Junos® OS

Overview for Routing Devices

Modified: 2017-05-15

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Documentation and Release Notes

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

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

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

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

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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.

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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.xsl; }
```

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.

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

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the **configure** command: user@host> **configure**
`Fixed-width text like this`	Represents output that appears on the terminal screen.	`user@host>` **show chassis alarms** `No alarms currently active`
Italic text like this	• Introduces or emphasizes important new terms. • Identifies guide names. • Identifies RFC and Internet draft titles.	• A policy *term* is a named structure that defines match conditions and actions. • *Junos OS CLI User Guide* • RFC 1997, *BGP Communities Attribute*
Italic text like this	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# **set system domain-name** *domain-name*
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	• To configure a stub area, include the **stub** statement at the **[edit protocols ospf area area-id]** hierarchy level. • The console port is labeled **CONSOLE**.
< > (angle brackets)	Encloses optional keywords or variables.	**stub <default-metric** *metric***>;**
| (pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	**broadcast | multicast** **(***string1* **|** *string2* **|** *string3***)**
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	**rsvp { # Required for dynamic MPLS only**
[ ] (square brackets)	Encloses a variable for which you can substitute one or more values.	**community name members [** *community-ids* **]**

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

; (semicolon)	Identifies a leaf statement at a configuration hierarchy level.	

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

Convention	Description	Examples
GUI Conventions		
Bold text like this	Represents graphical user interface (GUI) items you click or select.	• In the Logical Interfaces box, select **All Interfaces**. • To cancel the configuration, click **Cancel**.
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select **Protocols>Ospf**.

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can 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. 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:

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- 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.

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PART 1

Junos OS Overview

- Junos OS Software Overview on page 3
- Junos OS Security Overview on page 25
- Junos OS Configuration Overview on page 31

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CHAPTER 1

Junos OS Software Overview

- Junos OS Overview on page 3
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Junos OS Overview

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

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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
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Junos OS Architecture Overview

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

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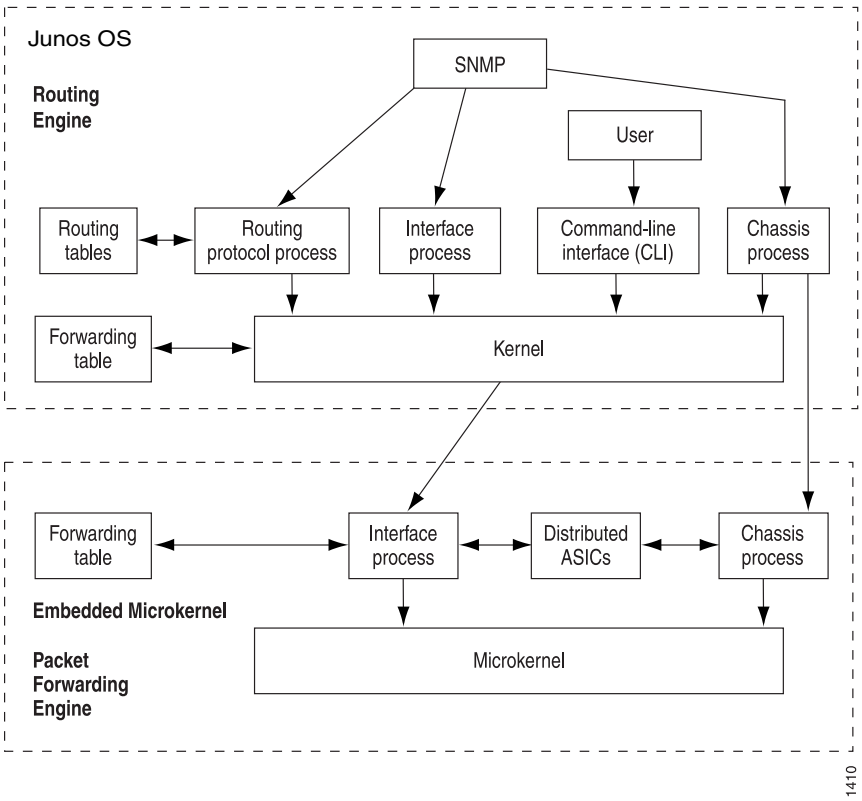
Because this architecture separates control operations such as routing updates and system management from packet forwarding, the router can deliver superior performance and highly reliable Internet operation.

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.

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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.

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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

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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

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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

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.

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Table 4: Junos OS Processes on MX Series Platform Only

Process	Name	Description
Clksync process (RE)	clksyncd	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. Operates the PTP stack, exchanges packets, and handles the configuration changes for the modular MX Series (MX80). Controls the configuration and monitoring of the overall operation of the PTP functionality for chassis-based MX Series platforms (MX240, MX480, and so on).
Clock-sync process (PFE)	clock-sync	Programs and monitors the modular interface card (MIC), the CPLD, and the EEC clock. Peer of the clksyncd process module. Captures all PTP and Synchronous Ethernet statistics on the Packet Forwarding Engine and provides them to the Routing Engine.
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	Acts as a relay process to collect interface statistics for all software development kit (SDK) applications. Interacts with the pfed process to collect the logical interface statistics for SDK applications.

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.

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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.

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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	ethernet-connectivity-fault-management	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.

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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: • Learn unicast media access control (MAC) addresses to avoid flooding the packets to all the ports in a bridge domain. • 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.
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: • Provides a standardized means for exchanging information between partner systems on a link. • 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. • Enables the transmission and reception processes for the link to function in an orderly manner.
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.

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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	(Some EX Series switches and MX Series routers only) Completes internal NFS mount requests for MS-PIC and MS-MPC.
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.

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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	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). NOTE: 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 **disable** statement at the **[edit system processes process-monitor]** hierarchy level.
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.

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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.

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- **/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.

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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 53

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

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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

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

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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.

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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

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

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Junos OS Support for VPNs

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

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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

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

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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

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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,

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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

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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

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

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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.

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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

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

- Junos OS Configuration 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

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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

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- 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.

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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

- Junos OS Configuration from External Devices on page 35

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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 64

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

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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*

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.

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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*

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PART 2

Configuring and Administering Routers

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- Monitoring Routers on page 69
- Managing Junos OS Processes on page 79

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CHAPTER 4

Configuring Routers

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- 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 52
- Format for Specifying IP Addresses, Network Masks, and Prefixes in Junos OS Configuration Statements on page 52
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- Example: Configuring a Proxy Server for License Updates on page 56
- Configuring Automatic Mirroring of the CompactFlash Card on the Hard Disk Drive on page 59
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- Using Junos OS to Configure a Router or Switch to Transfer Its Configuration to an Archive Site on page 61
- Specifying the Physical Location of the Router or Switch on page 63
- Configuring Junos OS to Set Console and Auxiliary Port Properties on page 64
- Example: Configuring the Unique Identity of a Router for Making it Accessible on the Network on page 65

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.

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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 52

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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
   ```

