

```

PSM 6      Rev 01  740-048334  1GB43360046  High Capacity AC PSM
PSM 7      Rev 01  740-048334  1GB43360100  High Capacity AC PSM
PDU 1      Rev 01  740-048338  1GB83360006  High Capacity AC WYE PDU

PSM 0      Rev 01  740-048334  1GB43360069  High Capacity AC PSM
PSM 1      Rev 01  740-048334  1GB43360099  High Capacity AC PSM
PSM 2      Rev 01  740-048334  1GB43360050  High Capacity AC PSM
PSM 3      Rev 01  740-048334  1GB43360095  High Capacity AC PSM
PSM 4      Rev 01  740-048334  1GB43360101  High Capacity AC PSM
PSM 5      Rev 01  740-048334  1GB43360075  High Capacity AC PSM
PSM 6      Rev 01  740-048334  1GB43360047  High Capacity AC PSM
PSM 7      Rev 01  740-048334  1GB43360019  High Capacity AC PSM
CCG 0      REV 09  750-030653  BBAZ5345     Clock Generator
...

```

### show chassis hardware (PTX5000 Packet Transport Router with FPC2-PTX-P1A)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN1204FC0AJA  PTX5000
Midplane      REV 11   750-035893  ACAB8038      Midplane-8S
FPM           REV 12   760-030647  BBBD5619      Front Panel
Display
PDU 0         Rev 04   740-048336  1GB93470043   High Capacity DC PDU
  PSM 0       Rev 04   740-046988  1GB63500184   High Capacity DC PSM
  PSM 2       Rev 04   740-046988  1GB63500169   High Capacity DC PSM
  PSM 4       Rev 04   740-046988  1GB63500306   High Capacity DC PSM
  PSM 6       Rev 04   740-046988  1GB63500074   High Capacity DC PSM
PDU 1         Rev 04   740-048336  1GB93470045   High Capacity DC PDU
  PSM 1       Rev 04   740-046988  1GB63500193   High Capacity DC PSM
  PSM 3       Rev 04   740-046988  1GB63500143   High Capacity DC PSM
  PSM 5       Rev 04   740-046988  1GB63500146   High Capacity DC PSM
  PSM 7       Rev 04   740-046988  1GB63500192   High Capacity DC PSM
CCG 0         REV 09   750-030653  BBBC1909      Clock Generator
CCG 1         REV 09   750-030653  BBBD2970      Clock Generator
...

```

### show chassis hardware clei-models (PTX5000 Packet Transport Router)

```

user@host> show chassis hardware clei-models
Hardware inventory:
Item          Version  Part number  CLEI code      FRU model number
FPM           REV 08   760-030647  PROTOXCLEI     CRAFT-PTX5000-S
PDU 0         Rev 05   740-032019  IPUPAHLKAA     PWR-SAN-PDU-DC
  PSM 0       Rev 05   740-032022  IPUPAHNKAA     PSM-PTX-DC-120-S
  PSM 1       Rev 04   740-032022  032022XXXX     PWR-SAN-12-DC
  PSM 2       Rev 04   740-032022  032022XXXX     PWR-SAN-12-DC
  PSM 3       Rev 05   740-032022  IPUPAHNKAA     PSM-PTX-DC-120-S
CCG 0         REV 04   750-030653  PROTOXCLEI     CCG-PTX-S
CCG 1         REV 04   750-030653  PROTOXCLEI     CCG-PTX-S
Routing Engine 0 REV 05   740-026942                RE-DUO-C2600-16G-S
Routing Engine 1 REV 06   740-026942                RE-DUO-C2600-16G-S
CB 0          REV 08   750-030625  PROTOXCLEI     CB-PTX-S
CB 1          REV 08   750-030625  PROTOXCLEI     CB-PTX-S
FPC 0         REV 18   750-036844  PROTOXCLEI     FPC-PTX-P1-A
FPC 2         REV 13   750-036844  PROTOXCLEI     FPC-PTX-P1-A
  PIC 0       REV 14   750-031913  PROTOXCLEI     P1-PTX-24-10GE-SFPP
FPC 5
  PIC 0       REV 14   750-031913  PROTOXCLEI     P1-PTX-24-10GE-SFPP

```

FPC 6	REV 18	750-036844	PROTOXCLEI	FPC-PTX-P1-A
FPC 7	REV 18	750-036844	PROTOXCLEI	FPC-PTX-P1-A
SIB 0	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 1	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 2	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 3	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 4	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 5	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 6	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 7	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
SIB 8	REV 07	750-030631	PROTOXCLEI	SIB-I-PTX5008
Fan Tray 1	REV 04	760-030642	PROTOXCLEI	FAN-PTX-H-S

#### show chassis hardware clei-models (PTX5000 Packet Transport Router with AC PSM and PDU)

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

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 16	750-035893	IPMUN00ARA	CHAS-MP-PTX5000-S
FPM	REV 12	760-030647	IPUCA7SCAA	CRAFT-PTX5000-S
PDU 0	Rev 01	740-048338	PROTOACPDU	PDU2-PTX-AC-W
PSM 0	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PSM 1	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PSM 2	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PSM 3	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PSM 4	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PSM 5	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PSM 6	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PSM 7	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PDU 1	Rev 01	740-048338	PROTOACPDU	PDU2-PTX-AC-W
PSM 0	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PSM 1	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PSM 2	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PSM 3	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PSM 4	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PSM 5	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PSM 6	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
PSM 7	Rev 01	740-048334	PROTOACPSM	PSM2-PTX-AC
CCG 0	REV 09	750-030653	IPUCA7DCAA	CCG-PTX-S
...				

#### show chassis hardware clei-models (PTX5000 Packet Transport Router with FPC2-PTX-P1A)

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

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 11	750-035893	IPMUN00ARA	CHAS-MP-PTX5000-S
FPM	REV 12	760-030647	IPUCA7SCAA	CRAFT-PTX5000-S
PDU 0	Rev 04	740-048336	IPUPAL7KAA	PDU2-PTX-DC-S
PSM 0	Rev 04	740-046988	IPUPAL8KAA	PSM2-PTX-DC-S
PSM 2	Rev 04	740-046988	IPUPAL8KAA	PSM2-PTX-DC-S
PSM 4	Rev 04	740-046988	IPUPAL8KAA	PSM2-PTX-DC-S
PSM 6	Rev 04	740-046988	IPUPAL8KAA	PSM2-PTX-DC-S
PDU 1	Rev 04	740-048336	IPUPAL7KAA	PDU2-PTX-DC-S
PSM 1	Rev 04	740-046988	IPUPAL8KAA	PSM2-PTX-DC-S
PSM 3	Rev 04	740-046988	IPUPAL8KAA	PSM2-PTX-DC-S
PSM 5	Rev 04	740-046988	IPUPAL8KAA	PSM2-PTX-DC-S
PSM 7	Rev 04	740-046988	IPUPAL8KAA	PSM2-PTX-DC-S
CCG 0	REV 09	750-030653	IPUCA7DCAA	CCG-PTX-S
CCG 1	REV 09	750-030653	IPUCA7DCAA	CCG-PTX-S
...				

## show chassis hardware detail (PTX5000 Packet Transport Router)

```

user@host> show chassis hardware detail
Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              REV 03   711-031896   JN11D1FD7AJA   PTX5000
Midplane             REV 08   760-030647   EG1679         Front Panel Display
FPM                  Rev 05   740-032019   ZE00006        DC Power Dist Unit
  PSM 0              Rev 05   740-032022   ZJ00018        DC 12V Power Supply
  PSM 1              Rev 04   740-032022   ZC00052        DC 12V Power Supply
  PSM 2              Rev 04   740-032022   ZD00051        DC 12V Power Supply
  PSM 3              Rev 05   740-032022   ZJ00060        DC 12V Power Supply
CCG 0                REV 04   750-030653   EG3703         Clock Generator
CCG 1                REV 04   750-030653   EG3698         Clock Generator
Routing Engine 0     REV 05   740-026942   P737A-002231   RE-DUO-2600
  ad0 3823 MB SMART CF 201006190039C02DC02D Compact Flash
  ad1 62720 MB SMART Lite SATA Drive 2011042300CF4C6B4C6B Disk 1
Routing Engine 1     REV 06   740-026942   P737A-002438   RE-DUO-2600
  ad0 3823 MB SMART CF 20100619053455F055F0 Compact Flash
  ad1 62720 MB SMART Lite SATA Drive 20110423000AE8E7E8E7 Disk 1
CB 0                 REV 08   750-030625   EG5519         Control Board
CB 1                 REV 08   750-030625   EG5516         Control Board
FPC 0                REV 18   750-036844   EJ3080         FPC
CPU                  REV 12   711-030686   EJ3260         SNG PMB
FPC 2                REV 13   750-036844   EG5065         FPC
CPU                  REV 09   711-030686   EG4082         SNG PMB
PIC 0                REV 14   750-031913   EG5127         24x 10GE(LAN) SFP+
  Xcvr 0              REV 01   740-031980   143363A00240   SFP+-10G-SR
  Xcvr 1              REV 01   740-031981   UK90PZ1        SFP+-10G-LR
  Xcvr 2              REV 01   740-031980   AD1141A04XH    SFP+-10G-SR
  Xcvr 3              REV 01   740-031981   UK90Q46        SFP+-10G-LR
  Xcvr 4              REV 01   740-031980   AD1141A04X4    SFP+-10G-SR
  Xcvr 6              REV 01   740-031980   B11H02560      SFP+-10G-SR
  Xcvr 7              REV 01   740-031980   B11C01589      SFP+-10G-SR
  Xcvr 8              REV 01   740-031980   AD1141A04XF    SFP+-10G-SR
  Xcvr 10             REV 01   740-031980   123363A01094   SFP+-10G-SR
  Xcvr 11             REV 01   740-031980   AK80LKF        SFP+-10G-SR
  Xcvr 12             REV 01   740-031980   183363A01528   SFP+-10G-SR
  Xcvr 14             REV 01   740-031980   193363A01079   SFP+-10G-SR
  Xcvr 15             REV 01   740-031980   AK80MC8        SFP+-10G-SR
  Xcvr 16             REV 01   740-031980   AJC0BHC        SFP+-10G-SR
  Xcvr 19             REV 01   740-021309   J08D26856      SFP+-10G-LR
  Xcvr 21             REV 01   740-031980   AK80KCT        SFP+-10G-SR
  Xcvr 22             REV 01   740-031981   UK90PZL        SFP+-10G-LR
  Xcvr 23             REV 01   740-031980   AK80N1V        SFP+-10G-SR
FPC 3                REV 13   750-036844   EG5074         FPC
CPU                  REV 09   711-030686   EG4064         SNG PMB
PIC 1                REV 10   750-031903   EG0325         SNG Load
FPC 5                REV 06   750-036844   EH3198         FPC
CPU
PIC 0                REV 14   750-031913   EG5134         24x 10GE(LAN) SFP+
  Xcvr 0              REV 01   740-031980   AK80LBH        SFP+-10G-SR
  Xcvr 1              REV 01   740-031980   B11B03724      SFP+-10G-SR
  Xcvr 2              REV 01   740-031980   AK80FMH        SFP+-10G-SR
  Xcvr 5              REV 01   740-031980   B11J00818      SFP+-10G-SR
  Xcvr 6              REV 01   740-031980   193363A00743   SFP+-10G-SR
  Xcvr 7              REV 01   740-031980   B11B06125      SFP+-10G-SR
  Xcvr 10             REV 01   740-031980   B11H02529      SFP+-10G-SR
  Xcvr 11             REV 01   740-031980   AK80LFB        SFP+-10G-SR
  Xcvr 12             REV 01   740-031980   193363A01061   SFP+-10G-SR

```



Xcvr 15	REV 01	740-031980	B11J00687	SFP+-10G-SR
Xcvr 16	REV 01	740-031980	193363A00738	SFP+-10G-SR
Xcvr 18	REV 01	740-031980	AK80MQX	SFP+-10G-SR
Xcvr 19	REV 01	740-021309	J08C17257	SFP+-10G-LR
Xcvr 22	REV 01	740-031980	B11J00730	SFP+-10G-SR
Xcvr 23	REV 01	740-031980	AK80KEE	SFP+-10G-SR
PIC 1	REV 08	750-036710	EG3105	2x 40GE CFP
Xcvr 0	REV 01	740-034554	B260HLT	CFP-40G-LR4
Xcvr 1	REV 01	740-034554	B11C02847	CFP-40G-LR4
FPC 6	REV 18	750-036844	EJ4391	FPC
CPU	REV 12	711-030686	EJ3257	SNG PMB
FPC 7	REV 18	750-036844	EJ4382	FPC
CPU	REV 12	711-030686	EJ3238	SNG PMB
SPMB 0	REV 10	711-030686	EG5418	SNG PMB
SPMB 1	REV 09	711-030686	EG5373	SNG PMB
SIB 0	REV 07	750-030631	EG4858	SIB-I-8S
SIB 1	REV 07	750-030631	EG4872	SIB-I-8S
SIB 2	REV 07	750-030631	EG4866	SIB-I-8S
SIB 3	REV 07	750-030631	EG6011	SIB-I-8S
SIB 4	REV 07	750-030631	EG4907	SIB-I-8S
SIB 5	REV 07	750-030631	EG4879	SIB-I-8S
SIB 6	REV 07	750-030631	EG4864	SIB-I-8S
SIB 7	REV 07	750-030631	EG4899	SIB-I-8S
SIB 8	REV 07	750-030631	EG4880	SIB-I-8S
Fan Tray 0	REV 04	760-032784	EG1496	Vertical Fan Tray
Fan Tray 1	REV 04	760-030642	EG1335	Horizontal Fan Tray
Fan Tray 2	REV 02	760-030642	ED4952	Horizontal Fan Tray

#### show chassis hardware detail (PTX5000 Packet Transport Router with AC PSM and PDU)

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN12223A6AJA	PTX5000
Midplane	REV 16	750-035893	ACRA1350	Midplane-8S
FPM	REV 12	760-030647	BBBD5625	Front Panel Display
PDU 0	Rev 01	740-048338	1GB83360005	High Capacity AC WYE PDU
PSM 0	Rev 01	740-048334	1GB43360074	High Capacity AC PSM
PSM 1	Rev 01	740-048334	1GB43360001	High Capacity AC PSM
PSM 2	Rev 01	740-048334	1GB43360104	High Capacity AC PSM
PSM 3	Rev 01	740-048334	1GB43360042	High Capacity AC PSM
PSM 4	Rev 01	740-048334	1GB43360068	High Capacity AC PSM
PSM 5	Rev 01	740-048334	1GB43360080	High Capacity AC PSM
PSM 6	Rev 01	740-048334	1GB43360046	High Capacity AC PSM
PSM 7	Rev 01	740-048334	1GB43360100	High Capacity AC PSM
PDU 1	Rev 01	740-048338	1GB83360006	High Capacity AC WYE PDU
PSM 0	Rev 01	740-048334	1GB43360069	High Capacity AC PSM
PSM 1	Rev 01	740-048334	1GB43360099	High Capacity AC PSM
PSM 2	Rev 01	740-048334	1GB43360050	High Capacity AC PSM
PSM 3	Rev 01	740-048334	1GB43360095	High Capacity AC PSM
PSM 4	Rev 01	740-048334	1GB43360101	High Capacity AC PSM
PSM 5	Rev 01	740-048334	1GB43360075	High Capacity AC PSM
PSM 6	Rev 01	740-048334	1GB43360047	High Capacity AC PSM
PSM 7	Rev 01	740-048334	1GB43360019	High Capacity AC PSM
CCG 0	REV 09	750-030653	BBAZ5345	Clock Generator

#### show chassis hardware detail (PTX5000 Packet Transport Router with FPC2-PTX-P1A)

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



## Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN1204FC0AJA	PTX5000
Midplane	REV 11	750-035893	ACAB8038	Midplane-8S
FPM	REV 12	760-030647	BBBD5619	Front Panel
Display				
PDU 0	Rev 04	740-048336	1GB93470043	High Capacity DC PDU
PSM 0	Rev 04	740-046988	1GB63500184	High Capacity DC PSM
PSM 2	Rev 04	740-046988	1GB63500169	High Capacity DC PSM
PSM 4	Rev 04	740-046988	1GB63500306	High Capacity DC PSM
PSM 6	Rev 04	740-046988	1GB63500074	High Capacity DC PSM
PDU 1	Rev 04	740-048336	1GB93470045	High Capacity DC PDU
PSM 1	Rev 04	740-046988	1GB63500193	High Capacity DC PSM
PSM 3	Rev 04	740-046988	1GB63500143	High Capacity DC PSM
PSM 5	Rev 04	740-046988	1GB63500146	High Capacity DC PSM
PSM 7	Rev 04	740-046988	1GB63500192	High Capacity DC PSM
CCG 0	REV 09	750-030653	BBBC1909	Clock Generator
CCG 1	REV 09	750-030653	BBBD2970	Clock Generator
...				

## show chassis hardware models (PTX5000 Packet Transport Router)

user@host&gt; show chassis hardware models

## Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
FPM	REV 08	760-030647	EG1679	CRAFT-PTX5000-S
PDU 0	Rev 05	740-032019	ZE00006	PWR-SAN-PDU-DC
PSM 0	Rev 05	740-032022	ZJ00018	PSM-PTX-DC-120-S
PSM 1	Rev 04	740-032022	ZC00052	PWR-SAN-12-DC
PSM 2	Rev 04	740-032022	ZD00051	PWR-SAN-12-DC
PSM 3	Rev 05	740-032022	ZJ00060	PSM-PTX-DC-120-S
CCG 0	REV 04	750-030653	EG3703	CCG-PTX-S
CCG 1	REV 04	750-030653	EG3698	CCG-PTX-S
Routing Engine 0	REV 05	740-026942	P737A-002231	RE-DUO-C2600-16G-S
Routing Engine 1	REV 06	740-026942	P737A-002438	RE-DUO-C2600-16G-S
CB 0	REV 08	750-030625	EG5519	CB-PTX-S
CB 1	REV 08	750-030625	EG5516	CB-PTX-S
FPC 0	REV 18	750-036844	EJ3080	FPC-PTX-P1-A
FPC 2	REV 13	750-036844	EG5065	FPC-PTX-P1-A
PIC 0	REV 14	750-031913	EG5127	P1-PTX-24-10GE-SFPP
FPC 3	REV 13	750-036844	EG5074	FPC-PTX-P1-A
FPC 5				
PIC 0	REV 14	750-031913	EG5134	P1-PTX-24-10GE-SFPP
FPC 6	REV 18	750-036844	EJ4391	FPC-PTX-P1-A
FPC 7	REV 18	750-036844	EJ4382	FPC-PTX-P1-A
SIB 0	REV 07	750-030631	EG4858	SIB-I-PTX5008
SIB 1	REV 07	750-030631	EG4872	SIB-I-PTX5008
SIB 2	REV 07	750-030631	EG4866	SIB-I-PTX5008
SIB 3	REV 07	750-030631	EG6011	SIB-I-PTX5008
SIB 4	REV 07	750-030631	EG4907	SIB-I-PTX5008
SIB 5	REV 07	750-030631	EG4879	SIB-I-PTX5008
SIB 6	REV 07	750-030631	EG4864	SIB-I-PTX5008
SIB 7	REV 07	750-030631	EG4899	SIB-I-PTX5008
SIB 8	REV 07	750-030631	EG4880	SIB-I-PTX5008
Fan Tray 1	REV 04	760-030642	EG1335	FAN-PTX-H-S

## show chassis hardware models (PTX5000 Packet Transport Router with AC PSM and PDU)

user@host&gt; show chassis hardware models

## Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
------	---------	-------------	---------------	------------------

Midplane	REV 16	750-035893	ACRA1350	CHAS-MP-PTX5000-S
FPM	REV 12	760-030647	BBBD5625	CRAFT-PTX5000-S
PDU 0	Rev 01	740-048338	1GB83360005	PDU2-PTX-AC-W
PSM 0	Rev 01	740-048334	1GB43360074	PSM2-PTX-AC
PSM 1	Rev 01	740-048334	1GB43360001	PSM2-PTX-AC
PSM 2	Rev 01	740-048334	1GB43360104	PSM2-PTX-AC
PSM 3	Rev 01	740-048334	1GB43360042	PSM2-PTX-AC
PSM 4	Rev 01	740-048334	1GB43360068	PSM2-PTX-AC
PSM 5	Rev 01	740-048334	1GB43360080	PSM2-PTX-AC
PSM 6	Rev 01	740-048334	1GB43360046	PSM2-PTX-AC
PSM 7	Rev 01	740-048334	1GB43360100	PSM2-PTX-AC
PDU 1	Rev 01	740-048338	1GB83360006	PDU2-PTX-AC-W
PSM 0	Rev 01	740-048334	1GB43360069	PSM2-PTX-AC
PSM 1	Rev 01	740-048334	1GB43360099	PSM2-PTX-AC
PSM 2	Rev 01	740-048334	1GB43360050	PSM2-PTX-AC
PSM 3	Rev 01	740-048334	1GB43360095	PSM2-PTX-AC
PSM 4	Rev 01	740-048334	1GB43360101	PSM2-PTX-AC
PSM 5	Rev 01	740-048334	1GB43360075	PSM2-PTX-AC
PSM 6	Rev 01	740-048334	1GB43360047	PSM2-PTX-AC
PSM 7	Rev 01	740-048334	1GB43360019	PSM2-PTX-AC
CCG 0	REV 09	750-030653	BBAZ5345	CCG-PTX-S
...				

#### show chassis hardware models (PTX5000 Packet Transport Router with FPC2-PTX-P1A)

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

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 11	750-035893	ACAB8038	CHAS-MP-PTX5000-S
FPM	REV 12	760-030647	BBBD5619	CRAFT-PTX5000-S
PDU 0	Rev 04	740-048336	1GB93470043	PDU2-PTX-DC-S
PSM 0	Rev 04	740-046988	1GB63500184	PSM2-PTX-DC-S
PSM 2	Rev 04	740-046988	1GB63500169	PSM2-PTX-DC-S
PSM 4	Rev 04	740-046988	1GB63500306	PSM2-PTX-DC-S
PSM 6	Rev 04	740-046988	1GB63500074	PSM2-PTX-DC-S
PDU 1	Rev 04	740-048336	1GB93470045	PDU2-PTX-DC-S
PSM 1	Rev 04	740-046988	1GB63500193	PSM2-PTX-DC-S
PSM 3	Rev 04	740-046988	1GB63500143	PSM2-PTX-DC-S
PSM 5	Rev 04	740-046988	1GB63500146	PSM2-PTX-DC-S
PSM 7	Rev 04	740-046988	1GB63500192	PSM2-PTX-DC-S
CCG 0	REV 09	750-030653	BBBC1909	CCG-PTX-S
CCG 1	REV 09	750-030653	BBBD2970	CCG-PTX-S
...				

#### show chassis hardware extensive (PTX5000 Packet Transport Router)

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

Item	Version	Part number	Serial number	Description
PDU 0	Rev 04	740-032019	UE0003	DC Power Dist Unit
Jedec Code:	0x7fb0	EEPROM Version:	0x02	
P/N:	740-032019	S/N:	UE0003	
Assembly ID:	0x043d	Assembly Version:	04.00	
Date:	11-29-2010	Assembly Flags:	0x00	
Version:	Rev 04	CLEI Code:	032022XXXX	
ID: DC Power Dist Unit		FRU Model Number:	PWR-SAN-PDU-DC	
Board Information Record:				
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff				
I2C Hex Data:				
Address 0x00: 7f b0 02 ff 04 3d 04 00 52 65 76 20 30 34 00 00				

```

Address 0x10: 00 00 00 00 37 34 30 2d 30 33 32 30 31 39 00 00
Address 0x20: 53 2f 4e 20 55 45 30 30 30 33 00 00 00 1d 0b 07
Address 0x30: da ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 30 33 32 30 32 32 58 58 58 58 50
Address 0x50: 57 52 2d 53 41 4e 2d 50 44 55 2d 44 43 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 a3 ff ff ff ff ff ff ff ff ff ff ff
PSM 0          Rev 04    740-032022  YG00065          DC 12V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           740-032022      S/N:              YG00065
Assembly ID:   0x0440          Assembly Version:  04.00
Date:          07-30-2010      Assembly Flags:    0x00
Version:       Rev 04          CLEI Code:         032022XXXX
ID: DC 12V Power Supply Module FRU Model Number: PWR-SAN-12-DC
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 40 04 00 52 65 76 20 30 34 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 33 32 30 32 32 00 00
Address 0x20: 53 2f 4e 20 59 47 30 30 30 36 35 00 00 1e 07 07
Address 0x30: da ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 30 33 32 30 32 32 58 58 58 58 50
Address 0x50: 57 52 2d 53 41 4e 2d 31 32 2d 44 43 20 20 20 20
Address 0x60: 20 20 20 20 20 20 20 01 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 0c ff ff ff ff ff ff ff ff ff ff ff ff

```

#### show chassis hardware extensive (PTX1000 Packet Transport Router)

```

user@host> show chassis hardware extensive
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               UNDEFINED    PTX1000
Pseudo CB 0
Routing Engine 0
FPC 0         REV 06    750-053330   ACAM4850       PTX1000-FPC-P2-BUILTIN
CPU           BUILTIN   BUILTIN      FPC CPU
PIC 0         BUILTIN   BUILTIN      288X10GE/72X40GE/24X100GE

Xcvr 2        REV 01    740-046565   QE240845       QSFP+-40G-SR4
Xcvr 3        REV 01    740-046565   QE240962       QSFP+-40G-SR4
Xcvr 5        REV 01    740-032986   ES400LZ        QSFP+-40G-SR4
Xcvr 12       REV 01    740-054053   QE419452       QSFP+-4X10G-SR
Xcvr 18       REV 01    740-054053   QE419481       QSFP+-4X10G-SR
Xcvr 30       REV 01    740-046565   QE440485       QSFP+-40G-SR4
Xcvr 48       REV 01    740-032986   ES400K3        QSFP+-40G-SR4
Xcvr 68       REV 01    740-046565   QF2805J3       QSFP+-40G-SR4
Mezz          REV 05    711-053333   ACAM4282       Mezzanine Board
Power Supply 2 REV 01    740-054405   1EDN4470131    AC AFO 1600W PSU
Power Supply 3 REV 01    740-054405   1EDN4470112    AC AFO 1600W PSU
Fan Tray 0                               PTX1000 Fan Tray 0, Front
to Back Airflow - AFO
Fan Tray 1                               PTX1000 Fan Tray 1, Front
to Back Airflow - AFO
Fan Tray 2                               PTX1000 Fan Tray 2, Front
to Back Airflow - AFO

```

#### show chassis hardware extensive (PTX5000 with Control Board 2)

```

user@host> show chassis hardware grep CB

```

CB 0	REV 06	750-055537	ACLZ9541	Control Board 2
CB 1	REV 06	750-055537	ACLY5329	Control Board 2

### show chassis hardware (MX Routers with Media Services Blade [MSB])

```

user@switch> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number  Description
Chassis                               JN1100FB1AFB  MX480
Midplane          REV 05    710-017414   TR3310        MX480 Midplane
FPM Board         REV 02    710-017254   KG1872        Front Panel Display
PEM 2             Rev 02    740-017343   QCS0812A00N   DC Power Entry Module
PEM 3             Rev 02    740-017343   QCS0812A00U   DC Power Entry Module
Routing Engine 0  REV 07    740-015113   1000740938    RE-S-1300
CB 0              REV 03    710-021523   KF4630        MX SCB
FPC 1            REV 11    750-037207   ZW9726        AS-MCC
  CPU            REV 04    711-038173   ZW4819        AS-MCC PMB
    MIC 0        REV 06    750-037214   ZW3574        AS-MSC
      PIC 0                        BUILTIN      BUILTIN      AS-MSC
    MIC 1        REV 00    750-037211                        AS-MXC
      PIC 2                        BUILTIN      BUILTIN      AS-MXC

```

### show chassis hardware extensive (MX Routers with Media Services Blade [MSB])

```

user@switch> show chassis hardware extensive
FPC 1            REV 11    750-037207   ZW9726        AS-MCC
Jedec Code:      0x7fb0          EEPROM Version: 0x02
P/N:             750-037207      S/N:           ZW9726
Assembly ID:     0x0b37          Assembly Version: 01.11
Date:            02-17-2012      Assembly Flags: 0x00
Version:         REV 11          CLEI Code:     PROTOXCLEI
ID: AS-MCC       FRU Model Number: 750-037207
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 37 01 0b 52 45 56 20 31 31 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 32 30 37 00 00
Address 0x20: 53 2f 4e 20 5a 57 39 37 32 36 00 00 00 11 02 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 37
Address 0x50: 35 30 2d 30 33 37 32 30 37 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 31 31 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 5e ff ff ff ff ff ff ff ff ff ff ff ff
CPU            REV 04    711-038173   ZW4819        AS-MCC-PMB
Jedec Code:      0x7fb0          EEPROM Version: 0x02
P/N:             711-038173      S/N:           ZW4819
Assembly ID:     0x0b38          Assembly Version: 01.04
Date:            12-30-2011      Assembly Flags: 0x00
Version:         REV 04
ID: AS-MCC PMB
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 38 01 04 52 45 56 20 30 34 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 33 38 31 37 33 00 00
Address 0x20: 53 2f 4e 20 5a 57 34 38 31 39 00 00 00 1e 0c 07
Address 0x30: db ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 50 52 4f 54 4f 58 43 4c 45 49 37
Address 0x50: 31 31 2d 30 33 38 31 37 33 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 30 34 00 ff ff ff ff ff ff ff

```

```

Address 0x70: ff ff ff 60 00 00 00 00 00 00 00 00 00 00 00
MIC 0          REV 06    750-037214    ZW3574          AS-MS
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           750-037214      S/N:           ZW3574
Assembly ID:   0x0a44          Assembly Version: 01.06
Date:          02-19-2012      Assembly Flags: 0x00
Version:       REV 06          CLEI Code:     PROTOXCLEI
ID: AS-MS      FRU Model Number: 750-037214
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0a 44 01 06 52 45 56 20 30 36 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 32 31 34 00 00
Address 0x20: 53 2f 4e 20 5a 57 33 35 37 34 00 00 00 13 02 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 37
Address 0x50: 35 30 2d 30 33 37 32 31 34 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 30 36 00 ff ff ff ff ff ff
Address 0x70: ff ff ff 60 c0 03 e5 f4 00 00 00 00 00 00 00 00
PIC 0          BUILTIN      BUILTIN          AS-MS
MIC 1          REV 00    750-037211          AS-MXC
Jedec Code:    0x7fb0          EEPROM Version:    0x01
P/N:           750-037211
Assembly ID:   0x0a43          Assembly Version: 01.00
Date:          255-255-65535   Assembly Flags: 0x00
Version:       REV 00
ID: AS-MXC
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 0a 43 01 00 52 45 56 20 30 30 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 32 31 31 00 00
Address 0x20: 00 00 00 00 00 00 00 00 00 00 00 00 00 ff ff ff
Address 0x30: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff
Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff c0 02 e6 6c 7f b0 02 ff 0a 44 01 06
PIC 2          BUILTIN      BUILTIN          AS-MXC

```

### show chassis hardware (ACX5048 Router)

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               VF3714170810  ACX5048
Pseudo CB 0
Routing Engine 0
FPC 0         REV 05    650-056267   VF3714170810  ACX5048
CPU           BUILTIN    BUILTIN      FPC CPU
PIC 0         BUILTIN    BUILTIN      48x10G-6x40G
  Xcvr 0      REV 02    740-011613   NR2051S       SFP-SX
  Xcvr 33     REV 01    740-030589   SE5N290041    SFP+-10G-LPBK
  Xcvr 35     REV 01    740-030589   SE5N290926    SFP+-10G-LPBK
  Xcvr 37     REV 01    740-030589   SE5N290049    SFP+-10G-LPBK
  Xcvr 39     REV 01    740-030589   SE5N290046    SFP+-10G-LPBK
  Xcvr 48     NON-JNPR   409310098    UNKNOWN
Power Supply 1 REV 03    740-041741   1GA24081097   JPSU-650W-AC-AFO
Fan Tray 0
to Back Airflow - AFO

```

```

Fan Tray 1
  to Back Airflow - AFO
Fan Tray 2
  to Back Airflow - AFO
Fan Tray 3
  to Back Airflow - AFO
Fan Tray 4
  to Back Airflow - AFO

```

ACX5K Fan Tray 1, Front

ACX5K Fan Tray 2, Front

ACX5K Fan Tray 3, Front

ACX5K Fan Tray 4, Front

#### show chassis hardware detail (ACX5048 Router)

```

user@host> show chassis hardware detail
Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis
Pseudo CB 0
Routing Engine 0
  ad0      509 MB  QEMU HARDDISK  BUILTIN        ACX5K Routing Engine
  ad1     4095 MB  QEMU HARDDISK  QM00001        Hard Disk
  ad2      511 MB  QEMU HARDDISK  QM00002        Hard Disk
  ad3     1023 MB  QEMU HARDDISK  QM00003        Hard Disk
  ad3     1023 MB  QEMU HARDDISK  QM00004        Hard Disk
  usb0 (addr 1)  product 0x0000 0  vendor 0x0000  uhub1
  usb0 (addr 2)  product 0x0020 32  vendor 0x8087  uhub2
FPC 0
  REV 05        650-056267  VF3714170810  ACX5048
CPU
  BUILTIN       BUILTIN        FPC CPU
PIC 0
  BUILTIN       BUILTIN        48x10G-6x40G
  Xcvr 0        REV 02    740-011613    NR2051S       SFP-SX
  Xcvr 33       REV 01    740-030589    SE5N290041    SFP+-10G-LPBK
  Xcvr 35       REV 01    740-030589    SE5N290926    SFP+-10G-LPBK
  Xcvr 37       REV 01    740-030589    SE5N290049    SFP+-10G-LPBK
  Xcvr 39       REV 01    740-030589    SE5N290046    SFP+-10G-LPBK
  Xcvr 48       NON-JNPR    409310098     UNKNOWN
Power Supply 1  REV 03    740-041741    1GA24081097   JPSU-650W-AC-AFO
Fan Tray 0
  to Back Airflow - AFO
Fan Tray 1
  to Back Airflow - AFO
Fan Tray 2
  to Back Airflow - AFO
Fan Tray 3
  to Back Airflow - AFO
Fan Tray 4
  to Back Airflow - AFO

```

ACX5K Fan Tray 0, Front

ACX5K Fan Tray 1, Front

ACX5K Fan Tray 2, Front

ACX5K Fan Tray 3, Front

ACX5K Fan Tray 4, Front

#### show chassis hardware clei-models (ACX5048 Router)

```

user@host> show chassis hardware clei-models
Hardware inventory:
Item              Version  Part number  CLEI code      FRU model number
Routing Engine 0
  BUILTIN         CMMRG00BRA    ACX5048
FPC 0
  REV 05          650-056267    CMMRG00BRA    ACX5048
  BUILTIN         CMMRG00BRA    ACX5048
PIC 0
  BUILTIN         CMMRG00BRA    ACX5048
Power Supply 1  REV 03    740-041741    CMUPABHBAA    JPSU-650W-AC-AFO
Fan Tray 0
  ACX5K-FAN
Fan Tray 1
  ACX5K-FAN
Fan Tray 2
  ACX5K-FAN
Fan Tray 3
  ACX5K-FAN
Fan Tray 4
  ACX5K-FAN

```

**show chassis hardware models (ACX5048 Router)**

```

user@host> show chassis hardware models
Hardware inventory:
Item          Version  Part number  Serial number  FRU model number
Routing Engine 0
FPC 0         REV 05    650-056267  VF3714170810  ACX5048
  PIC 0       BUILTIN  BUILTIN    ACX5048
Power Supply 1 REV 03    740-041741  1GA24081097  JPSU-650W-AC-AFO
Fan Tray 0
Fan Tray 1
Fan Tray 2
Fan Tray 3
Fan Tray 4

```

**show chassis hardware (ACX5096 Router)**

```

user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Pseudo CB 0
Routing Engine 0
FPC 0         REV 09    650-053391  VB3714510139  ACX5096
  CPU
  PIC 0
    Xcvr 0     REV 01    740-021308  ARS186H       SFP+-10G-SR
    Xcvr 2     REV 01    740-031851  AM1045SUA1G   SFP-SX
    Xcvr 10    REV 02    740-011613  NS11KRP       SFP-SX
    Xcvr 14    REV 01    740-031980  AMCOLKL       SFP+-10G-SR
    Xcvr 20    REV 01    740-021308  ARS18A2       SFP+-10G-SR
    Xcvr 30    REV 02    740-011613  PJ21954       SFP-SX
    Xcvr 35    REV 01    740-031851  PN344LV       SFP-SX
    Xcvr 40    REV 01    740-031851  PLG028R       SFP-SX
    Xcvr 41    REV 01    740-021308  L12D01919     SFP+-10G-SR
    Xcvr 46    REV 01    740-011613  PD91F10       SFP-SX
    Xcvr 64    REV 01    740-031980  AMSOYSS       SFP+-10G-SR
    Xcvr 96    REV 01    740-032986  QE481421      QSFP+-40G-SR4
    Xcvr 99    REV 01    740-032986  QE494942      QSFP+-40G-SR4
    Xcvr 100   REV 01    740-032986  QE494756      QSFP+-40G-SR4
Power Supply 0 REV 01    740-053352  1GD14220106   JPSU-850W-AC-AFO
Power Supply 1 REV 01    740-053352  1GD14220102   JPSU-850W-AC-AFO
Fan Tray 0
  to Back Airflow - AFO
Fan Tray 1
  to Back Airflow - AFO
Fan Tray 2
  to Back Airflow - AFO

```

**show chassis hardware detail (ACX5096 Router)**

```

user@host> show chassis hardware detail
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Pseudo CB 0
Routing Engine 0
  ad0         509 MB  QEMU HARDDISK  QM00001      Hard Disk
  ad1         4095 MB  QEMU HARDDISK  QM00002      Hard Disk
  ad2         511 MB  QEMU HARDDISK  QM00003      Hard Disk
  ad3         1023 MB  QEMU HARDDISK  QM00004      Hard Disk

```

```

usb0 (addr 1) product 0x0000 0 vendor 0x0000 uhub1
usb0 (addr 2) product 0x0020 32 vendor 0x8087 uhub2
FPC 0 REV 09 650-053391 VB3714510139 ACX5096
CPU BUILTIN BUILTIN FPC CPU
PIC 0 BUILTIN BUILTIN 96x10G-8x40G
Xcvr 0 REV 01 740-021308 ARS186H SFP+-10G-SR
Xcvr 10 REV 02 740-011613 NS11KRP SFP-SX
Xcvr 14 REV 01 740-031980 AMC0LKL SFP+-10G-SR
Xcvr 20 REV 01 740-021308 ARS18A2 SFP+-10G-SR
Xcvr 30 REV 02 740-011613 PJ21954 SFP-SX
Xcvr 41 REV 01 740-021308 L12D01919 SFP+-10G-SR
Xcvr 46 REV 01 740-011613 PD91F10 SFP-SX
Xcvr 64 REV 01 740-031980 AMS0YSS SFP+-10G-SR
Xcvr 78 REV 01 740-031851 AM1045SUA1G SFP-SX
Xcvr 96 REV 01 740-032986 QE481421 QSFP+-40G-SR4
Xcvr 99 REV 01 740-032986 QE494942 QSFP+-40G-SR4
Xcvr 100 REV 01 740-032986 QE494756 QSFP+-40G-SR4
Power Supply 0 REV 01 740-053352 1GD14220106 JPSU-850W-AC-AFO
Power Supply 1 REV 01 740-053352 1GD14220102 JPSU-850W-AC-AFO
Fan Tray 0 ACX5K Fan Tray 0, Front
to Back Airflow - AFO
Fan Tray 1 ACX5K Fan Tray 1, Front
to Back Airflow - AFO
Fan Tray 2 ACX5K Fan Tray 2, Front
to Back Airflow - AFO

```

#### show chassis hardware clei-models (ACX5096 Router)

```

user@host> show chassis hardware clei-models
Hardware inventory:
Item Version Part number CLEI code FRU model number
Routing Engine 0 BUILTIN CMMNX10BRA ACX5096
FPC 0 REV 09 650-053391 CMMNX10BRA ACX5096
PIC 0 BUILTIN CMMNX10BRA ACX5096
Power Supply 0 REV 01 740-053352 CMUPACSBAA JPSU-850W-AC-AFO
Power Supply 1 REV 01 740-053352 CMUPACSBAA JPSU-850W-AC-AFO
Fan Tray 0 ACX5K-FAN
Fan Tray 1 ACX5K-FAN
Fan Tray 2 ACX5K-FAN

```

#### show chassis hardware models (ACX5096 Router)

```

user@host> show chassis hardware models
Hardware inventory:
Item Version Part number Serial number FRU model number
Routing Engine 0 BUILTIN BUILTIN ACX5096
FPC 0 REV 09 650-053391 VB3714510139 ACX5096
PIC 0 BUILTIN BUILTIN ACX5096
Power Supply 0 REV 01 740-053352 1GD14220106 JPSU-850W-AC-AFO
Power Supply 1 REV 01 740-053352 1GD14220102 JPSU-850W-AC-AFO
Fan Tray 0 ACX5K-FAN
Fan Tray 1 ACX5K-FAN
Fan Tray 2 ACX5K-FAN

```

#### show chassis hardware (ACX500 Router)

```

user@host> show chassis hardware
Hardware inventory:
Item Version Part number Serial number Description
Chassis REV 01 650-055932 VJ0214510035 ACX500-AC
Midplane REV 01 650-055932 VJ0214510035 ACX500-AC
Routing Engine BUILTIN BUILTIN Routing Engine

```



FEB 0		BUILTIN	BUILTIN	Forwarding Engine
Processor				
FPC 0		BUILTIN	BUILTIN	FPC BUILTIN
MIC 0		BUILTIN	BUILTIN	2x 1GE(LAN) SFP
PIC 0		BUILTIN	BUILTIN	2x 1GE(LAN) SFP
Xcvr 0	REV 01	740-031851	PMF2Y3C	SFP-SX
Xcvr 1	REV 01	740-031851	PN342QN	SFP-SX
MIC 1		BUILTIN	BUILTIN	4x 1GE(LAN) SFP, RJ45
PIC 1		BUILTIN	BUILTIN	4x 1GE(LAN) SFP, RJ45
Xcvr 0	REV 01	740-011613	PF30K0L	SFP-SX
MIC 2		BUILTIN	BUILTIN	MS BUILTIN
PIC 2		BUILTIN	BUILTIN	MS BUILTIN

### show chassis hardware detail (ACX500 Router)

```
user@host> show chassis hardware detail
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               VJ0214510035  ACX500-AC
Midplane      REV 01    650-055932  VJ0214510035  ACX500-AC
Routing Engine                               BUILTIN      BUILTIN      Routing Engine
da0          3820 MB  USB DISK 2.0 Nand Flash 0
FEB 0                               BUILTIN      BUILTIN      Forwarding Engine
Processor
FPC 0                               BUILTIN      BUILTIN      FPC BUILTIN
MIC 0                               BUILTIN      BUILTIN      2x 1GE(LAN) SFP
PIC 0                               BUILTIN      BUILTIN      2x 1GE(LAN) SFP
Xcvr 0        REV 01    740-031851  PMF2Y3C       SFP-SX
Xcvr 1        REV 01    740-031851  PN342QN       SFP-SX
MIC 1                               BUILTIN      BUILTIN      4x 1GE(LAN) SFP, RJ45
PIC 1                               BUILTIN      BUILTIN      4x 1GE(LAN) SFP, RJ45
Xcvr 0        REV 01    740-011613  PF30K0L       SFP-SX
MIC 2                               BUILTIN      BUILTIN      MS BUILTIN
PIC 2                               BUILTIN      BUILTIN      MS BUILTIN
```

### show chassis hardware extensive (ACX500 Router)

```
user@host> show chassis hardware extensive
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               VJ0214510035  ACX500-AC
Jedec Code:   0x7fb0                      EEPROM Version: 0x02
S/N:          VJ0214510035
Assembly ID:  0x057c                      Assembly Version: 00.00
Date:         00-00-0000                  Assembly Flags:  0x00
ID: ACX500-AC
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 7c 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: 56 4a 30 32 31 34 35 31 30 30 33 35 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 01    650-055932  VJ0214510035  ACX500-AC
Jedec Code:   0x7fb0                      EEPROM Version: 0x02
P/N:         650-055932                  S/N:          VJ0214510035
Assembly ID:  0x057c                      Assembly Version: 01.00
```

```

Date:          12-23-2014      Assembly Flags:  0x00
Version:       REV 01         CLEI Code:       PROTOXCLEI
ID: ACX500-AC   FRU Model Number: ACX500-AC
Board Information Record:
Address 0x00: ad 01 00 80 f0 1c 2d 1b 60 80 ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 fe 05 7c 01 00 52 45 56 20 30 31 00 00
Address 0x10: 00 00 00 00 36 35 30 2d 30 35 35 39 33 32 00 00
Address 0x20: 56 4a 30 32 31 34 35 31 30 30 33 35 00 17 0c 07
Address 0x30: de ff ff ff ad 01 00 80 f0 1c 2d 1b 60 80 ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 41
Address 0x50: 43 58 35 30 30 2d 41 43 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 30 41 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 93 56 4a 30 32 31 34 35 31 30 30 33 35
Routing Engine      BUILTIN      BUILTIN      Routing Engine
da0      3820 MB  USB DISK 2.0      Nand Flash 0
FEB 0      BUILTIN      BUILTIN      Forwarding Engine
Processor
FPC 0      BUILTIN      BUILTIN      FPC BUILTIN
MIC 0      BUILTIN      BUILTIN      2x 1GE(LAN) SFP
Jedec Code: 0x0000      EEPROM Version: 0x00
P/N:      BUILTIN      S/N:      BUILTIN
Assembly ID: 0x0a40      Assembly Version: 00.00
Date:      00-00-0000      Assembly Flags: 0x00
ID: 2x 1GE(LAN) SFP
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 00 00 00 00 0a 40 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 49 6e 76 61
Address 0x20: 42 55 49 4c 54 49 4e 00 49 6e 76 61 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 de ad be ef 64 20 22 a8 60 af 21 38
PIC 0      BUILTIN      BUILTIN      2x 1GE(LAN) SFP
Xcvr 0      REV 01      740-031851      PMF2Y3C      SFP-SX
Xcvr 1      REV 01      740-031851      PN342QN      SFP-SX
MIC 1      BUILTIN      BUILTIN      4x 1GE(LAN) SFP, RJ45
Jedec Code: 0x0000      EEPROM Version: 0x00
P/N:      BUILTIN      S/N:      BUILTIN
Assembly ID: 0x0aac      Assembly Version: 00.00
Date:      00-00-0000      Assembly Flags: 0x00
ID: 4x 1GE(LAN) SFP, RJ45
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 00 00 00 00 0a ac 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 49 6e 76 61
Address 0x20: 42 55 49 4c 54 49 4e 00 49 6e 76 61 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 64 20 b5 c0 60 af 21 38
PIC 1      BUILTIN      BUILTIN      4x 1GE(LAN) SFP, RJ45
Xcvr 0      REV 01      740-011613      PF30K0L      SFP-SX
MIC 2      BUILTIN      BUILTIN      MS BUILTIN
Jedec Code: 0x0000      EEPROM Version: 0x00
P/N:      BUILTIN      S/N:      BUILTIN

```

```

Assembly ID: 0x0aaf          Assembly Version: 00.00
Date: 00-00-0000          Assembly Flags: 0x00
ID: MS BUILTIN
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 00 00 00 00 0a af 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 49 6e 76 61
Address 0x20: 42 55 49 4c 54 49 4e 00 49 6e 76 61 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 de ad be ef 64 22 cd 48 60 af 21 38
PIC 2                BUILTIN          BUILTIN          MS BUILTIN

```

#### show chassis hardware clei-models (ACX500 Router)

```

user@host> show chassis hardware clei-models
Hardware inventory:
Item          Version  Part number  CLEI code      FRU model number
Midplane      REV 01   650-055932  PROTOXCLEI     ACX500-AC
Routing Engine          BUILTIN
FEB 0          BUILTIN
FPC 0          BUILTIN

```

#### show chassis hardware models (ACX500 Router)

```

user@host> show chassis hardware models
Hardware inventory:
Item          Version  Part number  Serial number   FRU model number
Midplane      REV 01   650-055932  VJ0214510035   ACX500-AC
Routing Engine          BUILTIN      BUILTIN
FEB 0          BUILTIN      BUILTIN
FPC 0          BUILTIN      BUILTIN

```

## show configuration

---

<b>Syntax</b>	<code>show configuration</code> <code>&lt;statement-path&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Display the configuration that currently is running on the router or switch, which is the last committed configuration.
<b>Options</b>	<p><b>none</b>—Display the entire configuration.</p> <p><b>statement-path</b>—(Optional) Display one of the following hierarchies in a configuration. (Each <b>statement-path</b> option has additional suboptions not described here. See the appropriate feature guide or EX Series switch documentation for more information.)</p> <ul style="list-style-type: none"><li>• <b>access</b>—Network access configuration.</li><li>• <b>access-profile</b>—Access profile configuration.</li><li>• <b>accounting-options</b>—Accounting data configuration.</li><li>• <b>applications</b>—Applications defined by protocol characteristics.</li><li>• <b>apply-groups</b>—Groups from which configuration data is inherited.</li><li>• <b>chassis</b>—Chassis configuration.</li><li>• <b>chassis network-services</b>—Current running mode.</li><li>• <b>class-of-service</b>—Class-of-service configuration.</li><li>• <b>diameter</b>—Diameter base protocol layer configuration.</li><li>• <b>ethernet-switching-options</b>—(EX Series switch only) Ethernet switching configuration.</li><li>• <b>event-options</b>—Event processing configuration.</li><li>• <b>firewall</b>—Firewall configuration.</li><li>• <b>forwarding-options</b>—Options that control packet sampling.</li><li>• <b>groups</b>—Configuration groups.</li><li>• <b>interfaces</b>—Interface configuration.</li><li>• <b>jsrc</b>—JSRC partition configuration.</li><li>• <b>jsrc-partition</b>—JSRC partition configuration.</li><li>• <b>logical-systems</b>—Logical system configuration.</li><li>• <b>poe</b>—(EX Series switch only) Power over Ethernet configuration.</li><li>• <b>policy-options</b>—Routing policy option configuration.</li><li>• <b>protocols</b>—Routing protocol configuration.</li></ul>

- **routing-instances**—Routing instance configuration.
- **routing-options**—Protocol-independent routing option configuration.
- **security**—Security configuration.
- **services**—Service PIC applications configuration.
- **snmp**—Simple Network Management Protocol configuration.
- **system**—System parameters configuration.
- **virtual-chassis**—(EX Series switch only) Virtual Chassis configuration.
- **vlan**—(EX Series switch only) VLAN configuration.