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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 or 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:

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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.

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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 59

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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
   ```

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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.

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```
[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
    ```

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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: retype 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:

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```
[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

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- *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 59

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 55

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.

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- ***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 53

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 **sslv3-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 **sslv3-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 sslv3-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 sslv3-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.

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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. However you can specify HTTP(s) URL for a file as a source.

- ***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*/%2F*path/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
  ```


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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 ];
  }
}
```

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Related Documentation

- Example: Configuring the Unique Identity of a Router for Making it Accessible on the Network on page 65
- *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 56
- Overview on page 56
- Configuration on page 57
- Verification on page 58

Requirements

This example uses the following hardware and software components:

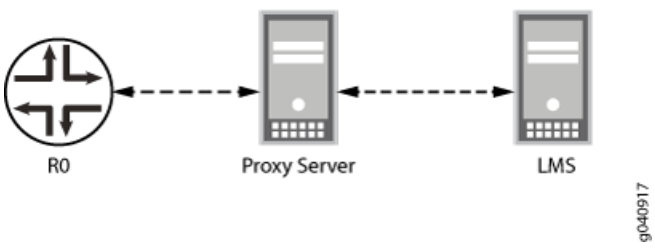
- An M Series, MX Series, PTX Series, or SRX Series device
- Junos OS Release 11.4 running on the device

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.

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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
```

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```
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:
                                Licenses     Licenses    Licenses    Expiry
  Feature name                       used    installed      needed
  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
```


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```
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 128
- port on page 131
- proxy on page 135
- server on page 143
- username on page 150

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.

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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 60
- 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 59

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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 61
2. Configuring the Periodic Transfer of the Active Configuration to an Archive Site on page 61
3. Configuring the Transfer of the Currently Active Configuration When a Configuration Is Committed on page 62
4. Configuring Archive Sites for the Transfer of Active Configuration Files on page 62

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.

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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

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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*

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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.

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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 132

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 identify. 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 65
- Overview on page 65
- Configuration on page 66
- Verification on page 67

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.

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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 66 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 *domain-name*	domain-name device.example.net	
host-name *host-name*	host-name example-re0	
inet *ip-address*	inet 172.22.147.39	
name-server *ip-address*	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 Indentity

Step-by-Step Procedure

To configure the identity settings of a device:

1. Configure the domain name of your network.

   [edit]

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```
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
```

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Related Documentation

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

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CHAPTER 5

Monitoring Routers

- Junos OS Tools for Monitoring the Router on page 69
- Tracing and Logging Junos OS Operations on page 70
- Understanding Dropped Packets and Untransmitted Traffic Using show Commands on page 71
- Log a User Out of the Router on page 76

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

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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.

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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:

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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.

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- **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.

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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:

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- **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

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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
```


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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-lt.cmpy.net                 10:07PM     - -cli (cl
wizard   p1       hpot-lt.cmpy.net                 10:06PM     - -cli (cl

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-lt.cmpy.net                 10:06PM     - -cli (cl
```

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.

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CHAPTER 6

Managing Junos OS Processes

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- Viewing Core Files from Junos OS Processes on page 80
- Saving Core Files from Junos OS Processes on page 80
- Configuring Failover to Backup Media If a Junos OS Process Fails on page 80
- Using the AgentD Process for Exporting Data to the Routing Engine on page 81
- Using Virtual Memory for Process Configuration Data on page 82
- Example: Configuring Virtual Memory for Process Configuration Data on page 83

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 80
- *Configuring Password Authentication for the Diagnostics Port*
- Viewing Core Files from Junos OS Processes on page 80

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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 80

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 80

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

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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 79
- Saving Core Files from Junos OS Processes on page 80
- processes on page 134

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.

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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 83
- configuration-database on page 109
- extend-size on page 114
- virtual-memory-mapping on page 151

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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 83
- Overview on page 83
- Configuration on page 84

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 665.99 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 665.99 MB to 1305.99 MB, 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 {
```

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```
        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 84
- Configuring Virtual Memory Parameters for Multiple Processes on page 85
- Configuring Extended Size for the Configuration Database on page 86

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;
    }
  }
}
```


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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 {
```

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```
        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 1305.99 MB from the default of 665.99 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;
```


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```
}
```

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 **show system configuration database usage** operational mode command to view the usage statistics of configuration database memory.

Related Documentation

- Using Virtual Memory for Process Configuration Data on page 82
- configuration-database on page 109
- extend-size on page 114
- virtual-memory-mapping on page 151
- show system configuration database usage on page 508

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PART 3

Configuration Statements and Operational Commands

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- File Management Commands on page 153
- System Software Administrative Commands on page 173
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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;
```


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```
            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;
  }
```

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```
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;
```


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```
    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;
```

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```
    }
}
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;
```


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```
    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 ];
      portport-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;
```

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```
    }
    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;
```


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```
        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;
}
```

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announcement

Syntax announcement *text*;

Hierarchy Level [edit system login]

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

Description Configure a system login announcement. This announcement appears after a user logs in.

Options ***text***—Text of the announcement. If the text contains any spaces, enclose it in quotation marks.

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

Related Documentation

- *Configuring the Junos OS to Display a System Login Announcement*
- message on page 125

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archival

Syntax

```
archival {
  configuration {
    archive-sites {
      file://<path>/<filename>;
      ftp://username@host:<port>url-path password password;
      http://username@host:<port>url-path password password;
      pasvftp://username@host:<port>url-path password password;
      scp://username@host:<port>url-path password password;
    }
    transfer-interval interval;
    transfer-on-commit;
  }
}
```

Hierarchy Level [edit system]

Release Information

Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 11.1 for the QFX Series.
Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.

Description 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.

Options The remaining statements are explained separately.

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

Required Privilege Level

admin—To view this statement in the configuration.
admin-control—To add this statement to the configuration.

Related Documentation

- Using Junos OS to Configure a Router or Switch to Transfer Its Configuration to an Archive Site on page 61

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archive-sites (Configuration File)

Syntax

```
archive-sites {
  file://<path>/<filename>;
  ftp://username@host:<port>url-path password password;
  http://username@host:<port>url-path password password;
  pasvftp://username@host:<port>url-path password password;
  scp://username@host:<port>url-path password password;
}
```

Hierarchy Level [edit system archival configuration]

Release Information

Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 11.1 for the QFX Series.
Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.

Description

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*<:*password*>@[*ipv6-host-address*]<:*port*>/*url-path*"**

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.

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 or switch is configured as UTC or the local time zone. The default time zone on the router or switch is UTC.

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

Options The prefix used in the configuration statement determines the form of transfer:

file:// —transfer on a path to a named file

ftp:// —transfer using active FTP server

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http://—transfer using HTTP server

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

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

Required Privilege Level

system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

Related Documentation

- Configuring Archive Sites for the Transfer of Active Configuration Files on page 62
- Junos OS Commit Model for Router or Switch Configuration on page 35
- **configuration on page 108**
- **transfer-on-commit on page 149**

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autoinstallation

Syntax

```
autoinstallation {
  configuration-servers {
    url;
  }
  interfaces {
    interface-name {
      bootp;
      rarp;
    }
  }
}
```

Hierarchy Level [edit system]

Release Information Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.1 for EX Series switches.
Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.

Description 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.

Options The remaining statements are explained separately. See CLI Explorer.

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

Related Documentation

- *ACX Series Autoinstallation Overview*
- *Before You Begin Autoinstallation on an ACX Series Universal Access Router*
- *Autoinstallation Configuration of ACX Series Universal Access Routers*
- *USB Autoinstallation on ACX Series Routers*
- *Verifying Autoinstallation on ACX Series Universal Access Routers*
- *show system autoinstallation status*
- *Upgrading Software by Using Automatic Software Download*
- configuration-servers on page 110
- *idle-timeout*

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backup-router

Syntax backup-router *address* <destination *destination-address*>;

Hierarchy Level [edit system]

Release Information Statement introduced before Junos OS Release 7.4.

Description 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.

Options ***address***—Address of the default router.

destination *destination-address*—(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.

Default: All hosts (default route) are reachable through the backup router.

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

Related Documentation

- *Configuring a Backup Router*

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commit (System)

Syntax