**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.

Likewise, when you issue the **show configuration** command with the **| display set** pipe option to view the configuration as **set** commands, those portions of the configuration that you do not have permissions to view are substituted with the text **ACCESS-DENIED**.

**Required Privilege Level** view

**Related Documentation**

- *Displaying the Current Junos OS Configuration*
- *Overview of Junos OS CLI Operational Mode Commands*

**List of Sample Output** [show configuration on page 419](#)  
[show configuration policy-options on page 420](#)

**Output Fields** This command displays information about the current running configuration.

## Sample Output

### show configuration

```
user@host> show configuration
## Last commit: 2006-10-31 14:13:00 PST by user1 version "8.2I0 [userb]"; ## last
changed: 2006-10-31 14:05:53 PST
system {
    host-name exhost;
    domain-name ex1.net;
    backup-router 198.51.100.254;
    time-zone America/Los_Angeles;
    default-address-selection;
    name-server {
        192.0.2.254;
        192.0.2.249;
```

```
        192.0.2.176;
    }
    services {
        telnet;
    }
    tacplus-server {
        10.2.3.4 {
            secret /* SECRET-DATA */;
            ...
        }
    }
}
interfaces {
    ...
}
protocols {
    isis {
        export "direct routes";
    }
}
policy-options {
    policy-statement "direct routes" {
        from protocol direct;
        then accept;
    }
}
```

#### show configuration policy-options

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

## show host

---

<b>Syntax</b>	<code>show host <i>hostname</i></code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
<b>Description</b>	Display Domain Name System (DNS) hostname information.
<b>Options</b>	<i>hostname</i> —Hostname or address.
<b>Additional Information</b>	The <code>show host</code> command displays the raw data received from the DNS server.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<a href="#">show host on page 421</a>

## Sample Output

### show host

```
user@host> show host device
device.example.net has address 192.0.2.0

user@host> show host 192.0.2.0
Name: device.example.net
Address: 192.0.2.0
Aliases:
```

## show log

---

<b>List of Syntax</b>	<a href="#">Syntax on page 422</a> <a href="#">Syntax (QFX Series and OCX Series) on page 422</a> <a href="#">Syntax (TX Matrix Router) on page 422</a>
<b>Syntax</b>	<code>show log</code> <code>&lt;filename   user &lt;username&gt;&gt;</code>
<b>Syntax (QFX Series and OCX Series)</b>	<code>show log filename</code> <code>&lt;device-type (device-id   device-alias)&gt;</code>
<b>Syntax (TX Matrix Router)</b>	<code>show log</code> <code>&lt;all-lcc   lcc <i>number</i>   scc&gt;</code> <code>&lt;filename   user &lt;username&gt;&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Option <i>device-type (device-id   device-alias)</i> is introduced in Junos OS Release 13.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
<b>Description</b>	List log files, display log file contents, or display information about users who have logged in to the router or switch.



**NOTE:** On MX Series routers, modifying a configuration to replace a service interface with another service interface is treated as a catastrophic event. When you modify a configuration, the entire configuration associated with the service interface—including NAT pools, rules, and service sets—is deleted and then re-created for the newly specified service interface. If there are active sessions associated with the service interface that is being replaced, these sessions are deleted and the NAT pools are then released, which leads to the generation of the NAT\_POOL\_RELEASE system log messages. However, because NAT pools are already deleted as a result of the catastrophic configuration change and no longer exist, the NAT\_POOL\_RELEASE system log messages are not generated for the changed configuration.

**Options**    **none**—List all log files.

**<all-lcc | lcc *number* | scc>**—(Routing matrix only) (Optional) Display logging information about all T640 routers (or line-card chassis) or a specific T640 router (replace *number* with a value from 0 through 3) connected to a TX Matrix router. Or, display logging information about the TX Matrix router (or switch-card chassis).

**device-type**—(QFabric system only) (Optional) Display log messages for only one of the following device types:



- **director-device**—Display logs for Director devices.
- **infrastructure-device**—Display logs for the logical components of the QFabric system infrastructure, including the diagnostic Routing Engine, fabric control Routing Engine, fabric manager Routing Engine, and the default network Node group and its backup (NW-NG-0 and NW-NG-0-backup).
- **interconnect-device**—Display logs for Interconnect devices.
- **node-device**—Display logs for Node devices.



**NOTE:** If you specify the **device-type** optional parameter, you must also specify either the **device-id** or **device-alias** optional parameter.

**(device-id | device-alias)**—If a device type is specified, display logs for a device of that type. Specify either the device ID or the device alias (if configured).

**filename**—(Optional) Display the log messages in the specified log file. For the routing matrix, the filename must include the chassis information.



**NOTE:** The **filename** parameter is mandatory for the QFabric system. If you did not configure a syslog filename, specify the default filename of messages.

**user <username>**—(Optional) Display logging information about users who have recently logged in to the router or switch. If you include **username**, display logging information about the specified user.

**Required Privilege Level** trace

**Related Documentation** • [syslog \(System\)](#)

**List of Sample Output** [show log on page 423](#)  
[show log filename on page 424](#)  
[show log filename \(QFabric System\) on page 424](#)  
[show log user on page 425](#)

## Sample Output

[show log](#)

```
user@host> show log
total 57518
-rw-r--r-- 1 root bin      211663 Oct  1 19:44 dcd
-rw-r--r-- 1 root bin      999947 Oct  1 19:41 dcd.0
-rw-r--r-- 1 root bin      999994 Oct  1 17:48 dcd.1
-rw-r--r-- 1 root bin      238815 Oct  1 19:44 rpd
```

```

-rw-r--r-- 1 root bin      1049098 Oct  1 18:00 rpd.0
-rw-r--r-- 1 root bin      1061095 Oct  1 12:13 rpd.1
-rw-r--r-- 1 root bin      1052026 Oct  1 06:08 rpd.2
-rw-r--r-- 1 root bin      1056309 Sep 30 18:21 rpd.3
-rw-r--r-- 1 root bin      1056371 Sep 30 14:36 rpd.4
-rw-r--r-- 1 root bin      1056301 Sep 30 10:50 rpd.5
-rw-r--r-- 1 root bin      1056350 Sep 30 07:04 rpd.6
-rw-r--r-- 1 root bin      1048876 Sep 30 03:21 rpd.7
-rw-rw-r-- 1 root bin          19656 Oct  1 19:37 wtmp

```

### show log filename

```

user@host> show log rpd
Oct  1 18:00:18 trace_on: Tracing to ?/var/log/rpd? started
Oct  1 18:00:18 EVENT <MTU> ds-5/2/0.0 index 24 <Broadcast PointToPoint Multicast
Oct  1 18:00:18
Oct  1 18:00:19 KRT recv len 56 V9 seq 148 op add Type route/if af 2 addr
192.0.2.21 nhop type local nhop 192.0.2.21
Oct  1 18:00:19 KRT recv len 56 V9 seq 149 op add Type route/if af 2 addr
192.0.2.22 nhop type unicast nhop 192.0.2.22
Oct  1 18:00:19 KRT recv len 48 V9 seq 150 op add Type ifaddr index 24 devindex
43
Oct  1 18:00:19 KRT recv len 144 V9 seq 151 op chnge Type ifdev devindex 44
Oct  1 18:00:19 KRT recv len 144 V9 seq 152 op chnge Type ifdev devindex 45
Oct  1 18:00:19 KRT recv len 144 V9 seq 153 op chnge Type ifdev devindex 46
Oct  1 18:00:19 KRT recv len 1272 V9 seq 154 op chnge Type ifdev devindex 47
...

```

### show log filename (QFabric System)

```

user@qfabric> show log messages
Mar 28 18:00:06 qfabric chassisd: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:06 ED1486
chassisd: CHASSISD_SNMP_TRAP10: SNMP trap generated: FRU power on
(jnxFruContentsIndex 8, jnxFruL1Index 1, jnxFruL2Index 1, jnxFruL3Index 0,
jnxFruName PIC: 48x 10G-SFP+ @ 0/0/*, jnxFruType 11, jnxFruSlot 0,
jnxFruOfflineReason 2, jnxFruLastPowerOff 0, jnxFruLastPowerOn 2159)
Mar 28 18:00:07 qfabric chassisd: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:07 ED1486
chassisd: CHASSISD_SNMP_TRAP10: SNMP trap generated: FRU power on
(jnxFruContentsIndex 8, jnxFruL1Index 1, jnxFruL2Index 2, jnxFruL3Index 0,
jnxFruName PIC: @ 0/1/*, jnxFruType 11, jnxFruSlot 0, jnxFruOfflineReason 2,
jnxFruLastPowerOff 0, jnxFruLastPowerOn 2191)
Mar 28 18:00:07 qfabric chassisd: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:07 ED1492
chassisd: CHASSISD_SNMP_TRAP10: SNMP trap generated: FRU power on
(jnxFruContentsIndex 8, jnxFruL1Index 1, jnxFruL2Index 1, jnxFruL3Index 0,
jnxFruName PIC: 48x 10G-SFP+ @ 0/0/*, jnxFruType 11, jnxFruSlot 0,
jnxFruOfflineReason 2, jnxFruLastPowerOff 0, jnxFruLastPowerOn 242726)
Mar 28 18:00:07 qfabric chassisd: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:07 ED1492
chassisd: CHASSISD_SNMP_TRAP10: SNMP trap generated: FRU power on
(jnxFruContentsIndex 8, jnxFruL1Index 1, jnxFruL2Index 2, jnxFruL3Index 0,
jnxFruName PIC: @ 0/1/*, jnxFruType 11, jnxFruSlot 0, jnxFruOfflineReason 2,
jnxFruLastPowerOff 0, jnxFruLastPowerOn 242757)
Mar 28 18:00:16 qfabric file: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:16 ED1486
file: UI_COMMIT: User 'root' requested 'commit' operation (comment: none)
Mar 28 18:00:27 qfabric file: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:27 ED1486
file: UI_COMMIT: User 'root' requested 'commit' operation (comment: none)
Mar 28 18:00:50 qfabric file: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:50
_DCF_default__NW-INE-0_REO_ file: UI_COMMIT: User 'root' requested 'commit'
operation (comment: none)
Mar 28 18:00:50 qfabric file: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:50
_DCF_default__NW-INE-0_REO_ file: UI_COMMIT: User 'root' requested 'commit'
operation (comment: none)

```

```

Mar 28 18:00:55 qfabric file: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:55 ED1492
file: UI_COMMIT: User 'root' requested 'commit' operation (comment: none)
Mar 28 18:01:10 qfabric file: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:01:10 ED1492
file: UI_COMMIT: User 'root' requested 'commit' operation (comment: none)
Mar 28 18:02:37 qfabric chassisd: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:02:37 ED1491
chassisd: CHASSISD_SNMP_TRAP10: SNMP trap generated: FRU power on
(jnxFruContentsIndex 8, jnxFruL1Index 1, jnxFruL2Index 1, jnxFruL3Index 0,
jnxFruName PIC: 48x 10G-SFP+ @ 0/0/*, jnxFruType 11, jnxFruSlot 0,
jnxFruOfflineReason 2, jnxFruLastPowerOff 0, jnxFruLastPowerOn 33809)

```

### show log user

```

user@host> show log user

```

usera	mg2546		Thu Oct 1 19:37	still logged in
usera	mg2529		Thu Oct 1 19:08 - 19:36	(00:28)
usera	mg2518		Thu Oct 1 18:53 - 18:58	(00:04)
root	mg1575		Wed Sep 30 18:39 - 18:41	(00:02)
root	ttyp2	aaa.bbbb.com	Wed Sep 30 18:39 - 18:41	(00:02)
userb	ttyp1	192.0.2.0	Wed Sep 30 01:03 - 01:22	(00:19)

## show system connections

---

<b>List of Syntax</b>	<a href="#">Syntax on page 426</a> <a href="#">Syntax (EX Series) on page 426</a> <a href="#">Syntax (TX Matrix Router) on page 426</a> <a href="#">Syntax (TX Matrix Plus Router) on page 426</a> <a href="#">Syntax (MX Series Router) on page 426</a> <a href="#">Syntax (QFX Series) on page 426</a> <a href="#">Syntax (OCX Series) on page 426</a>
<b>Syntax</b>	<code>show system connections</code> <code>&lt;extensive&gt;</code> <code>&lt;all-chassis   all-lcc   lcc <i>number</i>   scc&gt;</code> <code>&lt;inet   inet6&gt;</code> <code>&lt;show-routing-instances&gt;</code>
<b>Syntax (EX Series)</b>	<code>show system connections</code> <code>&lt;extensive&gt;</code> <code>&lt;all-members&gt;</code> <code>&lt;inet   inet6&gt;</code> <code>&lt;local&gt;</code> <code>&lt;member <i>member-id</i>&gt;</code> <code>&lt;show-routing-instances&gt;</code>
<b>Syntax (TX Matrix Router)</b>	<code>show system connections</code> <code>&lt;extensive&gt;</code> <code>&lt;all-chassis   all-lcc   lcc <i>number</i>   scc&gt;</code> <code>&lt;inet   inet6&gt;</code> <code>&lt;show-routing-instances&gt;</code>
<b>Syntax (TX Matrix Plus Router)</b>	<code>show system connections</code> <code>&lt;extensive&gt;</code> <code>&lt;all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i>&gt;</code> <code>&lt;inet   inet6&gt;</code> <code>&lt;show-routing-instances&gt;</code>
<b>Syntax (MX Series Router)</b>	<code>show system connections</code> <code>&lt;extensive&gt;</code> <code>&lt;all-members&gt;</code> <code>&lt;inet   inet6&gt;</code> <code>&lt;local&gt;</code> <code>&lt;member <i>member-id</i>&gt;</code> <code>&lt;show-routing-instances&gt;</code>
<b>Syntax (QFX Series)</b>	<code>show system connections</code> <code>&lt;extensive&gt;</code> <code>&lt;inet&gt;</code> <code>&lt;infrastructure <i>name</i>&gt;</code> <code>&lt;interconnect-device <i>name</i>&gt;</code> <code>&lt;node-group <i>name</i>&gt;</code> <code>&lt;show-routing-instances&gt;</code>
<b>Syntax (OCX Series)</b>	<code>show system connections</code>

<extensive>  
 <inet>  
 <show-routing-instances>

<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
<b>Description</b>	<p>Display information about the active IP sockets on the Routing Engine. Use this command to verify which servers are active on a system and what connections are currently in progress.</p>
<b>Options</b>	<p><b>none</b>—Display information about all active IP sockets on the Routing Engine.</p> <p><b>extensive</b>—(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><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system connection activity for all the routers in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system connection activity for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system connection activity for all connected T1600 or T4000 LCCs</p> <p><b>all-members</b>—(EX4200 switches and MX Series routers only) (Optional) Display system connection activity for all members of the Virtual Chassis configuration.</p> <p><b>inet   inet6</b>—(Optional) Display IPv4 connections or IPv6 connections, respectively.</p> <p><b>infrastructure <i>name</i></b>—(QFabric systems only) (Optional) Display system connection activity for the fabric control Routing Engines or fabric manager Routing Engines.</p> <p><b>interconnect-device <i>name</i></b>—(QFabric systems only) (Optional) Display system connection activity for the Interconnect device.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system connection activity for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system connection activity for a specific router that is connected to the TX Matrix Plus router. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> <li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li> <li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li> </ul>

- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Display system connection activity for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Display system connection activity for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace ***member-id*** with a value from 0 through 9. For an MX Series Virtual Chassis, replace ***member-id*** with a value of 0 or 1.

**node-group *name***—(QFabric systems only) (Optional) Display system connection activity for the Node group.

**scc**—(TX Matrix routers only) (Optional) Display system connection activity for the TX Matrix router (or switch-card chassis).

**sfc**—(TX Matrix routers only) (Optional) Display system connection activity for the TX Matrix Plus router.

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

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

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system connections on page 429](#)  
[show system connections extensive on page 430](#)  
[show system connections lcc \(TX Matrix Router\) on page 431](#)  
[show system connections show-routing-instances on page 431](#)  
[show system connections \(TX Matrix Plus Router\) on page 432](#)  
[show system connections sfc \(TX Matrix Plus Router\) on page 435](#)  
[show system connections show-routing-instances \(TX Matrix Plus Router\) on page 437](#)

**Output Fields** [Table 10 on page 429](#) describes the output fields for the **show system connections** command. Output fields are listed in the approximate order in which they appear.

Table 10: show system connections Output Fields

Field Name	Field Description
<b>Proto</b>	Protocol of the socket: <b>IP</b> , <b>TCP</b> , or <b>UDP</b> for IPv4 or IPv6.
<b>Recv-Q</b>	Number of input packets received by the protocol and waiting to be processed by the application.
<b>Send-Q</b>	Number of output packets sent by the application and waiting to be processed by the protocol.
<b>Local Address</b>	Local address and port of the socket, separated by a period. An asterisk (*) indicates that the bound address is the wildcard address. Server sockets typically have the wildcard address and a well-known port bound to them.
<b>Foreign Address</b>	Foreign address and port of the socket, separated by a period. An asterisk (*) indicates that the address or port is a wildcard.
<b>Routing Instance</b>	(Displayed only when the <b>show-routing-instance</b> option is used.) Routing instances associated with active IP sockets on the Routing Engine.
<b>(state)</b>	For TCP, the protocol state of the socket.

## Sample Output

### show system connections

```

user@host> show system connections
Active Internet connections (including servers)
Proto Recv-Q Send-Q Local Address          Foreign Address         (state)
tcp      0      0 192.0.2.16.513         192.0.2.254.894        ESTABLISHED
tcp      0      0 192.0.2.16.513         192.0.2.195.945        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
udp00192.192.0.2.1634    192.0.2.249.2049
udp00192.192.0.2.1627    192.0.2.254.2049
udp00192.192.0.2.1371    192.0.2.195.2049
udp00*.*                *.*
udp00*.9999             *.*
udp00 *.161             *.*
udp00192.192.0.2.1039    192.0.2.16.1023
udp00192.192.0.2.1038    192.0.2.16.1023
udp 00 192.0.2.16.1037      192.0.2.16.1023
udp00 192.0.2.16.1036    192.0.2.16.1023
udp00*.1022             *.*
udp00*.1023             *.*
udp00*.111              *.*
udp00*.*                *.*

```

## show system connections extensive

user@host&gt; show system connections extensive

```

Active Internet connections (including servers)
Proto Recv-Q Send-Q Local Address           Foreign Address
      (state)
tcp4      0      6 192.0.2.15.23           192.0.2.138.3013
      ESTABLISHED
      sndsbcc:          6 sndsbmbcnt:          256 sndsbmbmax:          272000
      sndsblowat:       2048 sndsbhiwat:          34000
      rcvsbcc:          0 rcvsbmbcnt:          0 rcvsbmbmax:          533120
      rcvsblowat:       1 rcvsbhiwat:          66640
      proc id:          0 proc name:
      iss: 2566994072    sndup: 2566994491
      snduna: 2566994491  sndnxt: 2566994494    sndwnd:          64094
      sndmax: 2566994494  sndcwnd:          6589 sndssthresh:          2720
      irs: 236981199     rcvup: 236981325
      rcvnxt: 236981327   rcvadv: 237046862     rcvwnd:          66640
      rtt: 140058623     srtt: 15519          rttv:           908
      rxtcur:          1200 rxtshift:          0    rtseq: 2566994491
      rttmin:          1000 mss:          1360
      flags: SACK_PERMIT [0x2000200]
tcp4      0      0 10.255.165.93.179       10.255.165.203.65141
      ESTABLISHED
      sndsbcc:          0 sndsbmbcnt:          0 sndsbmbmax:          131072
      sndsblowat:       2048 sndsbhiwat:          16384
      rcvsbcc:          0 rcvsbmbcnt:          0 rcvsbmbmax:          131072
      rcvsblowat:       1 rcvsbhiwat:          16384
      proc id:          0 proc name:
      iss: 2555995917    sndup: 2555995917
      snduna: 2555995917  sndnxt: 2555995917    sndwnd:          16384
      sndmax: 2555995917  sndcwnd:          1000 sndssthresh: 1073725440
      irs: 2123825753     rcvup: 2123860681
      rcvnxt: 2123860681  rcvadv: 2123877065    rcvwnd:          16384
      rtt: 0             srtt: 3309          rttv:           72
      rxtcur:          1200 rxtshift:          0    rtseq: 2555995898
      rttmin:          1000 mss:           500
      flags: REQ_SCALE RCVD_SCALE REQ_TSTMP RCVD_TSTMP SACK_PERMIT [0x3e0]
tcp4      0      0 10.255.165.93.179       10.255.165.203.65141
      ESTABLISHED
      sndsbcc:          0 sndsbmbcnt:          0 sndsbmbmax:          131072
      sndsblowat:       2048 sndsbhiwat:          16384
      rcvsbcc:          0 rcvsbmbcnt:          0 rcvsbmbmax:          131072
      rcvsblowat:       1 rcvsbhiwat:          16384
      proc id:          5022 proc name:          rpd
      iss: 2123825753    sndup: 2123860662
      snduna: 2123860681  sndnxt: 2123860681    sndwnd:          16384
      sndmax: 2123860681  sndcwnd:          1000 sndssthresh: 1073725440
      irs: 2555995917     rcvup: 2555995917
      rcvnxt: 2555995917  rcvadv: 2556012301    rcvwnd:          16384
      rtt: 0             srtt: 3279          rttv:           22
      rxtcur:          1200 rxtshift:          0    rtseq: 2123860662
      rttmin:          1000 mss:           500
      flags: REQ_SCALE RCVD_SCALE REQ_TSTMP RCVD_TSTMP SACK_PERMIT [0x100003e0]
tcp4      0      0 10.255.165.113.52404     10.255.165.203.179
      ESTABLISHED
      sndsbcc:          0 sndsbmbcnt:          0 sndsbmbmax:          131072
      sndsblowat:       2048 sndsbhiwat:          16384
      rcvsbcc:          0 rcvsbmbcnt:          0 rcvsbmbmax:          131072
      rcvsblowat:       1 rcvsbhiwat:          16384

```



```

proc id:      0  proc name:
  iss: 1109297190  sndup: 1109332099
  snduna: 1109332118  sndnxt: 1109332118  sndwnd: 16384
  sndmax: 1109332118  sndcwnd: 1000  sndssthresh: 1073725440
  irs: 1476831634  rcvup: 1476866449
  rcvnxt: 1476866449  rcvadv: 1476882833  rcvwnd: 16384
  rtt: 0  srtt: 3235  rttv: 18
  rxtcur: 1200  rxtshift: 0  rtseq: 1109332099
  rttmin: 1000  mss: 500
  flags: REQ_SCALE RCVD_SCALE REQ_TSTMP RCVD_TSTMP SACK_PERMIT [0x3e0]

```

### show system connections lcc (TX Matrix Router)

```
user@host> show system connections lcc 2
```

```
lcc2-re0:
```

```

-----
Active Internet connections (including servers)
Proto Recv-Q Send-Q Local Address          Foreign Address         (state)
tcp4    0      0 192.0.2.131.1342      192.0.2.130.23         ESTABLISHED
tcp4    0      0 192.0.2.131.2059      192.0.2.130.23         ESTABLISHED
tcp4    0      0 192.0.2.131.4571      192.0.2.130.23         ESTABLISHED
tcp4    0      0 192.0.2.131.2496      192.0.2.130.23         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      0 192.0.2.204.23        192.0.2.19.4267        default
ESTABLISHED
tcp4    0      0 192.0.2.204.58540     10.209.7.138.23        default
ESTABLISHED
tcp4    0      0 192.0.2.204.23        192.0.2.19.1098        default
ESTABLISHED
tcp4    0      0 192.0.2.1.57668       192.0.2.1.179          default
ESTABLISHED
tcp4    0      0 192.0.2.1.179         192.0.2.1.49209        default
ESTABLISHED
tcp4    0      0 192.0.2.1.6234        192.0.2.17.1024
__juniper_private1__ ESTABLISHED
tcp4    0      0 192.0.2.4.9000        192.0.24.59103
__juniper_private1__ ESTABLISHED
tcp4    0      0 1192.0.2.4.59103     192.0.2.4.9000
__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      3 192.0.2.11.23           192.0.2.19.3565
      ESTABLISHED
tcp4      0      0 192.0.2.11.23           192.0.2.204.62719
      ESTABLISHED
tcp4      0      0 192.0.2.11.23           1192.0.2.199.51255
      ESTABLISHED
tcp4      0      0 1192.0.2.11.23          1192.0.2.227.42860
      ESTABLISHED
tcp4      0      0 *.6156                *.*
      LISTEN
tcp4      0      0 192.0.2.4.32012         192.0.2.5.58935
      ESTABLISHED
tcp4      0      0 *.32012                *.*
      LISTEN
tcp4      0      0 *.33007                *.*
      LISTEN
tcp4      0      0 *.666                  *.*
      LISTEN
tcp4      0      0 192.0.2.4.6161         192.0.2.5.62026
      ESTABLISHED
tcp4      0      0 *.33005                *.*
      LISTEN
tcp4      0      0 192.0.2.4.9000         192.0.2.4.51611

```

```

                                ESTABLISHED
tcp4      0      0 192.0.2.4.51611             192.0.2.4.9000
                                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      0 192.0.2.1.123              *.*
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      0 192.0.2.3.23            192.0.2.227.50399
      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	192.0.2.4.514	192.0.2.4.952
			TIME_WAIT	
tcp4	0	0	1192.0.2.4.514	192.0.2.4.694
			TIME_WAIT	
tcp4	0	0	192.0.2.4.514	192.0.2.4.860
			TIME_WAIT	
tcp4	0	0	192.0.2.4.514	192.0.2.4.716
			TIME_WAIT	

tcp4	0	0	192.0.2.4.996		192.0.2.4.514
			TIME_WAIT		
tcp4	0	0	192.0.2.4.798		192.0.2.4.514
			TIME_WAIT		
tcp4	0	0	192.0.2.4.995		192.0.2.4.514
			TIME_WAIT		
tcp4	0	0	192.0.2.4.895		192.0.2.4.514
			TIME_WAIT		
tcp4	0	0	192.0.2.11.21		192.0.2.64662
			TIME_WAIT		
tcp4	0	0	192.0.2.178.11.21		
192.0.2.204.51612				TIME_WAIT	
tcp4	0	0	*,6156		*,*
			LISTEN		
tcp4	0	0	*,9000		*,*
			LISTEN		
tcp4	0	0	*,666		*,*
			LISTEN		
tcp4	0	2	192.0.2.11.23		192.0.2.19.3565
			ESTABLISHED		
tcp4	0	0	192.0.2.11.23		192.0.2.204.62719
			ESTABLISHED		
tcp4	0	0	192.0.2.11.23		192.0.2.199.51255
			ESTABLISHED		
tcp4	0	0	192.0.2.11.23		1192.0.227.42860
			ESTABLISHED		
tcp4	0	0	192.0.2.4.32012		192.0.2.5.58935
			ESTABLISHED		
tcp4	0	0	*,32012		*,*
			LISTEN		
tcp4	0	0	*,33007		*,*
			LISTEN		
tcp4	0	1432	192.0.2.4.6161		192.0.2.5.62026
			ESTABLISHED		
tcp4	0	0	*,33005		*,*
			LISTEN		
tcp4	0	0	192.0.2.4.9000		192.0.2.4.51611
			FIN_WAIT_2		
tcp4	0	0	192.0.2.4.51611		192.0.2.4.9000
			CLOSE_WAIT		
tcp4	0	0	*,6151		*,*
			LISTEN		
tcp4	0	0	*,6154		*,*
			LISTEN		
tcp4	0	0	*,6153		*,*
			LISTEN		
tcp4	0	0	*,31343		*,*
			LISTEN		
tcp4	0	0	*,31341		*,*
			LISTEN		
tcp4	0	0	*,6152		*,*
			LISTEN		
tcp4	0	0	*,32003		*,*
			LISTEN		
tcp4	0	0	*,33009		*,*
			LISTEN		
tcp4	0	0	*,3221		*,*
			LISTEN		
tcp4	0	0	*,23		*,*
			LISTEN		
tcp4	0	0	*,22		*,*

```

tcp4      0      0 *.514      LISTEN      *. *
tcp4      0      0 *.513      LISTEN      *. *
tcp4      0      0 *.21       LISTEN      *. *
tcp4      0      0 *.79       LISTEN      *. *
tcp4      0      0 *.514      LISTEN      *. *
tcp4      0      0 *.513      LISTEN      *. *
tcp4      0      0 *.6234     LISTEN      *. *
udp4      0      0 127.0.0.1.123 LISTEN      *. *
udp4      0      0 10.255.178.11.123 LISTEN      *. *
udp4      0      0 *.123      LISTEN      *. *
udp46     0      0 *.514      LISTEN      *. *
udp4      0      0 *.514      LISTEN      *. *
udp46     0      0 *.50895    LISTEN      *. *
udp4      0      0 *.50794    LISTEN      *. *
udp4      0      0 *.31342    LISTEN      *. *
udp46     0      0 *.161      LISTEN      *. *
udp4      0      0 *.161      LISTEN      *. *
udp4      0      0 *.31340    LISTEN      *. *
udp4      0      0 *.31340    LISTEN      *. *
udp46     0      0 *.49152    LISTEN      *. *
udp46     0      0 *.4784     LISTEN      *. *
udp46     0      0 *.3784     LISTEN      *. *
udp4      0      0 *.49152    LISTEN      *. *
udp4      0      0 *.4784     LISTEN      *. *
udp4      0      0 *.3784     LISTEN      *. *
udp4      0      0 *.6333     LISTEN      *. *
ip4       104    0 *. *      LISTEN      *. *
ip4       0      0 *. *      LISTEN      *. *
ip4       0      0 *. *      LISTEN      *. *

```

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

```

user@host> show system connections show-routing-instances
sfc0-re0:
-
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q Local Address           Foreign Address
      Routing Instance      (state)
tcp4      0      0 *.6156                  __juniper_private1__    LISTEN      *. *
tcp4      0      0 *.9000                  __juniper_private1__    LISTEN      *. *
tcp4      0      0 *.666                   __juniper_private1__    LISTEN      *. *
tcp4      0      2 192.168.178.11.23       default                  ESTABLISHED
172.17.28.19.3565
tcp4      0      0 192.168.178.11.23       default                  ESTABLISHED
172.17.28.204.62719
tcp4      0      0 192.168.178.11.23       default                  ESTABLISHED
192.168.69.199.51255
tcp4      0      0 192.168.178.11.23       default                  ESTABLISHED
172.24.26.227.42860
tcp4      0      0 162.0.0.4.32012         162.0.0.5.58935

```

tcp4	0	0	*.32012	__juniper_private1__	ESTABLISHED	*.*
tcp4	0	0	*.33007	__juniper_private1__	LISTEN	*.*
tcp4	0	0	162.0.0.4.6161	__juniper_private2__	LISTEN	162.0.0.5.62026
tcp4	0	0	*.33005	__juniper_private1__	ESTABLISHED	*.*
tcp4	0	0	162.0.0.4.9000	__juniper_private2__	LISTEN	162.0.0.4.51611
tcp4	0	0	162.0.0.4.51611	__juniper_private1__	FIN_WAIT_2	162.0.0.4.9000
tcp4	0	0	*.6151	__juniper_private1__	CLOSE_WAIT	*.*
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_private1__	LISTEN	*.*
tcp4	0	0	*.33009	__juniper_private2__	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	*.6234	__juniper_private1__	LISTEN	*.*
tcp4	0	0		__juniper_private1__	LISTEN	*.*
udp4	0	0	127.0.0.1.123	default		*.*
udp4	0	0	10.255.178.11.123	default		*.*
udp4	0	0	*.123	default		*.*
udp46	0	0	*.514	default		*.*
udp4	0	0	*.514	default		*.*
udp46	0	0	*.50895	default		*.*



```

udp4      0      0 *.50794      *.*
           default
udp4      0      0 *.31342      *.*
           __juniper_private1__
udp46     0      0 *.161        *.*
           default
udp4      0      0 *.161        *.*
           default
udp4      0      0 *.31340      *.*
           __juniper_private2__
udp4      0      0 *.31340      *.*
           __juniper_private1__
udp46     0      0 *.49152      *.*
           default
udp46     0      0 *.4784       *.*
           default
udp46     0      0 *.3784       *.*
           default
udp4      0      0 *.49152      *.*
           default
udp4      0      0 *.4784       *.*
           default
udp4      0      0 *.3784       *.*
           default
udp4      0      0 *.6333       *.*
           __juniper_private1__
ip4       0      0 *.*          *.*
           default
ip4       0      0 *.*          *.*
           default
ip4       0      0 *.*          *.*
           default

```

lcc0-re0:

-

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

Proto	Recv-Q	Send-Q	Local Address	Routing Instance	(state)	Foreign Address
tcp4	0	0	*.7000			*.*
				__juniper_private1__	LISTEN	
tcp4	0	0	192.0.2.3.23			192.0.2.227.50399
			default		ESTABLISHED	
tcp4	0	0	*.6234			*.*
				__juniper_private1__	LISTEN	
tcp4	0	0	*.9000			*.*
				__juniper_private1__	LISTEN	
tcp4	0	0	*.33009			*.*
				__juniper_private2__	LISTEN	
tcp4	0	0	*.3221			*.*
				default	LISTEN	
tcp4	0	0	*.23			*.*
				default	LISTEN	
tcp4	0	0	*.22			*.*
				default	LISTEN	
tcp4	0	0	*.514			*.*
				default	LISTEN	
tcp4	0	0	*.513			*.*
				default	LISTEN	
tcp4	0	0	*.21			*.*
				default	LISTEN	
tcp4	0	0	*.79			*.*

tcp4	0	0	*.514	default	LISTEN	.*.*
tcp4	0	0	*.513	__juniper_private1__	LISTEN	.*.*
udp46	0	0	*.514	__juniper_private1__	LISTEN	.*.*
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	default		.*.*
udp4	0	0	*.6333	__juniper_private1__		.*.*
				__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			.*.*
tcp4	0	0	*.6234	__juniper_private1__	LISTEN	.*.*
tcp4	0	0	*.9000	__juniper_private1__	LISTEN	.*.*
tcp4	0	0	*.3221	__juniper_private1__	LISTEN	.*.*
tcp4	0	0	*.23	default	LISTEN	.*.*
tcp4	0	0	*.22	default	LISTEN	.*.*
tcp4	0	0	*.514	default	LISTEN	.*.*
tcp4	0	0	*.513	default	LISTEN	.*.*
tcp4	0	0	*.21	default	LISTEN	.*.*
tcp4	0	0	*.79	default	LISTEN	.*.*
tcp4	0	0	*.514	__juniper_private1__	LISTEN	.*.*
tcp4	0	0	*.513	__juniper_private1__	LISTEN	.*.*
tcp4	0	0	*.33009	__juniper_private2__	LISTEN	.*.*
udp46	0	0	*.514	default		.*.*
udp4	0	0	*.514	default		.*.*
udp46	0	0	*.59924	default		.*.*
udp4	0	0	*.59412	default		.*.*

```

udp4      0      0 *.31342      *.*
          __juniper_private1__
udp46     0      0 *.161        *.*
          default
udp4      0      0 *.161        *.*
          default
udp4      0      0 *.6333       *.*
          __juniper_private1__

lcc2-re0:
-
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q Local Address           Foreign Address
Routing Instance (state)
tcp4      0      0 *.7000       *.*
          __juniper_private1__ LISTEN
tcp4      0      0 *.6234       *.*
          __juniper_private1__ LISTEN
tcp4      0      0 *.9000       *.*
          __juniper_private1__ LISTEN
tcp4      0      0 *.33009      *.*
          __juniper_private2__ LISTEN
tcp4      0      0 *.3221       *.*
          default          LISTEN
tcp4      0      0 *.23         *.*
          default          LISTEN
tcp4      0      0 *.22         *.*
          default          LISTEN
tcp4      0      0 *.514        *.*
          default          LISTEN
tcp4      0      0 *.513        *.*
          default          LISTEN
tcp4      0      0 *.21         *.*
          default          LISTEN
tcp4      0      0 *.79         *.*
          default          LISTEN
tcp4      0      0 *.514        *.*
          __juniper_private1__ LISTEN
tcp4      0      0 *.513        *.*
          __juniper_private1__ LISTEN
udp46     0      0 *.514        *.*
          default
udp4      0      0 *.514        *.*
          default
udp4      0      0 *.31342      *.*
          __juniper_private1__
udp46     0      0 *.62103      *.*
          default
udp4      0      0 *.59924      *.*
          default
udp46     0      0 *.161        *.*
          default
udp4      0      0 *.161        *.*
          default
udp4      0      0 *.6333       *.*
          __juniper_private1__

lcc3-re0:
-
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q Local Address           Foreign Address

```

				Routing Instance	(state)	
tcp4	0	0	*.7000			*.*
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			*.*
udp4	0	0	*.514	default		*.*
udp46	0	0	*.62103	default		*.*
udp4	0	0	*.59924	default		*.*
udp4	0	0	*.31342	default		*.*
udp46	0	0	*.161	__juniper_private1__		*.*
udp4	0	0	*.161	default		*.*
udp4	0	0	*.6333	default		*.*
				__juniper_private1__		

## show system name-resolution

<b>Syntax</b>	show system name-resolution
<b>Release Information</b>	Command introduced in Junos OS Release 9.6.
<b>Description</b>	Display hostname-to-IP-address mappings.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>Output Fields</b>	Table 11 on page 443 lists the output fields for the <b>show system name-resolution</b> command. Output fields are listed in the approximate order in which they appear.

Table 11: show system name-resolution Output Fields

Field Name	Field Description
Last update	Date and time when the hostname-to-IP address mapping were last resolved.
Refresh interval	Interval for refreshing the cache with the updated hostname-to-IP address mappings.
Addresses	Resolved IP addresses based on the hostname-to-IP address mappings.
Error	Error message displayed if there is a DNS hostname lookup failure.
Last change	Timestamp for the last change in the hostname-to-IP address mappings.

## show system name-resolution

```

user@host> show system name-resolution

Hostname to IP-address mappings:
-----
Last update: Mon Sep 29 18:42:21 2008
Refresh interval: 600 secs
Host: ntp1
  Addresses:
    3.3.3.11
  Last change: Mon Sep 29 18:42:20 2008
Host: radauth1
  Error: Host name lookup failure
Last change: Mon Sep 29 18:42:20 2008
Host: radacct1
  Error: Host name lookup failure
Host: snmp1
  Addresses:
    4.4.4.1
    4.4.4.2
  Last change: Mon Sep 29 18:45:20 2008
Host: sys1
  Addresses:

```

192.168.68.69  
Last change: Mon Sep 29 18:42:21 2008

## show version

<b>List of Syntax</b>	<a href="#">Syntax on page 445</a> <a href="#">Syntax (EX Series Switches) on page 445</a> <a href="#">Syntax (TX Matrix Router) on page 445</a> <a href="#">Syntax (TX Matrix Plus Router) on page 445</a> <a href="#">Syntax (MX Series Router) on page 445</a> <a href="#">Syntax (QFX Series) on page 445</a> <a href="#">Syntax (ACX5048 and ACX5096 Routers) on page 445</a>
<b>Syntax</b>	show version <brief   detail>
<b>Syntax (EX Series Switches)</b>	show version <all-members> <brief   detail> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show version <brief   detail> <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show version <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <brief   detail>
<b>Syntax (MX Series Router)</b>	show version <brief   detail> <all-members> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	show version <brief   detail> <component <i>component-name</i>   all>
<b>Syntax (ACX5048 and ACX5096 Routers)</b>	show version <brief   detail>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 15.1X54-D20 for ACX5048 and ACX5096 Routers.</p>
<b>Description</b>	<p>Display the hostname and version information about the software running on the router or switch.</p> <p>Beginning in Junos OS Release 13.3, the <b>show version</b> command output includes the <b>Junos</b> field that displays the Junos OS version running on the device. This field provides a</p>

consistent means of identifying the Junos OS version, rather than extracting that information from the list of installed sub-packages.

**Options** **none**—Display standard information about the hostname and version of the software running on the router or switch.

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

**all-members**—(EX4200 switches and MX Series routers only) (Optional) Display standard information about the hostname and version of the software running on all members of the Virtual Chassis configuration.

**component all**—(QFabric systems only) (Optional) Display the host name and version information about the software running on all the components on the QFabric system.

**component *component-name***—(QFabric systems only) (Optional) Display the host name and version information about the software running on a specific QFabric system component. Replace *component-name* with the name of the QFabric system component. The *component-name* can be the name of a diagnostics Routing Engine, Director group, fabric control Routing Engine, fabric manager Routing Engine, Interconnect device, or Node group.

**local**—(EX4200 switches and MX Series routers 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 and MX Series routers only) (Optional) Display standard information about the hostname and version of the software running on the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**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).

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the host name and version information about the software running on for a specified T640 router (line-card chassis or LCC) that is connected to the TX Matrix router. On a TX Matrix Plus router, display the host name and version information about the software running for a specified T1600 or T4000 router (LCC) that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.



- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**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 or T4000 (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 or T4000 (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 \(Devices Running Junos OS Release 13.3 and Later\) on page 448](#)  
[show version on page 448](#)  
[show version \(TX Matrix Plus Router\) on page 449](#)  
[show version \(TX Matrix Plus Router with 3D SIBs\) on page 451](#)  
[show version \(MX Series Router\) on page 455](#)  
[show version \(QFX3500 Switch\) on page 455](#)  
[show version \(QFabric System\) on page 455](#)  
[show version component all \(QFabric System\) on page 456](#)  
[show version \(ACX5048 Router\) on page 457](#)  
[show version \(ACX5096 Router\) on page 458](#)

## Sample Output

### show version (Devices Running Junos OS Release 13.3 and Later)

The following output is from the MX240 Router and shows the **Junos** field introduced in Junos OS 13.3. Depending on the platform running Junos OS 13.3, you might see different installed sub-packages, but the **Junos** field is common across all platforms that run Junos OS 13.3 and later.

```
user@host > show version
Hostname: lab
Model: mx240
Junos: 13.3R1.4
JUNOS Base OS boot [13.3R1.4]
JUNOS Base OS Software Suite [13.3R1.4]
JUNOS Kernel Software Suite [13.3R1.4]
JUNOS Crypto Software Suite [13.3R1.4]
JUNOS Packet Forwarding Engine Support (M/T/EX Common) [13.3R1.4]
JUNOS Packet Forwarding Engine Support (MX Common) [13.3R1.4]
JUNOS Online Documentation [13.3R1.4]
JUNOS Services ACL Container package [13.3R1.4]
JUNOS Services Application Level Gateways [13.3R1.4]
JUNOS AppId Services [13.3R1.4]
JUNOS Border Gateway Function package [13.3R1.4]
JUNOS Services Captive Portal and Content Delivery Container package [13.3R1.4]
JUNOS Services HTTP Content Management package [13.3R1.4]
JUNOS IDP Services [13.3R1.4]
JUNOS Services Jflow Container package [13.3R1.4]
JUNOS Services LL-PDF Container package [13.3R1.4]
JUNOS Services MobileNext Software package [13.3R1.4]
JUNOS Services Mobile Subscriber Service Container package [13.3R1.4]
JUNOS Services NAT [13.3R1.4]
JUNOS Services PTSP Container package [13.3R1.4]
JUNOS Services RPM [13.3R1.4]
JUNOS Services Stateful Firewall [13.3R1.4]
JUNOS Voice Services Container package [13.3R1.4]
JUNOS Services Crypto [13.3R1.4]
JUNOS Services SSL [13.3R1.4]
JUNOS Services IPSec [13.3R1.4]
JUNOS platform Software Suite [13.3R1.4]
JUNOS Runtime Software Suite [13.3R1.4]
JUNOS Routing Software Suite [13.3R1.4]
JUNOS py-base-i386 [13.3R1.4]
```

### 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_builder]
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:
```

```
-----
Hostname: host
Model: txp
JUNOS Base OS boot [12.3-20121019.0]
JUNOS Base OS Software Suite [12.3-20121019.0]
JUNOS Kernel Software Suite [12.3-20121019.0]
JUNOS Crypto Software Suite [12.3-20121019.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [12.3-20121019.0]
JUNOS Packet Forwarding Engine Support (T-Series) [12.3-20121019.0]
JUNOS Online Documentation [12.3-20121019.0]
JUNOS Services AACL Container package [12.3-20121019.0]
JUNOS Services Application Level Gateways [12.3-20121019.0]
JUNOS AppId Services [12.3-20121019.0]
JUNOS Border Gateway Function package [12.3-20121019.0]
JUNOS Services Captive Portal and Content Delivery Container package
[12.3-20121019.0]
JUNOS Services HTTP Content Management package [12.3-20121019.0]
JUNOS IDP Services [12.3-20121019.0]
JUNOS Services LL-PDF Container package [12.3-20121019.0]
JUNOS Services NAT [12.3-20121019.0]
JUNOS Services PTSP Container package [12.3-20121019.0]
JUNOS Services RPM [12.3-20121019.0]
JUNOS Services Stateful Firewall [12.3-20121019.0]
JUNOS Voice Services Container package [12.3-20121019.0]
JUNOS Services Example Container package [12.3-20121019.0]
JUNOS Services Crypto [12.3-20121019.0]
JUNOS Services SSL [12.3-20121019.0]
JUNOS Services IPSec [12.3-20121019.0]
JUNOS Runtime Software Suite [12.3-20121019.0]
JUNOS Routing Software Suite [12.3-20121019.0]
```

```
lcc0-re0:
```

```
-----
Hostname: host1
Model: t1600
JUNOS Base OS boot [12.3-20121019.0]
JUNOS Base OS Software Suite [12.3-20121019.0]
JUNOS Kernel Software Suite [12.3-20121019.0]
JUNOS Crypto Software Suite [12.3-20121019.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [12.3-20121019.0]
JUNOS Packet Forwarding Engine Support (T-Series) [12.3-20121019.0]
JUNOS Online Documentation [12.3-20121019.0]
JUNOS Services AACL Container package [12.3-20121019.0]
```

JUNOS Services Application Level Gateways [12.3-20121019.0]  
JUNOS AppId Services [12.3-20121019.0]  
JUNOS Border Gateway Function package [12.3-20121019.0]  
JUNOS Services Captive Portal and Content Delivery Container package [12.3-20121019.0]  
JUNOS Services HTTP Content Management package [12.3-20121019.0]  
JUNOS IDP Services [12.3-20121019.0]  
JUNOS Services LL-PDF Container package [12.3-20121019.0]  
JUNOS Services NAT [12.3-20121019.0]  
JUNOS Services PTSP Container package [12.3-20121019.0]  
JUNOS Services RPM [12.3-20121019.0]  
JUNOS Services Stateful Firewall [12.3-20121019.0]  
JUNOS Voice Services Container package [12.3-20121019.0]  
JUNOS Services Example Container package [12.3-20121019.0]  
JUNOS Services Crypto [12.3-20121019.0]  
JUNOS Services SSL [12.3-20121019.0]  
JUNOS Services IPSec [12.3-20121019.0]  
JUNOS Runtime Software Suite [12.3-20121019.0]  
JUNOS Routing Software Suite [12.3-20121019.0]

lcc1-re0:

-----  
Hostname: host2  
Model: t1600  
JUNOS Base OS boot [12.3-20121019.0]  
JUNOS Base OS Software Suite [12.3-20121019.0]  
JUNOS Kernel Software Suite [12.3-20121019.0]  
JUNOS Crypto Software Suite [12.3-20121019.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [12.3-20121019.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [12.3-20121019.0]  
JUNOS Online Documentation [12.3-20121019.0]  
JUNOS Services ACL Container package [12.3-20121019.0]  
JUNOS Services Application Level Gateways [12.3-20121019.0]  
JUNOS AppId Services [12.3-20121019.0]  
JUNOS Border Gateway Function package [12.3-20121019.0]  
JUNOS Services Captive Portal and Content Delivery Container package [12.3-20121019.0]  
JUNOS Services HTTP Content Management package [12.3-20121019.0]  
JUNOS IDP Services [12.3-20121019.0]  
JUNOS Services LL-PDF Container package [12.3-20121019.0]  
JUNOS Services NAT [12.3-20121019.0]  
JUNOS Services PTSP Container package [12.3-20121019.0]  
JUNOS Services RPM [12.3-20121019.0]  
JUNOS Services Stateful Firewall [12.3-20121019.0]  
JUNOS Voice Services Container package [12.3-20121019.0]  
JUNOS Services Example Container package [12.3-20121019.0]  
JUNOS Services Crypto [12.3-20121019.0]  
JUNOS Services SSL [12.3-20121019.0]  
JUNOS Services IPSec [12.3-20121019.0]  
JUNOS Runtime Software Suite [12.3-20121019.0]  
JUNOS Routing Software Suite [12.3-20121019.0]

lcc2-re0:

-----  
Hostname: host3  
Model: t1600  
JUNOS Base OS boot [12.3-20121019.0]  
JUNOS Base OS Software Suite [12.3-20121019.0]  
JUNOS Kernel Software Suite [12.3-20121019.0]  
JUNOS Crypto Software Suite [12.3-20121019.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [12.3-20121019.0]

```

JUNOS Packet Forwarding Engine Support (T-Series) [12.3-20121019.0]
JUNOS Online Documentation [12.3-20121019.0]
JUNOS Services AACL Container package [12.3-20121019.0]
JUNOS Services Application Level Gateways [12.3-20121019.0]
JUNOS AppId Services [12.3-20121019.0]
JUNOS Border Gateway Function package [12.3-20121019.0]
JUNOS Services Captive Portal and Content Delivery Container package
[12.3-20121019.0]
JUNOS Services HTTP Content Management package [12.3-20121019.0]
JUNOS IDP Services [12.3-20121019.0]
JUNOS Services LL-PDF Container package [12.3-20121019.0]
JUNOS Services NAT [12.3-20121019.0]
JUNOS Services PTSP Container package [12.3-20121019.0]
JUNOS Services RPM [12.3-20121019.0]
JUNOS Services Stateful Firewall [12.3-20121019.0]
JUNOS Voice Services Container package [12.3-20121019.0]
JUNOS Services Example Container package [12.3-20121019.0]
JUNOS Services Crypto [12.3-20121019.0]
JUNOS Services SSL [12.3-20121019.0]
JUNOS Services IPSec [12.3-20121019.0]
JUNOS Runtime Software Suite [12.3-20121019.0]
JUNOS Routing Software Suite [12.3-20121019.0]

```

```
lcc3-re0:
```

```

-----
Hostname: host4
Model: t1600
JUNOS Base OS boot [12.3-20121019.0]
JUNOS Base OS Software Suite [12.3-20121019.0]
JUNOS Kernel Software Suite [12.3-20121019.0]
JUNOS Crypto Software Suite [12.3-20121019.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [12.3-20121019.0]
JUNOS Packet Forwarding Engine Support (T-Series) [12.3-20121019.0]
JUNOS Online Documentation [12.3-20121019.0]
JUNOS Services AACL Container package [12.3-20121019.0]
JUNOS Services Application Level Gateways [12.3-20121019.0]
JUNOS AppId Services [12.3-20121019.0]
JUNOS Border Gateway Function package [12.3-20121019.0]
JUNOS Services Captive Portal and Content Delivery Container package
[12.3-20121019.0]
JUNOS Services HTTP Content Management package [12.3-20121019.0]
JUNOS IDP Services [12.3-20121019.0]
JUNOS Services LL-PDF Container package [12.3-20121019.0]
JUNOS Services NAT [12.3-20121019.0]
JUNOS Services PTSP Container package [12.3-20121019.0]
JUNOS Services RPM [12.3-20121019.0]
JUNOS Services Stateful Firewall [12.3-20121019.0]
JUNOS Voice Services Container package [12.3-20121019.0]
JUNOS Services Example Container package [12.3-20121019.0]
JUNOS Services Crypto [12.3-20121019.0]
JUNOS Services SSL [12.3-20121019.0]
JUNOS Services IPSec [12.3-20121019.0]
JUNOS Runtime Software Suite [12.3-20121019.0]
JUNOS Routing Software Suite [12.3-20121019.0]

```

#### show version (TX Matrix Plus Router with 3D SIBs)

```

user@host>show version
sfc0-re0:

```

```

-----
Hostname: sfc0

```

```
Model: txp
JUNOS Base OS boot [13.1-20130306.0]
JUNOS Base OS Software Suite [13.1-20130306.0]
JUNOS Kernel Software Suite [13.1-20130306.0]
JUNOS Crypto Software Suite [13.1-20130306.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130306.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130306.0]
JUNOS Online Documentation [13.1-20130306.0]
JUNOS Services ACL Container package [13.1-20130306.0]
JUNOS Services Application Level Gateways [13.1-20130306.0]
JUNOS AppId Services [13.1-20130306.0]
JUNOS Border Gateway Function package [13.1-20130306.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130306.0]
JUNOS Services HTTP Content Management package [13.1-20130306.0]
JUNOS IDP Services [13.1-20130306.0]
JUNOS Services Jflow Container package [13.1-20130306.0]
JUNOS Services LL-PDF Container package [13.1-20130306.0]
JUNOS Services MobileNext Software package [13.1-20130306.0]
JUNOS Services Mobile Subscriber Service Container package [13.1-20130306.0]
JUNOS Services NAT [13.1-20130306.0]
JUNOS Services PTSP Container package [13.1-20130306.0]
JUNOS Services RPM [13.1-20130306.0]
JUNOS Services Stateful Firewall [13.1-20130306.0]
JUNOS Voice Services Container package [13.1-20130306.0]
JUNOS Services Example Container package [13.1-20130306.0]
JUNOS Services Crypto [13.1-20130306.0]
JUNOS Services SSL [13.1-20130306.0]
JUNOS Services IPSec [13.1-20130306.0]
JUNOS Runtime Software Suite [13.1-20130306.0]
JUNOS Routing Software Suite [13.1-20130306.0]
```

```
lcc0-re0:
```

```
-----
Hostname: lcc0
Model: t4000
JUNOS Base OS boot [13.1-20130306.0]
JUNOS Base OS Software Suite [13.1-20130306.0]
JUNOS Kernel Software Suite [13.1-20130306.0]
JUNOS Crypto Software Suite [13.1-20130306.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130306.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130306.0]
JUNOS Online Documentation [13.1-20130306.0]
JUNOS Services ACL Container package [13.1-20130306.0]
JUNOS Services Application Level Gateways [13.1-20130306.0]
JUNOS AppId Services [13.1-20130306.0]
JUNOS Border Gateway Function package [13.1-20130306.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130306.0]
JUNOS Services HTTP Content Management package [13.1-20130306.0]
JUNOS IDP Services [13.1-20130306.0]
JUNOS Services Jflow Container package [13.1-20130306.0]
JUNOS Services LL-PDF Container package [13.1-20130306.0]
JUNOS Services MobileNext Software package [13.1-20130306.0]
JUNOS Services Mobile Subscriber Service Container package [13.1-20130306.0]
JUNOS Services NAT [13.1-20130306.0]
JUNOS Services PTSP Container package [13.1-20130306.0]
JUNOS Services RPM [13.1-20130306.0]
JUNOS Services Stateful Firewall [13.1-20130306.0]
JUNOS Voice Services Container package [13.1-20130306.0]
JUNOS Services Example Container package [13.1-20130306.0]
```

```

JUNOS Services Crypto [13.1-20130306.0]
JUNOS Services SSL [13.1-20130306.0]
JUNOS Services IPSec [13.1-20130306.0]
JUNOS Runtime Software Suite [13.1-20130306.0]
JUNOS Routing Software Suite [13.1-20130306.0]

```

```
lcc2-re0:
```

```

-----
Hostname: lcc2
Model: t4000
JUNOS Base OS boot [13.1-20130306.0]
JUNOS Base OS Software Suite [13.1-20130306.0]
JUNOS Kernel Software Suite [13.1-20130306.0]
JUNOS Crypto Software Suite [13.1-20130306.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130306.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130306.0]
JUNOS Online Documentation [13.1-20130306.0]
JUNOS Services AACL Container package [13.1-20130306.0]
JUNOS Services Application Level Gateways [13.1-20130306.0]
JUNOS AppId Services [13.1-20130306.0]
JUNOS Border Gateway Function package [13.1-20130306.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130306.0]
JUNOS Services HTTP Content Management package [13.1-20130306.0]
JUNOS IDP Services [13.1-20130306.0]
JUNOS Services Jflow Container package [13.1-20130306.0]
JUNOS Services LL-PDF Container package [13.1-20130306.0]
JUNOS Services MobileNext Software package [13.1-20130306.0]
JUNOS Services Mobile Subscriber Service Container package [13.1-20130306.0]
JUNOS Services NAT [13.1-20130306.0]
JUNOS Services PTSP Container package [13.1-20130306.0]
JUNOS Services RPM [13.1-20130306.0]
JUNOS Services Stateful Firewall [13.1-20130306.0]
JUNOS Voice Services Container package [13.1-20130306.0]
JUNOS Services Example Container package [13.1-20130306.0]
JUNOS Services Crypto [13.1-20130306.0]
JUNOS Services SSL [13.1-20130306.0]
JUNOS Services IPSec [13.1-20130306.0]
JUNOS Runtime Software Suite [13.1-20130306.0]
JUNOS Routing Software Suite [13.1-20130306.0]

```

```
lcc4-re0:
```

```

-----
Hostname: lcc4
Model: t4000
JUNOS Base OS boot [13.1-20130306.0]
JUNOS Base OS Software Suite [13.1-20130306.0]
JUNOS Kernel Software Suite [13.1-20130306.0]
JUNOS Crypto Software Suite [13.1-20130306.0]
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130306.0]
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130306.0]
JUNOS Online Documentation [13.1-20130306.0]
JUNOS Services AACL Container package [13.1-20130306.0]
JUNOS Services Application Level Gateways [13.1-20130306.0]
JUNOS AppId Services [13.1-20130306.0]
JUNOS Border Gateway Function package [13.1-20130306.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130306.0]
JUNOS Services HTTP Content Management package [13.1-20130306.0]
JUNOS IDP Services [13.1-20130306.0]

```

JUNOS Services Jflow Container package [13.1-20130306.0]  
JUNOS Services LL-PDF Container package [13.1-20130306.0]  
JUNOS Services MobileNext Software package [13.1-20130306.0]  
JUNOS Services Mobile Subscriber Service Container package [13.1-20130306.0]  
JUNOS Services NAT [13.1-20130306.0]  
JUNOS Services PTSP Container package [13.1-20130306.0]  
JUNOS Services RPM [13.1-20130306.0]  
JUNOS Services Stateful Firewall [13.1-20130306.0]  
JUNOS Voice Services Container package [13.1-20130306.0]  
JUNOS Services Example Container package [13.1-20130306.0]  
JUNOS Services Crypto [13.1-20130306.0]  
JUNOS Services SSL [13.1-20130306.0]  
JUNOS Services IPSec [13.1-20130306.0]  
JUNOS Runtime Software Suite [13.1-20130306.0]  
JUNOS Routing Software Suite [13.1-20130306.0]

lcc6-re0:

-----  
Hostname: lcc6  
Model: t1600  
JUNOS Base OS boot [13.1-20130306.0]  
JUNOS Base OS Software Suite [13.1-20130306.0]  
JUNOS Kernel Software Suite [13.1-20130306.0]  
JUNOS Crypto Software Suite [13.1-20130306.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130306.0]  
JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130306.0]  
JUNOS Online Documentation [13.1-20130306.0]  
JUNOS Services AACL Container package [13.1-20130306.0]  
JUNOS Services Application Level Gateways [13.1-20130306.0]  
JUNOS AppId Services [13.1-20130306.0]  
JUNOS Border Gateway Function package [13.1-20130306.0]  
JUNOS Services Captive Portal and Content Delivery Container package [13.1-20130306.0]  
JUNOS Services HTTP Content Management package [13.1-20130306.0]  
JUNOS IDP Services [13.1-20130306.0]  
JUNOS Services Jflow Container package [13.1-20130306.0]  
JUNOS Services LL-PDF Container package [13.1-20130306.0]  
JUNOS Services MobileNext Software package [13.1-20130306.0]  
JUNOS Services Mobile Subscriber Service Container package [13.1-20130306.0]  
JUNOS Services NAT [13.1-20130306.0]  
JUNOS Services PTSP Container package [13.1-20130306.0]  
JUNOS Services RPM [13.1-20130306.0]  
JUNOS Services Stateful Firewall [13.1-20130306.0]  
JUNOS Voice Services Container package [13.1-20130306.0]  
JUNOS Services Example Container package [13.1-20130306.0]  
JUNOS Services Crypto [13.1-20130306.0]  
JUNOS Services SSL [13.1-20130306.0]  
JUNOS Services IPSec [13.1-20130306.0]  
JUNOS Runtime Software Suite [13.1-20130306.0]  
JUNOS Routing Software Suite [13.1-20130306.0]

lcc7-re0:

-----  
Hostname: lcc7  
Model: t1600  
JUNOS Base OS boot [13.1-20130306.0]  
JUNOS Base OS Software Suite [13.1-20130306.0]  
JUNOS Kernel Software Suite [13.1-20130306.0]  
JUNOS Crypto Software Suite [13.1-20130306.0]  
JUNOS Packet Forwarding Engine Support (M/T Common) [13.1-20130306.0]



```

JUNOS Packet Forwarding Engine Support (T-Series) [13.1-20130306.0]
JUNOS Online Documentation [13.1-20130306.0]
JUNOS Services AACL Container package [13.1-20130306.0]
JUNOS Services Application Level Gateways [13.1-20130306.0]
JUNOS AppId Services [13.1-20130306.0]
JUNOS Border Gateway Function package [13.1-20130306.0]
JUNOS Services Captive Portal and Content Delivery Container package
[13.1-20130306.0]
JUNOS Services HTTP Content Management package [13.1-20130306.0]
JUNOS IDP Services [13.1-20130306.0]
JUNOS Services Jflow Container package [13.1-20130306.0]
JUNOS Services LL-PDF Container package [13.1-20130306.0]
JUNOS Services MobileNext Software package [13.1-20130306.0]
JUNOS Services Mobile Subscriber Service Container package [13.1-20130306.0]
JUNOS Services NAT [13.1-20130306.0]
JUNOS Services PTSP Container package [13.1-20130306.0]
JUNOS Services RPM [13.1-20130306.0]
JUNOS Services Stateful Firewall [13.1-20130306.0]
JUNOS Voice Services Container package [13.1-20130306.0]
JUNOS Services Example Container package [13.1-20130306.0]
JUNOS Services Crypto [13.1-20130306.0]
JUNOS Services SSL [13.1-20130306.0]
JUNOS Services IPSec [13.1-20130306.0]
JUNOS Runtime Software Suite [13.1-20130306.0]
JUNOS Routing Software Suite [13.1-20130306.0]

```

#### show version (MX Series Router)

```

user@host5> show version
Hostname: host5
Model: mx80
JUNOS Base OS boot [11.3-20110717.0]
JUNOS Base OS Software Suite [11.3-20110717.0]
JUNOS Kernel Software Suite [11.3-20110717.0]
JUNOS Crypto Software Suite [11.3-20110717.0]
JUNOS Packet Forwarding Engine Support (MX80) [11.3-20110717.0]
JUNOS Online Documentation [11.3-20110717.0]
JUNOS Routing Software Suite [11.3-20110717.0]

```

#### show version (QFX3500 Switch)

```

user@switch> show version
Hostname: switch
Model: qfx_s3500
JUNOS Base OS boot [11.1R1]
JUNOS Base OS Software Suite [11.1R1]
JUNOS Kernel Software Suite [11.1R1]
JUNOS Crypto Software Suite [11.1R1]
JUNOS Online Documentation [11.1R1]
JUNOS Enterprise Software Suite [11.1R1]
JUNOS Packet Forwarding Engine Support (QFX) [11.1R1]
JUNOS Routing Software Suite [11.1R1]

```

#### show version (QFabric System)

```

user@qfabric> show version
Hostname: qfabric
Model: qfx3000-g
Serial Number: qfsn-0123456789
QFabric System ID: f158527a-f99e-11e0-9fbd-00e081c57cda
JUNOS Base Version [12.2I20111018_0215_dc-builder]

```

**show version component all (QFabric System)**

```
user@switch> show version component all
dg1:
-
Hostname: qfabric
Model: qfx3100
JUNOS Base Version [11.3R1.6]

dg0:
-
Hostname: qfabric
Model: qfx3100
JUNOS Base Version [11.3R1.6]

NW-NG-0:
-
Hostname: qfabric
Model: qfx-jvre
JUNOS Base OS boot [11.3R1.6]
JUNOS Base OS Software Suite [11.3R1.6]
JUNOS Kernel Software Suite [11.3R1.6]
JUNOS Crypto Software Suite [11.3R1.6]
JUNOS Online Documentation [11.3R1.6]
JUNOS Enterprise Software Suite [11.3R1.6]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3R1.6]
JUNOS Routing Software Suite [11.3R1.6]

FC-0:
-
Hostname: qfabric
Model: qfx-jvre
JUNOS Base OS boot [11.3R1.6]
JUNOS Base OS Software Suite [11.3R1.6]
JUNOS Kernel Software Suite [11.3R1.6]
JUNOS Crypto Software Suite [11.3R1.6]
JUNOS Online Documentation [11.3R1.6]
JUNOS Enterprise Software Suite [11.3R1.6]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3R1.6]
JUNOS Routing Software Suite [11.3R1.6]

FC-1:
Hostname: qfabric
Model: qfx-jvre
JUNOS Base OS boot [11.3R1.6]
JUNOS Base OS Software Suite [11.3R1.6]
JUNOS Kernel Software Suite [11.3R1.6]
JUNOS Crypto Software Suite [11.3R1.6]
JUNOS Online Documentation [11.3R1.6]
JUNOS Enterprise Software Suite [11.3R1.6]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3R1.6]
JUNOS Routing Software Suite [11.3R1.6]

DRE-0:
-
Hostname: dre-0
Model: qfx-jvre
JUNOS Base OS boot [11.3R1.6]
JUNOS Base OS Software Suite [11.3R1.6]
JUNOS Kernel Software Suite [11.3R1.6]
JUNOS Crypto Software Suite [11.3R1.6]
```

```
JUNOS Online Documentation [11.3R1.6]
JUNOS Enterprise Software Suite [11.3R1.6]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3R1.6]
JUNOS Routing Software Suite [11.3R1.6]
```

```
FM-0:
```

```
-
```

```
Hostname: qfabric
Model: qfx-jvre
JUNOS Base OS boot [11.3R1.6]
JUNOS Base OS Software Suite [11.3R1.6]
JUNOS Kernel Software Suite [11.3R1.6]
JUNOS Crypto Software Suite [11.3R1.6]
JUNOS Online Documentation [11.3R1.6]
JUNOS Enterprise Software Suite [11.3R1.6]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3R1.6]
JUNOS Routing Software Suite [11.3R1.6]
```

```
nodedevice1:
```

```
-
```

```
Hostname: qfabric
Model: QFX3500
JUNOS Base OS boot [11.3R1.6]
JUNOS Base OS Software Suite [11.3R1.6]
JUNOS Kernel Software Suite [11.3R1.6]
JUNOS Crypto Software Suite [11.3R1.6]
JUNOS Online Documentation [11.3R1.6]
JUNOS Enterprise Software Suite [11.3R1.6]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3R1.6]
JUNOS Routing Software Suite [11.3R1.6]
```

```
interconnectdevice1:
```

```
-
```

```
Hostname: qfabric
Model: QFX3108
JUNOS Base OS boot [11.3R1.6]
JUNOS Base OS Software Suite [11.3R1.6]
JUNOS Kernel Software Suite [11.3R1.6]
JUNOS Crypto Software Suite [11.3R1.6]
JUNOS Online Documentation [11.3R1.6]
JUNOS Enterprise Software Suite [11.3R1.6]
JUNOS Packet Forwarding Engine Support (QFX RE) [11.3R1.6]
JUNOS Routing Software Suite [11.3R1.6]
warning: from interconnectdevice0: Disconnected
```

### show version (ACX5048 Router)


```
user@host> show version
fpc0:
Hostname: acx5k11-ac
Model: acx5048
Junos: 15.1X54-D20.3
JUNOS Base OS boot [15.1X54-D20.3]
JUNOS Online Documentation [15.1X54-D20.3]
JUNOS Crypto Software Suite [15.1X54-D20.3]
JUNOS Base OS Software Suite [15.1X54-D20.3]
JUNOS Kernel Software Suite [15.1X54-D20.3]
JUNOS Packet Forwarding Engine Support (acx5k) [15.1X54-D20.3]
JUNOS Enterprise Software Suite [15.1X54-D20.3]
JUNOS Routing Software Suite [15.1X54-D20.3]
```

```
JUNOS py-base-i386 [15.1X54-D20.3]  
JUNOS Host Software [15.1X54-D20.3]
```

#### show version (ACX5096 Router)

```
user@host> show version  
fpc0:  
Hostname: acx5k13-ac  
Model: acx5096  
Junos: 15.1X54-D20.3  
JUNOS Base OS boot [15.1X54-D20.3]  
JUNOS Online Documentation [15.1X54-D20.3]  
JUNOS Crypto Software Suite [15.1X54-D20.3]  
JUNOS Base OS Software Suite [15.1X54-D20.3]  
JUNOS Kernel Software Suite [15.1X54-D20.3]  
JUNOS Packet Forwarding Engine Support (acx5k) [15.1X54-D20.3]  
JUNOS Enterprise Software Suite [15.1X54-D20.3]  
JUNOS Routing Software Suite [15.1X54-D20.3]  
JUNOS py-base-i386 [15.1X54-D20.3]  
JUNOS Host Software [15.1X54-D20.3]
```

## start shell

<b>Syntax</b>	start shell (csh   sh) <user <i>username</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
<b>Description</b>	Exit from the CLI environment and create a UNIX-level shell. To return to the CLI, type <b>exit</b> from the shell.
<div>  <b>NOTE:</b> <ul style="list-style-type: none"> <li>To issue this command, the user must have the required login access privileges configured by including the <b>permissions</b> statement at the [edit system login class <i>class-name</i>] hierarchy level.</li> <li>UNIX wheel group membership or permissions are no longer required to issue this command.</li> </ul> </div>	
<b>Options</b>	<b>csh</b> —Create a UNIX C shell.  <b>sh</b> —Create a UNIX Bourne shell.  <b>user <i>username</i></b> —(Optional) Start the shell as another user.
<b>Additional Information</b>	When you are in the shell, the shell prompt has the following format:  <i>username@hostname%</i>  An example of the prompt is:  root@host%
<b>Required Privilege Level</b>	shell and maintenance
<b>List of Sample Output</b>	<a href="#">start shell csh on page 459</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### start shell csh

```

user@host> start shell csh
%
exit
%
```

```
username@hostname% start shell sh
%

exit
user@host>
```

## CHAPTER 10

# System Software Monitoring Commands

- `show system commit`
- `show system configuration archival`
- `show system configuration database usage`
- `show system configuration rescue`
- `show system processes`
- `show system queues`
- `show system reboot`
- `show system rollback`
- `show system snapshot`
- `show system software`
- `show system statistics`
- `show system storage`
- `show system switchover`
- `show system uptime`
- `show system virtual-memory`
- `show task`
- `show task io`
- `show task logical-system-mux`
- `show task memory`
- `show task replication`
- `test configuration`

## show system commit


<b>Syntax</b>	<pre>show system commit &lt;revision&gt; &lt;server&gt;</pre>	
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Option <b>server</b> introduced in Junos OS Release 12.1 for the PTX Series router.</p> <p>Option <b>revision</b> introduced in Junos OS Release 14.1.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.</p>	
<b>Description</b>	Display the system commit history and any pending commit operation.	
<b>Options</b>	<p><b>none</b>—Display the last 50 commit operations listed, most recent to first.</p> <p><b>revision</b>—(Optional) Display the revision number of the active configuration of the Routing Engine(s).</p> <p><b>server</b>—(Optional) Display commit server status.</p>	
	<div>  <p><b>NOTE:</b> By default, the status of the commit server is “Not running”. The commit server starts running only when a commit job is added to the batch.</p> </div>	
<b>Required Privilege Level</b>	view	
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><a href="#">clear system commit on page 171</a></li> <li><a href="#">show system commit revision</a></li> </ul>	
<b>List of Sample Output</b>	<p><a href="#">show system commit on page 464</a></p> <p><a href="#">show system commit (At a Particular Time) on page 464</a></p> <p><a href="#">show system commit (At the Next Reboot) on page 464</a></p> <p><a href="#">show system commit (Rollback Pending) on page 464</a></p> <p><a href="#">show system commit (QFX Series) on page 464</a></p>	
<b>Output Fields</b>	<p>Table 12 on page 462 describes the output fields for the <b>show system commit</b> command. Output fields are listed in the approximate order in which they appear.</p>	

Table 12: show system commit Output Fields

Field Name	Field Description	Level of Output
<b>&lt;number&gt;</b>	Displays the last 50 commit operations listed, most recent to first. The identifier <b>&lt;number&gt;</b> designates a configuration created for recovery using the <b>request system configuration rescue save</b> command.	<b>none</b>



Table 12: show system commit Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>&lt;time-stamp&gt;</b>	Date and time of the commit operation.	<b>none</b>
<b>&lt;root&gt;/&lt;username&gt;</b>	User who executed the commit operation.	<b>none</b>
<b>&lt;method&gt;</b>	Method used to execute the commit operation: <ul style="list-style-type: none"> <li>• <b>CLI</b>—CLI interactive user performed the commit operation.</li> <li>• <b>Junos XML protocol</b>—Junos XML protocol client performed the commit operation.</li> <li>• <b>synchronize</b>—The <b>commit synchronize</b> command was performed on the other Routing Engine.</li> <li>• <b>snmp</b>—An SNMP <b>set</b> request caused the commit operation.</li> <li>• <b>button</b>—A button on the router or switch was pressed to commit a rescue configuration for recovery.</li> <li>• <b>autoinstall</b>—A configuration obtained through autoinstallation was committed.</li> <li>• <b>other</b>—When there is no login name associated with the session, the values for user and client default to root and other. For example, during a reboot after package installation, mgd commits the configuration as a system commit, and there is no login associated with the commit.</li> </ul>	<b>none</b>

## Sample Output

### show system commit

```
user@host> show system commit
0   2003-07-28 19:14:04 PDT by root via other
1   2003-07-25 22:01:36 PDT by user via cli
2   2003-07-25 22:01:32 PDT by user via cli
3   2003-07-25 21:30:13 PDT by root via button
4   2003-07-25 13:46:48 PDT by user via cli
5   2003-07-25 05:33:21 PDT by root via autoinstall
...
rescue 2002-05-10 15:32:03 PDT by root via other
```

### show system commit (At a Particular Time)

```
user@host> show system commit
commit requested by root via cli at Tue May  7 15:59:00 2002
```

### show system commit (At the Next Reboot)

```
user@host> show system commit
commit requested by root via cli at reboot
```

### show system commit (Rollback Pending)

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

### show system commit (QFX Series)

```
user@switch> show system commit
0 2011-11-25 19:17:49 PST by root via cli
```

---

## show system configuration archival

---

**Syntax**    show system configuration archival

**Release Information**    Introduced in Junos OS Release 7.6.  
Command introduced in Junos OS Release 9.0 for EX Series switches.  
Command introduced in Junos OS Release 11.1 for the QFX Series.  
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

**Description**    Display directory and number of files queued for archival transfer.



**NOTE:** The [edit system configuration] hierarchy is not available on QFabric systems.

---

**Options**    This command has no options.

**Required Privilege Level**    maintenance

**List of Sample Output**    [show system configuration archival on page 465](#)

### Sample Output

show system configuration archival

```
user@host> show system configuration archival
```

```
/var/transfer/config/:  
total 8
```

## show system configuration database usage

<b>Syntax</b>	show system configuration database usage
<b>Release Information</b>	Command introduced in Junos OS Release 15.1.
<b>Description</b>	Display configuration database disk space usage statistics.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	maintenance
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><a href="#">Overview for Routing Devices</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show system configuration database usage on page 466</a>
<b>Output Fields</b>	<a href="#">Table 13 on page 466</a> describes the output fields for the <b>show system configuration database usage</b> command. Output fields are listed in the approximate order in which they appear.

Table 13: show system configuration database usage Output Fields

Field Name	Field Description
Maximum size of the database	Display the maximum available space on the disk to store the configuration database
Current database size on disk	Display the total space on the disk used by the current configuration database
Actual database usage	Display the actual space on the disk used by the current configuration data
Available database space	Display the free space available on the disk to store the configuration database

## Sample Output

### show system configuration database usage

```

user@host> show system configuration database usage
Maximum size of the database: 665.99 MB
Current database size on disk: 1.50 MB
Actual database usage: 1.48 MB
Available database space: 664.51 MB

```

## show system configuration rescue

**Syntax** show system configuration rescue

**Release Information** Command introduced before Junos OS Release 7.4.  
 Command introduced in Junos OS Release 9.0 for EX Series switches.  
 Command introduced in Junos OS Release 11.1 for the QFX Series.  
 Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.

**Description** Display a rescue configuration, if one exists.



**NOTE:** The [edit system configuration] hierarchy is not available on QFabric systems.

**Options** This command has no options.

**Required Privilege Level** maintenance

**Related Documentation** • [show system configuration archival on page 465](#)

**List of Sample Output** [show system configuration rescue on page 467](#)

## Sample Output

### show system configuration rescue

```
user@switch> show system configuration rescue
version "7.3"; groups {
  global {
    system {
      host-name router1;
      domain-name customer.net;
      domain-search [ customer.net ];
      backup-router 192.0.2.0;
      name-server {
        192.0.2.11;
        192.0.2.101;
        192.0.2.100;
        192.0.2.10;
      }
      login {
        user user1 {
          uid 928;
          class ;
          shell csh;
          authentication {
            encrypted-password "$ABC123"; ## SECRET-DATA
          }
        }
      }
    }
  }
  services {
```

```

    ftp;
    rlogin;
    rsh;
    telnet;
}
}
....
```

## show system processes

---

<b>List of Syntax</b>	<a href="#">Syntax on page 469</a> <a href="#">Syntax (EX Series Switches) on page 469</a> <a href="#">Syntax (QFX Series Switches) on page 469</a> <a href="#">Syntax (MX Series Routers) on page 469</a> <a href="#">Syntax (OCX Series) on page 469</a> <a href="#">Syntax (TX Matrix Routers) on page 470</a> <a href="#">Syntax (TX Matrix Plus Router) on page 470</a>
<b>Syntax</b>	<pre>show system processes &lt;brief   detail   extensive   summary&gt; &lt;health (pid <i>process-identifer</i>   process-name <i>process-name</i>)&gt; &lt;providers&gt; &lt;resource-limits (brief   detail) <i>process-name</i>&gt; &lt;wide&gt;</pre>
<b>Syntax (EX Series Switches)</b>	<pre>show system processes &lt;all-members&gt; &lt;brief   detail   extensive   summary&gt; &lt;health (pid <i>process-identifer</i>   process-name <i>process-name</i>)&gt; &lt;local&gt; &lt;member <i>member-id</i>&gt; &lt;providers&gt; &lt;resource-limits (brief   detail) <i>process-name</i>&gt; &lt;wide&gt;</pre>
<b>Syntax (QFX Series Switches)</b>	<pre>show system processes &lt;all-members&gt; &lt;brief   detail   extensive   summary&gt; &lt;health (pid <i>process-identifer</i>   process-name <i>process-name</i>)&gt; host-processes (brief detail ) &lt;local&gt; &lt;member <i>member-id</i>&gt; &lt;providers&gt; &lt;resource-limits (brief   detail) <i>process-name</i>&gt; &lt;wide&gt;</pre>
<b>Syntax (MX Series Routers)</b>	<pre>show system processes &lt;all-members&gt; &lt;brief   detail   extensive   summary&gt; &lt;health (pid <i>process-identifer</i>   process-name <i>process-name</i>)&gt; &lt;local&gt; &lt;member <i>member-id</i>&gt; &lt;providers&gt; &lt;resource-limits (brief   detail) <i>process-name</i>&gt; &lt;wide&gt;</pre>
<b>Syntax (OCX Series)</b>	<pre>show system processes &lt;brief   detail   extensive   summary &gt; &lt;health (pid <i>process-identifer</i>   process-name <i>process-name</i>)&gt; host-processes (brief detail ) &lt;providers&gt;</pre>

	<code>&lt;resource-limits&gt;</code> <code>&lt;wide&gt;</code>
<b>Syntax (TX Matrix Routers)</b>	<code>show system processes</code> <code>&lt;brief   detail   extensive   summary&gt;</code> <code>&lt;all-chassis   all-lcc   lcc <i>number</i>   scc&gt;</code> <code>&lt;wide&gt;</code>
<b>Syntax (TX Matrix Plus Router)</b>	<code>show system processes</code> <code>&lt;brief   detail   extensive   summary&gt;</code> <code>&lt;all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i>&gt;</code> <code>&lt;wide&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Option <b>sfc</b> introduced for the TX Matrix Plus router in Junos OS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series. Enhanced output regarding per CPU usage introduced in Junos OS Release 16.1R3 for Junos OS with upgraded FreeBSD.
<b>Description</b>	Display information about software processes that are running on the router or switch and that have controlling terminals.
<b>Options</b>	<b>none</b> —Display standard information about system processes.  <b>brief   detail   extensive   summary</b> —(Optional) Display the specified level of detail.  <b>adaptive-services</b> —(Optional) Display the configuration management process that manages the configuration for stateful firewall, Network Address Translation (NAT), intrusion detection services (IDS), and IP Security (IPsec) services on the Adaptive Services PIC.  <b>alarm-control</b> —(Optional) Display the process to configure the system alarm.  <b>all-chassis</b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display standard system process information about all the T640 routers (in a routing matrix based on the TX Matrix router) or all the T1600 or T4000 routers (in a routing matrix based on the TX Matrix Plus router) in the chassis.  <b>all-lcc</b> —(TX Matrix routers and TX Matrix Plus router only) (Optional) Display standard system process information for all T640 routers (or line-card chassis) connected to the TX Matrix router. Display standard system process information for all connected T1600 or T4000 LCCs.  <b>all-members</b> —(EX4200 switches, QFX Series Virtual Chassis, and MX Series routers ) (Optional) Display standard system process information for all members of the Virtual Chassis configuration.  <b>ancpd-service</b> —Display the Access Node Control Protocol (ANCP) process, which works with a special Internet Group Management Protocol (IGMP) session to collect outgoing interface mapping events in a scalable manner.



**application-identification**—Display the process that identifies an application using intrusion detection and prevention (IDP) to allow or deny traffic based on applications running on standard or nonstandard ports.

**audit-process**—(Optional) Display the RADIUS accounting process.

**auto-configuration**—Display the Interface Auto-Configuration process.

**bootp**—Display the process that enables a router, switch, or interface to act as a Dynamic Host Configuration Protocol (DHCP) or bootstrap protocol (BOOTP) relay agent. DHCP relaying is disabled.

**captive-portal-content-delivery**—Display the HTTP redirect service by specifying the location to which a subscriber's initial Web browser session is redirected, enabling initial provisioning and service selection for the subscriber.

**ce-l2tp-service**—(Optional) (M10, M10i, M7i, and MX Series routers only) Display the Universal Edge Layer 2 Tunneling Protocol (L2TP) process, which establishes L2TP tunnels and Point-to-Point Protocol (PPP) sessions through L2TP tunnels.

**cfm**—Display Ethernet Operations, Administration, and Maintenance (OAM) connectivity fault management (CFM) process, which can be used to monitor the physical link between two switches.

**chassis-control**—(Optional) Display the chassis management process.

**class-of-service**—(Optional) Display the class-of-service (CoS) process, which controls the router's or switch's CoS configuration.

**clksyncd-service**—Display the external clock synchronization process, which uses synchronous Ethernet (SyncE).

**craft-control**—Display the process for the I/O of the craft interface.

**database-replication**—(EX Series switches and MX Series routers only) (Optional) Display the database replication process.

**datapath-trace-service**—Display the packet path tracing process.

**dhcp-service**—(EX Series switches and MX Series routers only) (Optional) Display the Dynamic Host Configuration Protocol process, which enables a DHCP server to allocate network IP addresses and deliver configuration settings to client hosts without user intervention.

**diameter-service**—(Optional) Display the diameter process.

**disk-monitoring**—(Optional) Display the disk monitoring process, which checks the health of the hard disk drive on the Routing Engine.

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

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

**ethernet-connectivity-fault-management**—Display the process that provides IEEE 802.1ag OAM connectivity fault management (CFM) database information for CFM maintenance association end points (MEPs) in a CFM session.

**ethernet-link-fault-management**—(EX Series switches and MX Series routers only)  
(Optional) Display the process that provides the OAM link fault management (LFM) information for Ethernet interfaces.

**event-processing**—(Optional) Display the event process (eventd).

**firewall**—(Optional) Display the firewall management process, which manages the firewall configuration and enables accepting or rejecting packets that are transiting an interface on a router or switch.

**general-authentication-service**—(EX Series switches and MX Series routers only)  
(Optional) Display the general authentication process.

**health (pid *process-identifier* | process-name *process-name*)**—(Optional) Display process health information, either by process id (PID) or by process name.

**host-processes**—Display process information of processes running on the host system.  
(On OCX Series only) The following options are available:

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

**iccp-service**—Display the Inter-Chassis Communication Protocol (ICCP) process.

**idp-policy**—Display the intrusion detection and prevention (IDP) protocol process.

**ilmi**—Display the Integrated Local Management Interface (ILMI) protocol process, which provides bidirectional exchange of management information between two ATM interfaces across a physical connection.

**inet-process**—Display the IP multicast family process.

**init**—Display the process that initializes the USB modem.

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

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

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

**l2cpd-service**—Display the Layer 2 Control Protocol process, which enables features such as Layer 2 protocol tunneling and nonstop bridging.

**lACP**—(Optional) Display the Link Aggregation Control Protocol (LACP) process. LACP provides a standardized means for exchanging information between partner systems on a link to allow their link aggregation control instances to reach agreement on the identity of the LAG to which the link belongs, and then to move the link to that LAG, and to enable the transmission and reception processes for the link to function in an orderly manner.

**lcc number**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display standard system process information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display standard system process information for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches, QFX Series Virtual Chassis, and MX Series routers) (Optional) Display standard system process information for the local Virtual Chassis member.

**local-policy-decision-function**—Display the process for the Local Policy Decision Function, which regulates collection of statistics related to applications and application groups and tracking of information about dynamic subscribers and static interfaces.

**logical-system-mux**—Display the logical router multiplexer process (lrmuxd), which manages the multiple instances of the routing protocols process (rpd) on a machine running logical routers.

**mac-validation**—Display the MAC validation process, which configures MAC address validation for subscriber interfaces created on demux interfaces in dynamic profiles on MX Series routers.

**member member-id**—(EX4200 switches, QFX Series Virtual Chassis, and MX Series routers) (Optional) Display standard system process information for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**mib-process**—(Optional) Display the MIB II process, which provides the router's MIB II agent.

**mobile-ip**—(Optional) Display the Mobile IP process, which configures Junos OS Mobile IP features.

**mountd-service**—(EX Series switches and MX Series routers only) (Optional) Display the service for NFS mounts requests.

**mpls-traceroute**—(Optional) Display the MPLS Periodic Traceroute process.

**mspd**—(Optional) Display the Multiservice process.

**multicast-snooping**—(EX Series switches and MX Series routers only) (Optional) Display the multicast snooping process, which makes Layer 2 devices such as VLAN switches aware of Layer 3 information, such as the media access control (MAC) addresses of members of a multicast group.

**named-service**—(Optional) Display the DNS Server process, which is used by a router or a switch to resolve hostnames into addresses.

**neighbor-liveness**—Display the process, which specifies the maximum length of time that the router waits for its neighbor to re-establish an LDP session.

**nfsd-service**—(Optional) Display the Remote NFS Server process, which provides remote file access for applications that need NFS-based transport.

**ntp**—Display the Network Time Protocol (NTP) process, which provides the mechanisms to synchronize time and coordinate time distribution in a large, diverse network.

**packet-triggered-subscribers**—Display the packet-triggered subscribers and policy control (PTSP) process, which allows the application of policies to dynamic subscribers that are controlled by a subscriber termination device.

**peer-selection-service**—(Optional) Display the Peer Selection Service process.

**periodic-packet-services**—Display the Periodic packet management process, which is responsible for processing a variety of time-sensitive periodic tasks so that other processes can more optimally direct their resources.

**pfe**—Display the Packet Forwarding Engine management process.

**pgcp-service**—(Optional) Display the pgcpd service process running on the Routing Engine.

**pgm**—Display the Pragmatic General Multicast (PGM) protocol process, which enables a reliable transport layer for multicast applications.

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

**ppp**—(Optional) Display the Point-to-Point Protocol (PPP) process, which is the encapsulation protocol process for transporting IP traffic across point-to-point links.

**ppp-service**—Display the Universal edge PPP process, which is the encapsulation protocol process for transporting IP traffic across universal edge routers.

**pppoe**—(Optional) Display the Point-to-Point Protocol over Ethernet (PPPoE) process, which combines PPP that typically runs over broadband connections with the Ethernet link-layer protocol that allows users to connect to a network of hosts over a bridge or access concentrator.

**process-monitor**—Display the process health monitor process (pmond).

**providers**—(Optional) Display provider processes.

**redundancy-interface-process**—(Optional) Display the ASP redundancy process.

**remote-operations**—(Optional) Display the remote operations process, which provides the ping and traceroute MIBs.

**resource-cleanup**—Display the resource cleanup process.

**resource-limits (brief | detail) process-name**—(Optional) Display process resource limits.

**routing**—(Optional) Display the routing protocol process.

**sampling**—(Optional) Display the sampling process, which performs packet sampling based on particular input interfaces and various fields in the packet header.

**sbc-configuration-process**—Display the session border controller (SBC) process of the border signaling gateway (BSG).

**scc**—(TX Matrix routers only) (Optional) Display standard system process information for the TX Matrix router (or switch-card chassis).

**sdk-service**—Display the SDK Service process, which runs on the Routing Engine and is responsible for communications between the SDK application and Junos OS. Although the SDK Service process is present on the router, it is turned off by default.

**secure-neighbor-discovery**—(EX Series switches and MX Series routers only) (Optional) Display the secure Neighbor Discovery Protocol (NDP) process, which provides support for protecting NDP messages.

**send**—(Optional) Display the Secure Neighbor Discovery Protocol (SEND) process, which provides support for protecting Neighbor Discovery Protocol (NDP) messages.

**service-deployment**—(Optional) Display the service deployment process, which enables Junos OS to work with the Session and Resource Control (SRC) software.