```
commit {
  commit-synchronize-server
  delta-export;
  fast-synchronize;
  notification
  peers {
    name of peer {
      user name of user;
      authentication string;
    }
  }
  peers-synchronize;
  persist-groups-inheritance ;
  server;
  synchronize;
}
```

Hierarchy Level [edit system]

Release Information

Statement introduced in Junos OS Release 7.4.
Option **persist-groups-inheritance** added in Junos OS Release 13.2.
Option **delta-export** added in Junos OS Release 14.2.
Option **peers** added in Junos OS Release 14.2R6
Option **peers-synchronize** added in Junos OS Release 14.2R6

Description Configure options for Junos OS commit.

Options

commit-synchronize-server—(Optional) Configure a commit synchronization on servers.

delta-export—(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.

fast-synchronize—(Optional) Configure the default commit to occur simultaneously on dual Routing Engines.

notification—(Optional) Notifies applications upon commit completion.

peers—(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.

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

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

server—(Optional) Configure a default batch commit.

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

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

Related Documentation
- delta-export on page 110
- fast-synchronize on page 115
- persist-groups-inheritance on page 129
- server on page 142
- synchronize on page 145

compress-configuration-files (System)

Syntax
(compress-configuration-files | no-compress-configuration-files);

Hierarchy Level
[edit system]

Release Information
Statement introduced before Junos OS Release 7.4.

Description
Compress the current operational configuration file. By default, the current operational configuration file is compressed, and is stored in the file **juniper.conf**, in the **/config** 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 **/config** 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 **compress-configuration-files** statement.

NOTE: **We recommend that you enable compression of the router configuration files to minimize the amount of disk space that they require.**

Default
The current operational configuration file is uncompressed.

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

Related Documentation
- *Compressing the Current Configuration File*

configuration

Syntax

```
configuration {
  transfer-interval interval;
  transfer-on-commit;
  archive-sites {
    file://<path>/<filename>;
    ftp://username@host:<port>url-path password password;
    http://username@host:<port>url-path password password;
    pasvftp://username@host:<port>url-path password password;
    scp://username@host:<port>url-path password password;
  }
}
```

Hierarchy Level [edit system archival]

Release Information

Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 11.1 for the QFX Series.
Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.

Description Configure the router or switch to periodically transfer its currently active configuration (or after each commit).

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

Options The remaining statements are explained separately. See CLI Explorer.

Required Privilege Level

system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

Related Documentation

- Using Junos OS to Configure a Router or Switch to Transfer Its Configuration to an Archive Site on page 61
- *archive*
- archive-sites on page 102
- transfer-interval on page 148
- transfer-on-commit on page 149

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configuration-database

Syntax

```
configuration-database {
  virtual-memory-mapping {
    process process name {
      fixed-size size KB;
      page-pooling-size size KB;
    }
  }
  extend-size;
}
```

Hierarchy Level [edit system]

Release Information Statement introduced in Junos OS Release 13.2.

Description Define parameters for the configuration databases.

Configure the **virtual-memory-mapping** 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.

Options **extend-size**—For i386 platforms on the M Series , MX Series, or T Series devices only, increase the memory space available for the configuration database, per process, up to 1.5 GB.

The remaining statements are explained separately. See CLI Explorer.

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

Related Documentation

- Example: Configuring Virtual Memory for Process Configuration Data on page 83

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configuration-servers

Syntax

```
configuration-servers {
  url;
}
```

Hierarchy Level [edit system autoinstallation]

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

Description For EX Series switches only, configure the URL address of a server from which to obtain configuration files. Examples of URLs:

tftp://*hostname/path/filename*

ftp://*username:prompt@ftp.hostname.net/filename /*

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

Related Documentation

- *Upgrading Software by Using Automatic Software Download*
- Getting Started Guide for your router model
- autoinstallation on page 104
- *idle-timeout*

delta-export

Syntax

```
delta-export;
```

Hierarchy Level [edit system commit]

Release Information Statement introduced in Junos OS Release 14.2.

Description 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.

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

Related Documentation

- commit on page 106
- System Management Configuration Statements on page 92

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domain-name

Syntax domain-name *domain-name*;

Hierarchy Level [edit system]

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

Description 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.

Options ***domain-name***—Name of the domain.

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

Related Documentation
- *Reaching a Domain Name System Server*

domain-search

Syntax domain-search [*domain-list*];

Hierarchy Level [edit system],
[edit system services dhcp],
[edit system services dhcp],
[edit system services dhcp pool],
[edit system services dhcp static-binding]

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

Description Configure a list of domains to be searched.

Options ***domain-list***—A list of domain names to search. The list can contain up to six domain names, with a total of up to 256 characters.

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

Related Documentation
- *Reaching a Domain Name System Server*

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dump-device

Syntax