**sfc number**—(TX Matrix Plus routers only) (Optional) Display system process information for the TX Matrix Plus router. Replace *number* with 0.

**snmp**—Display the SNMP process, which enables the monitoring of network devices from a central location and provides the router's or switch's SNMP master agent.

**sonet-aps**—Display the SONET Automatic Protection Switching (APS) process, which monitors any SONET interface that participates in APS.

**static-subscribers**—(Optional) Display the Static subscribers process, which associates subscribers with statically configured interfaces and provides dynamic service activation and activation for these subscribers.

**tunnel-oamd**—(Optional) Display the Tunnel OAM process, which enables the Operations, Administration, and Maintenance of Layer 2 tunneled networks. Layer 2 protocol tunneling (L2PT) allows service providers to send Layer 2 protocol data units (PDUs) across the provider's cloud and deliver them to Juniper Networks EX Series Ethernet Switches that are not part of the local broadcast domain.

**vrrp**—(EX Series switches and MX Series routers only) (Optional) Display the Virtual Router Redundancy Protocol (VRRP) process, which enables hosts on a LAN to make use of redundant routing platforms on that LAN without requiring more than the static configuration of a single default route on the hosts.

**watchdog**—Display the watchdog timer process, which enables the watchdog timer when Junos OS encounters a problem.

**wide**—(Optional) Display process information that might be wider than 80 columns.

**Additional Information** By default, when you issue the **show system processes** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level**

view

**Related Documentation**

- [List of Junos OS Processes on page 10](#)
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**

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[show system processes brief on page 480](#)  
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[show system processes extensive \(EX9200 Switch\) on page 481](#)  
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**Output Fields**

[Table 14 on page 477](#) describes the output fields for the **show system processes** command. Output fields are listed in the approximate order in which they appear.

Table 14: show system processes Output Fields

Field Name	Field Description	Level of Output
<b>last pid</b>	Last process identifier assigned to the process.	<b>brief extensive summary</b>
<b>load averages</b>	Three load averages followed by the current time.	<b>brief extensive summary</b>
<b>processes</b>	Number of existing processes and the number of processes in each state ( <b>sleeping, running, starting, zombies, and stopped</b> ).	<b>brief extensive summary</b>
<b>CPU</b>	<p>(For systems running Junos OS with upgraded FreeBSD only) Breakdown of the percent usage on a per-CPU basis into the following categories: <b>% user, % nice, % system, % interrupt, % idle</b>.</p> <p><b>NOTE:</b> This field shows up in the second frame of output.</p> <p>To see which platforms run Junos OS with upgraded FreeBSD, see <i>Understanding Junos OS with Upgraded FreeBSD</i>.</p>	<b>extensive</b>
<b>Mem</b>	Information about physical and virtual memory allocation.	<b>brief extensive summary</b>
<b>Active</b>	<p>Memory allocated and actively used by the program.</p> <p>When the system is under memory pressure, the pageout process reuses memory from the free, cache, <b>inact</b> and, if necessary, <b>active</b> pages. When the pageout process runs, it scans memory to see which pages are good candidates to be unmapped and freed up. Thus, the distinction between <b>Active</b> and <b>Inact</b> memory is only used by the pageout process to determine which pool of pages to free first at the time of a memory shortage.</p> <p>The pageout process first scans the <b>Inact</b> list, and checks whether the pages on this list have been accessed since the time they have been listed here. The pages that have been accessed are moved from the <b>Inact</b> list to the <b>Active</b> list. On the other hand, pages that have not been accessed become prime candidates to be freed by the pageout process. If the pageout process cannot produce enough free pages from the <b>Inact</b> list, pages from the <b>Active</b> list get freed up.</p> <p>Because the pageout process runs only when the system is under memory pressure, the pages on the <b>Inact</b> list remain untouched – even if they have not been accessed recently – when the amount of <b>Free</b> memory is adequate.</p>	<b>brief extensive summary</b>
<b>Inact</b>	<p>Memory allocated but not recently used or memory freed by the programs. Inactive memory remains mapped in the address space of one or more processes and, therefore, counts toward the RSS value of those processes.</p> <p>Any amount of memory freed by the routing protocol process might still be considered part of the <b>RES</b> value. Generally, the kernel delays the migrating of memory out of the <b>Inact</b> queue into the <b>Cache</b> or <b>Free</b> list unless there is a memory shortage.</p>	<b>brief extensive summary</b>
<b>Wired</b>	Memory that is not eligible to be swapped, usually used for in-kernel memory structures and/or memory physically locked by a process.	<b>brief extensive summary</b>

Table 14: show system processes Output Fields (*continued*)

Field Name	Field Description	Level of Output
Cache	Memory that is not associated with any program and does not need to be swapped before being reused.	brief extensive summary
Buf	Size of memory buffer used to hold data recently called from the disk.	brief extensive summary
Free	Memory that is not associated with any programs. Memory freed by a process can become <b>Inactive</b> , <b>Cache</b> , or <b>Free</b> , depending on the method used by the process to free the memory.	brief extensive summary
Swap	Information about physical and virtual memory allocation.  <b>NOTE:</b> Memory can remain swapped out indefinitely if it is not accessed again. Therefore, the show system process extensive command shows that memory is swapped to disk even though there is plenty of free memory, and such a situation is not unusual.	brief extensive summary
PID	Process identifier.	detail extensive summary
TT	Control terminal name.	none detail
STAT	Symbolic process state. The state is given by a sequence of letters. The first letter indicates the run state of the process: <ul style="list-style-type: none"> <li>• <b>D</b>—In disk or other short-term, uninterruptible wait</li> <li>• <b>I</b>—Idle (sleeping longer than about 20 seconds)</li> <li>• <b>R</b>—Runnable</li> <li>• <b>S</b>—Sleeping for less than 20 seconds</li> <li>• <b>T</b>—Stopped</li> <li>• <b>Z</b>—Dead (zombie)</li> <li>• <b>+</b> —The process is in the foreground process group of its control terminal.</li> <li>• <b>&lt;</b>—The process has raised CPU scheduling priority.</li> <li>• <b>&gt;</b>—The process has specified a soft limit on memory requirements and is currently exceeding that limit; such a process is not swapped.</li> <li>• <b>A</b>—The process requested random page replacement.</li> <li>• <b>E</b>—The process is trying to exit.</li> <li>• <b>L</b>—The process has pages locked in core.</li> <li>• <b>N</b>—The process has reduced CPU scheduling priority.</li> <li>• <b>S</b>—The process requested first-in, first-out (FIFO) page replacement.</li> <li>• <b>s</b>—The process is a session leader.</li> <li>• <b>V</b>—The process is temporarily suspended.</li> <li>• <b>W</b>—The process is swapped out.</li> <li>• <b>X</b>—The process is being traced or debugged.</li> </ul>	none detail
UID	User identifier.	detail
USERNAME	Process owner.	extensive summary



Table 14: show system processes Output Fields (*continued*)

Field Name	Field Description	Level of Output
PPID	Parent process identifier.	detail
CPU	(D)—Short-term CPU usage.  (E and S)—Raw (unweighted) CPU usage. The value of this field is used to sort the processes in the output.	detail extensive summary
RSS	Resident set size.	detail
WCHAN	Symbolic name of the wait channel.	detail
STARTED	Local time when the process started running.	detail
PRI	Current priority of the process. A lower number indicates a higher priority.	detail extensive summary
NI or NICE	UNIX "niceness" value. A lower number indicates a higher priority.	detail extensive summary
SIZE	Total size of the process (text, data, and stack), in kilobytes.	extensive summary
RES	Current amount of program resident memory, in kilobytes.  This is also known as RSS or Resident Set Size. The <b>RES</b> value includes shared library pages used by the process. Any amount of memory freed by the process might still be considered part of the <b>RES</b> value. Generally, the kernel delays the migrating of memory out of the <b>Inact</b> queue into the <b>Cache</b> or <b>Free</b> list unless there is a memory shortage. This can lead to large discrepancies between the values reported by the routing protocol process and the kernel, even after the routing protocol process has freed a large amount of memory.	extensive summary
STATE	Current state of the process (for example, <b>sleep</b> , <b>wait</b> , <b>run</b> , <b>idle</b> , <b>zombie</b> , or <b>stop</b> ).	extensive summary
TIME	(S)—Number of system and user CPU seconds that the process has used.  (None, D, and E)—Total amount of time that the command has been running.	detail extensive summary
WCPU	Weighted CPU usage.	extensive summary
COMMAND	Command that is currently running.  (MX Series routers only) When you display the software processes for an MX Series Virtual Chassis, the <b>show system processes</b> command does not display information about the relayd process.	detail extensive summary
THR	Number of threads in the process	extensive

## Sample Output

### show system processes

```

user@host> show system processes
PID TT STAT TIME COMMAND
  0 ?? DLs 0:00.70 (swapper)
  1 ?? Is 0:00.35 /sbin/init --
  2 ?? DL 0:00.00 (pagedaemon)
  3 ?? DL 0:00.00 (vmdaemon)
  4 ?? DL 0:42.37 (update)
  5 ?? DL 0:00.00 (if_jnx)
 80 ?? Ss 0:14.66 syslogd -s
 96 ?? Is 0:00.01 portmap
128 ?? Is 0:02.70 cron
173 ?? Is 0:02.24 /usr/local/sbin/sshd (sshd1)
189 ?? S 0:03.80 /sbin/watchdog -t180
190 ?? I 0:00.03 /usr/sbin/tnetd -N
191 ?? S 2:24.76 /sbin/ifd -N
192 ?? S< 0:55.44 /usr/sbin/xntpd -N
195 ?? S 0:53.11 /usr/sbin/snmpd -N
196 ?? S 1:15.73 /usr/sbin/mib2d -N
198 ?? I 0:00.75 /usr/sbin/inetd -N
2677 ?? I 0:00.01 /usr/sbin/mgd -N
2712 ?? Ss 0:00.24 rlogind
2735 ?? R 0:00.00 /bin/ps -ax
1985 p0- S 0:07.41 ./rpd -N
2713 p0 Is 0:00.24 -tcsh (tcsh)
2726 p0 S+ 0:00.07 cli

```

### show system processes brief

```

user@host> show system processes brief
last pid: 543; load averages: 0.00, 0.00, 0.00 18:29:47
37 processes: 1 running, 36 sleeping

Mem: 25M Active, 3976K Inact, 19M Wired, 8346K Buf, 202M Free
Swap: 528M Total, 64K Used, 528M Free

```

### show system processes detail

```

user@host> show system processes detail
PID UID PPID CPU PRI NI RSS WCHAN STARTED TT STAT TIME COMMAND
3151 1049 3129 2 28 0 672 - 1:13PM p0 R+ 0:00.00 ps -ax -r
  1 0 0 0 10 0 376 wait 1:51PM ?? Is 0:00.29 /sbin/ini
  2 0 0 0 -18 0 12 psleep 1:51PM ?? DL 0:00.00 (pagedae
  3 0 0 0 28 0 12 psleep 1:51PM ?? DL 0:00.00 (vmdaemo
  4 0 0 0 28 0 12 update 1:51PM ?? DL 0:07.15 (update)
  5 0 0 0 2 0 12 pfesel 1:51PM ?? IL 0:02.90 (if_pfe)
 27 0 1 0 10 0 17936 mfsidl 1:51PM ?? Is 0:00.46 mfs /dev/
 81 0 1 0 2 0 496 select 1:52PM ?? Ss 0:31.21 syslogd -
119 1 1 0 2 0 492 select 1:52PM ?? Is 0:00.00 portmap
134 0 1 0 2 0 580 select 1:52PM ?? S 0:02.95 amd -p -a
151 0 1 0 18 0 532 pause 1:52PM ?? Is 0:00.34 cron
183 0 1 0 2 0 420 select 1:52PM ?? Ss 0:00.07 /usr/loca
206 0 1 0 18 0 72 pause 1:52PM ?? S 0:00.51 /sbin/wat
207 0 1 0 2 0 520 select 1:52PM ?? I 0:00.16 /usr/sbin
208 0 1 0 2 0 536 select 1:52PM ?? S 0:08.21 /sbin/dcd
210 0 1 255 2 -12 740 select 1:52PM ?? S< 0:05.83 /usr/sbin
211 0 1 0 2 0 376 select 1:52PM ?? S 0:00.03 /usr/sbin
215 0 1 0 2 0 548 select 1:52PM ?? I 0:00.50 /usr/sbin

```

```

219  0  1  0  3  0  540 ttyin  1:52PM  v0  Is+  0:00.02 /usr/libe
220  0  1  0  3  0  540 ttyin  1:52PM  v1  Is+  0:00.01 /usr/libe
221  0  1  0  3  0  540 ttyin  1:52PM  v2  Is+  0:00.01 /usr/libe
222  0  1  0  3  0  540 ttyin  1:52PM  v3  Is+  0:00.01 /usr/libe
735  0  1  0  2  0  468 select  2:47PM  ??  S    0:19.14 /usr/sbin
736  0  1  0  2  0  212 select  2:47PM  ??  S    0:14.13 /usr/sbin
1380 0  1  0  3  0  888 ttyin  7:32PM  d0  Is+  0:00.46 bash
3019 0 207 0  2  0  636 select 10:49AM  ??  Ss   0:02.93 tnp.chass
3122 0 1380 0  2  0 1764 select 12:33PM  d0  S    0:00.77 ./rpd -N
3128 0 215 0  2  0  580 select 12:45PM  ??  Ss   0:00.12 rlogind
3129 1049 3128 0 18 0 944 pause 12:45PM  p0  Ss   0:00.14 -tcsh (tc
      0  0  0  0 -18 0  0 sched  1:51PM  ??  DLs  0:00.10 (swapper

```

### show system processes extensive

```
user@host> show system processes extensive
```

```
Mem: 241M Active, 99M Inact, 78M Wired, 325M Cache, 69M Buf, 1251M Free
Swap: 2048M Total, 2048M Free
```

PID	USERNAME	THR	PRI	NICE	SIZE	RES	STATE	TIME	WCPU	COMMAND
11	root	1	171	52	OK	12K	RUN	807.5H	98.73%	idle
13	root	1	-20	-139	OK	12K	WAIT	36:17	0.00%	swi7: clock sio
1499	root	1	96	0	7212K	3040K	select	34:01	0.00%	license-check
1621	root	1	96	0	20968K	11216K	select	20:25	0.00%	mib2d
1465	root	2	8	-88	115M	11748K	nanslp	14:32	0.00%	chassisd
1478	root	1	96	0	6336K	3816K	select	11:28	0.00%	ppmd
20	root	1	-68	-187	OK	12K	WAIT	10:28	0.00%	irq10: em0 em1+++*
1490	root	1	96	0	11792K	4336K	select	9:44	0.00%	shm-rtssdbd
1618	root	1	96	0	39584K	7464K	select	8:47	0.00%	pfed
1622	root	1	96	0	15268K	10988K	select	6:16	0.00%	snmpd
1466	root	1	96	0	7408K	2896K	select	5:44	0.00%	alarmd
7	root	1	-16	0	OK	12K	client	5:09	0.00%	ifstate notify
1480	root	1	96	0	5388K	2660K	select	4:29	0.00%	ksyncd
12	root	1	-40	-159	OK	12K	WAIT	4:15	0.00%	swi2: netisr 0
1462	root	1	96	0	1836K	1240K	select	3:57	0.00%	bslockd
55	root	1	-16	0	OK	12K	-	3:44	0.00%	schedcpu
1392	root	1	16	0	OK	12K	bcmsem	3:37	0.00%	bcmLINK.0
47	root	1	-16	0	OK	12K	psleep	3:25	0.00%	vmkmemdaemon
36	root	1	20	0	OK	12K	syncer	2:46	0.00%	syncer
1484	root	1	96	0	7484K	3428K	select	2:38	0.00%	clksyncd
1616	root	1	96	0	4848K	2848K	select	2:18	0.00%	irsd
1487	root	1	96	0	32800K	6992K	select	2:10	0.00%	smid
1623	root	1	96	0	34616K	5464K	select	2:01	0.00%	dcd
15	root	1	-16	0	OK	12K	-	1:59	0.00%	yarrow
49	root	1	-16	0	OK	12K	.	1:51	0.00%	ddostasks

### show system processes extensive (EX9200 Switch)

```
user@switch> show system processes extensive
```

```
last pid: 3372; load averages: 0.02, 0.02, 0.00 up 0+01:42:22 16:39:57
151 processes: 4 running, 131 sleeping, 1 zombie, 15 waiting
```

```
Mem: 935M Active, 122M Inact, 108M Wired, 838M Cache, 214M Buf, 5872M Free
Swap: 8192M Total, 8192M Free
```

PID	USERNAME	THR	PRI	NICE	SIZE	RES	STATE	TIME	WCPU	COMMAND
10	root	1	171	52	OK	16K	RUN	96:34	92.19%	idle
3317	root	1	97	0	40412K	30944K	select	0:00	5.13%	mgd
3316	root	1	96	0	26672K	20516K	select	0:00	3.08%	cli

```

1626 root      2   8  -88   124M 20332K nanslp   3:19  2.39% chassisd
260 root      1  -8    0    OK    16K mdwait   0:16  0.00% md16
19 root       1 -68 -187    OK    16K WAIT    0:12  0.00% irq11: em0 em1
em2*
1642 root     1  96    0  8052K 3936K RUN     0:10  0.00% clksyncd
11 root      1 -20 -139    OK    16K WAIT    0:07  0.00% swi7: clock sio
154 root     1  -8    0    OK    16K mdwait   0:06  0.00% md8
1784 root     1  96    0   98M 33720K select   0:05  0.00% authd
1646 root     1  96    0  7776K 2944K select   0:03  0.00% license-check
1807 root     1  96    0 41340K 9944K select   0:02  0.00% mib2d

```

[...Output truncated...]

### show system processes host processes (OCX1100 Switch)

```

user@switch> show system processes host processes
fpc0:
-----
top - 14:14:32 up  2:05,  0 users,  load average: 0.11, 0.39, 0.39
Tasks: 101 total,  1 running, 98 sleeping,  0 stopped,  2 zombie
Cpu(s):  3.1%us,  2.2%sy,  0.0%ni, 94.2%id,  0.4%wa,  0.0%hi,  0.0%si,  0.0%st
Mem:   3881300k total, 2667040k used, 1214260k free,  53232k buffers
Swap:   15620k total,    0k used,   15620k free,  808492k cached

  PID USER      PR  NI  VIRT  RES  SHR  S  %CPU  %MEM    TIME+  COMMAND
 2780 root       20   0 1860m 1.5g 3780 S   14  41.7 20:56.05 kvm
 1482 bind       20   0 24676 5912 1944 S    2   0.2  0:00.07 named
 4631 root       20   0  648m  94m  13m S    2   2.5  4:19.59 dcpfe
 9230 root       20   0 15208 1092  832 R    2   0.0  0:00.01 top
    1 root       20   0  4216  660  576 S    0   0.0  2:09.61 init
    2 root       20   0      0    0    0 S    0   0.0  0:00.00 kthreadd
    3 root       20   0      0    0    0 S    0   0.0  0:00.21 ksoftirqd/0
    4 root       20   0      0    0    0 S    0   0.0  0:00.00 kworker/0:0
    5 root        0 -20      0    0    0 S    0   0.0  0:00.00 kworker/0:0H
    7 root       RT    0      0    0    0 S    0   0.0  0:00.52 migration/0
    8 root       20   0      0    0    0 S    0   0.0  0:04.36 rcu_preempt
    9 root       20   0      0    0    0 S    0   0.0  0:00.00 rcu_bh
   10 root       20   0      0    0    0 S    0   0.0  0:00.00 rcu_sched
   11 root       RT    0      0    0    0 S    0   0.0  0:00.53 migration/1

```

[...Output truncated...]

### 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  (vmddaemon)
    4  ??  DL     0:00.00  (bufddaemon)
    5  ??  DL     0:00.04  (syncer)
    6  ??  DL     0:00.00  (netddaemon)
    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) (user)/dev/ttyp2 (mgd)
36867 ?? S      0:03.14 /usr/sbin/rpd -N
36874 ?? S      0:00.08 /usr/sbin/lmpd
36876 ?? S      0:00.17 /usr/sbin/lacpd -N
36877 ?? S      0:00.15 /usr/sbin/bfdd -N
36878 ?? S      0:05.05 /usr/sbin/ppmd -N
36907 ?? S      0:25.07 /usr/sbin/chassisd -N
37775 ?? S      0:00.01 /usr/sbin/bdbrepd -N
45727 ?? S      0:00.02 /usr/sbin/xntpd -j -N -g (ntpd)
45729 ?? S      0:00.38 /usr/sbin/l2ald -N
45730 ?? S<     0:00.12 /usr/sbin/apsd -N
45731 ?? SN     0:00.10 /usr/sbin/sampled -N
45732 ?? S      0:00.03 /usr/sbin/ilmid -N
45733 ?? S      0:00.09 /usr/sbin/rmopd -N
45734 ?? S      0:00.30 /usr/sbin/cosd
45735 ?? I      0:00.00 /usr/sbin/rtspd -N
45736 ?? S      0:00.06 /usr/sbin/fsad -N
45737 ?? S      0:00.05 /usr/sbin/rdd -N
45738 ?? S      0:00.10 /usr/sbin/pppd -N
45739 ?? S      0:00.05 /usr/sbin/dfcd -N
45740 ?? S      0:00.07 /usr/sbin/lfmd -N
45741 ?? S      0:00.01 /usr/sbin/mplsoamd -N
45742 ?? I      0:00.01 /usr/sbin/sendd -N
45743 ?? S      0:00.08 /usr/sbin/appidd -N
45744 ?? S      0:00.05 /usr/sbin/mspd -N
45745 ?? S      0:00.25 /usr/sbin/jdiameterd -N
45746 ?? S      0:00.10 /usr/sbin/pfed -N
45747 ?? S      0:00.19 /usr/sbin/lpdfd -N
45748 ?? S      0:00.63 /sbin/dcd -N
45750 ?? S      0:00.45 /usr/sbin/mib2d -N
45751 ?? S      0:00.15 /usr/sbin/dfwd -N
45752 ?? S      0:00.15 /usr/sbin/irsd -N
45764 ?? S      0:20.59 /usr/sbin/snmpd -N
56479 ?? Ss     0:00.00 mgd: (mgd) (root) (mgd)
56480 ?? R      0:00.00 /bin/ps -ax
1142 d0- I      0:00.01 /usr/sbin/usbd -N
1160 d0- S      0:29.17 /usr/sbin/eventd -N -r -s -A
6527 d0 Is+    0:00.00 /usr/libexec/getty std.9600 ttyd0
2392 p1 Is     0:00.00 login [pam] (login)
2393 p1 I      0:00.00 -csh (csh)
2394 p1 I      0:00.00 su -
2395 p1 I+     0:00.01 -su (csh)
23782 p2 Is     0:00.00 login [pam] (login)
23881 p2 I      0:00.00 -csh (csh)
23925 p2 S+     0:00.03 cli
7332 p3 Is     0:00.00 login [pam] (login)
7333 p3 I      0:00.00 -csh (csh)
23780 p3 S+     0:00.02 telnet aj

```

lcc0-re0:

```

-----
PID  TT  STAT      TIME COMMAND
 0  ??  Wls      0:00.00 [swapper]
 1  ??  ILs      0:00.16 /packages/mnt/jbase/sbin/init --
 2  ??  DL       0:00.01 [g_event]
 3  ??  DL       0:00.16 [g_up]
 4  ??  DL       0:00.11 [g_down]
 5  ??  DL       0:00.00 [thread taskq]
 6  ??  DL       0:00.00 [kqueue taskq]
 7  ??  DL       0:00.00 [pagedaemon]
 8  ??  DL       0:00.00 [vmdaemon]
 9  ??  DL       0:01.77 [pagezero]
10  ??  DL       0:00.00 [ktrace]
11  ??  RL      17:22.31 [idle]
12  ??  WL       0:00.32 [swi2: net]
13  ??  WL       0:01.21 [swi7: clock sio]
14  ??  WL       0:00.00 [swi6: vm]
15  ??  DL       0:00.10 [yarrow]
16  ??  WL       0:00.00 [swi9: +]
17  ??  WL       0:00.00 [swi8: +]
18  ??  WL       0:00.00 [swi5: cambio]
19  ??  WL       0:00.00 [swi9: task queue]
20  ??  WL       0:02.73 [irq10: bcm0 uhci1*]
21  ??  WL       0:00.02 [irq11: cb0 uhci0+*]
22  ??  DL       0:00.00 [usb0]
23  ??  DL       0:00.00 [usbtask]
24  ??  DL       0:00.00 [usb1]
25  ??  DL       0:00.05 [usb2]
26  ??  DL       0:00.00 [usb3]
27  ??  DL       0:00.00 [usb4]
28  ??  DL       0:00.00 [usb5]
29  ??  DL       0:00.04 [usb6]
30  ??  DL       0:00.00 [usb7]
31  ??  WL       0:00.00 [irq14: ata0]
32  ??  WL       0:00.00 [irq15: ata1]
33  ??  WL       0:00.00 [irq1: atkbd0]
34  ??  WL       0:00.00 [swi0: sio]
35  ??  WL       0:00.00 [swi3: ip6opt ipopt]
36  ??  WL       0:00.00 [swi4: ip6mismatch+]
37  ??  WL       0:00.00 [swi1: ipfwd]
38  ??  DL       0:00.00 [bufdaemon]
39  ??  DL       0:00.00 [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.snptd -N
1534 ?? I 0:00.00 /usr/sbin/tnp.snptc -N
1536 ?? S 0:00.01 /usr/sbin/smartd -N
1540 ?? I 0:00.07 /usr/sbin/jcsd -N
1541 ?? S 0:00.11 /usr/sbin/idpd -N
1542 ?? I 0:00.00 /usr/libexec/getty Pc ttyv0
2089 ?? DL 0:00.01 [peer proxy]
2090 ?? DL 0:00.01 [peer proxy]
2091 ?? DL 0:00.01 [peer proxy]
2657 ?? S 0:00.02 /usr/sbin/dfwd -N
2658 ?? S 0:00.02 /sbin/dcd -N
2659 ?? S 0:00.05 /usr/sbin/snmpd -N
2660 ?? S 0:00.01 /usr/sbin/mib2d -N
2661 ?? S 0:00.01 /usr/sbin/pfed -N
2662 ?? S 0:00.01 /usr/sbin/irsd -N
2667 ?? S 0:00.13 /usr/sbin/ksyncd -N
2690 ?? Ss 0:00.00 mgd: (mgd) (root) (mgd)
2691 ?? R 0:00.00 /bin/ps -ax
1164 d0- S 0:00.00 /usr/sbin/usbd -N
1182 d0- S 0:00.34 /usr/sbin/eventd -N -r -s -A
1543 d0 Is+ 0:00.00 /usr/libexec/getty std.9600 ttyd0

```

lcc1-re0:

```

-----
PID TT STAT TIME COMMAND
 0 ?? Wls 0:00.00 [swapper]
 1 ?? ILs 0:00.17 /packages/mnt/jbase/sbin/init --
 2 ?? DL 0:00.01 [g_event]
 3 ?? DL 0:00.16 [g_up]
 4 ?? DL 0:00.11 [g_down]
 5 ?? DL 0:00.00 [thread taskq]
 6 ?? DL 0:00.00 [kqueue taskq]
 7 ?? DL 0:00.00 [pagedaemon]
 8 ?? DL 0:00.00 [vmdaemon]
 9 ?? DL 0:01.77 [pagezero]
10 ?? DL 0:00.00 [ktrace]
11 ?? RL 17:22.83 [idle]
12 ?? WL 0:00.35 [swi2: net]
13 ?? WL 0:01.20 [swi7: clock sio]
14 ?? WL 0:00.00 [swi6: vm]
15 ?? DL 0:00.10 [yarrow]

```

```

16 ?? WL 0:00.00 [swi9: +]
17 ?? WL 0:00.00 [swi8: +]
18 ?? WL 0:00.00 [swi5: cambio]
19 ?? WL 0:00.00 [swi9: task queue]
20 ?? WL 0:02.87 [irq10: bcm0 uhci1*]
21 ?? WL 0:00.02 [irq11: cb0 uhci0+*]
22 ?? DL 0:00.00 [usb0]
23 ?? DL 0:00.00 [usbtask]
24 ?? DL 0:00.00 [usb1]
25 ?? DL 0:00.05 [usb2]
26 ?? DL 0:00.00 [usb3]
27 ?? DL 0:00.00 [usb4]
28 ?? DL 0:00.00 [usb5]
29 ?? DL 0:00.04 [usb6]
30 ?? DL 0:00.00 [usb7]
31 ?? WL 0:00.00 [irq14: ata0]
32 ?? WL 0:00.00 [irq15: ata1]
33 ?? WL 0:00.00 [irq1: atkbd0]
34 ?? WL 0:00.00 [swi0: sio]
35 ?? WL 0:00.00 [swi3: ip6opt ipopt]
36 ?? WL 0:00.00 [swi4: ip6mismatch+]
37 ?? WL 0:00.00 [swi1: ipfwd]
38 ?? DL 0:00.00 [bufdaemon]
39 ?? DL 0:00.00 [vn1ru]
40 ?? DL 0:00.01 [syncer]
41 ?? DL 0:00.00 [softdepflush]
42 ?? DL 0:00.00 [netdaemon]
43 ?? DL 0:00.00 [vmuncachedaemon]
44 ?? DL 0:00.00 [if_pic_listen]
45 ?? DL 0:00.02 [vmkmemdaemon]
46 ?? DL 0:00.01 [cb_poll]
47 ?? DL 0:00.00 [if_pfe_listen]
48 ?? DL 0:00.00 [scs_housekeeping]
49 ?? IL 0:00.00 [kern_dump_proc]
50 ?? IL 0:00.00 [nfsiod 0]
51 ?? IL 0:00.00 [nfsiod 1]
52 ?? IL 0:00.00 [nfsiod 2]
53 ?? IL 0:00.00 [nfsiod 3]
54 ?? DL 0:00.02 [schedcpu]
55 ?? DL 0:00.75 [md0]
77 ?? DL 0:03.40 [md1]
98 ?? DL 0:00.37 [md2]
116 ?? DL 0:00.02 [md3]
137 ?? DL 0:00.56 [md4]
158 ?? DL 0:00.15 [md5]
179 ?? DL 0:00.00 [md6]
215 ?? DL 0:00.03 [md7]
225 ?? DL 0:00.03 [md8]
1052 ?? DL 0:00.00 [jsr_kkcm]
1337 ?? SL 0:00.09 [bcmTX]
1338 ?? SL 0:00.10 [bcmXGS3AsyncTX]
1339 ?? SL 0:03.10 [bcmLINK.0]
1344 ?? Is 0:00.00 /usr/sbin/cron
1496 ?? S 0:00.00 /sbin/watchdog -t-1
1497 ?? S 0:00.05 /usr/libexec/bslockd -mp -N
1498 ?? I 0:00.01 /usr/sbin/tnetd -N
1500 ?? S 0:04.97 /usr/sbin/chassisd -N
1501 ?? S 0:00.04 /usr/sbin/alarmd -N
1502 ?? I 0:00.40 /usr/sbin/craftd -N
1503 ?? S 0:00.08 /usr/sbin/mgd -N
1506 ?? I 0:00.04 /usr/sbin/inetd -N

```

```

1507 ?? I      0:00.00 /usr/sbin/tnp.sntpd -N
1508 ?? I      0:00.00 /usr/sbin/tnp.sntpc -N
1510 ?? S      0:00.01 /usr/sbin/smartd -N
1514 ?? I      0:00.07 /usr/sbin/jcsd -N
1515 ?? S      0:00.18 /usr/sbin/idpd -N
1516 ?? I      0:00.00 /usr/libexec/getty Pc ttyv0
2068 ?? DL     0:00.01 [peer proxy]
2069 ?? DL     0:00.01 [peer proxy]
2070 ?? DL     0:00.01 [peer proxy]
2666 ?? S      0:00.02 /sbin/dcd -N
2667 ?? S      0:00.01 /usr/sbin/irsd -N
2668 ?? S      0:00.01 /usr/sbin/pfed -N
2669 ?? S      0:00.05 /usr/sbin/snmpd -N
2670 ?? S      0:00.01 /usr/sbin/mib2d -N
2671 ?? S      0:00.02 /usr/sbin/dfwd -N
2675 ?? S      0:00.13 /usr/sbin/ksyncd -N
2699 ?? Ss     0:00.00 mgd: (mgd) (root) (mgd)
2700 ?? R      0:00.00 /bin/ps -ax
1138 d0- S     0:00.00 /usr/sbin/usbd -N
1156 d0- S     0:00.37 /usr/sbin/eventd -N -r -s -A
1517 d0 Is+    0:00.00 /usr/libexec/getty std.9600 ttyd0

```

lcc2-re0:

```

-----
PID TT  STAT      TIME COMMAND
  0 ??  Wls     0:00.00 [swapper]
  1 ??  ILs     0:00.18 /packages/mnt/jbase/sbin/init --
  2 ??  DL      0:00.01 [g_event]
  3 ??  DL      0:00.17 [g_up]
  4 ??  DL      0:00.12 [g_down]
  5 ??  DL      0:00.00 [thread taskq]
  6 ??  DL      0:00.00 [kqueue taskq]
  7 ??  DL      0:00.00 [pagedaemon]
  8 ??  DL      0:00.00 [vmdaemon]
  9 ??  DL      0:01.77 [pagezero]
 10 ??  DL      0:00.00 [ktrace]
 11 ??  RL     17:19.13 [idle]
 12 ??  WL      0:00.36 [swi2: net]
 13 ??  WL      0:01.20 [swi7: clock sio]
 14 ??  WL      0:00.00 [swi6: vm]
 15 ??  DL      0:00.13 [yarrow]
 16 ??  WL      0:00.00 [swi9: +]
 17 ??  WL      0:00.00 [swi8: +]
 18 ??  WL      0:00.00 [swi5: cambio]
 19 ??  WL      0:00.00 [swi9: task queue]
 20 ??  WL      0:03.03 [irq10: bcm0 uhci1*]
 21 ??  WL      0:00.02 [irq11: cb0 uhci0+*]
 22 ??  DL      0:00.00 [usb0]
 23 ??  DL      0:00.00 [usbtask]
 24 ??  DL      0:00.00 [usb1]
 25 ??  DL      0:00.05 [usb2]
 26 ??  DL      0:00.00 [usb3]
 27 ??  DL      0:00.00 [usb4]
 28 ??  DL      0:00.00 [usb5]
 29 ??  DL      0:00.04 [usb6]
 30 ??  DL      0:00.00 [usb7]
 31 ??  WL      0:00.00 [irq14: ata0]
 32 ??  WL      0:00.00 [irq15: ata1]
 33 ??  WL      0:00.00 [irq1: atkbd0]
 34 ??  WL      0:00.00 [swi0: sio]
 35 ??  WL      0:00.00 [swi3: ip6opt ipopt]

```

```

36 ?? WL 0:00.00 [swi4: ip6mismatch+]
37 ?? WL 0:00.00 [swi1: ipfwd]
38 ?? DL 0:00.00 [bufdaemon]
39 ?? DL 0:00.00 [vn1ru]
40 ?? DL 0:00.01 [syncer]
41 ?? DL 0:00.00 [softdepflush]
42 ?? DL 0:00.00 [netdaemon]
43 ?? DL 0:00.00 [vmuncachedaemon]
44 ?? DL 0:00.00 [if_pic_listen]
45 ?? DL 0:00.02 [vmkmemdaemon]
46 ?? DL 0:00.01 [cb_poll]
47 ?? DL 0:00.00 [if_pfe_listen]
48 ?? DL 0:00.00 [scs_housekeeping]
49 ?? IL 0:00.00 [kern_dump_proc]
50 ?? IL 0:00.00 [nfsiod 0]
51 ?? IL 0:00.00 [nfsiod 1]
52 ?? IL 0:00.00 [nfsiod 2]
53 ?? IL 0:00.00 [nfsiod 3]
54 ?? DL 0:00.02 [schedcpu]
55 ?? DL 0:00.75 [md0]
77 ?? DL 0:03.48 [md1]
98 ?? DL 0:00.59 [md2]
116 ?? DL 0:00.02 [md3]
137 ?? DL 0:00.56 [md4]
158 ?? DL 0:00.15 [md5]
179 ?? DL 0:00.00 [md6]
215 ?? DL 0:00.03 [md7]
225 ?? DL 0:00.03 [md8]
1052 ?? DL 0:00.00 [jsr_kkcm]
1337 ?? SL 0:00.09 [bcmTX]
1338 ?? SL 0:00.10 [bcmXGS3AsyncTX]
1339 ?? SL 0:03.22 [bcmLINK.0]
1344 ?? Is 0:00.00 /usr/sbin/cron
1496 ?? S 0:00.00 /sbin/watchdog -t-1
1497 ?? S 0:00.05 /usr/libexec/bslockd -mp -N
1498 ?? S 0:00.01 /usr/sbin/tnetd -N
1500 ?? R 0:05.17 /usr/sbin/chassisd -N
1501 ?? S 0:00.04 /usr/sbin/alarmd -N
1502 ?? I 0:00.39 /usr/sbin/craftd -N
1503 ?? S 0:00.08 /usr/sbin/mgd -N
1506 ?? I 0:00.05 /usr/sbin/inetd -N
1507 ?? I 0:00.00 /usr/sbin/tnp.sntpd -N
1508 ?? I 0:00.00 /usr/sbin/tnp.sntpc -N
1510 ?? S 0:00.01 /usr/sbin/smartd -N
1514 ?? I 0:00.07 /usr/sbin/jcsd -N
1515 ?? S 0:00.17 /usr/sbin/idpd -N
1516 ?? I 0:00.00 /usr/libexec/getty Pc ttyv0
2591 ?? DL 0:00.01 [peer proxy]
2592 ?? DL 0:00.01 [peer proxy]
2593 ?? DL 0:00.01 [peer proxy]
2597 ?? DL 0:00.00 [peer proxy]
3192 ?? S 0:00.01 /usr/sbin/irsd -N
3193 ?? S 0:00.05 /usr/sbin/snmpd -N
3194 ?? S 0:00.02 /sbin/dcd -N
3195 ?? S 0:00.01 /usr/sbin/pfed -N
3196 ?? S 0:00.01 /usr/sbin/mib2d -N
3197 ?? S 0:00.02 /usr/sbin/dfwd -N
3198 ?? S 0:00.13 /usr/sbin/ksyncd -N
3228 ?? Ss 0:00.00 mgd: (mgd) (root) (mgd)
3229 ?? R 0:00.00 /bin/ps -ax
1138 d0- S 0:00.00 /usr/sbin/usbd -N

```

```

1156 d0- S      0:00.42 /usr/sbin/eventd -N -r -s -A
1517 d0 Is+    0:00.00 /usr/libexec/getty std.9600 ttyd0
...

```

### show system processes sfc (TX Matrix Plus Router)

```

user@host> show system processes sfc 0
sfc0-re0:

```

```

-----
PID  TT  STAT      TIME COMMAND
 0  ??  WLS      0:00.00 [swapper]
 1  ??  SLs      0:00.18 /packages/mnt/jbase/sbin/init --
 2  ??  DL       0:00.20 [g_event]
 3  ??  DL       0:00.39 [g_up]
 4  ??  DL       0:00.32 [g_down]
 5  ??  DL       0:00.00 [thread taskq]
 6  ??  DL       0:00.09 [kqueue taskq]
 7  ??  DL       0:00.01 [pagedaemon]
 8  ??  DL       0:00.00 [vmdaemon]
 9  ??  DL       0:06.63 [pagezero]
10  ??  DL       0:00.00 [ktrace]
11  ??  RL      312:09.00 [idle]
12  ??  WL       0:11.07 [swi2: net]
13  ??  WL       0:27.70 [swi7: clock sio]
14  ??  WL       0:00.00 [swi6: vm]
15  ??  DL       0:03.03 [yarrow]
16  ??  WL       0:00.00 [swi9: +]
17  ??  WL       0:00.00 [swi8: +]
18  ??  WL       0:00.00 [swi5: cambio]
19  ??  WL       0:00.00 [swi9: task queue]
20  ??  WL       0:11.46 [irq16: uhci0 uhci*]
21  ??  DL       0:00.00 [usb0]
22  ??  DL       0:00.00 [usbtask]
23  ??  WL       0:39.63 [irq17: uhci1 uhci*]
24  ??  DL       0:00.00 [usb1]
25  ??  WL       0:00.00 [irq18: uhci2 uhci*]
26  ??  DL       0:00.84 [usb2]
27  ??  DL       0:00.00 [usb3]
28  ??  DL       0:00.00 [usb4]
29  ??  DL       0:00.00 [usb5]
30  ??  DL       0:00.73 [usb6]
31  ??  DL       0:00.00 [usb7]
32  ??  WL       0:00.00 [irq14: ata0]
33  ??  WL       0:00.00 [irq15: ata1]
34  ??  WL       0:00.00 [irq1: atkbd0]
35  ??  WL       0:00.00 [swi0: sio]
36  ??  WL       0:00.00 [irq11: isab0]
37  ??  WL       0:00.00 [swi3: ip6opt ipopt]
38  ??  WL       0:00.00 [swi4: ip6mismatch+]
39  ??  WL       0:00.00 [swi1: ipfwd]
40  ??  DL       0:00.02 [bufdaemon]
41  ??  DL       0:00.02 [vnlru]
42  ??  DL       0:00.39 [syncer]
43  ??  DL       0:00.05 [softdepflush]
44  ??  DL       0:00.00 [netdaemon]
45  ??  DL       0:00.02 [vmuncachedaemon]
46  ??  DL       0:00.00 [if_pic_listen]
47  ??  DL       0:00.35 [vmkmemdaemon]
48  ??  DL       0:00.00 [cb_poll]
49  ??  DL       0:00.06 [if_pfe_listen]
50  ??  DL       0:00.00 [scs_housekeeping]

```

```

51 ?? IL 0:00.00 [kern_dump_proc]
52 ?? IL 0:00.00 [nfsiod 0]
53 ?? IL 0:00.00 [nfsiod 1]
54 ?? IL 0:00.00 [nfsiod 2]
55 ?? IL 0:00.00 [nfsiod 3]
56 ?? DL 0:00.37 [schedcpu]
57 ?? DL 0:00.56 [md0]
79 ?? DL 0:02.58 [md1]
100 ?? DL 0:00.03 [md2]
118 ?? DL 0:00.01 [md3]
139 ?? DL 0:00.95 [md4]
160 ?? DL 0:00.12 [md5]
181 ?? DL 0:00.00 [md6]
217 ?? DL 0:00.02 [md7]
227 ?? DL 0:00.05 [md8]
1341 ?? SL 0:01.35 [bcmTX]
1342 ?? SL 0:01.69 [bcmXGS3AsyncTX]
1343 ?? SL 0:41.57 [bcmLINK.0]
1345 ?? SL 0:33.97 [bcmLINK.1]
1350 ?? Is 0:00.01 /usr/sbin/cron
1502 ?? S 0:00.01 /sbin/watchdog -t-1
1503 ?? S 0:00.86 /usr/libexec/bslockd -mp -N
1504 ?? I 0:00.01 /usr/sbin/tnetd -N
1507 ?? S 0:01.32 /usr/sbin/alarmd -N
1508 ?? S 0:14.54 /usr/sbin/craftd -N
1509 ?? S 0:01.20 /usr/sbin/mgd -N
1512 ?? S 0:00.05 /usr/sbin/inetd -N
1513 ?? S 0:00.10 /usr/sbin/tnp.sntpd -N
1517 ?? S 0:00.11 /usr/sbin/smartd -N
1525 ?? S 0:01.11 /usr/sbin/idpd -N
1526 ?? S 0:01.43 /usr/sbin/license-check -U -M -p 10 -i 10
1527 ?? I 0:00.01 /usr/libexec/getty Pc ttyv0
1616 ?? DL 0:00.30 [peer proxy]
1617 ?? DL 0:00.32 [peer proxy]
1618 ?? DL 0:00.34 [peer proxy]
1619 ?? DL 0:00.30 [peer proxy]
2391 ?? Is 0:00.01 telnetd
7331 ?? Ss 0:00.03 telnetd
9538 ?? DL 0:01.16 [jsr_kkcm]
9613 ?? DL 0:00.18 [peer proxy]
23781 ?? Ss 0:00.01 telnetd
23926 ?? Ss 0:00.03 mgd: (mgd) (user)/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/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 0:00.31 /usr/sbin/cosd
45735 ?? I 0:00.00 /usr/sbin/rtspd -N
45736 ?? S 0:00.06 /usr/sbin/fsad -N
45737 ?? S 0:00.05 /usr/sbin/rdd -N
45738 ?? S 0:00.10 /usr/sbin/pppd -N
45739 ?? S 0:00.05 /usr/sbin/dfcd -N

```

```

45740 ?? S      0:00.08 /usr/sbin/lfmd -N
45741 ?? S      0:00.01 /usr/sbin/mplsoamd -N
45742 ?? I      0:00.01 /usr/sbin/sendd -N
45743 ?? S      0:00.08 /usr/sbin/appidd -N
45744 ?? S      0:00.05 /usr/sbin/mspd -N
45745 ?? S      0:00.27 /usr/sbin/jdiameterd -N
45746 ?? S      0:00.10 /usr/sbin/pfed -N
45747 ?? S      0:00.19 /usr/sbin/lpdfd -N
45748 ?? S      0:00.64 /sbin/dcd -N
45750 ?? S      0:00.46 /usr/sbin/mib2d -N
45751 ?? S      0:00.16 /usr/sbin/dfwd -N
45752 ?? S      0:00.15 /usr/sbin/irsd -N
45764 ?? S      0:20.60 /usr/sbin/snmpd -N
56481 ?? Ss     0:00.02 telnetd
56548 ?? Rs     0:00.19 mgd: (mgd) (user)/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 -jpw
1138 d0- S      0:00.00      /usr/sbin/usbd -N
1156 d0- S      0:00.50      /usr/sbin/eventd -N -r -s -A
1517 d0 Is+    0:00.00      /usr/libexec/getty std.9600 ttyd0

```

### show system processes (QFX Series and OCX Series)

```

user@switch> show system processes
PID TT STAT      TIME COMMAND
  0 ?? Wls    -2341043:-31.01 [swapper]
  1 ?? SLs     0:01.34 /packages/mnt/jbase/sbin/init --
  2 ?? DL      2:48.31 [g_event]
  3 ?? DL      1:47.44 [g_up]
  4 ?? DL      1:37.82 [g_down]
  5 ?? DL      0:00.00 [kdm_tcp_poller]
  6 ?? DL      0:00.00 [thread taskq]
  7 ?? DL      0:04.86 [kqueue taskq]
  9 ?? DL      0:03.94 [pagedaemon]
 10 ?? DL      0:00.00 [ktrace]
 11 ?? RL      0:00.00 [idle: cpu31]
 12 ?? RL      0:00.00 [idle: cpu30]
 13 ?? RL      0:00.00 [idle: cpu29]
 14 ?? RL      0:00.00 [idle: cpu28]
 15 ?? RL      0:00.00 [idle: cpu27]
 16 ?? RL      0:00.00 [idle: cpu26]
 17 ?? RL      0:00.00 [idle: cpu25]
 18 ?? RL      0:00.00 [idle: cpu24]
 19 ?? RL      0:00.00 [idle: cpu23]
 20 ?? RL      0:00.00 [idle: cpu22]
 21 ?? RL      0:00.00 [idle: cpu21]
 22 ?? RL      0:00.00 [idle: cpu20]
 23 ?? RL      0:00.00 [idle: cpu19]
 24 ?? RL      0:00.00 [idle: cpu18]
 25 ?? RL      0:00.00 [idle: cpu17]
 26 ?? RL      0:00.00 [idle: cpu16]
 27 ?? RL      0:00.00 [idle: cpu15]
 28 ?? RL      0:00.00 [idle: cpu14]
 29 ?? RL      0:00.00 [idle: cpu13]
 30 ?? RL      0:00.00 [idle: cpu12]
 31 ?? RL      0:00.00 [idle: cpu11]
 32 ?? RL      0:00.00 [idle: cpu10]
 33 ?? RL      0:00.00 [idle: cpu9]
 34 ?? RL     18184:07.25 [idle: cpu8]
 35 ?? RL      0:00.00 [idle: cpu7]
 36 ?? RL     17862:11.31 [idle: cpu6]
 37 ?? RL     19343:45.16 [idle: cpu5]
 38 ?? RL     5192:38.30 [idle: cpu4]
 39 ?? RL      0:00.00 [idle: cpu3]

```

```

40 ?? RL 19278:02.24 [idle: cpu2]
41 ?? RL 19291:00.72 [idle: cpu1]
42 ?? RL 18910:31.21 [idle: cpu0]
43 ?? WL 19:03.74 [swi2: net]
44 ?? WL 261:43.82 [swi7: clock sio]
45 ?? WL 0:00.00 [swi6: vm]
46 ?? DL 2:18.57 [yarrow]
47 ?? WL 0:00.00 [swi9: +]
48 ?? WL 0:00.00 [swi8: +]
49 ?? WL 0:12.36 [swi5: cambio]
50 ?? WL 0:00.00 [swi9: task queue]
51 ?? WL 0:00.00 [swi0: sio]
52 ?? WL 0:32.40 [irq39: ehci0]
53 ?? DL 0:00.21 [usb0]
54 ?? DL 0:00.00 [usbtask]
55 ?? WL 0:00.00 [irq22: xlr_lbus0]
56 ?? WL 0:00.00 [irq38: xlr_lbus0]
57 ?? WL 0:00.00 [swi3: ip6opt ipopt]
58 ?? WL 0:00.00 [swi4: ip6mismatch+]
59 ?? WL 0:00.00 [swi1: ipfwd]
60 ?? DL 0:18.65 [pagezero]
61 ?? DL 0:18.59 [bufdaemon]
62 ?? DL 1:10.44 [vnlru_mem]
63 ?? DL 1:51.66 [syncer]
64 ?? DL 0:20.22 [vnlru]
65 ?? DL 0:40.48 [softdepflush]
66 ?? DL 0:00.00 [netdaemon]
67 ?? DL 20:47.67 [vmkmemdaemon]
68 ?? DL 0:00.00 [if_pfe_listen]
69 ?? SL 0:02.80 [kdm_checkkcore]
70 ?? SL 0:03.34 [kdm_savekcore]
71 ?? SL 0:04.31 [kdm_livekcore]
72 ?? SL 0:06.14 [kdm_logger]
73 ?? SL 0:04.31 [kdm_kdb]
74 ?? SL 0:00.02 [devrt_kernel_thread]
75 ?? DL 0:21.54 [vmuncachedaemon]
76 ?? DL 0:00.00 [if_pic_listen0]
77 ?? SL 0:00.00 [nfsiod 0]
78 ?? SL 0:00.00 [nfsiod 1]
79 ?? SL 0:00.00 [nfsiod 2]
80 ?? SL 0:00.00 [nfsiod 3]
81 ?? WL 5:59.98 [irq13: +]
82 ?? RL 105:06.81 [pkt_sender: cpu0]
83 ?? DL 0:03.62 [md0]
95 ?? DL 0:37.04 [md1]
115 ?? DL 0:06.01 [md2]
135 ?? DL 0:00.75 [md3]
155 ?? DL 0:21.17 [md4]
175 ?? DL 0:01.90 [md5]
195 ?? DL 0:06.26 [md6]
231 ?? DL 0:00.01 [md7]
755 ?? Ss 0:04.17 /usr/sbin/cron
847 ?? S 0:00.10 /usr/sbin/tnetd -N
849 ?? S 0:06.82 /usr/sbin/mgd -N
850 ?? S 0:00.32 /usr/sbin/inetd -N
852 ?? S 1:05.34 /usr/sbin/dhcpd -N
853 ?? S 0:00.18 /usr/sbin/inetd -p /var/run/inetd_4.pid -N -JU __juni
855 ?? L 1181:02.21 /usr/sbin/dc-pfe -N (pafxpc)
857 ?? S 17:55.86 /usr/sbin/vccpd -N
896 ?? S 93:43.45 /usr/sbin/chassism -N
953 ?? S 0:02.89 /sbin/watchdog -t-1

```

```

954 ?? S      3:34.00 /sbin/dcd -N
955 ?? S     10:30.13 /usr/sbin/chassisd -N
956 ?? DL     0:00.21 [peer proxy]
957 ?? S      4:07.43 /usr/sbin/alarmd -N
958 ?? S      0:31.69 /usr/sbin/craftd -N
959 ?? S      0:55.16 /usr/sbin/mib2d -N
960 ?? S      3:40.64 /usr/sbin/rpd -N
961 ?? S      0:00.03 /usr/sbin/tnp.snmpd -N
962 ?? S      0:51.94 /usr/sbin/pfed -N
963 ?? S      0:47.31 /usr/sbin/rmopd -N
964 ?? S      0:33.65 /usr/sbin/cosd
965 ?? S      1:48.41 /usr/sbin/ppmd -N
966 ?? S      0:07.18 /usr/sbin/dfwd -N
967 ?? S      1:02.56 /usr/sbin/bfdd -N
968 ?? S      0:00.63 /usr/sbin/rdd -N
969 ?? S      0:40.61 /usr/sbin/dfcd -N
971 ?? S      0:07.81 /usr/sbin/bdbrepd -N
972 ?? S      0:00.28 /usr/sbin/sendd -N
973 ?? S      1:37.69 /usr/sbin/xntpd -j -N -g -JU __example_process4__ (nt
974 ?? S      5:56.28 /usr/sbin/snmpd -N -JU __example_process4__
975 ?? S     16:46.82 /usr/sbin/jdiameterd -N
976 ?? S      2:34.13 /usr/sbin/eswd -N
977 ?? S      1:03.05 /usr/sbin/sflowd -N
978 ?? S      0:22.30 /usr/sbin/fcd -N
979 ?? S      1:07.01 /usr/sbin/vccpdf -N
982 ?? S      0:25.25 /usr/sbin/mcsnoopd -N
983 ?? S      3:45.68 /usr/sbin/rpdf -N
1043 ?? S      0:37.87 /usr/sbin/lacpd -N
1048 ?? DL     0:01.29 [peer proxy]
1111 ?? WL     0:00.00 [swi2: FMNITHRD+]
1112 ?? DL     0:00.03 [peer proxy]
12816 ?? S     15:35.32 /usr/sbin/sfid -N
30893 ?? Ss     0:00.65 sshd: tlewis@tty0 (sshd)
30897 ?? Ss     0:00.15 mgd: (mgd) (tlewis)/dev/tty0 (mgd)
30905 ?? Ss     0:00.64 sshd: tlewis@tty1 (sshd)
30909 ?? Ss     0:00.15 mgd: (mgd) (tlewis)/dev/tty1 (mgd)
30910 ?? Ss     0:01.26 sshd: tcheng@tty2 (sshd)
30914 ?? Ss     0:00.80 mgd: (mgd) (tcheng)/dev/tty2 (mgd)
30937 ?? R      0:00.03 /bin/ps -ax
  661 d0- S      0:21.24 /usr/sbin/eventd -N -r -s -A
  860 d0 Ss+     0:00.07 /usr/libexec/getty std.9600 ttyd0
30896 p0 Ss+     0:00.55 -cli (cli)
30908 p1 Ss+     0:00.50 -cli (cli)
30913 p2 Ss+     0:00.85 -cli (cli)

```

## show system queues

---

<b>List of Syntax</b>	<a href="#">Syntax on page 498</a> <a href="#">Syntax (TX Matrix Router) on page 498</a> <a href="#">Syntax (TX Matrix Plus Router) on page 498</a> <a href="#">Syntax (MX Series Router) on page 498</a>
<b>Syntax</b>	show system queues
<b>Syntax (TX Matrix Router)</b>	show system queues <all-chassis  all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system queues <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	show system queues <all-members> <local> <member <i>member-id</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
<b>Description</b>	Display queue statistics.
<b>Options</b>	<p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system queue statistics for all the T640 routers in the chassis that are connected to the TX Matrix router. On a TX Matrix Plus router, display system queue statistics for all the T1600 or T4000 routers in the chassis that are connected the TX Matrix Plus router.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system queue statistics for all LCC chassis attached to the TX Matrix or TX Matrix Plus router.</p> <p><b>all-members</b>—(MX Series routers only) (Optional) Display system queue statistics for all members of the Virtual Chassis configuration.</p> <p><b>lcc <i>number</i></b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system queue statistics for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system queue statistics for a specific connected router that is connected to the TX Matrix Plus router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"><li>• 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.</li><li>• 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.</li></ul>

- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display system queue statistics for the local Virtual Chassis member.

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

**scc**—(TX Matrix routers only) (Optional) Display queue statistics for the TX Matrix router.

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display system queue statistics for the TX Matrix Plus router. Replace ***number*** with 0.

**Additional Information** By default, when you issue the **show system queues** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** maintenance

**Related Documentation** [• Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output** [show system queues on page 500](#)  
[show system queues scc \(TX Matrix Router\) on page 500](#)  
[show system queues sfc \(TX Matrix Router\) on page 501](#)

**Output Fields** [Table 15 on page 499](#) lists the output fields for the **show system queues** command. Output fields are listed in the approximate order in which they appear.

**Table 15: show system queues Output Fields**

Field Name	Field Description
<b>Output interface</b>	Interface on the router on which the queue exists: <ul style="list-style-type: none"> <li>• <b>fxp0</b>—Management Ethernet interface</li> <li>• <b>fxp1</b>—Internal Ethernet interface</li> <li>• <b>lsi</b>—Internally generated interface and not configurable</li> <li>• <b>dsc</b>—Discard interface</li> </ul>
<b>bytes</b>	Number of bytes in the queue.
<b>max</b>	Maximum number of bytes allowed in the queue.

Table 15: show system queues Output Fields (*continued*)

Field Name	Field Description
<b>packets</b>	Number of packets in the queue.
<b>max</b>	Maximum number of packets allowed in the queue.
<b>drops</b>	Number of packets dropped from the queue.

## Sample Output

### show system queues

```

user@host> show system queues
output interface      bytes      max  packets      max  drops
fxp0                  0    1250000      0    4166        6
fxp1                  0    1250000      0    4166       19
lsi                   0     12500      0     41         0
dsc                   0         0      0         0         0

```

### show system queues scc (TX Matrix Router)

```

user@host> show system queues scc
output interface      bytes      max  packets      max  drops
fxp0                  0    1250000      0    4166         5
lsi                   0     12500      0     41         0
dsc                   0         0      0         0         0
lo0                   0         0      0         0         0
bcm0                  0    12500000      0    30000        0
em0                   0    12500000      0    30000        0
gre                   0     12500      0     41         0
ipip                  0     12500      0     41         0
tap                   0         0      0         0         0
pime                  0     12500      0     41         0
pimd                  0     12500      0     41         0
mtun                  0     12500      0     41         0
so-1/0/0              0     125000      0    416         0
so-1/1/0              0     125000      0    416         0
so-21/0/0             0     125000      0    416         0
ge-21/1/0             0    1250000      0    4166         0
ge-21/1/1             0    1250000      0    4166         3
ge-21/2/0             0    1250000      0    4166         0
ge-21/2/1             0    1250000      0    4166         3
so-21/3/0            0     125000      0    416         0
so-0/0/0              0     125000      0    416         0
so-0/1/0              0     125000      0    416         0
so-0/2/0              0     125000      0    416         0
pd-0/3/0              0     12500      0     41         0
pe-0/3/0              0     12500      0     41         0
gr-0/3/0              0     12500      0     41         0
ip-0/3/0              0     12500      0     41         0
vt-0/3/0              0     12500      0     41         0
mt-0/3/0              0     12500      0     41         0
lt-0/3/0              0     12500      0     41         0
so-17/0/0            0     125000      0    416         0
input protocol      bytes      max  packets      max  drops
splfwdq              0    1000000      0    1000         0
splnetq              0    1000000      0    1000         0

```

arpintrq	0	1000	0	50	0
optionq	0	200000	0	200	0
icmpq	0	50000	0	50	0
frlmiq	0	0	0	0	0
spppintrq	0	25000	0	250	0
clnlintrq	0	200000	0	200	0
tnpintrq	0	1250000	0	4166	0
tagintrq	0	200000	0	200	0
tagfragq	0	200000	0	200	0

#### show system queues sfc (TX Matrix Router)

```
user@host> show system queues sfc 0
sfc0-re0:
```

output interface	bytes	max	packets	max	drops
ixgbe1	0	125000000	0	45000	4384
ixgbe0	0	125000000	0	45000	0
lsi	0	12500	0	41	0
dsc	0	0	0	0	0
lo0	0	0	0	0	0
em0	0	12500000	0	41666	1
gre	0	12500	0	41	0
ipip	0	12500	0	41	0
tap	0	0	0	0	0
pime	0	12500	0	41	0
pimd	0	12500	0	41	0
mtun	0	12500	0	41	0
xe-12/0/0	0	1250000	0	4166	0
xe-12/0/1	0	1250000	0	4166	0
xe-12/0/2	0	1250000	0	4166	0
xe-12/0/3	0	1250000	0	4166	0
xe-12/1/0	0	1250000	0	4166	0
xe-12/1/1	0	1250000	0	4166	0
xe-12/1/2	0	1250000	0	4166	0
xe-12/1/3	0	1250000	0	4166	0
xe-20/0/0	0	1250000	0	4166	0
xe-20/0/1	0	1250000	0	4166	0
xe-20/0/2	0	1250000	0	4166	0
xe-20/0/3	0	1250000	0	4166	0
xe-20/1/0	0	1250000	0	4166	0
xe-20/1/1	0	1250000	0	4166	0
xe-20/1/2	0	1250000	0	4166	0
xe-20/1/3	0	1250000	0	4166	0
ge-15/0/0	0	1250000	0	4166	75
ge-15/0/1	0	1250000	0	4166	0
ge-15/0/2	0	1250000	0	4166	75
ge-15/0/3	0	1250000	0	4166	75
ge-15/0/4	0	1250000	0	4166	0
ge-15/0/5	0	1250000	0	4166	0
ge-15/0/6	0	1250000	0	4166	0
ge-15/0/7	0	1250000	0	4166	0
ge-15/0/8	0	1250000	0	4166	0
ge-15/0/9	0	1250000	0	4166	0
xe-4/0/0	0	1250000	0	4166	0
xe-4/0/1	0	1250000	0	4166	0
xe-4/0/2	0	1250000	0	4166	0
xe-4/0/3	0	1250000	0	4166	0
xe-4/1/0	0	1250000	0	4166	0
xe-4/1/1	0	1250000	0	4166	0
xe-4/1/2	0	1250000	0	4166	0

xe-4/1/3	0	1250000	0	4166	0
xe-24/0/0	0	1250000	0	4166	0
xe-24/0/1	0	1250000	0	4166	0
xe-24/0/2	0	1250000	0	4166	0
xe-24/0/3	0	1250000	0	4166	0
xe-24/1/0	0	1250000	0	4166	0
xe-24/1/1	0	1250000	0	4166	0
xe-24/1/2	0	1250000	0	4166	0
xe-24/1/3	0	1250000	0	4166	0
ge-7/0/0	0	1250000	0	4166	0
ge-7/0/1	0	1250000	0	4166	0
ge-7/0/2	0	1250000	0	4166	0
ge-7/0/3	0	1250000	0	4166	75
ge-7/0/4	0	1250000	0	4166	0
ge-7/0/5	0	1250000	0	4166	0
ge-7/0/6	0	1250000	0	4166	0
ge-7/0/7	0	1250000	0	4166	0
ge-7/0/8	0	1250000	0	4166	0
ge-7/0/9	0	1250000	0	4166	0
so-7/1/0	0	125000	0	416	0
so-7/2/0	0	125000	0	416	0
xe-21/0/0	0	1250000	0	4166	0
xe-21/0/1	0	1250000	0	4166	0
xe-21/0/2	0	1250000	0	4166	0
xe-21/0/3	0	1250000	0	4166	0
xe-21/1/0	0	1250000	0	4166	0
xe-21/1/1	0	1250000	0	4166	0
xe-21/1/2	0	1250000	0	4166	0
xe-21/1/3	0	1250000	0	4166	0
xe-14/0/0	0	1250000	0	4166	0
xe-14/0/1	0	1250000	0	4166	0
xe-14/0/2	0	1250000	0	4166	0
xe-14/0/3	0	1250000	0	4166	0
xe-14/1/0	0	1250000	0	4166	0
xe-14/1/1	0	1250000	0	4166	0
xe-14/1/2	0	1250000	0	4166	0
xe-14/1/3	0	1250000	0	4166	0
xe-25/0/0	0	1250000	0	4166	0
xe-25/0/1	0	1250000	0	4166	0
xe-25/0/2	0	1250000	0	4166	0
xe-25/0/3	0	1250000	0	4166	0
xe-25/1/0	0	1250000	0	4166	0
xe-25/1/1	0	1250000	0	4166	0
xe-25/1/2	0	1250000	0	4166	0
xe-25/1/3	0	1250000	0	4166	0
so-22/0/0	0	125000	0	416	0
so-22/0/1	0	125000	0	416	0
so-22/0/2	0	125000	0	416	0
so-22/0/3	0	125000	0	416	0
xe-22/1/0	0	1250000	0	4166	0
xe-22/1/1	0	1250000	0	4166	0
xe-22/1/2	0	1250000	0	4166	0
xe-22/1/3	0	1250000	0	4166	0
xe-6/0/0	0	1250000	0	4166	0
xe-6/0/1	0	1250000	0	4166	0
xe-6/0/2	0	1250000	0	4166	0
xe-6/0/3	0	1250000	0	4166	0
xe-6/1/0	0	1250000	0	4166	0
xe-6/1/1	0	1250000	0	4166	0
xe-6/1/2	0	1250000	0	4166	0
xe-6/1/3	0	1250000	0	4166	0



xe-26/0/0	0	1250000	0	4166	0
xe-26/0/1	0	1250000	0	4166	0
xe-26/0/2	0	1250000	0	4166	0
xe-26/0/3	0	1250000	0	4166	0
xe-26/1/0	0	1250000	0	4166	0
xe-26/1/1	0	1250000	0	4166	0
xe-26/1/2	0	1250000	0	4166	0
xe-26/1/3	0	1250000	0	4166	0
ge-31/0/0	0	1250000	0	4166	0
ge-31/0/1	0	1250000	0	4166	0
ge-31/0/2	0	1250000	0	4166	0
ge-31/0/3	0	1250000	0	4166	0
ge-31/0/4	0	1250000	0	4166	75
ge-31/0/5	0	1250000	0	4166	0
ge-31/0/6	0	1250000	0	4166	75
ge-31/0/7	0	1250000	0	4166	0
ge-31/0/8	0	1250000	0	4166	0
ge-31/0/9	0	1250000	0	4166	0
pd-31/1/0	0	12500	0	41	0
pe-31/1/0	0	12500	0	41	0
gr-31/1/0	0	12500	0	41	0
ip-31/1/0	0	12500	0	41	0
vt-31/1/0	0	12500	0	41	0
mt-31/1/0	0	12500	0	41	0
lt-31/1/0	0	12500	0	41	0
so-29/0/0	0	125000	0	416	0
so-29/0/1	0	125000	0	416	0
so-29/0/2	0	125000	0	416	0
so-29/0/3	0	125000	0	416	0
xe-29/1/0	0	1250000	0	4166	0
xe-29/1/1	0	1250000	0	4166	0
xe-29/1/2	0	1250000	0	4166	0
xe-29/1/3	0	1250000	0	4166	0
so-28/0/0	0	125000	0	416	0
so-28/0/1	0	125000	0	416	0
so-28/0/2	0	125000	0	416	0
so-28/0/3	0	125000	0	416	0
ge-23/0/0	0	1250000	0	4166	0
ge-23/0/1	0	1250000	0	4166	0
ge-23/0/2	0	1250000	0	4166	0
ge-23/0/3	0	1250000	0	4166	0
ge-23/0/4	0	1250000	0	4166	0
ge-23/0/5	0	1250000	0	4166	0
ge-23/0/6	0	1250000	0	4166	0
ge-23/0/7	0	1250000	0	4166	0
ge-23/0/8	0	1250000	0	4166	0
ge-23/0/9	0	1250000	0	4166	0
input protocol	bytes	max	packets	max	drops
sp1fwdq	0	1000000	0	1000	0
sp1netq	0	1000000	0	1000	0
arpintrq	0	1000	0	50	0
optionq	0	200000	0	200	0
icmpq	0	50000	0	50	0
frlmiq	0	0	0	0	0
spppintrq	0	25000	0	250	0
atmctlpktq	0	0	0	0	0
atmoamq	0	0	0	0	0
tnpintrq	0	1250000	0	4166	0
tagintrq	0	200000	0	200	0
tagfragq	0	200000	0	200	0



## show system reboot

<b>List of Syntax</b>	<a href="#">Syntax on page 505</a> <a href="#">Syntax (EX Series Switches) on page 505</a> <a href="#">Syntax (TX Matrix Router) on page 505</a> <a href="#">Syntax (TX Matrix Plus Router) on page 505</a> <a href="#">Syntax (MX Series Router) on page 505</a> <a href="#">Syntax (QFX Series and OCX Series) on page 505</a>
<b>Syntax</b>	<pre>show system reboot &lt;both-routing-engines&gt;</pre>
<b>Syntax (EX Series Switches)</b>	<pre>show system reboot &lt;all-members&gt; &lt;both-routing-engines&gt; &lt;local&gt; &lt;member <i>member-id</i>&gt;</pre>
<b>Syntax (TX Matrix Router)</b>	<pre>show system reboot &lt;all-chassis   all-lcc   lcc <i>number</i>   scc&gt; &lt;both-routing-engines&gt;</pre>
<b>Syntax (TX Matrix Plus Router)</b>	<pre>show system reboot &lt;all-chassis  all-lcc   lcc <i>number</i>   sfc <i>number</i>&gt; &lt;both-routing-engines&gt;</pre>
<b>Syntax (MX Series Router)</b>	<pre>show system reboot &lt;all-members&gt; &lt;both-routing-engines&gt; &lt;local&gt; &lt;member <i>member-id</i>&gt;</pre>
<b>Syntax (QFX Series and OCX Series)</b>	<pre>show system reboot &lt;both-routing-engines&gt; &lt;infrastructure <i>name</i>&gt; &lt;interconnect-device <i>name</i>&gt; &lt;node-device <i>name</i>&gt;</pre>
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
<b>Description</b>	Display pending system reboots or halts.
<b>Options</b>	<p><b>none</b>—Display pending reboots or halts on the active Routing Engine.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display halt or reboot request information for all the T640 routers in the chassis that are connected to the TX Matrix router. On a TX Matrix router, display</p>

halt or reboot request information for all the T1600 or T4000 routers in the chassis that are connected to the TX Matrix Plus router.

**all-members**—(EX4200 switches and MX Series routers only) (Optional) Display halt or reboot request information for all members of the Virtual Chassis configuration.

**all-lcc**—(TX Matrix routers and TX Matrix Plus router only) (Optional) On a TX Matrix router, display system halt or reboot request information for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display halt or reboot request information for all connected T1600 or T4000 LCCs.

**both-routing-engines**—(Systems with multiple Routing Engines) (Optional) Display halt or reboot request information on both Routing Engines.

**infrastructure *name***—(QFabric systems only) (Optional) Display reboot request information on the fabric manager Routing Engines and fabric control Routing Engines.

**interconnect-device *name***—(QFabric systems only) (Optional) Display reboot request information on the Interconnect device.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display halt or reboot request information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display halt or reboot request information for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Display halt or reboot request information for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Display halt or reboot request information for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**node-group *name***—(QFabric systems only) (Optional) Display reboot request information on the Node group.

**scc**—(TX Matrix router only) (Optional) Display halt or reboot request information for the TX Matrix router (or switch-card chassis).

**sfc**—(TX Matrix Plus router only) (Optional) Display halt or reboot request information for the TX Matrix Plus router.

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

**Required Privilege Level** maintenance

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**

- [show system reboot on page 507](#)
- [show system reboot all-lcc \(TX Matrix Router\) on page 507](#)
- [show system reboot sfc \(TX Matrix Plus Router\) on page 507](#)
- [show system reboot \(QFX3500 Switch\) on page 507](#)

## Sample Output

### show system reboot

```
user@host> show system reboot
reboot requested by root at Wed Feb 10 17:40:46 1999
[process id 17885]
```

### show system reboot all-lcc (TX Matrix Router)

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

```
-----
No shutdown/reboot scheduled.
```

```
lcc2-re0:
```

```
-----
No shutdown/reboot scheduled.
```

### show system reboot sfc (TX Matrix Plus Router)

```
user@host> show system sfc 0
No shutdown/reboot scheduled.
```

### show system reboot (QFX3500 Switch)

```
user@switch> show system reboot
No shutdown/reboot scheduled.
```

## show system rollback

**Syntax** `show system rollback number`  
`<compare number>`

**Release Information** Command introduced before Junos OS Release 7.4.  
 Command introduced in Junos OS Release 9.0 for EX Series switches.  
 Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.  
 Command introduced in Junos OS Release 11.1 for the QFX Series.

**Description** Display the contents of a previously committed configuration, or the differences between two previously committed configurations.



**NOTE:** The `show system rollback` command is a purely operational mode command and cannot be issued with `run` from the configuration mode.

**Options** *number*—Number of a configuration to view. The output displays the configuration. The range of values is 0 through 49.

*compare number* —(Optional) Number of another previously committed (rollback) configuration to compare to rollback *number*. The output displays the differences between the two configurations. The range of values is 0 through 49.

**Required Privilege Level** view

**List of Sample Output** [show system rollback compare on page 508](#)

### Sample Output

#### show system rollback compare

```
user@host> show system rollback 3 compare 1
[edit]
+ interfaces {
+   ge-1/1/1 {
+     unit 0 {
+       family inet {
+         filter {
+           input mf_plp;
+         }
+         address 10.1.1.1/10;
+       }
+     }
+   }
+   ge-1/2/1 {
+     unit 0 {
+       family inet {
+         filter {
+           input mf_plp;
+         }
+         address 10.1.1.1/10;
```

```
+      }
+    }
+  }
+  ge-1/3/0 {
+    unit 0 {
+      family inet {
+        filter {
+          input mf_plp;
+        }
+        address 10.1.1.1/10;
+      }
+    }
+  }
+}
```

## show system snapshot

**List of Syntax** [Syntax on page 510](#)  
[Syntax \(EX Series Switches\) on page 510](#)

**Syntax** show system snapshot

**Syntax (EX Series Switches)** show system snapshot  
 <all-members | local | member *member-id*>  
 <media (external | internal)>

**Release Information** Command introduced in Junos OS Release 7.6.  
 Command introduced in Junos OS Release 10.0 for EX Series switches.  
 Option **slice** deprecated for Junos OS with Upgraded FreeBSD in Junos OS Release 15.1.



**NOTE:** To determine which platforms run Junos OS with Upgraded FreeBSD, see the table listing the platforms currently running Junos OS with upgraded FreeBSD in *Understanding Junos OS with Upgraded FreeBSD*.

**Description** Display information about the backup software:

- On the routers, display information about the backup software, which is located in the **/altroot**, and **/altconfig** file systems or on the alternate media.
- On the switches, display information about the backup of the root file system (**/**) and directories **/altroot**, **/config**, **/var**, and **/var/tmp**, which are located either on an external USB flash drive or in internal flash memory.



**NOTE:** To back up software, use the **request system snapshot** command.

**Options** **none**—Display information about the backup software.

**all-members | local | member *member-id***—(EX Series switch Virtual Chassis only)  
 (Optional) Display the snapshot in a Virtual Chassis:

- **all-members**—Display the snapshot for all members of the Virtual Chassis.
- **local**—Display the snapshot on the member of the Virtual Chassis that you are currently logged into.
- **member *member-id***—Display the snapshot for the specified member of the Virtual Chassis.

**media (external | internal)**—(EX Series switch only) (Optional) Display the destination media location for the snapshot. The **external** option specifies the snapshot on an external mass storage device, such as a USB flash drive. The **internal** option specifies



the snapshot on an internal memory source, such as internal flash memory. If no additional options are specified, the command displays the snapshot stored in both slices.

**Required Privilege Level** view

**Related Documentation** • [request system snapshot on page 206](#)

**List of Sample Output** [show system snapshot \(Router\) on page 511](#)  
[show system snapshot media external \(Switch\) on page 511](#)  
[show system snapshot media internal \(Switch\) on page 512](#)

**Output Fields** [Table 16 on page 511](#) lists the output fields for the **show system snapshot** command. Output fields are listed in the approximate order in which they appear.

**Table 16: show system snapshot Output Fields**

Field Name	Field Description
Creation date	Date and time of the last snapshot.
JUNOS version on snapshot	Junos OS release number of individual software packages.

## Sample Output

### show system snapshot (Router)

```
user@host> show system snapshot
Information for snapshot on hard-disk
Creation date: Oct 5 13:53:29 2005
JUNOS version on snapshot:
  jbase : 7.3R2.5
  jcrypto: 7.3R2.5
  jdocs : 7.3R2.5
  jkernel: 7.3R2.5
  jpfe : M40-7.3R2.5
  jroute : 7.3R2.5
```

### show system snapshot media external (Switch)

```
user@switch> show system snapshot media external
Information for snapshot on external (/dev/dals1a) (backup)
Creation date: Mar 19 03:37:18 2012
JUNOS version on snapshot:
  jbase : ex-12.1I20120111_0048_user
  jcrypto-ex: 12.1I20120111_0048_user
  jdocs-ex: 12.1I20120111_0048_user
  jroute-ex: 12.1I20120111_0048_user
  jswitch-ex: 12.1I20120111_0048_user
  jweb-ex: 12.1I20120111_0048_user
Information for snapshot on external (/dev/dals2a) (primary)
Creation date: Mar 19 03:38:25 2012
JUNOS version on snapshot:
  jbase : ex-12.2I20120305_2240_user
```

```
jcrypto-ex: 12.2I20120305_2240_user  
jdocs-ex: 12.2I20120305_2240_user  
jroute-ex: 12.2I20120305_2240_user  
jswitch-ex: 12.2I20120305_2240_user  
jweb-ex: 12.2I20120305_2240_user
```

### show system snapshot media internal (Switch)

```
user@switch> show system snapshot media internal  
Information for snapshot on internal (/dev/da0s1a) (backup)  
Creation date: Mar 14 05:01:02 2011  
JUNOS version on snapshot:  
  jbase : 11.1R1.9  
  jcrypto-ex: 11.1R1.9  
  jdocs-ex: 11.1R1.9  
  jkernel-ex: 11.1R1.9  
  jroute-ex: 11.1R1.9  
  jswitch-ex: 11.1R1.9  
  jweb-ex: 11.1R1.9  
  jpfe-ex42x: 11.1R1.9  
Information for snapshot on internal (/dev/da0s2a) (primary)  
Creation date: Mar 30 08:46:27 2011  
JUNOS version on snapshot:  
  jbase : 11.2-20110330.0  
  jcrypto-ex: 11.2-20110330.0  
  jdocs-ex: 11.2-20110330.0  
  jkernel-ex: 11.2-20110330.0  
  jroute-ex: 11.2-20110330.0  
  jswitch-ex: 11.2-20110330.0  
  jweb-ex: 11.2-20110330.0  
  jpfe-ex42x: 11.2-20110330.0
```

## show system software

<b>List of Syntax</b>	<a href="#">Syntax on page 513</a> <a href="#">Syntax (EX Series Switches) on page 513</a> <a href="#">Syntax (TX Matrix Router) on page 513</a> <a href="#">Syntax (TX Matrix Plus Router) on page 513</a> <a href="#">Syntax (QFX Series) on page 513</a>
<b>Syntax</b>	show system software <detail>
<b>Syntax (EX Series Switches)</b>	show system software <all-members> <detail> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system software <all-chassis   all-lcc   lcc <i>number</i>   scc> <detail>
<b>Syntax (TX Matrix Plus Router)</b>	show system software <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> > <detail>
<b>Syntax (QFX Series)</b>	show system software <detail> <infrastructure <i>name</i> > <interconnect-device <i>name</i> > <node-group <i>name</i> >
<b>Release Information</b>	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
<b>Description</b>	Display the Junos OS extensions loaded on your router or switch.
<b>Options</b>	<p><b>none</b>—Display standard information about all loaded Junos OS extensions.</p> <p><b>all-chassis</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system software information for all the T640 routers (TX Matrix Router) or all the routers (TX Matrix Plus Router) in the chassis.</p> <p><b>all-lcc</b>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system software information for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system software information for all connected T1600 or T4000 LCCs.</p> <p><b>all-members</b>—(EX4200 switches only) (Optional) Display the system software running on all members of the Virtual Chassis configuration.</p>

**detail**—(Optional) Display detailed information about available Junos OS extensions.

**infrastructure *name***—(QFabric systems only) (Optional) Display the system software running on the fabric control Routing Engine and the fabric manager Routing Engine.

**interconnect-device *name***—(QFabric systems only) (Optional) Display the system software running on the Interconnect device.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system software information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system software information for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches only) (Optional) Display the system software running on the local Virtual Chassis member.

**member *member-id***—(EX4200 switches only) (Optional) Display the system software running on the specified member of the Virtual Chassis configuration. Replace *member-id* with a value from 0 through 9.

**node-group *name***—(QFabric systems only) (Optional) Display the system software running on the Node group.

**scc**—(Routing matrix only) (Optional) Display the system software running on a TX Matrix router (or switch-card chassis).

**sfc**—(TX Matrix Plus routers only) (Optional) Display system software information for the TX Matrix Plus router.

**Required Privilege Level**

maintenance

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**

[show system software on page 515](#)

[show system software \(TX Matrix Plus Router\) on page 515](#)

[show system software \(QFX Series\) on page 519](#)

**Output Fields** When you enter this command, you are provided a list of Junos OS packages installed on the router and their corresponding Junos OS release number.

## Sample Output

### show system software

```
user@host> show system software
Information for jbase:

Comment:
JUNOS Base OS Software Suite [7.2R1.7]

Information for jcrypto:

Comment:
JUNOS Crypto Software Suite [7.2R1.7]
Information for jdocs:

Comment:
JUNOS Online Documentation [7.2R1.7]

Information for jkernel:

Comment:
JUNOS Kernel Software Suite [7.2R1.7]

Information for jpfe:

Comment:
JUNOS Packet Forwarding Engine Support (M20/M40) [7.2R1.7]

Information for jroute:

Comment:
JUNOS Routing Software Suite [7.2R1.7]

Information for junos:

Comment:
JUNOS Base OS boot [7.2R1.7]
```

### show system software (TX Matrix Plus Router)

```
user@host> show system software
sfc0-re0:
-----
Information for jbase:

Comment:
JUNOS Base OS Software Suite [9.6-20090515.0]

Information for jcrypto:
```

Comment:  
JUNOS Crypto Software Suite [9.6-20090515.0]

Information for jdocs:

Comment:  
JUNOS Online Documentation [9.6-20090515.0]  
Information for jkernel:

Comment:  
JUNOS Kernel Software Suite [9.6-20090515.0]

Information for jpfe:

Comment:  
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090515.0]

Information for jpfe-common:

Comment:  
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090515.0]

Information for jroute:Comment:  
JUNOS Routing Software Suite [9.6-20090515.0]

Information for jservices-aacl:

Comment:  
JUNOS Services ACL Container package [9.6-20090515.0]

Information for jservices-appid:

Comment:  
JUNOS AppId Services [9.6-20090515.0]

Information for jservices-bgf:

Comment:  
JUNOS Border Gateway Function package [9.6-20090515.0]  
Information for jservices-idp:

Comment:  
JUNOS IDP Services [9.6-20090515.0]

Information for jservices-llpdf:

Comment:

JUNOS Services LL-PDF Container package [9.6-20090515.0]

Information for jservices-sfw:

Comment:

JUNOS Services Stateful Firewall [9.6-20090515.0]

Information for jservices-voice:

Comment:

JUNOS Voice Services Container package [9.6-20090515.0]

Information for junos:

Comment:

JUNOS Base OS boot [9.6-20090515.0]

...

lcc0-re0:

-----  
Information for jbase:

Comment:

JUNOS Base OS Software Suite [9.6-20090515.0]

Information for jcrypto:

Comment:

JUNOS Crypto Software Suite [9.6-20090515.0]

Information for jdocs:

Comment:

JUNOS Online Documentation [9.6-20090515.0]

Information for jkernel:

Comment:

JUNOS Kernel Software Suite [9.6-20090515.0]

Information for jpfe:

Comment:

JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090515.0]

Information for jpfe-common:

Comment:

JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090515.0]

Information for jroute:

Comment:

JUNOS Routing Software Suite [9.6-20090515.0]

Information for jservices-aac1:

Comment:

JUNOS Services ACL Container package [9.6-20090515.0]

Information for jservices-appid:

Comment:

JUNOS AppId Services [9.6-20090515.0]

Information for jservices-bgf:

Comment:

JUNOS Border Gateway Function package [9.6-20090515.0]

Information for jservices-idp:

Comment:

JUNOS IDP Services [9.6-20090515.0]

Information for jservices-llpdf:

Comment:

JUNOS Services LL-PDF Container package [9.6-20090515.0]

Information for jservices-sfw:

Comment:

JUNOS Services Stateful Firewall [9.6-20090515.0]

Information for jservices-voice:

Comment:

JUNOS Voice Services Container package [9.6-20090515.0]



Information for junos:

Comment:  
JUNOS Base OS boot [9.6-20090515.0]

lcc1-re0:

-----  
Information for jbase:

Comment:  
JUNOS Base OS Software Suite [9.6-20090515.0]

Information for jcrypto:

Comment:  
JUNOS Crypto Software Suite [9.6-20090515.0]  
...

#### show system software (QFX Series)

user@switch> **show system software**  
Information for jbase:

Comment:  
JUNOS Base OS Software Suite [11.3-20110730.0]

Information for jcrypto:

Comment:  
JUNOS Crypto Software Suite [11.3-20110730.0]

Information for jdocs:

Comment:  
JUNOS Online Documentation [11.3-20110730.0]

Information for jkernel:

Comment:  
JUNOS Kernel Software Suite [11.3-20110730.0]

Information for jpfe:

Comment:  
JUNOS Packet Forwarding Engine Support (QFX) [11.3-20110730.0]

Information for jroute:

Comment:

JUNOS Routing Software Suite [11.3-20110730.0]

Information for jswitch:

Comment:

JUNOS Enterprise Software Suite [11.3-20110730.0]

Information for junos:

Comment:

JUNOS Base OS boot [11.3-20110730.0]

Information for jweb:

Comment:

JUNOS Web Management [11.3-20110730.0]

## show system statistics

<b>List of Syntax</b>	<a href="#">Syntax on page 521</a> <a href="#">Syntax (EX Series Switches) on page 521</a> <a href="#">Syntax (TX Matrix Router) on page 521</a> <a href="#">Syntax (TX Matrix Plus Router) on page 521</a> <a href="#">Syntax (MX Series Router) on page 521</a> <a href="#">Syntax (QFX Series) on page 521</a>
<b>Syntax</b>	show system statistics
<b>Syntax (EX Series Switches)</b>	show system statistics <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system statistics <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system statistics <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	show system statistics <all-members> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	show system statistics
<b>Release Information</b>	Command introduced before JUNOS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in JUNOS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
<b>Description</b>	Display system-wide protocol-related statistics.
<b>Options</b>	<b>none</b> —Display system statistics for all the following protocols: <ul style="list-style-type: none"> <li>• <b>arp</b>—Address Resolution Protocol</li> <li>• <b>bridge</b>—IEEE 802.1 Bridging</li> <li>• <b>clns</b>—Connectionless Network Service</li> <li>• <b>esis</b>—End System-to-Intermediate System</li> <li>• <b>ethoamcfm</b>—Ethernet OAM protocol for connectivity fault management</li> <li>• <b>ethoamlfm</b>—Ethernet OAM protocol for link fault management</li> <li>• <b>icmp</b>—Internet Control Message Protocol</li> <li>• <b>icmp6</b>—Internet Control Message Protocol version 6</li> </ul>

- **igmp**—Internet Group Management Protocol
- **ip**—Internet Protocol version 4
- **ip6**—Internet Protocol version 6
- **jsr**—Juniper Socket Replication
- **mpls**—Multiprotocol Label Switching
- **rdp**—Reliable Datagram Protocol
- **tcp**—Transmission Control Protocol
- **tnp**—Trivial Network Protocol
- **ttp**—TNP Tunneling Protocol
- **tudp**—Trivial User Datagram Protocol
- **udp**—User Datagram Protocol
- **vpls**—Virtual Private LAN Service

**all-chassis**—(TX Matrix and TX Matrix Plus routers only) (Optional) Display system statistics for a protocol for all the routers in the chassis.

**all-lcc**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for a protocol for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for a protocol for all routers (line-card chassis) connected to the TX Matrix Plus router

**all-members**—(EX4200 switches and MX Series routers only) (Optional) Display system statistics for a protocol for all members of the Virtual Chassis configuration.

**lcc number**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system statistics for a protocol for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system statistics for a protocol for a specific router that is connected to the TX Matrix Plus router. Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Display system statistics for a protocol for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Display system statistics for a protocol for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace ***member-id*** with a value from 0 through 9. For an MX Series Virtual Chassis, replace ***member-id*** with a value of 0 or 1.

**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 523](#)  
[show system statistics \(EX Series Switches\) on page 533](#)  
[show system statistics \(TX Matrix Router\) on page 542](#)  
[show system statistics \(QFX Series\) on page 548](#)

## Sample Output

**show system statistics**

```
user@host> show system statistics
ip:
    3682087 total packets received
    0 bad header checksums
    0 with size smaller than minimum
    0 with data size < data length
    0 with header length < data size
    0 with data length < header length
    0 with incorrect version number
    0 packets destined to dead next hop
    0 fragments received
    0 fragments dropped (dup or out of space)
    0 fragments dropped (queue overflow)
    0 fragments dropped after timeout
    0 fragments dropped due to over limit
    0 packets reassembled ok
    3664774 packets for this host
    17316 packets for unknown/unsupported protocol
    0 packets forwarded
    0 packets not forwardable
    0 redirects sent
    6528 packets sent from this host
```

```
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets with bad options
1123 packets with options handled without error
0 strict source and record route options
0 loose source and record route options
0 record route options
0 timestamp options
0 timestamp and address options
0 timestamp and prespecified address options
0 option packets dropped due to rate limit
1123 router alert options
0 multicast packets dropped (no iflist)
0 packets dropped (src and int don't match)
icmp:
0 drops due to rate limit
0 calls to icmp_error
0 errors not generated because old message was icmp
Output histogram:
    echo reply: 75
0 messages with bad code fields
0 messages less than the minimum length
0 messages with bad checksum
0 messages with bad source address
0 messages with bad length
0 echo drops with broadcast or multicast destination address
0 timestamp drops with broadcast or multicast destination address
Input histogram:
    echo: 75
    router advertisement: 130
75 message responses generated
tcp:
3844 packets sent
    3618 data packets (1055596 bytes)
    0 data packets (0 bytes) retransmitted
    0 resends initiated by MTU discovery
    205 ack-only packets (148 packets delayed)
    0 URG only packets
    0 window probe packets
    0 window update packets
    1079 control packets
5815 packets received
    3377 acks (for 1055657 bytes)
    24 duplicate acks
    0 acks for unsent data
    2655 packets (15004 bytes) received in-sequence
    1 completely duplicate packet (0 bytes)
    0 old duplicate packets
    0 packets with some dup. data (0 bytes duped)
    0 out-of-order packets (0 bytes)
    0 packets (0 bytes) of data after window
    0 window probes
    7 window update packets
    0 packets received after close
    0 discarded for bad checksums
    0 discarded for bad header offset fields
    0 discarded because packet too short
```

```

1 connection request
32 connection accepts
0 bad connection attempts
0 listen queue overflows
33 connections established (including accepts)
30 connections closed (including 0 drops)
    27 connections updated cached RTT on close
    27 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
0 embryonic connections dropped
3374 segments updated rtt (of 3220 attempts)
0 retransmit timeouts
    0 connections dropped by rexmit timeout
0 persist timeouts
    0 connections dropped by persist timeout
344 keepalive timeouts
    0 keepalive probes sent
    0 connections dropped by keepalive
1096 correct ACK header predictions
1314 correct data packet header predictions
32 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped
    32 completed
    0 bucket overflow
    0 cache overflow
    0 reset
    0 stale
    0 aborted
    0 badack
    0 unreach
    0 zone failures
0 cookies sent
0 cookies received
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
1058 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors

udp:
3658884 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
3657342 dropped due to no socket
3657342 broadcast/multicast datagrams dropped due to no socket
0 dropped due to full socket buffers
0 not for hashed pcb
4291311496 delivered
1551 datagrams output

ipsec:
0 inbound packets processed successfully
0 inbound packets violated process security policy
0 inbound packets with no SA available
0 invalid inbound packets
0 inbound packets failed due to insufficient memory
0 inbound packets failed getting SPI

```

```
0 inbound packets failed on AH replay check
0 inbound packets failed on ESP replay check
0 inbound AH packets considered authentic
0 inbound AH packets failed on authentication
0 inbound ESP packets considered authentic
0 inbound ESP packets failed on authentication
0 outbound packets processed successfully
0 outbound packets violated process security policy
0 outbound packets with no SA available
0 invalid outbound packets
0 outbound packets failed due to insufficient memory
0 outbound packets with no route

igmp:
17186 messages received
0 messages received with too few bytes
0 messages received with bad checksum
0 membership queries received
0 membership queries received with invalid field(s)
0 membership reports received
0 membership reports received with invalid field(s)
0 membership reports received for groups to which we belong
0 membership reports sent

arp:
44181302 datagrams received
2 ARP requests received
2028 ARP replies received
3156 resolution requests received
0 unrestricted proxy requests
0 received proxy requests
0 proxy requests not proxied
0 with bogus interface
787 with incorrect length
712 for non-IP protocol
0 with unsupported op code
0 with bad protocol address length
0 with bad hardware address length
0 with multicast source address
7611 with multicast target address
0 with my own hardware address
14241699 for an address not on the interface
0 with a broadcast source address
0 with source address duplicate to mine
29929250 which were not for me
0 packets discarded waiting for resolution
6 packets sent after waiting for resolution
17812 ARP requests sent
2 ARP replies sent
0 requests for memory denied
0 requests dropped on entry
0 requests dropped during retry

ip6:
0 total packets received
0 with size smaller than minimum
0 with data size < data length
0 with bad options
0 with incorrect version number
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped after timeout
0 fragments that exceeded limit
0 packets reassembled ok
```