```
dump-device {
  compact-flash;
  removable-compact-flash;
  usb;
}
```

Hierarchy Level [edit system]

Release Information Statement introduced before Junos OS Release 7.4.

Description 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 **/var/crash** directory on the router and can be examined by Juniper Networks customer support to help determine the cause of failure.

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 **request system snapshot** command to specify the swap partition.

Options

compact-flash—The primary CompactFlash card.

removable-compact-flash—The CompactFlash card on the front of the router as the system software failure memory snapshot device.

usb—The device attached to the universal serial bus (USB) port.

Required Privilege Level

system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

Related Documentation

- Getting Started Guide for your router model

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events

Syntax events [*events*];

Hierarchy Level [edit system accounting]

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

Description Configure the types of events to track and log.

Options ***events***—Event types; can be one or more of the following:

- **change-log**—Audit configuration changes.
- **interactive-commands**—Audit interactive commands (any command-line input).
- **login**—Audit logins.

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

Related Documentation

- *Configuring TACACS+ System Accounting*

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extend-size

Syntax extend-size;

Hierarchy Level [edit system configuration-database]

Description (M, MX, T i386 only) Extend the default size of the configuration database to 1305.99 MB. This is only used by mgd and only in the M, MX, and T Series i386 platforms. The **extend-size** option is not available on MX80, MX40, MX10, or MX5 platforms.

NOTE: You must reboot the router after committing this statement to make the change effective.

NOTE: Starting with Junos OS Release 15.1R2, any operation on the system configuration-database extend-size configuration statement such as, deactivate, delete, or set, generates the following warning message:

Change in 'system configuration-database extend-size' will be effective at next reboot only.

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

Related Documentation

- Example: Configuring Virtual Memory for Process Configuration Data on page 83

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fast-synchronize

Syntax fast-synchronize;

Hierarchy Level [edit system commit]

Release Information Statement introduced in Junos OS Release 12.2.

Description Configure commits to run in parallel (simultaneously) on both the master and backup Routing Engines to reduce the time required for commit synchronization. The **fast-synchronize** 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.

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

Related Documentation

- *Configuring Multiple Routing Engines to Synchronize Committed Configurations Automatically*
- synchronize on page 145

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fixed-size (Virtual Memory Mapping)

Syntax fixed-size *size KB*;

Hierarchy Level [edit system configuration-database virtual-memory-mapping process *process name*]

Description 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.

Options ***size KB***—Size in kilobytes to directly map for the initial portion (fixed size) of the configuration database for the specified process.

Range: Minimum 1024 KB, maximum 680 MB

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

Related Documentation

- Using Virtual Memory for Process Configuration Data on page 82
- Example: Configuring Virtual Memory for Process Configuration Data on page 83
- configuration-database on page 109
- extend-size on page 114
- virtual-memory-mapping on page 151

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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

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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.**

- **lcc*n*-re0**—Configuration statements applied to the Routing Engine in slot 0 of the specified T640 router that is connected to a TX Matrix router.
- **lcc*n*-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. See CLI Explorer.

Required Privilege Level

configure—To enter configuration mode.

Related Documentation

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

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host-name

Syntax host-name *hostname*;

Hierarchy Level [edit system]

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

Description Set the hostname of the router or switch.

Options ***hostname***—Name of the router or switch.

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

Related Documentation

- *Understanding Hostnames*
- *Configuring the Hostname of a Router or Switch by Using a Configuration Group*

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inet6-backup-router

Syntax inet6-backup-router *address* <destination *destination-address*>;

Hierarchy Level [edit system]

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

Description 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.

Options ***address***—Address of the default router.

destination *destination-address*—(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.

Default: All hosts (default route) are reachable through the backup router.

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

Related Documentation

- *Configuring a Backup Router*

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interfaces

Syntax

```
interfaces {
  interface-name {
    bootp;
    rarp;
  }
}
```

Hierarchy Level [edit system autoinstallation]

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

Description 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.

Options **rarpbootp**—Send requests over serial interfaces with Frame Relay.

rarp—Send requests over Ethernet interfaces.

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

Related Documentation

- *Upgrading Software by Using Automatic Software Download*
- autoinstallation on page 104

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load-key-file

Syntax load-key-file *URL filename*;

Hierarchy Level [edit system root-authentication],
[edit system login user *username* authentication]

Release Information Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 11.1 for the QFX Series.
Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description

NOTE: ECDSA is not supported on the QFabric system.

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.

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

Related Documentation

- *Configuring the Root Password*
- *Configuring the Root Password*
- *Configuring Junos OS User Accounts by Using a Configuration Group*

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location (System)

Syntax