```

0 packets for this host
0 packets forwarded
0 packets not forwardable
0 redirects sent
0 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs, etc.
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets that violated scope rules
0 multicast packets which we don't join
Mbuf statistics:
0 packets whose headers are not continuous
0 tunneling packets that can't find gif
0 packets discarded due to too many headers
0 failures of source address selection
0 forward cache hit
0 forward cache miss
0 packets destined to dead next hop
0 option packets dropped due to rate limit
0 packets dropped (src and int don't match)
0 packets dropped due to bad protocol

icmp6:
0 calls to icmp_error
0 errors not generated because old message was icmp error or so
0 errors not generated because rate limitation
0 messages with bad code fields
0 messages < minimum length
0 bad checksums
0 messages with bad length
Histogram of error messages to be generated:
    0 no route
    0 administratively prohibited
    0 beyond scope
    0 address unreachable
    0 port unreachable
    0 packet too big
    0 time exceed transit
    0 time exceed reassembly
    0 erroneous header field
    0 unrecognized next header
    0 unrecognized option
    0 redirect
    0 unknown
0 message responses generated
0 messages with too many ND options

ipsec6:
0 inbound packets processed successfully
0 inbound packets violated process security policy
0 inbound packets with no SA available
0 invalid inbound packets
0 inbound packets failed due to insufficient memory
0 inbound packets failed getting SPI
0 inbound packets failed on AH replay check
0 inbound packets failed on ESP replay check
0 inbound AH packets considered authentic
0 inbound AH packets failed on authentication
0 inbound ESP packets considered authentic
0 inbound ESP packets failed on authentication

```

```
0 outbound packets processed successfully
0 outbound packets violated process security policy
0 outbound packets with no SA available
0 invalid outbound packets
0 outbound packets failed due to insufficient memory
0 outbound packets with no route

c1nl:
0 total packets received
0 packets delivered
0 too small
0 bad header length
0 bad checksum
0 bad version
0 unknown or unsupported protocol
0 bogus sdl size
0 no free memory in socket buffer
0 send packets discarded
0 sbappend failure
0 mcopy failure
0 address fields were not reasonable
0 segment information forgotten
0 forwarded packets
0 total packets sent
0 output packets discarded
0 non-forwarded packets
0 packets fragmented
0 fragments sent
0 fragments discarded
0 fragments timed out
0 fragmentation prohibited
0 packets reconstructed
0 packets destined to dead nexthop
0 packets discarded due to no route
0 Error pdu rate drops
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 VPLS 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 with too many tlvs
0 Input packets with bad tlv header
70633 Input packets with bad tlv type
68877 Input packets dropped based on tlv result
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

jsr:
  Handle-inf:o
    0 Handles in use
    0 Handles allocated so far
    0 Handles freed so far
    0 Handles in delayed free state
  IHA:
    0 IHA invalid subtype messages
    0 IHA invalid length messages
    0 IHA invalid version messages
    0 IHA too short messages
    0 IHA invalid dst handle messages
    0 IHA invalid src handle messages
    0 IHA unmatched src handle messages
    0 IHA invalid messages for primary
    0 IHA invalid messages for secondary
    0 IHA invalid messages for current state
    0 IHA messages sent for subtype init
    0 IHA messages rcvd for subtype init
    0 IHA messages sent for subtype init
    0 IHA messages rcvd for subtype init
    0 IHA messages sent for subtype init
    0 IHA messages rcvd for subtype init
    0 IHA messages sent for subtype init
    0 IHA messages rcvd for subtype init
    0 IHA messages sent for subtype init
    0 IHA messages rcvd for subtype init
    0 IHA message timeouts
    0 IHA socket unreplicate messages
  SDRL:
    0 SDRL socket teardowns
    0 SDRL socket teardown failures
    0 SDRL socket unreplicates
    0 SDRL socket unreplicate failures
    0 SDRL external timeouts
    0 SDRL internal timeouts
    0 SDRL ipc messages sent
    0 SDRL ipc send failures
    0 SDRL ipc messages rcvd
    0 SDRL ipc messages rcvd
    0 SDRL primary replication messages sent
    0 SDRL primary replication message send failures
```

```

0 SDRL primary ack messages received
0 SDRL primary ack message receive failures
0 SDRL primary sock replication inits
0 SDRL primary sock replication init failures
0 SDRL primary throttle remove messages
0 SDRL primary throttle remove failures
0 SDRL primary init handshake messages
0 SDRL primary init handshake failures
0 SDRL secondary replication messages received
0 SDRL secondary replication message receive failures
0 SDRL secondary replication acks sent
0 SDRL secondary replication ack send failures
0 SDRL secondary sock splits
0 SDRL secondary sock split failures
0 SDRL secondary sock merges
0 SDRL secondary sock merge failures
0 SDRL secondary sockets closed
0 SDRL secondary rcv snoop fd close failures
0 SDRL secondary snd snoop fd close failures
0 SDRL secondary init handshake messages
0 SDRL secondary init handshake failures
PRL:
0 PRL packets enqueued
0 PRL packets failed to enqueue
0 PRL packets dequeued
0 PRL packets failed to dequeue
0 PRL queue entry allocations
0 PRL queue entry frees
0 calls to layer 4 input handlers
0 failed calls to layer 4 input handlers
0 PRL queue drains
0 PRL replication timeouts
0 PRL replication messages sent
0 PRL replication message send failures
0 PRL acknowledgment messages sent
0 PRL acknowledgement message send failures
0 PRL replication messages received
0 PRL replication message receive failures
0 PRL acknowledgement messages received
0 PRL acknowledgement receive failures
0 PRL messages with bad IPC type
0 PRL messages with no handler
2 PRL global state initializations
1 PRL global state cleanups
0 PRL per-socket state creations
0 PRL per-socket state creation failures
0 PRL per-socket state cleanups
0 PRL socket closes
0 PRL socket merges
0 PRL socket unreplicates
0 PRL primary socket replication initializations
0 PRL secondary socket replication initializations
0 PRL primary socket replication activations
0 PRL secondary socket replication activations
0 packets received from peers
0 PRL packets receive operations from peer failed
0 PRL buffer pullup failures
0 new pkts dropped on secondary socket
PSRM:
0 PSRM replication timeouts
0 PSRM replication messages sent

```

```
0 PSRM replication message send failures
0 PSRM acknowledgment messages sent
0 PSRM acknowledgement message send failures
0 PSRM flow control messages sent
0 PSRM flow control message send failures
0 PSRM replication messages received
0 PSRM replication message receive failures
0 PSRM acknowledgment messages received
0 PSRM acknowledgment message receive failures
0 PSRM flow control messages received
0 PSRM flow control message receive failures
0 SRM messages with bad IPC type
0 PSRM messages with no handler
2 PSRM global state initializations
1 PSRM global state cleanups
0 PSRM per-socket state creations
0 PSRM per-socket state creation failures
0 PSRM per-socket state cleanups
0 PSRM socket closes
0 PSRM socket merges
0 PSRM socket unreplicates
0 PSRM primary socket replication initializations
0 psrm-secondary-socket-replication-initializations
0 PSRM primary socket replication activations
0 secondary socket replication activations
0 PSRM tcpcb updates
0 PSRM buffer pullup failures
73 PSRM tcp timestamp msg rcv counters
0 PSRM tcp timestamp msg rcv failures
0 PSRM tcp timestamp msg send counters
0 PSRM tcp timestamp msg send failures
TCP:
0 TCP out-of-order packets on JSR sockets
vpls:
0 total packets received
0 with size smaller than minimum
0 with incorrect version number
0 packets for this host
0 packets with no logical interface
0 packets with no family
0 packets with no route table
0 packets with no auxiliary table
0 packets with no corefacing entry
0 packets with no CE-facing entry
0 mac route learning requests
0 mac routes learnt
0 requests to learn an existing route
0 learning requests while learning disabled on interface
0 learning requests over capacity
0 mac routes moved
0 requests to move static route
0 mac route aging requests
0 mac routes aged
0 bogus address in aging requests
0 requests to age static route
0 requests to re-ageout aged route
0 requests involving multiple peer FEs
0 aging acks from PFE
0 aging non-acks from PFE
0 aging requests timed out waiting on FEs
```

```

0 aging requests over max-rate
0 errors finding peer FEs

```

### show system statistics (EX Series Switches)

```

user@host> show system statistics
Tcp:

```

```

571779 packets sent
    21517 data packets (1797102 bytes)
    2 data packets retransmitted (20 bytes)
    0 resends initiated by MTU discovery
    3708 ack only packets (531 packets delayed)
    0 URG only packets
    1 window probe packets
    1 window update packets
    1093063 control packets
1132541 packets received
    20961 acks(for 1796102 bytes)
    5861 duplicate acks
    0 acks for unsent data
    19556 packets received in-sequence(232079 bytes)
    3018 completely duplicate packets(0 bytes)
    0 old duplicate packets
    4 packets with some duplicate data(4 bytes duped)
    2 out-of-order packets(2 bytes)
    0 packets of data after window(0 bytes)
    0 window probes
    39 window update packets
    0 packets received after close
    0 discarded for bad checksums
    0 discarded for bad header offset fields
    0 discarded because packet too short
546519 connection requests
78 connection accepts
0 bad connection attempts
0 listen queue overflows
100 connections established (including accepts)
546596 connections closed (including 6 drops)
    47 connections updated cached RTT on close
    47 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
546497 embryonic connections dropped
20453 segments updated rtt(of 566914 attempts)
2 retransmit timeouts
    0 connections dropped by retransmit timeout
0 persist timeouts
    0 connections dropped by persist timeout
3028 keepalive timeouts
    3027 keepalive probes sent
    1 connections dropped by keepalive
7515 correct ACK header predictions
12258 correct data packet header predictions
78 syncache entries added
    0 retransmitted
    0 dupsyn
    4 dropped
    78 completed
    0 bucket overflow
    0 cache overflow
    0 reset
    0 stale

```

```

    0 aborted
    0 badack
    0 unreach
    0 zone failures
0 cookies sent
0 cookies received
1 SACK recovery episodes
1 segment retransmits in SACK recovery episodes
1 byte retransmits in SACK recovery episodes
71 SACK options (SACK blocks) received
1 SACK options (SACK blocks) sent
0 SACK scoreboard overflow
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
546544 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
0 outgoing segments dropped due to policing
udp:
147 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
9 dropped due to no socket
0 broadcast/multicast datagrams dropped due to no socket
0 dropped due to full socket buffers
0 not for hashed pcb
138 delivered
0 datagrams output
ip:
73704 total packets received
0 bad header checksums
0 with size smaller than minimum
0 with data size < data length
0 with header length < data size
0 with data length < header length
0 with incorrect version number
0 packets destined to dead next hop
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped (queue overflow)
0 fragments dropped after timeout
0 fragments dropped due to over limit
0 packets reassembled ok
1133057 packets for this host
0 packets for unknown/unsupported protocol
40146 packets forwarded
0 packets not forwardable
40146 redirects sent
1121700 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets with bad options
0 packets with options handled without error
```



```

0 strict source and record route options
0 loose source and record route options
0 record route options
0 timestamp options
0 timestamp and address options
0 timestamp and prespecified address options
0 option packets dropped due to rate limit
0 router alert options
0 multicast packets dropped (no iflist)
0 packets dropped (src and int don't match)
0 transit re packets dropped on mgmt i/f
0 packets used first nexthop in ecmp unilist
0 incoming ttpoip packets received
0 incoming ttpoip packets dropped
0 outgoing TTPoIP packets sent
0 outgoing TTPoIP packets dropped

icmp:
0 drops due to rate limit
9 calls to icmp_error
0 errors not generated because old message was icmp
Output histogram:
    295 echo reply
    9 destination unreachable
0 messages with bad code fields
0 messages less than the minimum length
0 messages with bad checksum
0 messages with bad source address
0 messages with bad length
0 echo drops with broadcast or multicast 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

c1n1:
0 Total packets received

```

```
0 Packets delivered
0 Too small packets
0 Packets with bad header length
0 Packets with bad checksum
0 Bad version packets
0 Unknown or unsupported protocol packets
0 Packets with bogus sdl size
0 No free memory in socket buffer
0 Send packets discarded
0 Sbappend failure
0 Mcopy failure
0 Address fields were not reasonable
0 Segment information forgotten
0 Forwarded packets
0 Total packets sent
0 Output packets discarded
0 Non-forwarded packets
0 Packets fragmented
0 Fragments sent
0 Fragments discarded
0 Fragments timed out
0 Fragmentation prohibited
0 Packets reconstructed
0 Packets destined to dead nexthop
0 Packets discarded due to no route
0 Error pdu rate drops
  0 ER pdu generation failure

esis:
0 Total pkts received
0 Total packets consumed by protocol
0 Pdus received with bad checksum
0 Pdus received with bad version number
0 Pdus received with bad type field
0 Short pdus received
0 Pdus with bogus sdl size
0 Pdus with bad header length
0 Pdu 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 VPLS 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 with too many tlvs
0 Input packets with bad tlv header
70633 Input packets with bad tlv type
68877 Input packets dropped based on tlv result
0 Input packets for which rt lookup is bypassed

mpls:
0 Total MPLS packets received
0 Packets forwarded
0 Packets dropped
0 Packets with header too small
0 After tagging, packets can't fit link MTU
0 Packets with IPv4 explicit NULL tag
0 Packets with IPv4 explicit NULL cksum errors
0 Packets with router alert tag
0 LSP ping packets (ttl-expired/router alert)
0 Packets with ttl expired
0 Packets with tag encoding error
0 Packets discarded due to no route
0 Packets used first nexthop in ecmp unilist

vpls:
0 Total packets received
0 Packets with size smaller than minimum
0 Packets with incorrect version number
0 Packets for this host
0 Packets with no logical interface
0 Packets with no family
0 Packets with no route table
0 Packets with no auxiliary table
0 Packets with no corefacing entry
0 packets with no CE-facing entry
0 MAC route learning requests
0 MAC routes learnt
0 Requests to learn an existing route
0 Learning requests while learning disabled on interface
0 Learning requests over capacity
0 MAC routes moved
0 Requests to move static route
0 MAC route aging requests
0 MAC routes aged
0 Bogus address in aging requests
0 Requests to age static route
0 Requests to re-ageout aged route
0 Requests involving multiple peer FEs
0 Aging acks from PFE
0 Aging non-acks from PFE
0 Aging requests timed out waiting on FEs
0 Aging requests over max-rate
0 Errors finding peer FEs
0 Unsupported platform
0 Packets dropped due to no l3 route table
0 Packets dropped due to no local ifl
0 Packets punted
0 Packets dropped due to no socket

bridge:
Input:
0 packets received
0 packets forwarded
0 packets failed to forward
0 packets dropped
```

```

0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with stp state lookup failures
0 packets dropped due to stp blocked/listening
0 packets dropped due to stp learning
0 packets with src MAC learning failures
0 packets with input control processing failures
Forward:
0 packets sent successfully
0 packets with send failures
0 packets forwarded to l3 interface
0 packets with l3 send failures
0 packets discarded
0 packets with l2ifl store failures
0 packets with ifl mismatch failures
0 packets with packet duplication failures
0 packets with tag lookup failures
0 packets with no route for DMAC
0 packets with no route table
0 packets with no nexthop
0 packets with dead nexthop
0 packets with eof reached error
Learning:
0 MACs learned
0 packets sent to l3 interface
0 packets with l3 send failures
0 packets hit holdq while learning
0 MAC moves
0 packets discarded
0 packets with no route for SMAC
0 packets with no nexthop
0 packets with dead nexthop
0 packets dropped due to no resolve route
0 packets with l3 ifd lookup failures
0 packets with l3 ifl lookup failures
0 packets with l3 invalid rnh
0 packets with no route for SMAC in clone learning
0 packets with no nexthop in clone learning
0 packets with dead nexthop in clone learning
0 packets dropped due to no resolve nh in clone learning
Output:
0 packets forwarded
0 packets failed to forward
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with input control processing failures
Send:
0 packets sent successfully
0 packets with send failures
0 packets dropped due to interface down
0 packets with dev output failures
0 blocked ifl discards
0 packets with tag lookup failures
0 packets with stp state lookup failures
0 packets with tag insertion failures
0 packets with tag removal failures
Flood:
0 packets flooded
0 flood failures
IGMP:
0 packets sent successfully

```

```
0 packets with send failures
0 packets forwarded
0 packets failed to forward
0 packets with mpull failures
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with ifl lookup failures
0 packets with tag lookup failures
Misc:
0 packets with size smaller than minimum
0 packets with double tags
0 packets with no ifl
0 packets with no family
0 packets with no route table
```

### show system statistics (TX Matrix Router)

```
user@host> show system statistics
sfc0-re0:
```

```
-----
Tcp:
```

```
361694 packets sent
  326507 data packets (103237236 bytes)
  2343 data packets retransmitted (2673324 bytes)
  0 resends initiated by MTU discovery
  33857 ack only packets (31613 packets delayed)
  0 URG only packets
  14 window probe packets
  387 window update packets
  1108 control packets
345879 packets received
  298207 acks(for 103141728 bytes)
  438 duplicate acks
  0 acks for unsent data
  204578 packets received in-sequence(13820995 bytes)
  6 completely duplicate packets(18 bytes)
  0 old duplicate packets
  0 packets with some duplicate data(0 bytes duped)
  0 out-of-order packets(0 bytes)
  0 packets of data after window(0 bytes)
  0 window probes
  899 window update packets
  166 packets received after close
  0 discarded for bad checksums
  0 discarded for bad header offset fields
  0 discarded because packet too short
406 connection requests
233 connection accepts
0 bad connection attempts
0 listen queue overflows
616 connections established (including accepts)
911 connections closed (including 41 drops)
  346 connections updated cached RTT on close
  346 connections updated cached RTT variance on close
  200 connections updated cached ssthresh on close
23 embryonic connections dropped
298155 segments updated rtt(of 287216 attempts)
1163 retransmit timeouts
  27 connections dropped by retransmit timeout
0 persist timeouts
  0 connections dropped by persist timeout
```



```

5 keepalive timeouts
    5 keepalive probes sent
    0 connections dropped by keepalive
69922 correct ACK header predictions
34993 correct data packet header predictions
233 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped
    233 completed
    0 bucket overflow
    0 cache overflow
    0 reset
    0 stale
    0 aborted
    0 badack
    0 unreach
    0 zone failures
0 cookies sent
0 cookies received
23 SACK recovery episodes
68 segment retransmits in SACK recovery episodes
71542 byte retransmits in SACK recovery episodes
158 SACK options (SACK blocks) received
0 SACK options (SACK blocks) sent
0 SACK scoreboard overflow
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
259 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
0 outgoing segments dropped due to policing

```

1cc0-re0:

-----  
 Tcp:

```

346 packets sent
    222 data packets (22894 bytes)
    0 data packets retransmitted (0 bytes)
    0 resends initiated by MTU discovery
    80 ack only packets (12 packets delayed)
    0 URG only packets
    0 window probe packets
    5 window update packets
    42 control packets
358 packets received
    268 acks(for 22939 bytes)
    9 duplicate acks
    0 acks for unsent data
    203 packets received in-sequence(33820 bytes)
    0 completely duplicate packets(0 bytes)
    0 old duplicate packets
    0 packets with some duplicate data(0 bytes duped)
    0 out-of-order packets(0 bytes)
    0 packets of data after window(0 bytes)
    0 window probes
    6 window update packets
    0 packets received after close

```

```
        0 discarded for bad checksums
        0 discarded for bad header offset fields
        0 discarded because packet too short
13 connection requests
18 connection accepts
0 bad connection attempts
0 listen queue overflows
31 connections established (including accepts)
35 connections closed (including 2 drops)
    3 connections updated cached RTT on close
    3 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
0 embryonic connections dropped
268 segments updated rtt(of 247 attempts)
0 retransmit timeouts
    0 connections dropped by retransmit timeout
0 persist timeouts
    0 connections dropped by persist timeout
0 keepalive timeouts
    0 keepalive probes sent
    0 connections dropped by keepalive
0 correct ACK header predictions
42 correct data packet header predictions
18 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped
    18 completed
    0 bucket overflow
    0 cache overflow
    0 reset
    0 stale
    0 aborted
    0 badack
    0 unreach
    0 zone failures
0 cookies sent
0 cookies received
0 SACK recovery episodes
0 segment retransmits in SACK recovery episodes
0 byte retransmits in SACK recovery episodes
0 SACK options (SACK blocks) received
0 SACK options (SACK blocks) sent
0 SACK scoreboard overflow
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
5 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
0 outgoing segments dropped due to policing
```

lcc1-re0:

-----  
Tcp:

```
    348 packets sent
        223 data packets (22895 bytes)
        0 data packets retransmitted (0 bytes)
        0 resends initiated by MTU discovery
```

```

      81 ack only packets (13 packets delayed)
      0 URG only packets
      0 window probe packets
      5 window update packets
      42 control packets
360 packets received
      269 acks(for 22940 bytes)
      9 duplicate acks
      0 acks for unsent data
      203 packets received in-sequence(33820 bytes)
      0 completely duplicate packets(0 bytes)
      0 old duplicate packets
      0 packets with some duplicate data(0 bytes duped)
      0 out-of-order packets(0 bytes)
      0 packets of data after window(0 bytes)
      0 window probes
      6 window update packets
      0 packets received after close
      0 discarded for bad checksums
      0 discarded for bad header offset fields
      0 discarded because packet too short
13 connection requests
18 connection accepts
0 bad connection attempts
0 listen queue overflows
31 connections established (including accepts)
36 connections closed (including 2 drops)
      3 connections updated cached RTT on close
      3 connections updated cached RTT variance on close
      0 connections updated cached ssthresh on close
0 embryonic connections dropped
269 segments updated rtt(of 248 attempts)
0 retransmit timeouts
      0 connections dropped by retransmit timeout
0 persist timeouts
      0 connections dropped by persist timeout
0 keepalive timeouts
      0 keepalive probes sent
      0 connections dropped by keepalive
0 correct ACK header predictions
43 correct data packet header predictions
18 syncache entries added
      0 retransmitted
      0 dupsyn
      0 dropped
      18 completed
      0 bucket overflow
      0 cache overflow
      0 reset
      0 stale
      0 aborted
      0 badack
      0 unreach
      0 zone failures
0 cookies sent
0 cookies received
0 SACK recovery episodes
0 segment retransmits in SACK recovery episodes
0 byte retransmits in SACK recovery episodes
0 SACK options (SACK blocks) received
0 SACK options (SACK blocks) sent

```

```
0 SACK scoreboard overflow
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
5 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
0 outgoing segments dropped due to policing
```

lcc2-re0:

-----  
Tcp:

```
405 packets sent
    271 data packets (23926 bytes)
    0 data packets retransmitted (0 bytes)
    0 resends initiated by MTU discovery
    86 ack only packets (13 packets delayed)
    0 URG only packets
    0 window probe packets
    5 window update packets
    46 control packets
418 packets received
    321 acks(for 23975 bytes)
    9 duplicate acks
    0 acks for unsent data
    234 packets received in-sequence(34403 bytes)
    0 completely duplicate packets(0 bytes)
    0 old duplicate packets
    0 packets with some duplicate data(0 bytes duped)
    0 out-of-order packets(0 bytes)
    0 packets of data after window(0 bytes)
    0 window probes
    7 window update packets
    0 packets received after close
    0 discarded for bad checksums
    0 discarded for bad header offset fields
    0 discarded because packet too short
15 connection requests
19 connection accepts
0 bad connection attempts
0 listen queue overflows
34 connections established (including accepts)
39 connections closed (including 2 drops)
    4 connections updated cached RTT on close
    4 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
0 embryonic connections dropped
321 segments updated rtt(of 299 attempts)
0 retransmit timeouts
    0 connections dropped by retransmit timeout
0 persist timeouts
    0 connections dropped by persist timeout
0 keepalive timeouts
    0 keepalive probes sent
    0 connections dropped by keepalive
0 correct ACK header predictions
48 correct data packet header predictions
19 syncache entries added
    0 retransmitted
```

```

0 dupsyn
0 dropped
19 completed
0 bucket overflow
0 cache overflow
0 reset
0 stale
0 aborted
0 badack
0 unreach
0 zone failures
0 cookies sent
0 cookies received
0 SACK recovery episodes
0 segment retransmits in SACK recovery episodes
0 byte retransmits in SACK recovery episodes
0 SACK options (SACK blocks) received
0 SACK options (SACK blocks) sent
0 SACK scoreboard overflow
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
5 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
0 outgoing segments dropped due to policing

```

lcc3-re0:

-----  
 Tcp:

```

346 packets sent
  221 data packets (22895 bytes)
  0 data packets retransmitted (0 bytes)
  0 resends initiated by MTU discovery
  81 ack only packets (13 packets delayed)
  0 URG only packets
  0 window probe packets
  5 window update packets
  42 control packets
360 packets received
  267 acks(for 22940 bytes)
  9 duplicate acks
  0 acks for unsent data
  203 packets received in-sequence(33820 bytes)
  0 completely duplicate packets(0 bytes)
  0 old duplicate packets
  0 packets with some duplicate data(0 bytes duped)
  0 out-of-order packets(0 bytes)
  0 packets of data after window(0 bytes)
  0 window probes
  6 window update packets
  0 packets received after close
  0 discarded for bad checksums
  0 discarded for bad header offset fields
  0 discarded because packet too short
13 connection requests
18 connection accepts
0 bad connection attempts
0 listen queue overflows

```

```
31 connections established (including accepts)
35 connections closed (including 2 drops)
    3 connections updated cached RTT on close
    3 connections updated cached RTT variance on close
    0 connections updated cached ssthresh on close
0 embryonic connections dropped
267 segments updated rtt(of 246 attempts)
0 retransmit timeouts
    0 connections dropped by retransmit timeout
0 persist timeouts
    0 connections dropped by persist timeout
0 keepalive timeouts
    0 keepalive probes sent
    0 connections dropped by keepalive
0 correct ACK header predictions
43 correct data packet header predictions
18 syncache entries added
    0 retransmitted
    0 dupsyn
    0 dropped
    18 completed
    0 bucket overflow
    0 cache overflow
    0 reset
    0 stale
    0 aborted
    0 badack
    0 unreach
    0 zone failures
0 cookies sent
0 cookies received
0 SACK recovery episodes
0 segment retransmits in SACK recovery episodes
0 byte retransmits in SACK recovery episodes
0 SACK options (SACK blocks) received
0 SACK options (SACK blocks) sent
0 SACK scoreboard overflow
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
5 RST packets
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
0 outgoing segments dropped due to policing
```

#### show system statistics (QFX Series)

```
user@switch> show system statistics
Tcp:
571779 packets sent
21517 data packets (1797102 bytes)
2 data packets retransmitted (20 bytes)
0 resends initiated by MTU discovery
3708 ack only packets (531 packets delayed)
0 URG only packets
1 window probe packets
1 window update packets
1093063 control packets
1132541 packets received
```

```
20961 acks(for 1796102 bytes)
5861 duplicate acks
0 acks for unsent data
19556 packets received in-sequence(232079 bytes)
3018 completely duplicate packets(0 bytes)
0 old duplicate packets
4 packets with some duplicate data(4 bytes duped)
2 out-of-order packets(2 bytes)
0 packets of data after window(0 bytes)
0 window probes
39 window update packets
0 packets received after close
0 discarded for bad checksums
0 discarded for bad header offset fields
0 discarded because packet too short
546519 connection requests
78 connection accepts
0 bad connection attempts
0 listen queue overflows
100 connections established (including accepts)
546596 connections closed (including 6 drops)
47 connections updated cached RTT on close
47 connections updated cached RTT variance on close
0 connections updated cached ssthresh on close
546497 embryonic connections dropped
20453 segments updated rtt(of 566914 attempts)
2 retransmit timeouts
0 connections dropped by retransmit timeout
0 persist timeouts
0 connections dropped by persist timeout
3028 keepalive timeouts
3027 keepalive probes sent
1 connections dropped by keepalive
7515 correct ACK header predictions
12258 correct data packet header predictions
78 syncache entries added
0 retransmitted
0 dupsyn
4 dropped
78 completed
0 bucket overflow
0 cache overflow
0 reset
0 stale
0 aborted
0 badack
0 unreach
0 zone failures
0 cookies sent
0 cookies received
1 SACK recovery episodes
1 segment retransmits in SACK recovery episodes
1 byte retransmits in SACK recovery episodes
71 SACK options (SACK blocks) received
1 SACK options (SACK blocks) sent
0 SACK scoreboard overflow
0 ACKs sent in response to in-window but not exact RSTs
0 ACKs sent in response to in-window SYNs on established connections
0 rcv packets dropped by TCP due to bad address
0 out-of-sequence segment drops due to insufficient memory
546544 RST packets
```

```
0 ICMP packets ignored by TCP
0 send packets dropped by TCP due to auth errors
0 rcv packets dropped by TCP due to auth errors
0 outgoing segments dropped due to policing
udp:
147 datagrams received
0 with incomplete header
0 with bad data length field
0 with bad checksum
9 dropped due to no socket
0 broadcast/multicast datagrams dropped due to no socket
0 dropped due to full socket buffers
0 not for hashed pcb
138 delivered
0 datagrams output
ip:
73704 total packets received
0 bad header checksums
0 with size smaller than minimum
0 with data size < data length
0 with header length < data size
0 with data length < header length
0 with incorrect version number
0 packets destined to dead next hop
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped (queue overflow)
0 fragments dropped after timeout
0 fragments dropped due to over limit
0 packets reassembled ok
1133057 packets for this host
0 packets for unknown/unsupported protocol
40146 packets forwarded
0 packets not forwardable
40146 redirects sent
1121700 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs
0 output packets discarded due to no route
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets with bad options
0 packets with options handled without error
0 strict source and record route options
0 loose source and record route options
0 record route options
0 timestamp options
0 timestamp and address options
0 timestamp and prespecified address options
0 option packets dropped due to rate limit
0 router alert options
0 multicast packets dropped (no iflist)
0 packets dropped (src and int don't match)
0 transit re packets dropped on mgmt i/f
0 packets used first nexthop in ecmp unilist
0 incoming ttpoip packets received
0 incoming ttpoip packets dropped
0 outgoing TTPoIP packets sent
0 outgoing TTPoIP packets dropped
icmp:
```



```
0 drops due to rate limit
9 calls to icmp_error
0 errors not generated because old message was icmp
Output histogram:
295 echo reply
9 destination unreachable
0 messages with bad code fields
0 messages less than the minimum length
0 messages with bad checksum
0 messages with bad source address
0 messages with bad length
0 echo drops with broadcast or multicast destination address
0 timestamp drops with broadcast or multicast destination address
Input histogram:
295 echo
295 message responses generated
igmp:
0 messages received
0 messages received with too few bytes
0 messages received with bad checksum
0 membership queries received
0 membership queries received with invalid fields
0 membership reports received
0 membership reports received with invalid fields
0 membership reports received for groups to which we belong
0 Membership reports sent
raw_if:
0 RAW packets transmitted
0 PPPOE packets transmitted
0 ISDN packets transmitted
0 DIALER packets transmitted
0 PPP packets transmitted to pppd
0 PPP packets transmitted to jppd
0 IGMPv2 packets transmitted
13 output drops due to tx error
0 MPU packets transmitted
0 PPPOE packets received
0 ISDN packets received
0 DIALER packets received
0 PPP packets received from pppd
0 MPU packets received
0 PPP packets received from jppd
0 IGMPv2 packets received
0 Input drops due to bogus protocol
0 input drops due to no mbufs available
0 input drops due to no space in socket
0 input drops due to no socket
arp:
186413 datagrams received
88 ARP requests received
88 ARP replies received
0 resolution request received
0 unrestricted proxy requests
0 restricted proxy requests
0 received proxy requests
0 proxy requests not proxied
0 restricted proxy requests not proxied
0 datagrams with bogus interface
0 datagrams with incorrect length
0 datagrams for non-IP protocol
0 datagrams with unsupported op code
```

```
0 datagrams with bad protocol address length
0 datagrams with bad hardware address length
0 datagrams with multicast source address
0 datagrams with multicast source address
0 datagrams with my own hardware address
164 datagrams for an address not on the interface
0 datagrams with a broadcast source address
0 datagrams with source address duplicate to mine
186065 datagrams which were not for me
0 packets discarded waiting for resolution
0 packets sent after waiting for resolution
50 ARP requests sent
88 ARP replies sent
0 requests for memory denied
0 requests dropped on entry
0 requests dropped during retry
0 requests dropped due to interface deletion
0 requests on unnumbered interfaces
0 new requests on unnumbered interfaces
0 replies for from unnumbered interfaces
0 requests on unnumbered interface with non-subnetted donor
0 replies from unnumbered interface with non-subnetted donor
ip6:
0 total packets received
0 packets with size smaller than minimum
0 packets with data size < data length
0 packets with bad options
0 packets with incorrect version number
0 fragments received
0 fragments dropped (dup or out of space)
0 fragments dropped after timeout
0 fragments that exceeded limit
0 packets reassembled ok
0 packets for this host
0 packets forwarded
0 packets not forwardable
0 redirects sent
0 packets sent from this host
0 packets sent with fabricated ip header
0 output packets dropped due to no bufs, etc.
0 output datagrams fragmented
0 fragments created
0 datagrams that can't be fragmented
0 packets that violated scope rules
0 multicast packets which we don't join
0 packets whose headers are not continuous
0 tunneling packets that can't find gif
0 packets discarded due to too may headers
0 failures of source address selection
0 forward cache hit
0 forward cache miss
0 Packets destined to dead next hop
0 option packets dropped due to rate limit
0 Packets dropped (src and int don't match)
0 packets dropped due to bad protocol
0 transit re packet(null) dropped on mgmt i/f
icmp6:
0 Calls to icmp_error
0 Errors not generated because old message was icmp error
0 Errors not generated because rate limitation
0 Messages with bad code fields
```

```
0 Messages < minimum length
0 Bad checksums
0 Messages with bad length
0 No route
0 Administratively prohibited
0 Beyond scope
0 Address unreachable
0 Port unreachable
0 packet too big
0 Time exceed transit
0 Time exceed reassembly
0 Erroneous header field
0 Unrecognized next header
0 Unrecognized option
0 redirect
0 Unknown
0 Message responses generated
0 Messages with too many ND options
pfkey:
0 Requests sent from userland
0 Bytes sent from userland
histogram by message type:
0 reserved
0 dump
0 Messages with invalid length field
0 Messages with invalid version field
0 Messages with invalid message type field
0 Messages too short
0 Messages with memory allocation failure
0 Messages with duplicate extension
0 Messages with invalid extension type
0 Messages with invalid sa type
0 Messages with invalid address extension
0 Requests sent to userland
0 Bytes sent to userland
histogram by message type:
0 reserved
0 dump
0 Messages toward single socket
0 Messages toward all sockets
0 Messages toward registered sockets
0 Messages with memory allocation failure
cInI:
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 VPLS 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 with too many tlvs
0 Input packets with bad tlv header
70633 Input packets with bad tlv type
68877 Input packets dropped based on tlv result0 Input packets for which rt lookup
    is bypassed
mpls:
0 Total MPLS packets received
0 Packets forwarded
0 Packets dropped
0 Packets with header too small
0 After tagging, packets can't fit link MTU
0 Packets with IPv4 explicit NULL tag
0 Packets with IPv4 explicit NULL cksum errors
0 Packets with router alert tag
0 LSP ping packets (ttl-expired/router alert)

```

```
0 Packets with ttl expired
0 Packets with tag encoding error
0 Packets discarded due to no route
0 Packets used first nexthop in ecmp unilist
vpls:
0 Total packets received
0 Packets with size smaller than minimum
0 Packets with incorrect version number
0 Packets for this host
0 Packets with no logical interface
0 Packets with no family
0 Packets with no route table
582 Copyright © 2010, Juniper Networks, Inc.
0 Packets with no auxiliary table
0 Packets with no corefacing entry
0 packets with no CE-facing entry
0 MAC route learning requests
0 MAC routes learnt
0 Requests to learn an existing route
0 Learning requests while learning disabled on interface
0 Learning requests over capacity
0 MAC routes moved
0 Requests to move static route
0 MAC route aging requests
0 MAC routes aged
0 Bogus address in aging requests
0 Requests to age static route
0 Requests to re-ageout aged route
0 Requests involving multiple peer FEs
0 Aging acks from PFE
0 Aging non-acks from PFE
0 Aging requests timed out waiting on FEs
0 Aging requests over max-rate
0 Errors finding peer FEs
0 Unsupported platform
0 Packets dropped due to no l3 route table
0 Packets dropped due to no local ifl
0 Packets punted
0 Packets dropped due to no socket
bridge:
Input:
0 packets received
0 packets forwarded
0 packets failed to forward
0 packets dropped
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with stp state lookup failures
0 packets dropped due to stp blocked/listening
0 packets dropped due to stp learning
0 packets with src MAC learning failures
0 packets with input control processing failures
Forward:
0 packets sent successfully
0 packets with send failures
0 packets forwarded to l3 interface
0 packets with l3 send failures
0 packets discarded
0 packets with l2ifl store failures
0 packets with ifl mismatch failures
0 packets with packet duplication failures
```

```

0 packets with tag lookup failures
0 packets with no route for DMAC
0 packets with no route table
0 packets with no nexthop
0 packets with dead nexthop
0 packets with eof reached error
Learning:
0 MACs learned
0 packets sent to l3 interface
0 packets with l3 send failures
0 packets hit holdq while learning
0 MAC moves
0 packets discarded
0 packets with no route for SMAC
0 packets with no nexthop
0 packets with dead nexthop
0 packets dropped due to no resolve route
0 packets with l3 ifd lookup failures
0 packets with l3 ifl lookup failures
0 packets with l3 invalid rnh
0 packets with no route for SMAC in clone learning
0 packets with no nexthop in clone learning
0 packets with dead nexthop in clone learning
0 packets dropped due to no resolve nh in clone learning
Output:
0 packets forwarded
0 packets failed to forward
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with input control processing failures
Send:
0 packets sent successfully
0 packets with send failures
0 packets dropped due to interface down
0 packets with dev output failures
0 blocked ifl discards
0 packets with tag lookup failures
0 packets with stp state lookup failures
0 packets with tag insertion failures
0 packets with tag removal failures
Flood:
0 packets flooded
0 flood failures
IGMP:
0 packets sent successfully
0 packets with send failures
0 packets forwarded
0 packets failed to forward
0 packets with mpull failures
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with ifl lookup failures
0 packets with tag lookup failures
Misc:
0 packets with size smaller than minimum
0 packets with double tags
0 packets with no ifl
0 packets with no family
0 packets with no route table

```

## show system storage

---

<b>List of Syntax</b>	<a href="#">Syntax on page 558</a> <a href="#">Syntax (EX Series Switches) on page 558</a> <a href="#">Syntax (MX Series Router) on page 558</a> <a href="#">Syntax (QFX Series) on page 558</a> <a href="#">Syntax (SRX Series) on page 558</a> <a href="#">Syntax (TX Matrix Router) on page 558</a> <a href="#">Syntax (TX Matrix Plus Router and TX Matrix Plus Router with 3D SIBs) on page 558</a>
<b>Syntax</b>	<code>show system storage</code> <code>&lt;detail&gt;</code> <code>&lt;invoke-on (all-routing-engines   other-routing-engine)&gt;</code>
<b>Syntax (EX Series Switches)</b>	<code>show system storage</code> <code>&lt;detail&gt;</code> <code>&lt;all-members&gt;</code> <code>&lt;local&gt;</code> <code>&lt;member <i>member-id</i>&gt;</code> <code>&lt;invoke-on (all-routing-engines   other-routing-engine)&gt;</code>
<b>Syntax (MX Series Router)</b>	<code>show system storage</code> <code>&lt;detail&gt;</code> <code>&lt;all-members&gt;</code> <code>&lt;local&gt;</code> <code>&lt;member <i>member-id</i>&gt;</code> <code>&lt;invoke-on (all-routing-engines   other-routing-engine)&gt;</code>
<b>Syntax (QFX Series)</b>	<code>show system storage</code> <code>&lt;detail&gt;</code> <code>&lt;infrastructure <i>name</i>&gt;</code> <code>&lt;interconnect-device <i>name</i>&gt;</code> <code>&lt;node-group <i>name</i>&gt;</code> <code>&lt;invoke-on (all-routing-engines   other-routing-engine)&gt;</code>
<b>Syntax (SRX Series)</b>	<code>show system storage</code> <code>&lt;detail&gt;</code> <code>&lt;partitions&gt;</code> <code>&lt;invoke-on (all-routing-engines   other-routing-engine)&gt;</code>
<b>Syntax (TX Matrix Router)</b>	<code>show system storage</code> <code>&lt;detail&gt;</code> <code>&lt;all-chassis   all-lcc   lcc <i>number</i>   scc&gt;</code> <code>&lt;invoke-on (all-routing-engines   other-routing-engine)&gt;</code>
<b>Syntax (TX Matrix Plus Router and TX Matrix Plus Router with 3D SIBs)</b>	<code>show system storage</code> <code>&lt;detail&gt;</code> <code>&lt;all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i>&gt;</code> <code>&lt;invoke-on (all-routing-engines   other-routing-engine)&gt;</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.



**sfc** option introduced for the TX Matrix Plus router in JUNOS Release 9.6.  
 Command introduced in Junos OS Release 11.1 for the QFX Series.  
 Option **invoke-on (all-routing-engines | other-routing-engine)** introduced in Junos OS Release 14.1  
 Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

- Description** Display statistics about the amount of free disk space in the router's or switch's file systems.
- Options**
- none**—Display standard information about the amount of free disk space in the router's or switch's file systems.
  - detail**—(Optional) Display detailed output.
  - invoke-on all-routing-engines**—(Optional) Display the system storage information 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.
  - invoke-on other-routing-engines**—(Optional) Display the system storage information 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 system storage 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 system storage information on all the backup Routing Engines.
  - all-chassis**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system storage statistics for all the routers in the chassis.
  - all-lcc**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system storage statistics for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system storage statistics for all routers connected to the TX Matrix Plus router.
  - all-members**—(EX4200 switches and MX Series routers only) (Optional) Display system storage statistics for all members of the Virtual Chassis configuration.
  - infrastructure name**—(QFabric systems only) (Optional) Display system storage statistics for the fabric control Routing Engines or fabric manager Routing Engines.
  - interconnect-device name**—(QFabric systems only) (Optional) Display system storage statistics for the Interconnect device.
  - lcc number**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system storage statistics for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system storage statistics for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Display system storage statistics for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Display system storage statistics for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**node-group *name***—(QFabric systems only) (Optional) Display system storage statistics for the Node group.

**scc**—(TX Matrix routers only) (Optional) Display system storage statistics for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display system storage statistics for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system storage** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)
- [show system storage partitions \(View SRX Series\)](#)

**List of Sample Output**

- [show system storage on page 561](#)
- [show system storage \(TX Matrix Plus Router\) on page 561](#)
- [show system storage \(QFX3500 Switch\) on page 563](#)
- [show system storage invoke-on all-routing-engines on page 564](#)
- [show system storage invoke-on other-routing-engine on page 565](#)

**Output Fields** Table 17 on page 561 describes the output fields for the **show system storage** command. Output fields are listed in the approximate order in which they appear.

**Table 17: show system storage Output Fields**

Field Name	Field Description
<b>Filesystem</b>	Name of the filesystem.
<b>Size</b>	Size of the filesystem.
<b>Used</b>	Amount of space used in the filesystem.
<b>Avail</b>	Amount of space available in the filesystem.
<b>Capacity</b>	Percentage of the filesystem space that is being used.
<b>Mounted on</b>	Directory in which the filesystem is mounted.

## Sample Output

### show system storage

```

user@host> show system storage
Filesystem      Size      Used      Avail  Capacity  Mounted on
/dev/ad0s1a      77M       37M       34M      52%      /
devfs           16K       16K        0B     100%    /dev/
/dev/vn0        12M       12M        0B     100%    /packages/mnt/jbase
/dev/vn1        39M       39M        0B     100%
/packages/mnt/jkernel-7.2R1.7
/dev/vn2        12M       12M        0B     100%
/packages/mnt/jpfe-M40-7.2R1.7
/dev/vn3        2.3M      2.3M        0B     100%
/packages/mnt/jdocs-7.2R1.7
/dev/vn4        14M       14M        0B     100%
/packages/mnt/jroute-7.2R1.7
/dev/vn5        4.5M      4.5M        0B     100%
/packages/mnt/jcrypto-7.2R1.7
mfs:172         1.5G      4.0K       1.3G      0%      /tmp
/dev/ad0s1e      12M       20K        11M      0%      /config
procfs          4.0K      4.0K        0B     100%    /proc
/dev/ad1s1f      9.4G      4.9G       3.7G      57%     /var

```

### show system storage (TX Matrix Plus Router)

```

user@host> show system storage
sfc0-re0:
-----
Filesystem      Size      Used      Avail  Capacity  Mounted on
/dev/ad0s1a      3.4G      178M       2.9G      6%      /
devfs           1.0K      1.0K        0B     100%    /dev
devfs           1.0K      1.0K        0B     100%    /dev/
/dev/md0         33M       33M        0B     100%    /packages/mnt/jbase
/dev/md1        216M      216M        0B     100%
/packages/mnt/jkernel-9.6-20090519.0
/dev/md2         66M       66M        0B     100%
/packages/mnt/jpfe-T-9.6-20090519.0

```

/dev/md3	4.1M	4.1M	0B	100%	
/packages/mnt/jdocs-9.6-20090519.0					
/dev/md4	57M	57M	0B	100%	
/packages/mnt/jroute-9.6-20090519.0					
/dev/md5	15M	15M	0B	100%	
/packages/mnt/jcrypto-9.6-20090519.0					
/dev/md6	34M	34M	0B	100%	
/packages/mnt/jpfe-common-9.6-20090519.0					
/dev/md7	2.0G	10.0K	1.8G	0%	/tmp
/dev/md8	2.0G	1.0M	1.8G	0%	/mfs
/dev/ad0s1e	383M	82K	352M	0%	/config
procfs	4.0K	4.0K	0B	100%	/proc
/dev/ad1s1f	52G	7.5G	40G	16%	/var

lcc0-re0:

Filesystem	Size	Used	Avail	Capacity	Mounted on
/dev/ad0s1a	3.4G	178M	2.9G	6%	/
devfs	1.0K	1.0K	0B	100%	/dev
devfs	1.0K	1.0K	0B	100%	/dev/
/dev/md0	33M	33M	0B	100%	/packages/mnt/jbase
/dev/md1	216M	216M	0B	100%	
/packages/mnt/jkernel-9.6-20090519.0					
/dev/md2	66M	66M	0B	100%	
/packages/mnt/jpfe-T-9.6-20090519.0					
/dev/md3	4.1M	4.1M	0B	100%	
/packages/mnt/jdocs-9.6-20090519.0					
/dev/md4	57M	57M	0B	100%	
/packages/mnt/jroute-9.6-20090519.0					
/dev/md5	15M	15M	0B	100%	
/packages/mnt/jcrypto-9.6-20090519.0					
/dev/md6	34M	34M	0B	100%	
/packages/mnt/jpfe-common-9.6-20090519.0					
/dev/md7	2.0G	10.0K	1.8G	0%	/tmp
/dev/md8	2.0G	540K	1.8G	0%	/mfs
/dev/ad0s1e	383M	88K	352M	0%	/config
procfs	4.0K	4.0K	0B	100%	/proc
/dev/ad1s1f	52G	6.3G	41G	13%	/var

lcc1-re0:

Filesystem	Size	Used	Avail	Capacity	Mounted on
/dev/ad0s1a	3.4G	178M	2.9G	6%	/
devfs	1.0K	1.0K	0B	100%	/dev
devfs	1.0K	1.0K	0B	100%	/dev/
/dev/md0	33M	33M	0B	100%	/packages/mnt/jbase
/dev/md1	216M	216M	0B	100%	
/packages/mnt/jkernel-9.6-20090519.0					
/dev/md2	66M	66M	0B	100%	
/packages/mnt/jpfe-T-9.6-20090519.0					
/dev/md3	4.1M	4.1M	0B	100%	
/packages/mnt/jdocs-9.6-20090519.0					
/dev/md4	57M	57M	0B	100%	
/packages/mnt/jroute-9.6-20090519.0					
/dev/md5	15M	15M	0B	100%	
/packages/mnt/jcrypto-9.6-20090519.0					
/dev/md6	34M	34M	0B	100%	
/packages/mnt/jpfe-common-9.6-20090519.0					
/dev/md7	2.0G	10.0K	1.8G	0%	/tmp
/dev/md8	2.0G	540K	1.8G	0%	/mfs
/dev/ad0s1e	383M	88K	352M	0%	/config

```

procfs          4.0K      4.0K      0B      100% /proc
/dev/ad1s1f     23G      13G      7.7G     64%  /var

lcc2-re0:
-----
Filesystem      Size      Used      Avail  Capacity  Mounted on
/dev/ad0s1a     3.4G      178M      2.9G      6%      /
devfs           1.0K      1.0K      0B      100%    /dev
devfs           1.0K      1.0K      0B      100%    /dev/
/dev/md0        33M       33M       0B      100%    /packages/mnt/jbase
/dev/md1        216M      216M      0B      100%
/packages/mnt/jkernel-9.6-20090519.0
/dev/md2        66M       66M       0B      100%
/packages/mnt/jpfe-T-9.6-20090519.0
/dev/md3        4.1M      4.1M      0B      100%
/packages/mnt/jdocs-9.6-20090519.0
/dev/md4        57M       57M       0B      100%
/packages/mnt/jroute-9.6-20090519.0
/dev/md5        15M       15M       0B      100%
/packages/mnt/jcrypto-9.6-20090519.0
/dev/md6        34M       34M       0B      100%
/packages/mnt/jpfe-common-9.6-20090519.0
/dev/md7        2.0G      10.0K     1.8G      0%      /tmp
/dev/md8        2.0G      540K     1.8G      0%      /mfs
/dev/ad0s1e     383M      64K      352M      0%      /config
procfs          4.0K      4.0K      0B      100%    /proc
/dev/ad1s1f     23G      3.7G     17G      18%     /var

lcc3-re0:
-----
Filesystem      Size      Used      Avail  Capacity  Mounted on
/dev/ad0s1a     3.4G      178M      2.9G      6%      /
devfs           1.0K      1.0K      0B      100%    /dev
devfs           1.0K      1.0K      0B      100%    /dev/
/dev/md0        33M       33M       0B      100%    /packages/mnt/jbase
/dev/md1        216M      216M      0B      100%
/packages/mnt/jkernel-9.6-20090519.0
/dev/md2        66M       66M       0B      100%
/packages/mnt/jpfe-T-9.6-20090519.0
/dev/md3        4.1M      4.1M      0B      100%
/packages/mnt/jdocs-9.6-20090519.0
/dev/md4        57M       57M       0B      100%
/packages/mnt/jroute-9.6-20090519.0
/dev/md5        15M       15M       0B      100%
/packages/mnt/jcrypto-9.6-20090519.0
/dev/md6        34M       34M       0B      100%
/packages/mnt/jpfe-common-9.6-20090519.0
/dev/md7        2.0G      10.0K     1.8G      0%      /tmp
/dev/md8        2.0G      540K     1.8G      0%      /mfs
/dev/ad0s1e     383M      34K      352M      0%      /config
procfs          4.0K      4.0K      0B      100%    /proc
/dev/ad1s1f     23G      18G      3.5G     84%     /var

```

#### show system storage (QFX3500 Switch)

```

user@switch> show system storage
Filesystem      Size      Used      Avail  Capacity  Mounted on
/dev/da0s2a     343M      192M     123M      61%      /
devfs           1.0K      1.0K      0B      100%    /dev
/dev/md0        119M      119M      0B      100%    /packages/mnt/jbase
/dev/md1        513M      513M      0B      100%

```

```

/packages/mnt/jkernel-qfx-11.1R1.5
/dev/md2          37M          37M          0B          100%
/packages/mnt/jpfe-qfx-e9xxx-11.1R1.5
/dev/md3          6.0M          6.0M          0B          100%
/packages/mnt/jdocs-qfx-11.1R1.5
/dev/md4          216M         216M          0B          100%
/packages/mnt/jroute-qfx-11.1R1.5
/dev/md5          59M           59M          0B          100%
/packages/mnt/jcrypto-qfx-11.1R1.5
/dev/md6          85M           85M          0B          100%
/packages/mnt/jswitch-qfx-11.1R1.5
/dev/md7          63M           8.0K          58M          0% /tmp
/dev/da0s2f        228M          14M          196M          7% /var
/dev/da0s3d        590M           3.0M          540M          1% /var/tmp
/dev/da0s3e        104M           162K           95M          0% /config
procfs            4.0K           4.0K           0B          100% /proc

```

### show system storage invoke-on all-routing-engines

```
user@host> show system storage invoke-on all-routing-engines
```

```
re0:
```

```

-----
Filesystem      Size      Used      Avail  Capacity  Mounted on
/dev/ad0s1a     3.3G      440M      2.6G      14%      /
devfs           1.0K      1.0K       0B      100%     /dev
/dev/md0        76M       76M       0B      100%     /packages/mnt/jbase
/dev/md1        40M       40M       0B      100%
/packages/mnt/jkernel64-14.1-20140407.1
/dev/md2        219M      219M       0B      100%
/packages/mnt/jpfe-T-14.1-20140407.1
/dev/md3        5.4M      5.4M       0B      100%
/packages/mnt/jdocs-14.1-20140407.1
/dev/md4        116M      116M       0B      100%
/packages/mnt/jroute-14.1-20140407.1
/dev/md5        44M       44M       0B      100%
/packages/mnt/jcrypto64-14.1-20140407.1
/dev/md6        70M       70M       0B      100%
/packages/mnt/jpfe-common-14.1-20140407.1
/dev/md7        182K      182K       0B      100%
/packages/mnt/jplatform-14.1-20140407.1
/dev/md8        499M      499M       0B      100%
/packages/mnt/jruntime-14.1-20140407.1
/dev/md9        41M       41M       0B      100%
/packages/mnt/jruntime64-14.1-20140407.1
/dev/md10       12M       12M       0B      100%
/packages/mnt/py-base-i386-14.1-20140407.1
/dev/md11       3.2G       8.0K      2.9G       0% /tmp
/dev/md12       3.2G       1.1M      2.9G       0% /mfs
/dev/ad0s1e     376M      220K      346M       0% /config
procfs         4.0K       4.0K       0B      100% /proc
/dev/ad1s1f     50G       43G      3.2G      93% /var

```

```
re1:
```

```

-----
Filesystem      Size      Used      Avail  Capacity  Mounted on
/dev/ad0s1a     3.3G      440M      2.6G      14%      /
devfs           1.0K      1.0K       0B      100%     /dev
/dev/md0        76M       76M       0B      100%     /packages/mnt/jbase
/dev/md1        40M       40M       0B      100%
/packages/mnt/jkernel64-14.1-20140407.1
/dev/md2        219M      219M       0B      100%

```

```

/packages/mnt/jpfe-T-14.1-20140407.1
/dev/md3          5.4M      5.4M          0B      100%
/packages/mnt/jdocs-14.1-20140407.1
/dev/md4          116M     116M          0B      100%
/packages/mnt/jroute-14.1-20140407.1
/dev/md5          44M      44M          0B      100%
/packages/mnt/jcrypto64-14.1-20140407.1
/dev/md6          70M      70M          0B      100%
/packages/mnt/jpfe-common-14.1-20140407.1
/dev/md7          182K     182K          0B      100%
/packages/mnt/jplatform-14.1-20140407.1
/dev/md8          499M     499M          0B      100%
/packages/mnt/jruntime-14.1-20140407.1
/dev/md9          41M      41M          0B      100%
/packages/mnt/jruntime64-14.1-20140407.1
/dev/md10         12M      12M          0B      100%
/packages/mnt/py-base-i386-14.1-20140407.1
/dev/md11         3.2G     8.0K         2.9G      0% /tmp
/dev/md12         3.2G    662K         2.9G      0% /mfs
/dev/ad0s1e       375M     230K        344M      0% /config
procfs           4.0K     4.0K          0B      100% /proc
/dev/ad1s1f      52G      46G         2.2G      95% /var

```

#### show system storage invoke-on other-routing-engine

```

user@host> show system storage invoke-on other-routing-engine
rel:

```

```

-----
Filesystem          Size      Used      Avail  Capacity  Mounted on
/dev/ad0s1a         3.3G      440M      2.6G      14%      /
devfs               1.0K      1.0K       0B      100%     /dev
/dev/md0            76M       76M       0B      100%     /packages/mnt/jbase
/dev/md1            40M       40M       0B      100%
/packages/mnt/jkernel64-14.1-20140407.1
/dev/md2            219M      219M       0B      100%
/packages/mnt/jpfe-T-14.1-20140407.1
/dev/md3            5.4M      5.4M       0B      100%
/packages/mnt/jdocs-14.1-20140407.1
/dev/md4            116M     116M       0B      100%
/packages/mnt/jroute-14.1-20140407.1
/dev/md5            44M       44M       0B      100%
/packages/mnt/jcrypto64-14.1-20140407.1
/dev/md6            70M       70M       0B      100%
/packages/mnt/jpfe-common-14.1-20140407.1
/dev/md7            182K     182K       0B      100%
/packages/mnt/jplatform-14.1-20140407.1
/dev/md8            499M     499M       0B      100%
/packages/mnt/jruntime-14.1-20140407.1
/dev/md9            41M       41M       0B      100%
/packages/mnt/jruntime64-14.1-20140407.1
/dev/md10           12M       12M       0B      100%
/packages/mnt/py-base-i386-14.1-20140407.1
/dev/md11           3.2G     8.0K      2.9G      0% /tmp
/dev/md12           3.2G    662K      2.9G      0% /mfs
/dev/ad0s1e         375M     230K      344M      0% /config
procfs              4.0K     4.0K       0B      100% /proc
/dev/ad1s1f        52G      46G      2.2G      95% /var

```

## show system switchover

<b>List of Syntax</b>	<a href="#">Syntax on page 566</a> <a href="#">Syntax (TX Matrix Router) on page 566</a> <a href="#">Syntax (TX Matrix Plus Router) on page 566</a> <a href="#">Syntax (MX Series Router) on page 566</a>
<b>Syntax</b>	show system switchover
<b>Syntax (TX Matrix Router)</b>	show system switchover <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system switchover <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	show system switchover <all-members> <local> <member <i>member-id</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6. Command introduced in Junos OS Release 13.2X51-D20 for QFX Series switches.
<b>Description</b>	Display whether graceful Routing Engine switchover is configured, the state of the kernel replication (ready or synchronizing), any replication errors, and whether the primary and standby Routing Engines are using compatible versions of the kernel database.



**NOTE:** Issue the `show system switchover` command *only* on the backup Routing Engine. This command is *not* supported on the master Routing Engine, because the kernel-replication process daemon does not run on the master Routing Engine. This process runs only on the backup Routing Engine.

Beginning Junos OS Release 9.6, the `show system switchover` command has been deprecated on the master Routing Engine on all routers other than a TX Matrix (switch-card chassis) or a TX Matrix Plus (switch-fabric chassis) router.

However, in a routing matrix, if you issue the `show system switchover` command on the master Routing Engine of the TX Matrix router (or switch-card chassis), the CLI displays graceful switchover information for the master Routing Engine of the T640 routers (or line-card chassis) in the routing matrix. Likewise, if you issue the `show system switchover` command on the master Routing Engine of a TX Matrix Plus router (or switch-fabric chassis), the CLI displays output for the master Routing Engine of T1600 or T4000 routers in the routing matrix.



**Options** **all-chassis**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display graceful Routing Engine switchover information for all Routing Engines on the TX Matrix router and the T640 routers configured in the routing matrix. On a TX Matrix Plus router, display graceful Routing Engine switchover information for all Routing Engines on the TX Matrix Plus router and the T1600 or T4000 routers configured in the routing matrix.

**all-lcc**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display graceful Routing Engine switchover information for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display graceful Routing Engine switchover information for all connected T1600 or T4000 LCCs.

Note that in this instance, packets get dropped. The LCCs perform GRES on their own chassis (GRES cannot be handled by one particular chassis for the entire router) and synchronization is not possible as the LCC plane bringup time varies for each LCC. Therefore, when there is traffic on these planes, there may be a traffic drop.

**all-members**—(MX Series routers only) (Optional) Display graceful Routing Engine switchover information for all Routing Engines on all members of the Virtual Chassis configuration.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display graceful Routing Engine switchover information for a specific T640 router connected to the TX Matrix router. On a TX Matrix Plus router, display graceful Routing Engine switchover information for a specific router connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(MX Series routers only) (Optional) Display graceful Routing Engines switchover information for all Routing Engines on the local Virtual Chassis member.

**member *member-id***—(MX Series routers only) (Optional) Display graceful Routing Engine switchover information for all Routing Engines on the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

**scc**—(TX Matrix router only) (Optional) Display graceful Routing Engine switchover information for the TX Matrix router (or switch-card chassis).

**sfc**—(TX Matrix Plus routers only) (Optional) Display graceful Routing Engine switchover information for the TX Matrix Plus router.

**Additional Information** If you issue the **show system switchover** command on a TX Matrix backup Routing Engine, the command is broadcast to all the T640 backup Routing Engines that are connected to it.

Likewise, if you issue the **show system switchover** command on a TX Matrix Plus backup Routing Engine, the command is broadcast to all the T1600 or T4000 backup Routing Engines that are connected to it.

If you issue the **show system switchover** command on the active Routing Engine in the master router of an MX Series Virtual Chassis, the router displays a message that this command is not applicable on this member of the Virtual Chassis.

**Required Privilege Level** view

**Related Documentation**

- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**

[show system switchover \(Backup Routing Engine - Ready\) on page 569](#)  
[show system switchover \(Backup Routing Engine - Not Ready\) on page 569](#)  
[show system switchover \(MX Virtual Chassis\) on page 569](#)  
[show system switchover \(MX Virtual Chassis\) on page 570](#)  
[show system switchover \(Routing Matrix and Routing Matrix Plus\) - Master Ready on page 570](#)  
[show system switchover \(Routing Matrix and Routing Matrix Plus\) - Master Not Ready on page 570](#)  
[show system switchover \(Routing Matrix and Routing Matrix Plus\) - Backup Ready on page 570](#)  
[show system switchover \(Routing Matrix and Routing Matrix Plus\) - Backup Not Ready on page 571](#)  
[show system switchover all-lcc \(Routing Matrix and Routing Matrix Plus\) on page 571](#)

**Output Fields** [Table 18 on page 568](#) describes the output fields for the **show system switchover** command. Output fields are listed in the approximate order in which they appear.

**Table 18: show system switchover Output Fields**

Field Name	Field Description
Graceful switchover	Display graceful Routing Engine switchover status: <ul style="list-style-type: none"> <li>• <b>On</b>—Indicates <b>graceful-switchover</b> is specified for the <b>routing-options</b> configuration command.</li> <li>• <b>Off</b>—Indicates <b>graceful-switchover</b> is not specified for the <b>routing-options</b> configuration command.</li> </ul>
Configuration database	State of the configuration database: <ul style="list-style-type: none"> <li>• <b>Ready</b>—Configuration database has synchronized.</li> <li>• <b>Synchronizing</b>—Configuration database is synchronizing. Displayed when there are updates within the last 5 seconds.</li> <li>• <b>Synchronize failed</b>—Configuration database synchronize process failed.</li> </ul>

Table 18: show system switchover Output Fields (*continued*)

Field Name	Field Description
<b>Kernel database</b>	<p>State of the kernel database:</p> <ul style="list-style-type: none"> <li>• <b>Ready</b>—Kernel database has synchronized. This message implies that the system is ready for GRES.</li> <li>• <b>Synchronizing</b>—Kernel database is synchronizing. Displayed when there are updates within the last 5 seconds.</li> <li>• <b>Version incompatible</b>—The primary and standby Routing Engines are running incompatible kernel database versions.</li> <li>• <b>Replication error</b>—An error occurred when the state was replicated from the primary Routing Engine. Inspect <b>Steady State</b> for possible causes, or notify Juniper Networks customer support.</li> </ul>
<b>Peer state</b>	<p>Routing Engine peer state:</p> <p>This field is displayed only when ksyncd is running in multichassis mode (LCC master).</p> <ul style="list-style-type: none"> <li>• <b>Steady State</b>—Peer completed switchover transition.</li> <li>• <b>Peer Connected</b>—Peer in switchover transition.</li> </ul>
<b>Switchover Status</b>	<p>Switchover Status:</p> <ul style="list-style-type: none"> <li>• <b>Ready</b>—Message for system being switchover ready.</li> <li>• <b>Not Ready</b>—Message for system not being ready for switchover.</li> </ul>

## Sample Output

### show system switchover (Backup Routing Engine - Ready)

```
user@host> show system switchover
Graceful switchover: On
Configuration database: Ready
Kernel database: Ready
Peer state: Steady State
Switchover Status: Ready
```

### show system switchover (Backup Routing Engine - Not Ready)

```
user@host> show system switchover
Graceful switchover: On
Configuration database: Ready
Kernel database: Ready
Peer state: Steady StateSwitchover Status: Not Ready
```

### show system switchover (MX Virtual Chassis)

```
{master:member1-re1}

user@host> show system switchover
member0:
-----
Graceful switchover: On
Configuration database: Ready
Kernel database: Ready
Switchover Status: Ready

member1:
```

```
-----  
Command is not applicable on this member of the virtual-chassis
```

### show system switchover (MX Virtual Chassis)

```
{master:member1-re1}  
user@host> show system switchover  
member0:  
-----  
Graceful switchover: On  
Configuration database: Ready  
Kernel database: Ready  
Switchover Ready  
  
member1:  
-----  
Command is not applicable on this member of the virtual-chassis
```

### show system switchover (Routing Matrix and Routing Matrix Plus) - Master Ready

```
user@host> show system switchover  
lcc0-re1:  
-----  
Multichassis replication: On  
Configuration database: Ready  
Kernel database: Ready  
Peer state: Steady State  
Switchover Status: Ready  
  
lcc2-re0:  
-----  
Multichassis replication: On  
Configuration database: Ready  
Kernel database: Ready  
Peer state: Steady State  
Switchover Status: Ready
```

### show system switchover (Routing Matrix and Routing Matrix Plus) - Master Not Ready

```
user@host> show system switchover  
lcc0-re1:  
-----  
Multichassis replication: On  
Configuration database: Ready  
Kernel database: Ready  
Peer state: Steady State  
Switchover Status: Ready  
  
lcc2-re1:  
-----  
Multichassis replication: On  
Configuration database: Ready  
Kernel database: Ready  
Peer state: Steady State  
Switchover Status: Not Ready
```

### show system switchover (Routing Matrix and Routing Matrix Plus) - Backup Ready

```
user@host> show system switchover
```

```
scc-re0:
-----
Graceful switchover: On
Configuration database: Ready
Kernel database: Ready
Switchover Status: Ready
```

```
lcc0-re0:
-----
Graceful switchover: On
Configuration database: Ready
Kernel database: Ready
Switchover Status: Ready
```

```
lcc2-re1:
-----
Graceful switchover: On
Configuration database: Ready
Kernel database: Ready
Switchover Status: Ready
```

#### show system switchover (Routing Matrix and Routing Matrix Plus) - Backup Not Ready

```
user@host> show system switchover
scc-re0:
-----
Graceful switchover: On
Configuration database: Ready
Kernel database: Ready
Switchover Status: Not Ready
```

```
lcc0-re0:
-----
Graceful switchover: On
Configuration database: Ready
Kernel database: Ready
Switchover Status: Ready
```

```
lcc2-re1:
-----
Graceful switchover: On
Configuration database: Ready
Kernel database: Ready
Switchover Status: Ready
```


#### show system switchover all-lcc (Routing Matrix and Routing Matrix Plus)

```
user@host> show system switchover all-lcc
lcc0-re0:
-----
Multichassis replication: On
Configuration database: Ready
Kernel database: Ready
Peer state: Steady State
Switchover Status: Ready
```

```
lcc2-re0:
-----
Multichassis replication: On
Configuration database: Ready
```

Kernel database: Ready  
Peer state: Steady State  
Switchover Status: Ready

## show system uptime

<b>List of Syntax</b>	<a href="#">Syntax on page 573</a> <a href="#">Syntax (EX Series Switches) on page 573</a> <a href="#">Syntax (QFX Series) on page 573</a> <a href="#">Syntax (TX Matrix Router) on page 573</a> <a href="#">Syntax (TX Matrix Plus Router) on page 573</a> <a href="#">Syntax (MX Series Router) on page 573</a>
<b>Syntax</b>	show system uptime
<b>Syntax (EX Series Switches)</b>	show system uptime <all-members> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	show system uptime <director-group <i>name</i> > <infrastructure <i>name</i> > <interconnect-device <i>name</i> > <node-group <i>name</i> >
<b>Syntax (TX Matrix Router)</b>	show system uptime <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system uptime <detail> <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	show system uptime <all-members> <invoke-on> <local> <member <i>member-id</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in JUNOS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
<b>Description</b>	Display the current time and information about how long the router or switch, router or switch software, and routing protocols have been running.
<div>  <p><b>NOTE:</b> Time values computed from differences in timestamps can vary due to the insertion or deletion of leap-seconds between them.</p> </div>	
<b>Options</b>	<b>none</b> —Show time since the system rebooted and processes started.

**all-chassis**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Show time since the system rebooted and processes started on all the routers in the chassis.

**all-lcc**—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, show time since the system rebooted and processes started for all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, show time since the system rebooted and processes started for all connected T1600 or T4000 LCCs.

**all-members**—(EX4200 switches and MX Series routers only) (Optional) Show time since the system rebooted and processes started on all members of the Virtual Chassis configuration.

**director-group *name***—(QFabric systems only) (Optional) Show time since the system rebooted and processes started on the Director group.

**infrastructure *name***—(QFabric systems only) (Optional) Show time since the system rebooted and processes started on the fabric control Routing Engine and fabric manager Routing Engine.

**interconnect-device *name***—(QFabric systems only) (Optional) Show time since the system rebooted and processes started on the Interconnect device.

**invoke-on**—(MX Series routers only) (Optional) Display the time since the system rebooted and processes started on the master Routing Engine, backup Routing Engine, or both, on a router with two Routing Engines.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, show time since the system rebooted and processes started for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, show time since the system rebooted and processes started for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Show time since the system rebooted and processes started on the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Show time since the system rebooted and processes started on the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a



value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**node-group *name***—(QFabric systems only) (Optional) Show time since the system rebooted and processes started on the Node group.

**scc**—(TX Matrix routers only) (Optional) Show time since the system rebooted and processes started for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Show time since the system rebooted and processes started for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system uptime** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.

**Required Privilege Level** view

**Related Documentation**

- [10-Gigabit Ethernet LAN/WAN PIC with XFP \(T640 Router\)](#)
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

**List of Sample Output**

- [show system uptime on page 576](#)
- [show system uptime all-lcc \(TX Matrix Router\) on page 576](#)
- [show system uptime all-lcc \(TX Matrix Plus Router\) on page 576](#)
- [show system uptime \(EX Series\) on page 577](#)
- [show system uptime \(QFX Series\) on page 577](#)

**Output Fields** [Table 19 on page 575](#) describes the output fields for the **show system uptime** command. Output fields are listed in the approximate order in which they appear.

**Table 19: show system uptime Output Fields**

Field Name	Field Description
<b>Current time</b>	Current system time in UTC.
<b>Time Source</b>	Reference time source that the system is locked to.
<b>System booted</b>	Date and time when the Routing Engine on the router or switch was last booted and how long it has been running.
<b>Protocols started</b>	Date and time when the routing protocols were last started and how long they have been running.
<b>Last configured</b>	Date and time when a configuration was last committed. Also shows the name of the user who issued the last <b>commit</b> command.
<b><i>time and up</i></b>	Current time, in the local time zone, and how long the router or switch has been operational.

Table 19: show system uptime Output Fields (*continued*)

Field Name	Field Description
<b>users</b>	Number of users logged in to the router or switch.
<b>load averages</b>	Load averages for the last 1 minute, 5 minutes, and 15 minutes.

## Sample Output

### show system uptime

```

user@host> show system uptime
Current time:      1998-10-13 19:45:47 UTC
Time Source:      NTP CLOCK
System booted:    1998-10-12 20:51:41 UTC (22:54:06 ago)
Protocols started: 1998-10-13 19:33:45 UTC (00:12:02 ago)
Last configured:  1998-10-13 19:33:45 UTC (00:12:02 ago) by abc
12:45PM up 22:54, 2 users, load averages: 0.07, 0.02, 0.01

```

### show system uptime all-lcc (TX Matrix Router)

```

user@host> show system uptime all-lcc
lcc0-re0:
-----
Current time: 2004-09-13 09:55:35 PDT
Time Source: LOCAL CLOCK
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
Time Source: LOCAL CLOCK
System booted: 2004-09-12 03:23:43 PDT (1d 06:31 ago)
Last configured: 2004-09-13 03:05:36 PDT (06:49:59 ago) by root
9:55AM PDT up 1 day, 6:32, 1 user, load averages: 0.02, 0.01, 0.00

```

### show system uptime all-lcc (TX Matrix Plus Router)

```

user@host> show system uptime all-lcc
sfc0-re0:
-----
Current time: 2009-05-25 00:24:30 PDT
Time Source: NTP CLOCK
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 user1
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
Time Source: NTP CLOCK
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
Time Source: NTP CLOCK
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
Time Source: NTP CLOCK
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
Time Source: NTP CLOCK
System booted: 2009-05-24 06:39:44 PDT (17:44:46 ago)
error: the routing subsystem is not running
Last configured: 2009-05-24 06:40:08 PDT (17:44:22 ago) by root
12:24AM up 17:45, 0 users, load averages: 0.00, 0.00, 0.00
```

#### show system uptime (EX Series)

```
user@switch> show system uptime
Current time: 2014-03-12 16:39:56 UTC
Time Source: NTP CLOCK
System booted: 2014-03-12 14:58:05 UTC (01:41:51 ago)
Protocols started: 2014-03-12 14:59:48 UTC (01:40:08 ago)
Last configured: 2014-03-12 14:58:58 UTC (01:40:58 ago) by root
4:39PM up 1:42, 4 users, load averages: 0.02, 0.02, 0.00
```

#### show system uptime (QFX Series)

```
user@switch> show system uptime
Current time: 2010-08-27 03:12:30 PDT
Time Source: NTP CLOCK
System booted: 2010-08-13 17:11:54 PDT (1w6d 10:00 ago)
Protocols started: 2010-08-13 17:13:56 PDT (1w6d 09:58 ago)
Last configured: 2010-08-26 05:54:00 PDT (21:18:30 ago) by user
3:12AM up 13 days, 10:01, 3 users, load averages: 0.00, 0.00, 0.00
```

## show system virtual-memory

---

<b>List of Syntax</b>	<a href="#">Syntax on page 578</a> <a href="#">Syntax (EX Series) on page 578</a> <a href="#">Syntax (TX Matrix Router) on page 578</a> <a href="#">Syntax (TX Matrix Plus Router) on page 578</a> <a href="#">Syntax (MX Series Router) on page 578</a> <a href="#">Syntax (QFX Series) on page 578</a>
<b>Syntax</b>	show system virtual-memory
<b>Syntax (EX Series)</b>	show system virtual-memory <all-members> <local> <member <i>member-id</i> >
<b>Syntax (TX Matrix Router)</b>	show system virtual-memory <all-chassis   all-lcc   lcc <i>number</i>   scc>
<b>Syntax (TX Matrix Plus Router)</b>	show system virtual-memory <all-chassis   all-lcc   lcc <i>number</i>   sfc <i>number</i> >
<b>Syntax (MX Series Router)</b>	show system virtual-memory <all-members> <local> <member <i>member-id</i> >
<b>Syntax (QFX Series)</b>	show system virtual-memory <infrastructure <i>name</i> > <interconnect-device <i>name</i> > <node-group <i>name</i> >
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. <b>sfc</b> option introduced for the TX Matrix Plus router in Junos OS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
<b>Description</b>	Display the usage of Junos OS kernel memory listed first by size of allocation and then by type of usage. Use the <b>show system virtual-memory</b> command for troubleshooting with Juniper Networks Customer Support.
<b>Options</b>	<b>none</b> —Display kernel dynamic memory usage information.  <b>all-chassis</b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display kernel dynamic memory usage information for all chassis.  <b>all-lcc</b> —(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display kernel dynamic memory usage information for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display kernel dynamic memory usage information for all connected T1600 or T4000 LCCs.

**all-members**—(EX4200 switches and MX Series routers only) (Optional) Display kernel dynamic memory usage information for all members of the Virtual Chassis configuration.

**infrastructure *name***—(QFabric systems only) (Optional) Display kernel dynamic memory usage information for the fabric control Routing Engine and fabric manager Routing Engine.

**interconnect-device *name***—(QFabric systems only) (Optional) Display kernel dynamic memory usage information for the Interconnect device.

**lcc *number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display kernel dynamic memory usage information for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display kernel dynamic memory usage information for a specific router that is connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**local**—(EX4200 switches and MX Series routers only) (Optional) Display kernel dynamic memory usage information for the local Virtual Chassis member.

**member *member-id***—(EX4200 switches and MX Series routers only) (Optional) Display kernel dynamic memory usage information for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace *member-id* with a value from 0 through 9. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

**node-group *name***—(QFabric systems only) (Optional) Display kernel dynamic memory usage information for the Node group.

**scc**—(TX Matrix routers only) (Optional) Display kernel dynamic memory usage information for the TX Matrix router (or switch-card chassis).

**sfc *number***—(TX Matrix Plus routers only) (Optional) Display kernel dynamic memory usage information for the TX Matrix Plus router. Replace *number* with 0.

**Additional Information** By default, when you issue the **show system virtual-memory** command on the master Routing Engine of a TX Matrix router or a TX Matrix Plus router, the command is broadcast to all the master Routing Engines of the LCCs connected to it in the routing matrix. Likewise, if you issue the same command on the backup Routing Engine of a TX Matrix

or a TX Matrix Plus router, the command is broadcast to all backup Routing Engines of the LCCs that are connected to it in the routing matrix.



**NOTE:** The `show system virtual-memory` command with the `| display XML` pipe option now displays XML output for the command in the parent tags: `<vmstat-memstat-malloc>`, `<vmstat-memstat-zone>`, `<vmstat-sumstat>`, `<vmstat-intr>`, and `<vmstat-kernel-state>` with each child element as a separate XML tag. In Junos OS Releases 10.1 and earlier, the `| display XML` option for this command does not have an XML API element and the entire output is displayed in a single `<output>` tag element.

Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">Routing Matrix with a TX Matrix Plus Router Solutions Page</a></li></ul>
List of Sample Output	<a href="#">show system virtual-memory on page 582</a> <a href="#">show system virtual-memory scc (TX Matrix Router) on page 586</a> <a href="#">show system virtual-memory sfc (TX Matrix Plus Router) on page 587</a> <a href="#">show system virtual-memory   display xml on page 590</a> <a href="#">show system virtual-memory (QFX Series) on page 613</a>
Output Fields	<a href="#">Table 20 on page 581</a> lists the output fields for the <code>show system virtual-memory</code> command. Output fields are listed in the approximate order in which they appear.

Table 20: show system virtual-memory Output Fields

Field Name	Field Description
Memory statistics by bucket size	
<b>Size</b>	Memory block size (bytes). The kernel memory allocator appropriates blocks of memory whose size is exactly a power of 2.
<b>In Use</b>	Number of memory blocks of this size that are in use (bytes).
<b>Free</b>	Number of memory blocks of this size that are free (bytes).
<b>Requests</b>	Number of memory allocation requests made.
<b>HighWater</b>	Maximum value the free list can have. Once the system starts reclaiming physical memory, it continues until the free list is increased to this value.
<b>Couldfree</b>	Total number of times that the free elements for a bucket size exceed the high-water mark for that bucket size.
Memory usage type by bucket size	
<b>Size</b>	Memory block size (bytes).
<b>Type(s)</b>	Kernel modules that are using these memory blocks. For a definition of each type, refer to a FreeBSD book.
Memory statistics by type	
<b>Type</b>	Kernel module that is using dynamic memory.
<b>InUse</b>	Number of memory blocks used by this type. The number is rounded up.
<b>MemUse</b>	Amount of memory in use, in kilobytes (KB).
<b>HighUse</b>	Maximum memory ever used by this type.
<b>Limit</b>	Maximum memory that can be allocated to this type.
<b>Requests</b>	Total number of dynamic memory allocation requests this type has made.
<b>Type Limit</b>	Number of times requests were blocked for reaching the maximum limit.
<b>Kern Limit</b>	Number of times requests were blocked for the kernel map.
<b>Size(s)</b>	Memory block sizes this type is using.
Memory Totals	
<b>In Use</b>	Total kernel dynamic memory in use (bytes, rounded up).
<b>Free</b>	Total kernel dynamic memory free (bytes, rounded up).

Table 20: show system virtual-memory Output Fields (*continued*)

Field Name	Field Description
<b>Requests</b>	Total number of memory allocation requests.
<b>ITEM</b>	Kernel module that is using memory.
<b>Size</b>	Memory block size (bytes).
<b>Limit</b>	Maximum memory that can be allocated to this type.
<b>Used</b>	Number of memory blocks used by this type. The number is rounded up.
<b>Free</b>	Number of memory blocks available to this type.
<b>Requests</b>	Total number of memory allocation requests this type has made.
<b>interrupt</b>	Timer events and scheduling interruptions.
<b>total</b>	Total number of interruptions for each type.
<b>rate</b>	Interruption rate.
<b>Total</b>	Total for all interruptions.

## Sample Output

### show system virtual-memory

```

user@host> show system virtual-memory
Memory statistics by bucket size
Size    In Use    Free    Requests  HighWater  Couldfree
16      906      118     154876    1280       0
32      455      313     209956    640        0
64      4412     260     75380     320        20
128     3200     32      19361     160        81
256     1510     10      8844      80         4
512     446      2        5085      40         0
1K      18       2        5901      20         0
2K     1128     2        4445      10        1368
4K      185     1         456       5          0
8K       5      1        2653      5          0
16K     181     0         233       5          0
32K      2      0        1848      5          0
64K     20      0         22       5          0
128K     5      0          5       5          0
256K     2      0          2       5          0
512K     1      0          1       5          0

Memory usage type by bucket size
Size    Type(s)
16      uc_devlist, nexusdev, iftable, temp, devbuf, atexit, COS, BPF,
        DEVFS mount, DEVFS node, vnodes, mount, pcb, soname, proc-args, kld,
        MD disk, rman, ATA generic, bus, sysctl, ippool, pfestat, ifstate,

```



```

pfe_ipc, mkey, rtable, ifmaddr, ipfw, rnode
32 atkbddev, dirrem, mkdir, diradd, freefile, freefrag, indirdep,
bmsafemap, newblk, temp, devbuf, COS, vnodes, cluster_save buffer,
pcb, soname, proc-args, sigio, kld, Gzip trees, taskqueue, SWAP,
eventhandler, bus, sysctl, uidinfo, subproc, pgrp, pfestat, itable32,
ifstate, pfe_ipc, mkey, rtable, ifmaddr, ipfw, rnode, rtnexthop
64 isadev, iftable, MFS node, allocindir, allocdirect, pagedep, temp,
devbuf, lockf, COS, NULLFS hash, DEVFS name, vnodes,
cluster_save buffer, vfscache, pcb, soname, proc-args, file,
AR driver, AD driver, Gzip trees, rman, eventhandler, bus, sysctl,
subproc, pfestat, pic, ifstate, pfe_ipc, mkey, ifaddr, rtable, ipfw
128 ZONE, freeblks, inodedep, temp, devbuf, zombie, COS, DEVFS node,
vnodes, mount, vfscache, pcb, soname, proc-args, ttys, dev_t,
timecounter, kld, Gzip trees, ISOFS node, bus, uidinfo, cred,
session, pic, itable16, ifstate, pfe_ipc, rtable, ifstat, metrics,
rtnexthop, iffamily
256 iflogical, iftable, MFS node, FFS node, newblk, temp, devbuf,
NFS daemon, vnodes, proc-args, kqueue, file desc, Gzip trees, bus,
subproc, itable16, ifstate, pfe_ipc, sysctl, rtnexthop
512 UFS mount, temp, devbuf, mount, BIO buffer, ptys, ttys, AR driver,
Gzip trees, ISOFS mount, msg, iocltops, ATA generic, bus, proc,
pfestat, lr, ifstate, pfe_ipc, rtable, ipfw, ifstat, rtnexthop
1K iftable, temp, devbuf, NQ NFS Lease, kqueue, kld, AD driver,
Gzip trees, sem, MD disk, bus, ifstate, pfe_ipc, ipfw
2K uc_devlist, UFS mount, temp, devbuf, BIO buffer, pcb, AR driver,
Gzip trees, iocltops, bus, ipfw, ifstat, rcache
4K memdesc, iftable, UFS mount, temp, devbuf, kld, Gzip trees, sem, msg
8K temp, devbuf, syncache, Gzip trees
16K indirdep, temp, devbuf, shm, msg
32K pagedep, kld, Gzip trees
64K VM pgdata, devbuf, MSDOSFS mount
128K UFS ihash, inodedep, NFS hash, kld, ISOFS mount
256K mbuf, vfscache
512K SWAP

```

Memory statistics by type					Type	Kern		
Type	InUse	MemUse	HighUse	Limit	Requests	Limit	Limit	Size(s)
isadev	13	1K	1K127753K	13	0	0	0	64
atkbddev	2	1K	1K127753K	2	0	0	0	32
uc_devlist	24	3K	3K127753K	24	0	0	0	16,2K
nexusdev	3	1K	1K127753K	3	0	0	0	16
memdesc	1	4K	4K127753K	1	0	0	0	4K
mbuf	1	152K	152K127753K	1	0	0	0	256K
iflogical	6	2K	2K127753K	6	0	0	0	256
iftable	17	9K	9K127753K	18	0	0	0	16,64,256,1K,4K
ZONE	15	2K	2K127753K	15	0	0	0	128
VM pgdata	1	64K	64K127753K	1	0	0	0	64K
UFS mount	12	26K	26K127753K	12	0	0	0	512,2K,4K
UFS ihash	1	128K	128K127753K	1	0	0	0	128K
MFS node	6	2K	3K127753K	35	0	0	0	64,256
FFS node	906	227K	227K127753K	1352	0	0	0	256
dirrem	0	0K	4K127753K	500	0	0	0	32
mkdir	0	0K	1K127753K	38	0	0	0	32
diradd	0	0K	6K127753K	521	0	0	0	32
freefile	0	0K	4K127753K	374	0	0	0	32
freeblks	0	0K	8K127753K	219	0	0	0	128
freefrag	0	0K	1K127753K	193	0	0	0	32
allocindir	0	0K	25K127753K	1518	0	0	0	64
indirdep	0	0K	17K127753K	76	0	0	0	32,16K
allocdirect	0	0K	10K127753K	760	0	0	0	64
bmsafemap	0	0K	1K127753K	72	0	0	0	32

newblk	1	1K	1K127753K	2279	0	0	32,256
inodedep	1	128K	175K127753K	2367	0	0	128,128K
pagedep	1	32K	33K127753K	47	0	0	64,32K
temp	1239	92K	96K127753K	8364	0	0	16,32,64K
devbuf	1413	5527K	5527K127753K	1535	0	0	16,32,64,128,256
lockf	38	3K	3K127753K	2906	0	0	64
atexit	1	1K	1K127753K	1	0	0	16
zombie	0	0K	2K127753K	3850	0	0	128
NFS hash	1	128K	128K127753K	1	0	0	128K
NQNFS Lease	1	1K	1K127753K	1	0	0	1K
NFS daemon	1	1K	1K127753K	1	0	0	256
syncache	1	8K	8K127753K	1	0	0	8K
COS	353	44K	44K127753K	353	0	0	16,32,64,128
BPF	189	3K	3K127753K	189	0	0	16
MSDOSFS mount	1	64K	64K127753K	1	0	0	64K
NULLFS hash	1	1K	1K127753K	1	0	0	64
DEVFS mount	2	1K	1K127753K	2	0	0	16
DEVFS name	487	31K	31K127753K	487	0	0	64
DEVFS node	471	58K	58K127753K	479	0	0	16,128
vnodes	28	7K	7K127753K	429	0	0	16,32,64,128,256
mount	15	8K	8K127753K	18	0	0	16,128,512
cluster_save buffer	0	0K	1K127753K	55	0	0	32,64
vfscache	1898	376K	376K127753K	3228	0	0	64,128,256K
BIO buffer	49	98K	398K127753K	495	0	0	512,2K
pcb	159	16K	17K127753K	399	0	0	16,32,64,128,2K
soname	82	10K	10K127753K	42847	0	0	16,32,64,128
proc-args	57	2K	3K127753K	2105	0	0	16,32,64,128,256
ptys	32	16K	16K127753K	32	0	0	512
ttys	254	33K	33K127753K	522	0	0	128,512
kqueue	5	3K	4K127753K	23	0	0	256,1K
sigio	1	1K	1K127753K	27	0	0	32
file	383	24K	24K127753K	16060	0	0	64
file desc	76	19K	20K127753K	3968	0	0	256
shm	1	12K	12K127753K	1	0	0	16K
dev_t	286	36K	36K127753K	286	0	0	128
timecounter	10	2K	2K127753K	10	0	0	128
kld	11	117K	122K127753K	34	0	0	16,32,128,1K,4K
AR driver	1	1K	3K127753K	5	0	0	64,512,2K
AD driver	2	2K	3K127753K	2755	0	0	64,1K
Gzip trees	0	0K	46K127753K	133848	0	0	32,64,128,256
ISOFS node	1136	142K	142K127753K	1189	0	0	128
ISOFS mount	9	132K	132K127753K	10	0	0	512,128K
sem	3	6K	6K127753K	3	0	0	1K,4K
MD disk	2	2K	2K127753K	2	0	0	16,1K
msg	4	25K	25K127753K	4	0	0	512,4K,16K
rman	59	4K	4K127753K	461	0	0	16,64
ioctlops	0	0K	2K127753K	992	0	0	512,2K
taskqueue	2	1K	1K127753K	2	0	0	32
SWAP	2	413K	413K127753K	2	0	0	32,512K
ATA generic	6	3K	3K127753K	6	0	0	16,512
eventhandler	17	1K	1K127753K	17	0	0	32,64
bus	340	30K	31K127753K	794	0	0	16,32,64,128,256
sysctl	0	0K	1K127753K	130262	0	0	16,32,64
uidinfo	4	1K	1K127753K	10	0	0	32,128
cred	22	3K	3K127753K	3450	0	0	128
subproc	156	10K	10K127753K	7882	0	0	32,64,256
proc	2	1K	1K127753K	2	0	0	512
session	12	2K	2K127753K	34	0	0	128
pgrp	16	1K	1K127753K	45	0	0	32
ippool	1	1K	1K127753K	1	0	0	16
pfestat	0	0K	1K127753K	47349	0	0	16,32,64,512

pic	5	1K	1K127753K	5	0	0	64,128
lr	1	1K	1K127753K	1	0	0	512
itable32	110	4K	4K127753K	110	0	0	32
itable16	161	26K	26K127753K	161	0	0	128,256
ifstate	694	159K	160K127753K	1735	0	0	16,32,64,128,1K
pfe_ipc	0	0K	1K127753K	56218	0	0	16,32,64,128,1K
mkey	250	4K	4K127753K	824	0	0	16,32,64
ifaddr	9	1K	1K127753K	9	0	0	64
sysctl	0	0K	1K127753K	30	0	0	256
rtable	49	6K	6K127753K	307	0	0	16,32,64,128,512
ifmaddr	22	1K	1K127753K	22	0	0	16,32
ipfw	23	10K	10K127753K	48	0	0	16,32,64,512,2K
ifstat	698	805K	805K127753K	698	0	0	128,512,2K
rcache	4	8K	8K127753K	4	0	0	2K
rnode	27	1K	1K127753K	285	0	0	16,32
metrics	1	1K	1K127753K	3	0	0	128
rtnexthop	57	9K	9K127753K	312	0	0	32,128,256,512
iffamily	12	2K	2K127753K	12	0	0	128

Memory Totals:	In Use	Free	Requests
	9311K	54K	489068

ITEM	SIZE	LIMIT	USED	FREE	REQUESTS
PIPE:	192,	0,	4,	81,	4422
SWAPMETA:	160,	95814,	0,	0,	0
unpcb:	160,	0,	114,	36,	279
ripcb:	192,	25330,	5,	37,	5
syncache:	128,	15359,	0,	64,	5
tcpcb:	576,	25330,	23,	12,	32
udpcb:	192,	25330,	14,	28,	255
socket:	256,	25330,	246,	26,	819
KNOTE:	96,	0,	27,	57,	71
NFSNODE:	352,	0,	0,	0,	0
NFSMOUNT:	544,	0,	0,	0,	0
VNODE:	224,	0,	2778,	43,	2778
NAMEI:	1024,	0,	0,	8,	40725
VMSPACE:	192,	0,	57,	71,	3906
PROC:	448,	0,	73,	17,	3923
DP fakepg:	64,	0,	0,	0,	0
PV ENTRY:	28,	499566,	44530,	152053,	1525141
MAP ENTRY:	48,	0,	1439,	134,	351075
KMAP ENTRY:	48,	35645,	179,	119,	10904
MAP:	108,	0,	7,	3,	7
VM OBJECT:	92,	0,	2575,	109,	66912

```

792644 cpu context switches
9863474 device interrupts
286510 software interrupts
390851 traps
3596829 system calls
  16 kernel threads created
 3880 fork() calls
   27 vfork() calls
    0 rfork() calls
    0 swap pager pageins
    0 swap pager pages paged in
    0 swap pager pageouts
    0 swap pager pages paged out
 380 vnode pager pageins
 395 vnode pager pages paged in
 122 vnode pager pageouts

```

```

1476 vnode pager pages paged out
    0 page daemon wakeups
    0 pages examined by the page daemon
101 pages reactivated
161722 copy-on-write faults
    0 copy-on-write optimized faults
84623 zero fill pages zeroed
83063 zero fill pages prezeroed
    7 intransit blocking page faults
535606 total VM faults taken
    0 pages affected by kernel thread creation
238254 pages affected by fork()
    2535 pages affected by vfork()
    0 pages affected by rfork()
283379 pages freed
    0 pages freed by daemon
190091 pages freed by exiting processes
17458 pages active
29166 pages inactive
    0 pages in VM cache
10395 pages wired down
134610 pages free
    4096 bytes per page
183419 total name lookups
    cache hits (90% pos + 7% neg) system 0% per-directory
    deletions 0%, falsehits 0%, toolong 0%

```

interrupt	total	rate
ata0 irq14	113338	3
mux irq7	727643	21
fxp1 irq10	1178671	34
sio0 irq4	833	0
clk irq0	3439769	99
rtc irq8	4403221	127
Total	9863475	286

```

Kernel direct memory map:
    4423 pages used
    4057340 pages maximum

```

*Note: Kernel direct memory map only displays for 64 bit platform.*

### show system virtual-memory scc (TX Matrix Router)

```
user@host> show system virtual-memory scc
```

Memory statistics by bucket size

Size	In Use	Free	Requests	HighWater	Couldfree
16	898	126	749493	1280	0
32	2018	1310	980643	640	632
64	3490	13342	935420	320	5365

...

Memory usage type by bucket size

Size	Type(s)
16	uc_devlist, COS, BPF, DEVFS mount, DEVFS node, vnodes, mount, pcb, soname, rman, bus, sysctl, ifstate, pfe_ipc, mkey, socket, rtable, ifmaddr, ipfw, rnode, iftable, temp, devbuf, atexit, proc-args, kld, MD disk
32	atkbddev, Gzip trees, dirrem, mkdir, diradd, freefile, freefrag, indirdep, bmsafemap, newblk, tseg_qent, COS, vnodes,

...