```
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;
}
```

Hierarchy Level [edit system]

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

Description Configure the system location in various formats.

Options

altitude *feet*—Number of feet above sea level.

building *name*—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 (" ").

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.

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

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Related Documentation
- Specifying the Physical Location of the Router or Switch on page 63

login-tip

Syntax login-tip;

Hierarchy Level [edit system login class *class-name*]

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

Description Enable CLI tips at login.

Default Disabled.

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

Related Documentation
- *Configuring Login Tips*

max-configurations-on-flash

Syntax max-configurations-on-flash *number*;

Hierarchy Level [edit system]

Release Information Statement introduced before Junos OS Release 7.4.

Description Specify the number of configurations stored on the CompactFlash card.

Options ***number***—The number of configurations stored on the CompactFlash card.

Range: 0 through 49. The most recently saved configuration is number 0, and the oldest saved configuration is number 49.

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

Related Documentation
- Using Junos OS to Specify the Number of Configurations Stored on the CompactFlash Card on page 60

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message

Syntax message *text*;

Hierarchy Level [edit system login]

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

Description Configure a system login message. This message appears before a user logs in.

You can format the message using the following special characters:

- \n—New line
- \t—Horizontal tab
- \'—Single quotation mark
- \"—Double quotation mark
- \\—Backslash

Options ***text***—Text of the message.

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

Related Documentation

- *Configuring the Junos OS to Display a System Login Message*
- announcement on page 100

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mirror-flash-on-disk

Syntax mirror-flash-on-disk;

Hierarchy Level [edit system]

Release Information 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.

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

Related Documentation

- Configuring Automatic Mirroring of the CompactFlash Card on the Hard Disk Drive on page 59

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name-server

Syntax

```
name-server {
  address;
}
```

Hierarchy Level

[edit system],
[edit system services dhcp],
[edit system services dhcp],
[edit system services dhcp pool],
[edit system services dhcp static-binding]

Release Information

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

Description

Configure one or more Domain Name System (DNS) name servers.

Options

address—Address of the name server. To configure multiple name servers, include a maximum of three ***address*** options.

Required Privilege Level

system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

Related Documentation

- *Reaching a Domain Name System Server*

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page-pooling-size (Virtual Memory Mapping)

Syntax page-pooling-size *size KB*;

Hierarchy Level [edit system configuration-database virtual-memory-mapping process *process name*]

Description 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.

Options ***size KB***—Size in kilobytes to use for page-pooling the remaining data in the database.
Range: Minimum 1024 KB, maximum 680 MB

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

Related Documentation
- Using Virtual Memory for Process Configuration Data on page 82
- Example: Configuring Virtual Memory for Process Configuration Data on page 83
- configuration-database on page 109
- extend-size on page 114
- virtual-memory-mapping on page 151

password (Proxy Systems)

Syntax password *password*;

Hierarchy Level [edit system proxy]

Release Information Statement introduced in Junos OS Release 11.4.

Description Configure the proxy server parameters for a device.

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

Related Documentation
- Example: Configuring a Proxy Server for License Updates on page 56

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persist-groups-inheritance

Syntax persist-groups-inheritance;

Hierarchy Level [edit system commit]

Release Information Statement introduced in Junos OS Release 13.2.

Description 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.

Options There are no options for this configuration.

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

Related Documentation

- *Improving Commit Time When Using Configuration Groups*

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pic-console-authentication

Syntax

```
pic-console authentication {
   (encrypted-password "password" | plain-text-password);
}
```

Hierarchy Level [edit system]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure console access to Physical Interface Cards (PICs).

Default Disabled. By default, there is no password setting for console access.

Options

encrypted-password " *password*"—Use MD5 or other encrypted authentication. Specify the MD5 or other password. You can specify only one encrypted password.

You cannot configure a blank password for **encrypted-password** 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.

plain-text-password—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.

The default requirements for plain-text passwords are:

- The password must be between 6 and 128 characters long
- 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.
- Valid passwords must contain at least one change of case or character class.

Required Privilege Level

admin—To view this statement in the configuration.
admin-control—To add this statement to the configuration.

Related Documentation

- Configuring Junos OS to Set Console and Auxiliary Port Properties on page 64
- *Configuring Password Authentication for Console Access to PICs*

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port (Syslog)

Syntax port *port number*;

Hierarchy Level [edit system syslog host *hostname* | other-routing-engine| scc-master)]

Release Information Statement introduced in Junos OS Release 11.3.

Description Specify the port number for the remote syslog server.

Options ***port number***—Port number of the remote syslog server.
Range: 0 through 65535
Default: 514

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

Related Documentation
- *syslog*
- *host*

port (Proxy Server)

Syntax port *port-number*;

Hierarchy Level [edit system proxy]

Release Information Statement introduced in Junos OS Release 11.4.

Description Configure the port number for the proxy server ranging from **0** through **65535**.

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

Related Documentation
- Example: Configuring a Proxy Server for License Updates on page 56

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ports

Syntax

```
ports {
  auxiliary {
    disable;
    insecure;
    type terminal-type;
    port-type (mini-usb | rj45);
  }
  console {
    disable;
    insecure;
    log-out-on-disconnect;
    type terminal-type;
  }
}
```

Hierarchy Level [edit system]

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

Description Configure the properties of the console and auxiliary ports. The ports are located on the router's craft interface.

See the switch's hardware documentation for port locations.

The remaining statements are explained separately.

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

Related Documentation

- Configuring Junos OS to Set Console and Auxiliary Port Properties on page 64

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process (Virtual Memory Mapping)

Syntax