```

Memory statistics by type
      Type  InUse MemUse HighUse Limit Requests Limit Limit Size(s)
      isadev  12   1K   1K166400K   12    0    0   64
      atkbddev  2   1K   1K166400K    2    0    0   32
      uc_devlist 24   3K   3K166400K   24    0    0  16,2K
....

Memory Totals:  In Use    Free    Requests
                  6091K   1554K   2897122

```

### show system virtual-memory sfc (TX Matrix Plus Router)

```

user@host> show system virtual-memory sfc 0
sfc0-re0:

```

```

-----
      Type InUse MemUse HighUse Requests Size(s)
CAM dev queue    1    1K      -         1    64
  entropy  1024   64K      -       1024   64
  linker   487  6272K      -       1163  16,32,64,4096,32768,131072
  USB     127   10K      -        127  16,32,64,128,256,1024,2048
  lockf    46    3K      -       98418   64
  USBdev   10    2K      -         34  16,128,2048,16384
ifstateSLLNode    0    0K      -       1096   16
  devbuf 21243 15683K      -       21810
16,32,64,128,256,512,1024,2048,4096,8192,16384,32768,65536,131072
  temp   1283   151K      -      2483472
16,32,64,128,256,512,2048,4096,8192,16384,32768,65536,131072
  ip6ndp    0    0K      -          4   64
  in6ifmulti  1    1K      -          1   64
  in6grentry  1    1K      -          1   64
  iflogical  20    5K      -         29  2048
  iffamilly  45    6K      -         69  32,1024,2048
  rtnexthop 266   46K      -      608013  32,256,512,1024,2048,4096
  metrics   31    4K      -          54  256
  rnode    212    4K      -      607848  16,32
  rcache     4    8K      -          4  65536
  iflist     0    0K      -          6  16,64
  ifdevice   11    8K      -         17  16,32768
  ifstat    424   472K      -        427  512,16384,65536
  ipfw      42   23K      -         145
16,32,64,128,256,512,1024,16384,32768,65536,131072
  ifmaddr   415   11K      -        415  16,32
  rtable    329   28K      -      608066  16,32,64,128,1024,16384
  sysctl     0    0K      -      887976  16,32,64,4096,16384,32768
  ifaddr     64    5K      -          70  32,64,128
  mkey     331    6K      -      12528  16,128
  pfe_ipc    0    0K      -     7299115
16,32,64,128,256,512,1024,2048,4096,8192,16384,32768,65536,131072
  ifstate 1245054 70088K      -     3040437
16,32,64,128,256,512,1024,2048,4096,8192,16384,32768
  idxbucket    1    1K      -          1   16
  itable16  5069 1250K      -       5103  1024,4096
  itable32   157   10K      -        157   64
  itable64     2    1K      -          2  128
  lr          1    1K      -          4  16384
  pic        37    6K      -          37  64,16384
  pffestat    0    0K      -      6220  32,64,128,256,131072
  gencfg   1486   424K      -       2614  16,32,64,256,512,16384,32768,65536

```

```

        jsr      2      1K      -      22  16
        idl      1      4K      -      165
32, 64, 128, 256, 512, 1024, 2048, 8192, 16384, 32768, 65536, 131072
        rtmsg    0      0K      -      16  131072
        module  250     16K      -      250  64, 128
        mtx_pool 1       8K      -       1  64, 128
        DEVFS3   113    13K      -      114  256
        DEVFS1   106    24K      -      106  2048
        pgrp     15     1K      -      8600  64
        session  11     2K      -      2829  512
        proc     2      1K      -       2  16384
        subproc  296    572K     -     24689  2048, 131072
        cred     38     5K      -     619244  256
        plimit   18     4K      -     21311  2048
        uidinfo   3     1K      -       10  32, 512
        sysctluid 2701   82K      -     2701  16, 32, 64
        sysctltmp 0      0K      -     15572  16, 32, 64, 1024
        umtx     171    11K      -      171  64
        SWAP      2    277K      -       2  64
        bus      779   125K     -     3072  16, 32, 64, 128, 32768
        bus-sc    67    62K      -     1477
16, 32, 64, 512, 1024, 2048, 8192, 16384, 65536, 131072
        devstat   8    17K      -       8  16, 131072
        eventhandler 46    2K      -      47  32, 128
        kobj      93   186K     -     111  65536
        DEVFS      8     1K      -       9  16, 64
        rman     106    7K      -      490  16, 32, 64
        sbuf      0     0K      -     28234  16, 32, 32768, 131072

```

...

lcc0-re0:

```

-----
      Type InUse MemUse HighUse Requests Size(s)
CAM dev queue    1     1K      -       1  64
      entropy  1024    64K      -    1024  64
      linker   487   6272K     -    1163  16, 32, 64, 4096, 32768, 131072
      USB     127    10K      -     127  16, 32, 64, 128, 256, 1024, 2048
      lockf    23     2K      -   169585  64
      USBdev   10     2K      -       34  16, 128, 2048, 16384
      devbuf  5128  10760K     -     5310
16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384, 32768, 65536, 131072
      temp   1285    151K     -    10770
16, 32, 64, 128, 256, 512, 2048, 4096, 8192, 16384, 32768, 65536, 131072
      ip6ndp    0     0K      -       4  64
      iflogical 20     5K      -      29  2048
      iffamilly 45     6K      -      69  32, 1024, 2048
      rtnexthop 189    29K     -  1211988  32, 256, 512, 1024, 2048, 4096
      metrics   11     2K      -      16  256
      rnode    135     3K     -    606391  16, 32
      rcache     4     8K      -       4  65536
      iflist     0     0K      -       6  16, 64
      ifdevice  11     8K      -      17  16, 32768
      ifstat   412   471K     -     415  512, 16384, 65536
      ipfw      42    23K      -      91
16, 32, 64, 128, 256, 512, 1024, 16384, 32768, 65536, 131072
      ifmaddr  415    11K      -      415  16, 32
      rtable   225    20K      -    606584  16, 32, 64, 128, 1024, 16384
      sysctl    0     0K      -  2302479  16, 32, 64
      ifaddr    53     4K      -      69  32, 64, 128
      mkey     133     3K      -     8974  16, 128
      pfe_ipc    0     0K      -   19035108
16, 32, 64, 128, 512, 1024, 2048, 8192, 16384, 32768, 65536, 131072

```

```

ifstate 710270 42176K - 9583703
16,32,64,128,256,512,1024,2048,8192,16384,32768
idxbucket 1 1K - 1 16
itable16 5045 1245K - 1825178 1024,4096
itable32 157 10K - 157 64
itable64 2 1K - 2 128
lr 1 1K - 4 16384
pic 37 6K - 37 64,16384
pfestat 0 0K - 1682 32,64,128,256,131072
gencfg 1486 424K - 2812 16,32,64,256,512,16384,32768,65536
jsr 0 0K - 22 16
idl 0 0K - 4 32768,131072
rtsmsg 0 0K - 3 131072
module 250 16K - 250 64,128
mtx_pool 1 8K - 1 64,128
DEVFS3 108 12K - 109 256
DEVFS1 101 23K - 101 2048
pgrp 5 1K - 917 64
session 5 1K - 917 512
proc 2 1K - 2 16384
subproc 217 441K - 4867 2048,131072
cred 21 3K - 48719 256
plimit 9 2K - 5255 2048
uidinfo 2 1K - 2 32,512
sysctluid 2786 85K - 2786 16,32,64
sysctltmp 0 0K - 1833 16,32,64,1024
umtx 126 8K - 126 64
SWAP 2 277K - 2 64
bus 780 125K - 2734 16,32,64,128,32768
bus-sc 69 69K - 1194
16,32,64,512,1024,2048,8192,16384,65536,131072
devstat 8 17K - 8 16,131072
eventhandler 45 2K - 46 32,128
kobj 93 186K - 111 65536
DEVFS 8 1K - 9 16,64
rman 94 6K - 477 16,32,64
sbuf 0 0K - 532 16,32,32768,131072
NULLFS hash 1 1K - 1 64
taskqueue 5 1K - 5 64
turnstiles 127 8K - 127 64
Unitno 6 1K - 44 16,64
ioctlops 0 0K - 1771718 16,32,64,128,8192,16384,65536,131072

iov 0 0K - 79425 16,64,128,256,512,1024,2048,131072
msg 4 25K - 4 32768,131072
sem 4 7K - 4 16384,32768,131072
shm 2 13K - 4 32768
ttys 93 16K - 195 512,32768
soname 31 3K - 389284 16,32,64,256
pcb 101 16K - 4374
16,32,64,128,1024,2048,4096,16384,65536
BIO buffer 40 80K - 750 65536
vfscache 1 512K - 1 65536
cluster_save buffer 0 OK - 55 32,64
VFS hash 1 256K - 1 32,64
vnodes 1 1K - 1 512
mount 266 21K - 481 16,32,64,128,256,4096,32768
vnodemarker 0 0K - 2497 16384
pfs_nodes 25 3K - 25 128
pfs_vncache 144 5K - 386 32
STP 1 1K - 1 64

```

```

        GEOM      173      15K      -      1068
16,32,64,128,256,512,2048,16384,32768,131072
        syncache    1      8K      -      1
16,32,64,128,256,512,2048,16384,32768,131072
        tlv_stat    0      0K      -      223
16,32,64,128,256,512,2048,16384,32768,131072
        NFS daemon  1      8K      -      1
16,32,64,128,256,512,2048,16384,32768,131072
        p1003.1b    1      1K      -      1  16
        MD disk     9      18K     -      9 65536
        ata_generic  2      2K      -      25 16,16384,32768
        ISOFS mount  7      1K      -      13 512
        ISOFS node  1439    135K     -     1453 128
        CAM SIM      1      1K      -      1 64
        CAM XPT      6      1K      -      9 16,64,16384
        CAM periph   1      1K      -      1 128
        ad_driver    2      1K      -      2 256
        pagedep      1      64K     -     105 64
        inodedep     1     256K     -     552 256
        newblk       1      1K      -     327 64,4096
        bmsafemap    0      0K      -      19 64
        allocdirect  0      0K      -     326 128
        freefrag     0      0K      -      31 32
        freeblks     0      0K      -     103 2048
        freefile      0      0K      -     175 32
        diradd       0      0K      -     590 64
        mkdir        0      0K      -     166 32
        dirrem       0      0K      -     382 32
        savedino     0      0K      -     283 512
        UFS mount    15     36K     -      15 2048,65536,131072
        ata_dma      6      1K      -      6 256
        UMAHash      1      4K      -      5 4096,16384,32768,65536,131072
        cdev         26     3K      -      26 256
        file desc    111    25K     -     5199 16,1024,2048,16384
        VM pgdata    2     65K     -      2 64
        sigio        1      1K      -      27 32
        kenv         30     5K      -      33 16,32,64,131072
        atkbddev     2      1K      -      2 32
        kqueue       0      0K      -      88 1024,4096,32768
        proc-args    28     2K      -     3970 32,64,128,256,512,1024
        isadev       23     2K      -      23 64
        zombie       1      1K      -     4651 128
        ithread      92     7K      -      92 16,64,256
        legacydrv    3      1K      -      3 16
        memdesc      1      4K      -      1 131072
        nexusdev     2      1K      -      2 16
        CAM queue    3      1K      -      3 16
        KTRACE       100    10K     -     100 128
        kbdmux       5      9K      -      5 128,2048,65536,131072
ITEM      SIZE      LIMIT      USED      FREE  REQUESTS
UMA Kegs:  136,      0,      71,      1,      71
...
```

### show system virtual-memory | display xml

```

user@host> show system virtual-memory | display xml
<rpc-reply xmlns:junos="http://xml.device1.example.com/junos/10.2R1/junos">
  <system-virtual-memory-information>
    <vmstat-memstat-malloc>
      <memstat-name>CAM dev queue</memstat-name>
      <inuse>1</inuse>
    </vmstat-memstat-malloc>
  </system-virtual-memory-information>
</rpc-reply>
```



```

<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>entropy</memstat-name>
<inuse>1024</inuse>
<memuse>64</memuse>
<high-use>--</high-use>
<memstat-req>1024</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>linker</memstat-name>
<inuse>481</inuse>
<memuse>1871</memuse>
<high-use>--</high-use>
<memstat-req>1145</memstat-req>
<memstat-size>16,32,64,4096,32768,131072</memstat-size>
<memstat-name>lockf</memstat-name>
<inuse>56</inuse>
<memuse>4</memuse>
<high-use>--</high-use>
<memstat-req>5998</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>devbuf</memstat-name>
<inuse>2094</inuse>
<memuse>3877</memuse>
<high-use>--</high-use>
<memstat-req>2099</memstat-req>

<memstat-size>16,32,64,128,512,1024,4096,8192,16384,32768,65536,131072</memstat-size>

<memstat-name>temp</memstat-name>
<inuse>21</inuse>
<memuse>66</memuse>
<high-use>--</high-use>
<memstat-req>3127</memstat-req>

<memstat-size>16,32,64,128,256,512,2048,4096,8192,16384,32768,65536,131072</memstat-size>

<memstat-name>ip6ndp</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>--</high-use>
<memstat-req>4</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>in6ifmulti</memstat-name>
<inuse>1</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>in6grentry</memstat-name>
<inuse>1</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>1</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>iflogical</memstat-name>
<inuse>13</inuse>
<memuse>3</memuse>
<high-use>--</high-use>
<memstat-req>13</memstat-req>

```

```
<memstat-size>64,2048</memstat-size>
<memstat-name>iffamily</memstat-name>
<inuse>28</inuse>
<memuse>4</memuse>
<high-use>--</high-use>
<memstat-req>28</memstat-req>
<memstat-size>32,1024,2048</memstat-size>
<memstat-name>rtnexthop</memstat-name>
<inuse>127</inuse>
<memuse>18</memuse>
<high-use>--</high-use>
<memstat-req>129</memstat-req>
<memstat-size>32,256,512,1024,2048,4096</memstat-size>
<memstat-name>metrics</memstat-name>
<inuse>3</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>5</memstat-req>
<memstat-size>256</memstat-size>
<memstat-name>inifmulti</memstat-name>
<inuse>3</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>3</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>ingrentry</memstat-name>
<inuse>6</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>6</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>rnode</memstat-name>
<inuse>68</inuse>
<memuse>2</memuse>
<high-use>--</high-use>
<memstat-req>76</memstat-req>
<memstat-size>16,32</memstat-size>
<memstat-name>rcache</memstat-name>
<inuse>4</inuse>
<memuse>8</memuse>
<high-use>--</high-use>
<memstat-req>4</memstat-req>
<memstat-size>65536</memstat-size>
<memstat-name>ifdevice</memstat-name>
<inuse>4</inuse>
<memuse>1</memuse>
<high-use>--</high-use>
<memstat-req>4</memstat-req>
<memstat-size>16</memstat-size>
<memstat-name>ifstat</memstat-name>
<inuse>40</inuse>
<memuse>22</memuse>
<high-use>--</high-use>
<memstat-req>40</memstat-req>
<memstat-size>512,16384,32768</memstat-size>
<memstat-name>ipfw</memstat-name>
<inuse>42</inuse>
<memuse>23</memuse>
<high-use>--</high-use>
<memstat-req>91</memstat-req>
```

```

<memstat-size>16,32,64,128,256,512,1024,16384,32768,65536,131072</memstat-size>
  <memstat-name>ifmaddr</memstat-name>
  <inuse>103</inuse>
  <memuse>3</memuse>
  <high-use>--</high-use>
  <memstat-req>103</memstat-req>
  <memstat-size>16,32</memstat-size>
  <memstat-name>rtable</memstat-name>
  <inuse>129</inuse>
  <memuse>14</memuse>
  <high-use>--</high-use>
  <memstat-req>139</memstat-req>
  <memstat-size>16,32,64,128,1024,16384</memstat-size>
  <memstat-name>sysctl</memstat-name>
  <inuse>0</inuse>
  <memuse>0</memuse>
  <high-use>--</high-use>
  <memstat-req>14847</memstat-req>
  <memstat-size>16,32,64,4096,16384,32768</memstat-size>
  <memstat-name>ifaddr</memstat-name>
  <inuse>29</inuse>
  <memuse>3</memuse>
  <high-use>--</high-use>
  <memstat-req>29</memstat-req>
  <memstat-size>64,128</memstat-size>
  <memstat-name>mkey</memstat-name>
  <inuse>345</inuse>
  <memuse>6</memuse>
  <high-use>--</high-use>
  <memstat-req>2527</memstat-req>
  <memstat-size>16,128</memstat-size>
  <memstat-name>pfe_ipc</memstat-name>
  <inuse>0</inuse>
  <memuse>0</memuse>
  <high-use>--</high-use>
  <memstat-req>1422</memstat-req>

<memstat-size>16,32,64,128,512,1024,2048,8192,16384,32768,65536,131072</memstat-size>
  <memstat-name>ifstate</memstat-name>
  <inuse>594</inuse>
  <memuse>51</memuse>
  <high-use>--</high-use>
  <memstat-req>655</memstat-req>

<memstat-size>16,32,64,128,256,1024,2048,4096,16384,32768</memstat-size>
  <memstat-name>itable16</memstat-name>
  <inuse>276</inuse>
  <memuse>52</memuse>
  <high-use>--</high-use>
  <memstat-req>294</memstat-req>
  <memstat-size>1024,4096</memstat-size>
  <memstat-name>itable32</memstat-name>
  <inuse>160</inuse>
  <memuse>10</memuse>
  <high-use>--</high-use>
  <memstat-req>160</memstat-req>
  <memstat-size>64</memstat-size>
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```
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<free>28</free>
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```

```

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  <soft-intr>33819</soft-intr>
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  <vfork-calls>21</vfork-calls>
  <rfork-calls>0</rfork-calls>
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  <vnode-pageouts>226</vnode-pageouts>
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  <pages-reactivated>8821</pages-reactivated>
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  <copy-on-write-optimized-faults>31</copy-on-write-optimized-faults>
  <zero-fill-pages-zeroed>74665</zero-fill-pages-zeroed>
  <zero-fill-pages-prezeroed>70061</zero-fill-pages-prezeroed>
  <transit-blocking-page-faults>85</transit-blocking-page-faults>
  <total-vm-faults>191824</total-vm-faults>

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```

```

    <pages-affected-by-fork>95343</pages-affected-by-fork>
    <pages-affected-by-vfork>3526</pages-affected-by-vfork>
    <pages-affected-by-rfork>0</pages-affected-by-rfork>
    <pages-freed>221502</pages-freed>
    <pages-freed-by-daemon>0</pages-freed-by-daemon>
    <pages-freed-by-exiting-proc>75630</pages-freed-by-exiting-proc>
    <pages-active>45826</pages-active>
    <pages-inactive>13227</pages-inactive>
    <pages-in-vm-cache>49278</pages-in-vm-cache>
    <pages-wired-down>10640</pages-wired-down>
    <pages-free>70706</pages-free>
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    <peak-swap-pages-used>0</peak-swap-pages-used>
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    <negative-cache-hits>5</negative-cache-hits>
    <pass2>0</pass2>
    <cache-deletions>0</cache-deletions>
    <cache-falsehits>0</cache-falsehits>
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    <intr-rate>999</intr-rate>
    <intr-name>irq4: sio0        </intr-name>
    <intr-cnt>1140</intr-cnt>
    <intr-rate>0</intr-rate>
    <intr-name>irq8: rtc         </intr-name>
    <intr-cnt>159164</intr-cnt>
    <intr-rate>127</intr-rate>
    <intr-name>irq9: cbb1 fxp0   </intr-name>
    <intr-cnt>28490</intr-cnt>
    <intr-rate>22</intr-rate>
    <intr-name>irq10: fxp1       </intr-name>
    <intr-cnt>20593</intr-cnt>
    <intr-rate>16</intr-rate>
    <intr-name>irq14: ata0       </intr-name>
    <intr-cnt>5031</intr-cnt>
    <intr-rate>4</intr-rate>
    <intr-name>Total</intr-name>
    <intr-cnt>1457873</intr-cnt>
    <intr-rate>1171</intr-rate>
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</vm-kernel-state>
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    <vm-directmm-size-max>4057334</vm-directmm-size-max>
</kernel-direct-mm-size-information>
</system-virtual-memory-information>
<cli>
    <banner></banner>
</cli>
</rpc-reply>

```

Note: <kernel-direct-mm-size-information> only displays for 64 bit platform.

**show system virtual-memory (QFX Series)**

```

user@switch> show system virtual-memory | display xml
<rpc-reply xmlns:junos="http://device1.example.com/junos/11.1R1/junos">
  <system-virtual-memory-information>
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      <inuse>1</inuse>
      <memuse>1</memuse>
      <high-use>-</high-use>
      <memstat-req>1</memstat-req>
      <memstat-size>64</memstat-size>
      <memstat-name>entropy</memstat-name>
      <inuse>1024</inuse>
      <memuse>64</memuse>
      <high-use>-</high-use>
      <memstat-req>1024</memstat-req>
      <memstat-size>64</memstat-size>
      <memstat-name>linker</memstat-name>
      <inuse>481</inuse>
      <memuse>1871</memuse>
      <high-use>-</high-use>
      <memstat-req>1145</memstat-req>
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      <memstat-name>lockf</memstat-name>
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      <memstat-size>64</memstat-size>
      <memstat-name>devbuf</memstat-name>
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      <memuse>3877</memuse>
      <high-use>-</high-use>
      <memstat-req>2099</memstat-req>

      <memstat-size>16,32,64,128,512,1024,4096,8192,16384,32768,65536,131072</memstat-size>

      <memstat-name>temp</memstat-name>
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      <memuse>66</memuse>
      <high-use>-</high-use>
      <memstat-req>3127</memstat-req>

      <memstat-size>16,32,64,128,256,512,2048,4096,8192,16384,32768,65536,131072</memstat-size>

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      <high-use>-</high-use>
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      <memstat-size>64</memstat-size>
      <memstat-name>in6ifmulti</memstat-name>
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      <memuse>1</memuse>
      <high-use>-</high-use>
      <memstat-req>1</memstat-req>
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      <memstat-name>in6grentry</memstat-name>
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<memstat-name>metrics</memstat-name>
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<memstat-name>ifstat</memstat-name>
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<memstat-name>umtx</memstat-name>
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<memstat-name>SWAP</memstat-name>
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<memstat-name>ISofs mount</memstat-name>
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<zone-size>20</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>ripcb:</zone-name>
<zone-size>232</zone-size>
<count-limit>25194</count-limit>
<used>5</used>
<free>29</free>
<zone-req>5</zone-req>
<zone-name>SWAPMETA:</zone-name>
<zone-size>276</zone-size>
<count-limit>94948</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>FFS inode:</zone-name>
<zone-size>132</zone-size>
<count-limit>0</count-limit>
<used>1146</used>
<free>72</free>
<zone-req>1306</zone-req>
<zone-name>FFS1 dinode:</zone-name>
<zone-size>128</zone-size>
<count-limit>0</count-limit>
<used>1146</used>
<free>24</free>
<zone-req>1306</zone-req>
<zone-name>FFS2 dinode:</zone-name>
<zone-size>256</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
</vmstat-memstat-zone>
<vmstat-sumstat>
  <cpu-context-switch>934906</cpu-context-switch>
  <dev-intr>1707986</dev-intr>
  <soft-intr>33819</soft-intr>
  <traps>203604</traps>
  <sys-calls>1200636</sys-calls>
  <kernel-thrds>60</kernel-thrds>
  <fork-calls>1313</fork-calls>
  <vfork-calls>21</vfork-calls>
  <rfork-calls>0</rfork-calls>
  <swap-pageins>0</swap-pageins>
  <swap-pagedin>0</swap-pagedin>
  <swap-pageouts>0</swap-pageouts>
  <swap-pagedout>0</swap-pagedout>
  <vnode-pageins>23094</vnode-pageins>
  <vnode-pagedin>23119</vnode-pagedin>
  <vnode-pageouts>226</vnode-pageouts>
  <vnode-pagedout>3143</vnode-pagedout>
  <page-daemon-wakeup>0</page-daemon-wakeup>
  <page-daemon-examined-pages>0</page-daemon-examined-pages>
  <pages-reactivated>8821</pages-reactivated>

```

```

<copy-on-write-faults>48364</copy-on-write-faults>
<copy-on-write-optimized-faults>31</copy-on-write-optimized-faults>
<zero-fill-pages-zeroed>74665</zero-fill-pages-zeroed>
<zero-fill-pages-prezeroed>70061</zero-fill-pages-prezeroed>
<transit-blocking-page-faults>85</transit-blocking-page-faults>
<total-vm-faults>191824</total-vm-faults>

<pages-affected-by-kernel-thrd-creat>0</pages-affected-by-kernel-thrd-creat>
<pages-affected-by-fork>95343</pages-affected-by-fork>
<pages-affected-by-vfork>3526</pages-affected-by-vfork>
<pages-affected-by-rfork>0</pages-affected-by-rfork>
<pages-freed>221502</pages-freed>
<pages-freed-by-daemon>0</pages-freed-by-daemon>
<pages-freed-by-exiting-proc>75630</pages-freed-by-exiting-proc>
<pages-active>45826</pages-active>
<pages-inactive>13227</pages-inactive>
<pages-in-vm-cache>49278</pages-in-vm-cache>
<pages-wired-down>10640</pages-wired-down>
<pages-free>70706</pages-free>
<bytes-per-page>4096</bytes-per-page>
<swap-pages-used>0</swap-pages-used>
<peak-swap-pages-used>0</peak-swap-pages-used>
<total-name-lookups>214496</total-name-lookups>
<positive-cache-hits>92</positive-cache-hits>
<negative-cache-hits>5</negative-cache-hits>
<pass2>0</pass2>
<cache-deletions>0</cache-deletions>
<cache-falsehits>0</cache-falsehits>
<toolong>0</toolong>
</vmstat-sumstat>
<vmstat-intr>
  <intr-name>irq0: clk          </intr-name>
  <intr-cnt>1243455</intr-cnt>
  <intr-rate>999</intr-rate>
  <intr-name>irq4: sio0        </intr-name>
  <intr-cnt>1140</intr-cnt>
  <intr-rate>0</intr-rate>
  <intr-name>irq8: rtc         </intr-name>
  <intr-cnt>159164</intr-cnt>
  <intr-rate>127</intr-rate>
  <intr-name>irq9: cbb1 fxp0   </intr-name>
  <intr-cnt>28490</intr-cnt>
  <intr-rate>22</intr-rate>
  <intr-name>irq10: fxp1       </intr-name>
  <intr-cnt>20593</intr-cnt>
  <intr-rate>16</intr-rate>
  <intr-name>irq14: ata0       </intr-name>
  <intr-cnt>5031</intr-cnt>
  <intr-rate>4</intr-rate>
  <intr-name>Total</intr-name>
  <intr-cnt>1457873</intr-cnt>
  <intr-rate>1171</intr-rate>
</vmstat-intr>
<vm-kernel-state>
  <vm-kmem-map-free>248524800</vm-kmem-map-free>
</vm-kernel-state>
</system-virtual-memory-information>
<cli>
  <banner></banner>
</cli>
</rpc-reply>

```



## show task

---

Syntax	<pre>show task   &lt;logical-system (all   <i>logical-system-name</i>)&gt;   &lt;task-name&gt;   io   logical-system-mux   memory   replication   snooping   summary</pre>
Release Information	Command introduced before Junos OS Release 7.4.
Description	Display routing protocol tasks on the Routing Engine.
Options	<p><b>none</b>—Display all routing protocol tasks on the Routing Engine.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><b>logical-system-mux</b>— Display the logical router multiplexer process (lrmuxd) per-task information.</p> <p><b>task-name</b>—(Optional) Display information about running tasks for all tasks whose name begins with this string (for example, <b>BGP_Group_69_153</b> and <b>BGP_Group_70_153</b> are both displayed when you run the <b>show task BGP_Group</b> command).</p> <p><b>io</b>— Show i/o statistics for all tasks displayed.</p> <p><b>memory</b>— Show memory statistics for all tasks displayed.</p> <p><b>replication</b>— Show only replication tasks.</p> <p><b>snooping</b>— Show only snooping tasks.</p> <p><b>summary</b>— (Optional) Display summary information about running tasks.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"><li>• <a href="#">show task io on page 638</a></li><li>• <a href="#">show task logical-system-mux on page 640</a></li><li>• <a href="#">show task memory on page 642</a></li></ul>
List of Sample Output	<a href="#">show task on page 637</a>
Output Fields	<a href="#">Table 21 on page 637</a> describes the output fields for the <b>show task</b> command. Output fields are listed in the approximate order in which they appear.

Table 21: show task Output Fields

Field Name	Field Description
<b>Pri</b>	Current priority of the process. A lower number indicates a higher priority.
<b>Task Name</b>	Name of the task.
<b>Pro</b>	IP protocol number associated with the process.
<b>Port</b>	TCP or UDP port number associated with the task.
<b>So</b>	Socket number of the task.
<b>Flags</b>	Flags for the task: <ul style="list-style-type: none"> <li>• <b>Accept</b>—Task is waiting for incoming connections.</li> <li>• <b>Connect</b>—Task is waiting for a connection to be completed.</li> <li>• <b>Delete</b>—Task has been deleted and is being cleaned up.</li> <li>• <b>LowPrio</b>— Task will be dispatched to read its socket after other higher-priority tasks.</li> </ul>

## Sample Output

### show task

```

user@host> show task
Pri Task Name                Pro  Port  So  Flags
10 IF
15 LABEL
15 ISO
15 INET                      7
20 Aggregate
20 RT
30 ICMP                      1    9
39 ISIS I/O                  12
40 IS-IS                     10
40 BGP RT Background         <LowPrio>
40 BGP.0.0.0.0+179           179 15 <Accept LowPrio>
50 BGP_69.192.168.201.234+179 179 17 <LowPrio>
50 BGP_70.192.168.201.233+179 179 16 <LowPrio>
50 BGP_Group_69_153          <LowPrio>
50 BGP_Group_70_153          <LowPrio>
50 ASPaths
60 KRT                       255   1
60 Redirect
70 MGMT.local                14 <LowPrio>
70 MGMT_Listen./var/run/rpd_mgmt 13 <Accept LowPrio>
70 SNMP Subagent./var/run/sub_rpd.sock 8 <LowPrio>

```

## show task io

<b>List of Syntax</b>	<a href="#">Syntax on page 638</a> <a href="#">Syntax (EX Series Switches) on page 638</a>
<b>Syntax</b>	show task io <logical-system (all   <i>logical-system-name</i> )>
<b>Syntax (EX Series Switches)</b>	show task io
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
<b>Description</b>	Display I/O statistics for routing protocol tasks on the Routing Engine.
<b>Options</b>	<b>none</b> —Display I/O statistics for routing protocol tasks on the Routing Engine.  <b>logical-system (all   <i>logical-system-name</i>)</b> —(Optional) Perform this operation on all logical systems or on a particular logical system.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<a href="#">show task io on page 638</a>
<b>Output Fields</b>	<a href="#">Table 22 on page 638</a> describes the output fields for the <b>show task io</b> command. Output fields are listed in the approximate order in which they appear.

**Table 22: show task io Output Fields**

Field Name	Field Description
<b>Task Name</b>	Name of the task.
<b>Reads</b>	Number of input ready notifications.
<b>Writes</b>	Number of output ready notifications.
<b>Rcvd</b>	Number of requests to the kernel for input.
<b>Sent</b>	Number of requests to the kernel for output.
<b>Dropped</b>	Number of sent requests that failed.

## Sample Output

### 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 logical-system-mux

<b>Syntax</b>	<pre>show task logical-system-mux &lt;task-name&gt; io memory replication summary</pre>
<b>Release Information</b>	Command introduced in Junos OS Release 13.3.
<b>Description</b>	Display the logical router multiplexer process (lrmuxd) per-task information.
<b>Options</b>	<p><b>none</b>— Display all the logical router multiplexer process (lrmuxd) per-task information.</p> <p><b>task-name</b>— (Optional) Display information about running tasks for all tasks whose name begins with this string (for example, <b>lsys_session_task:lr2</b> and <b>lsys_session_task:lr1</b> are both displayed when you run the <b>show task logical-system-mux lsys</b> command).</p> <p><b>io</b>— Show I/O statistics for all tasks displayed.</p> <p><b>memory</b>— Show memory statistics for all lrmuxd processes displayed.</p> <p><b>replication</b>— Show only replication tasks.</p> <p><b>summary</b>— Display summary information about running tasks.</p>
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show task on page 636</a></li> <li>• <a href="#">show task io on page 638</a></li> <li>• <a href="#">show task memory on page 642</a></li> </ul>
<b>List of Sample Output</b>	<p><a href="#">show task logical-system-mux on page 641</a></p> <p><a href="#">show task logical-system-mux io on page 641</a></p> <p><a href="#">show task logical-system-mux memory on page 641</a></p>
<b>Output Fields</b>	Table 23 on page 640 describes the output fields for the <b>show task logical-system-mux</b> command. Output fields are listed in the approximate order in which they appear.

**Table 23: show task logical-system-mux Output Fields**

Field Name	Field Description
<b>Pri</b>	Current priority of the process. A lower number indicates a higher priority.
<b>Task Name</b>	Name of the task.
<b>Pro</b>	IP number associated with the process.

Table 23: show task logical-system-mux Output Fields (*continued*)

Field Name	Field Description
<b>Port</b>	TCP or UDP port number associated with the task.
<b>So</b>	Socket number of the task.
<b>Flags</b>	Flags for the task: <ul style="list-style-type: none"> <li>• <b>Accept</b>—Task is waiting for incoming connections.</li> <li>• <b>Connect</b>—Task is waiting for a connection to be completed.</li> <li>• <b>Delete</b>—Task has been deleted and is being cleaned up.</li> <li>• <b>LowPrio</b>— Task will be dispatched to read its socket after other higher-priority tasks.</li> </ul>

## Sample Output

### show task logical-system-mux

```

user@host> show task logical-system-mux
Pri Task Name                               Pro  Port  So  Flags
15 Memory
40 lsys_session_task:lr2                    14 <WriteDisable>
40 lsys_session_task:lr1                    11 <WriteDisable>
40 lrmuxd lsys info task
60 Mirror Task.128.0.0.6                    63793 9 <WriteDisable>
70 MGMT.local                               15 <WriteDisable>
70 MGMT_Listen./var/run/lrmuxd_mgmt          6 <Accept WriteDisable>

```

### show task logical-system-mux io

```

user@host> show task logical-system-mux io
Task Name                               Reads  Writes  Rcvd  Sent  Dropped
Memory
lsys_session_task:lr2                    7      2      0      0      0
lsys_session_task:lr1                    7      2      0      0      0
lrmuxd lsys info task                     0      0      0      0      0
Mirror Task.128.0.0.6                    1940    1      0      0      0
MGMT.local                               0      0      1      0      0
MGMT_Listen./var/run/lrmuxd_mgmt          12      0     12      0      0

```

### show task logical-system-mux memory

```

user@host> show task logical-system-mux memory
Memory                               Size (kB)  Percentage  When
Currently In Use:                     1483        0%        now
Maximum Ever Used:                     1483        0%    13/03/20 02:28:18
Available:                             1589641    100%        now

```

## show task memory

**List of Syntax** [Syntax on page 642](#)  
[Syntax \(EX Series Switches\) on page 642](#)

**Syntax** show task memory  
 <brief | detail | history | summary>  
 <logical-system (all | *logical-system-name*)>

**Syntax (EX Series Switches)** show task memory  
 <brief | detail | history | summary>

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

**Description** Display memory utilization for routing protocol tasks on the Routing Engine.



**NOTE:** The **show task memory** command does not display all the memory used by the routing protocol process. This value does not account for the memory used for the **TEXT** and **STACK** segments, or the memory used by the routing protocol process's internal memory manager.

**Options** **none**—Display standard information about memory utilization for routing protocol tasks on the Routing Engine on all logical systems.

**brief | detail | history | summary**—(Optional) Display the specified level of output. Use the **history** option to display a history of memory utilization information.

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

**Required Privilege Level** view

**List of Sample Output** [show task memory on page 644](#)  
[show task memory detail on page 644](#)

**Output Fields** [Table 24 on page 642](#) describes the output fields for the **show task memory** command. Output fields are listed in the approximate order in which they appear.

**Table 24: show task memory Output Fields**

Field Name	Field Description	Level of Output
Memory Currently In Use	Memory currently in use. Dynamically allocated memory plus the <b>DATA</b> segment memory in kilobytes.	All levels
Memory Maximum Ever Used	Maximum memory ever used.	none specified, <b>brief</b> , <b>history</b>

Table 24: show task memory Output Fields (*continued*)

Field Name	Field Description	Level of Output
<b>Memory Available</b>	Memory currently available.  <b>NOTE:</b> The maximum currently available memory is displayed incorrectly. On 32-bit Junos OS, the actual available memory is 2,097,152 kilobytes (2147483648 / 1048) but instead it is displayed as 2,147,484 kilobytes (2147483648 / 1000). On 64-bit Junos OS, the actual available memory is 3,145,728 kilobytes (3221225472 / 1048) but instead it is displayed as 3221225 kilobytes (3221225472 / 1000).	none specified, <b>brief</b>
<b>Size (kB)</b>	Memory capacity in 1000-byte kilobytes.	none specified, <b>brief, history, summary</b>
<b>Percentage</b>	Percentage of memory currently available.	none specified, <b>brief</b>
<b>When</b>	Timestamp.	none specified, <b>brief, history</b>
<b>Overall Memory Report</b>	Memory utilization by memory size: <ul style="list-style-type: none"> <li>• <b>Size</b>—Block size, in bytes.</li> <li>• <b>TXP</b>—T indicates transient memory, X indicates exclusive memory, and P indicates full page.</li> <li>• <b>Allocs</b>—Number of blocks allocated for named objects.</li> <li>• <b>Mallocs</b>—Number of blocks allocated for anonymous objects.</li> <li>• <b>Alloc Bytes</b>—Number of blocks allocated times block size.</li> <li>• <b>MaxAllocs</b>—Maximum value of <b>Allocs</b>.</li> <li>• <b>MaxBytes</b>—Maximum value of <b>Alloc Bytes</b>.</li> <li>• <b>FreeBytes</b>—Total number of bytes unused on memory pages for this block size.</li> </ul>	<b>detail</b>
<b>Allocator Memory Report</b>	Memory utilization by named objects: <ul style="list-style-type: none"> <li>• <b>Size</b>—Size of the named object in bytes.</li> <li>• <b>Alloc Size</b>—Actual memory used by that object in bytes.</li> <li>• <b>DTXP</b>—D indicates debug, T indicates transient memory, X indicates exclusive memory, and P indicates full page.</li> <li>• <b>Alloc Blocks</b>—Number of named objects allocated.</li> <li>• <b>AllocBytes</b>—Number of blocks allocated times block size.</li> <li>• <b>MaxAlloc Blocks</b>—Maximum value of <b>Alloc Blocks</b>.</li> <li>• <b>Max Alloc Bytes</b>—Maximum value of <b>AllocBytes</b>.</li> </ul>	<b>detail</b>
<b>Malloc Usage Report</b>	Memory utilization for miscellaneous use: <ul style="list-style-type: none"> <li>• <b>Allocs</b>—Number of allocations.</li> <li>• <b>Bytes</b>—Total bytes consumed.</li> <li>• <b>MaxAllocs</b>—Maximum value of <b>Allocs</b>.</li> <li>• <b>MaxBytes</b>—Maximum value of <b>Bytes</b>.</li> <li>• <b>FuncCalls</b>—Cumulative number of <b>Allocs</b>.</li> </ul>	<b>detail</b>

Table 24: show task memory Output Fields (*continued*)

Field Name	Field Description	Level of Output
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

## Sample Output

### show task memory

```

user@host> show task memory
Memory                               Size (kB)  Percentage  When
Currently In Use:                    29417      3%          now
Maximum Ever Used:                   33882      4%          00/02/11 22:07:03
Available:                           756281     100%        now

```

### show task memory detail

```

user@host> show task memory detail
----- Overall Memory Report -----
Size TP    Allocs  Mallocs  AllocBytes  MaxAllocs  MaxBytes  FreeBytes
8      -      111      888        112         896       3208
12     -      149      2892       247         2964      1204
12 T   -      -        -           5           60        -
16     7      11       288        23          368       3808
20     100    33       2660       164         3280      1436
20 T   -      -        -           40          800        -
24     162    15       4248       177         4248      3944
24 T   -      -        -           4           96         -
28     371    -        10388      372         10416     1900
32     6      23       928        30          960       3168
...
-----
                               606182                715302      118810

----- Allocator Memory Report -----
Name                               Size Alloc DTP    Alloc  Alloc  MaxAlloc  MaxAlloc
                               Size      Size  Blocks  Bytes  Blocks  Bytes
patroot                          8      12      84     1008     87     1044
sockaddr_un.i802                 8      12       2      24       2      24
cos_nhm_nh                       8      12       1      12       1      12
sockaddr_un.tag                   8      12       3      36       4      48
gw_entry_list                     8      12       1      12       1      12
bgp_riblist_01                   8      12       1      12       2      24
ospf_intf_ev                     8      12      -        -       6      72
krt_remnant_rt                   8      12 T      -        -       5      60
...

```

```

-----
                                     164108      221552

----- Malloc Usage Report -----
Name           Allocs      Bytes MaxAllocs  MaxBytes  FuncCalls
MGMT.local      1          8          1         8         1
BGP.0.0.0.0+179 -          -          1         8         2
BGP RT Background 4      74748         4      74748         4
SNMP Subagent./var/run/ -      52          1      9172         56
OSPFv2 I/O./var/run/ppm 1     66536         2     66552      4551
OSPF            6     67655         7     67703         68
KRT             -          -          1     3784         18
ASPaths         3         80          3         80          3
-- sockaddr --  183      2100        184      2108      1645
BFD I/O./var/run/bfdd_c 1     65535         2     65551      4555
RT              48         872         48         872         48
Scheduler       42         628         43         628         88
--Anonymous--   56        1100         58        1140        112
--System--      82     58364        114     60044      4654
-----
                                     337678      352398

Dynamically allocated memory: 765952      Maximum: 765952
Program data+BSS memory:     1568768      Maximum: 1568768
Page data overhead:          53248         Maximum: 53248
Page directory size:          4096         Maximum: 4096
-----
Total bytes in use: 2392064 (0% of available memory)

```

## show task replication

<b>Syntax</b>	<b>show task replication</b>
<b>Release Information</b>	<p>Command introduced in Junos OS Release 8.5.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Command introduced in Junos OS Release 13.2X51-D20 for QFX Series switches.</p> <p>Support for logical systems introduced in Junos OS Release 13.3</p>
<b>Description</b>	Displays nonstop active routing (NSR) status. When you issue this command on the master Routing Engine, the status of nonstop active routing synchronization is also displayed.
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<a href="#">show task replication (Issued on the Master Routing Engine) on page 646</a> <a href="#">show task replication (Issued on the Backup Routing Engine) on page 647</a>
<b>Output Fields</b>	<a href="#">Table 25 on page 646</a> lists the output fields for the <b>show task replication</b> command. Output fields are listed in the approximate order in which they appear.

**Table 25: show task replication Output Fields**

Field Name	Field Description
<b>Stateful replication</b>	Displays whether or not graceful Routing Engine switchover is configured. The status can be <b>Enabled</b> or <b>Disabled</b> .
<b>RE mode</b>	Displays the Routing Engine on which the command is issued: <b>Master</b> , <b>Backup</b> , or <b>Not applicable</b> (when the router has only one Routing Engine).
<b>Protocol</b>	Protocols that are supported by nonstop active routing.
<b>Synchronization Status</b>	Nonstop active routing synchronization status for the supported protocols. States are <b>NotStarted</b> , <b>InProgress</b> , and <b>Complete</b> .

## Sample Output

### show task replication (Issued on the Master Routing Engine)

```

user@host> show task replication
  Stateful Replication: Enabled
    RE mode: Master

  Protocol              Synchronization Status
  OSPF                  NotStarted
  BGP                   Complete
  IS-IS                 NotStarted

```



LDP	Complete
PIM	Complete

#### show task replication (Issued on the Backup Routing Engine)

```
user@host> show task replication
Stateful Replication: Enabled
RE mode: Backup
```

## test configuration

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<b>Syntax</b>	<code>test configuration <i>filename</i></code> <code>syntax-only</code>
<b>Release Information</b>	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. <b>syntax-only</b> option introduced in Junos OS Release 12.1. Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.
<b>Description</b>	Verify that the syntax of a configuration file is correct. If the configuration contains any syntax or commit check errors, a message is displayed to indicate the line number and column number in which the error was found. This command only accepts text files.
<b>Options</b>	<b><i>filename</i></b> —Name of the configuration file.  <b>syntax-only</b> —(Optional) Check the syntax of a partial configuration file, without checking for commit errors.
<b>Required Privilege Level</b>	view
<b>List of Sample Output</b>	<a href="#">test configuration on page 648</a>
<b>Output Fields</b>	When you enter this command, you are provided feedback on the status of your request.

## Sample Output

### test configuration

```
user@host> test configuration terminal
[Type ^D to end input]
system {
host-name host;
test1;
login;
}
terminal:3:(8) syntax error: test
[edit system]
'test;'
syntax error
terminal:4:(11) statement must contain additional statements: ;
[edit system login]
'login ;'
statement must contain additional statements
configuration syntax failed
```