```
process process name {
  fixed-size size;
  page-pooling-size size;
}
```

Hierarchy Level [edit system configuration-database virtual-memory-mapping]

Description 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.

Options

fixed-size *size KB*—Size in kilobytes to directly map for the initial portion of the configuration database for the specified process.

Range: Minimum 512 KB, maximum 680 MB

page-pooling-size *size KB*—Size in kilobytes to use for page-pooling the remaining data in the database.

Range: Minimum 512 KB, maximum 680 MB

Required Privilege Level

admin—To view this statement in the configuration.
admin-control—To add this statement to the configuration.

Related Documentation

- Using Virtual Memory for Process Configuration Data on page 82
- Example: Configuring Virtual Memory for Process Configuration Data on page 83
- configuration-database on page 109
- extend-size on page 114
- virtual-memory-mapping on page 151

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processes

Syntax

```
processes {
  process-name (enable | disable) failover (alternate-media | other-routing-engine);
  timeout seconds;
}
```

Hierarchy Level [edit system]

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

Description Configure which Junos OS processes are running on the router or switch.

CAUTION: Never disable any of the software processes unless instructed to do so by a customer support engineer.

Default All processes are enabled by default.

Options

(enable | disable)—(Optional) Enable or disable a specified process.

failover (alternate-media | other-routing-engine)—(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.

process-name—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.

timeout *seconds*—(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.

Values: 15, 60, or 180

Default: 180 seconds (rounded up to 291 seconds by the Junos kernel)

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 79

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proxy (System)

Syntax

```
proxy {
    server (hostname | ip-address);
    port port-number;
    username username;
    password password;
}
```

Hierarchy Level [edit system]

Release Information Statement introduced in Junos OS Release 11.4.

Description Configure the proxy server properties for a device.

The remaining statements are explained separately. See CLI Explorer.

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

Related Documentation

- Example: Configuring a Proxy Server for License Updates on page 56

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root-authentication

Syntax

```
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";
}
```

Hierarchy Level [edit system]

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

Description Configure the authentication methods for the root-level user, whose username is **root**.

You can use the **load-key-file *URL:filename*** statement to laod an SSH key file that was previously generated using **ssh-keygen**.

Optionally, you can use the **ssh-dsa**, **ssh-ecdsa**, or **ssh-rsa** 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.

To view the SSH keys entries, use the configuration mode **show** command. For example:

```
[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
}
```

Options

encrypted-password "*password*"—MD5 or other encrypted authentication. Specify the MD5 or other password. You can specify only one encrypted password.

You cannot configure a blank password for **encrypted-password** 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.

load-key-file *URL:filename*—Load an SSH key file that was previously generated using **ssh-keygen**. The *URL:filename* 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 **load-key-file *URL:filename*** statement. This command loads RSA (SSH version 1 and SSH version 2) and DSA (SSH version 2) public keys.

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no-public-keys—Disbale SSH public key based authentication.

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.

Required Privilege Level

admin—To view this statement in the configuration.
admin-control—To add this statement to the configuration.

Related Documentation

- *Understanding User Accounts*
- *Protecting Network Security by Configuring the Root Password*
- *Recovering the Root Password*
- *authentication*

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root-login

Syntax root-login (allow | deny | deny-password);

Hierarchy Level [edit system services ssh]

Release Information Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 11.1 for the QFX Series.
Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.

Description Control user access through SSH.

Default **root-login deny-password** is the default for most systems.

NOTE: The default **root-login** setting for the MX240, MX480, MX960, MX2010 and MX2020 is **allow**.

Options **allow**—Allow users to log in to the router or switch as root through SSH.

deny—Disable users from logging in to the router or switch as root through SSH.

deny-password—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.

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

Related Documentation

- *Configuring SSH Service for Remote Access to the Router or Switch*

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routing (System Processes)

Syntax

```
routing {
  force-32-bit | force-64-bit | auto-64-bit;
}
```

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

Release Information Statement introduced in Junos OS Release 13.3 R4.

Description Configure routing protocols process (rpd) mode.

Default **force-32-bit** mode is used in Junos 15.1F2 and prior releases

auto-64-bit mode is used starting in Junos 15.1F3

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.

NOTE: Starting in Junos 15.1F3, 15.1R2, 15.1R3, and 15.2R1, 64-bit mode is enabled by default on systems that support it and which have at least 16 GB of RAM.

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. However, forcing rpd from 32-bit to 64-bit or 64-bit-to 32-bit will restart the rpd process, which can impact the routing protocols. For this

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reason, it is recommended to perform these changes in a maintenance window.

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 79
- processes on page 134

saved-core-context

Syntax
(saved-core-context | no-saved-core-context);

Hierarchy Level
[edit system]

Release Information
Statement introduced before Junos OS Release 7.4.

Description
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):

- **saved-core-context**—The router saves each cores file and its associated context in a compressed tar file named **/var/tmp/*process-name*.core.*core-number*.tgz**.
- **no-saved-core-context**—The router does not save cores files and their associated context.

The router saves core files.

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

Related Documentation
- Saving Core Files from Junos OS Processes on page 80
- saved-core-files on page 141

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saved-core-files

Syntax saved-core-files *number*;

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 *number*—Maximum number of core files to save.
Range: 1 through 10

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

Related Documentation
- Saving Core Files from Junos OS Processes on page 80
- saved-core-context on page 140

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server (Batch Commits)

Syntax

```
server {
  commit-interval<number-of-seconds-between-commits>;
  days-to-keep-error-logs<days-to-keep-error-log-entries>;
  maximum-aggregate-pool<maximum-number-of-commits-to-aggregate>;
  maximum-entries <number-of-entries>;
  traceoptions {
    file filename;
    files number;
    flag (all | batch | commit-server | configuration);
    size maximum-file-size;
    (world-readable | no-world-readable);
  }
}
```

Hierarchy Level [edit system commit]

Release Information Statement introduced in Junos OS Release 12.1.

Description Configure the system commit to occur in batches. Configure parameters for aggregating and saving batch commits.

Options

commit-interval—Configure the interval between commits.

days-to-keep-error-logs—Configure the number of days to keep log entries.

maximum-aggregate-pool—Configure the maximum number of commits to aggregate together.

maximum-entries —Configure the maximum number of commit entries.

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

Related Documentation

- *Example: Configuring Batch Commit Server Properties*

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server (Proxy)

Syntax server (*hostname* | *ip-address*);

Hierarchy Level [edit system proxy]

Release Information Statement introduced in Junos OS Release 11.4.

Description Configure the proxy server name or IP address.

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

Related Documentation
- Example: Configuring a Proxy Server for License Updates on page 56

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static-host-mapping

Syntax

```
static-host-mapping {
  hostname {
    alias [ aliases ];
    inet [ addresses ];
    inet6 [ addresses];
    sysid system-identifier;
  }
}
```

Hierarchy Level [edit system]

Release Information Statement introduced before Junos OS Release 7.4.

Description (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).

Default If you do not statically map the hostname, the mapping is generated dynamically, based on the system configuration. For instance, if you omit the **static-host-mapping *hostname* sysid** 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 **host-name** statement configured at the **[edit system]** hierarchy level.

Options

alias *alias*—Alias for the hostname.

hostname—Fully qualified hostname.

inet *address*—IP address. You can specify one or more IP addresses for the host.

inet6 *address*—IP address. You can specify one or more IPv6 addresses for the host.

sysid *system-identifier*—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.

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

Related Documentation

- *Configuring the Hostname of a Router or Switch by Using a Configuration Group*

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synchronize

Syntax synchronize;

Hierarchy Level [edit system commit]

Release Information Statement introduced in Junos OS Release 7.4.
Statement introduced in Junos OS Release 10.4 for EX Series switches.

Description For devices with multiple Routing Engines only. Configure the **commit** command to automatically perform a **commit synchronize** action between dual Routing Engines within the same chassis. The Routing Engine on which you execute the **commit** 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

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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 Level

system—To view this statement in the configuration.
system-control—To add this statement to the configuration.

Related Documentation

- *Synchronizing the Routing Engine Configuration*
- *Configuring Multiple Routing Engines to Synchronize Committed Configurations Automatically*

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synchronize (Commit configuration)

Syntax synchronize;

Hierarchy Level [edit system commit]

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

Description For devices with multiple Routing Engines only. Configure a **commit** command to automatically result in a **commit synchronize** action between dual Routing Engines within the same chassis. The Routing Engine on which you execute the **commit** 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.

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.

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

Related Documentation
- *Configuring Multiple Routing Engines to Synchronize Committed Configurations Automatically*

system

Syntax system { ... }

Hierarchy Level [edit]

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

Description Configure system management properties.

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

Related Documentation
- System Management Configuration Statements on page 92

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transfer-interval (Configuration)

Syntax transfer-interval *interval*;

Hierarchy Level [edit system archival configuration]

Release Information Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.
Statement introduced in Junos OS Release 11.1 for the QFX Series.

Description Configure the router or switch to periodically transfer its currently active configuration to an archive site.

Options ***interval***—Interval at which to transfer the current configuration to an archive site.
Range: 15 through 2880 minutes

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

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

Related Documentation

- Configuring the Periodic Transfer of the Active Configuration to an Archive Site on page 61
- *archive*
- configuration on page 108
- transfer-on-commit on page 149

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transfer-on-commit

Syntax transfer-on-commit;

Hierarchy Level [edit system archival configuration]

Release Information Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Statement introduced in Junos OS Release 11.1 for the QFX Series.
Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.

Description 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.

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

Related Documentation

- Configuring the Transfer of the Currently Active Configuration When a Configuration Is Committed on page 62
- *archive*
- configuration on page 108
- transfer-interval on page 148

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trusted-key

Syntax trusted-key [*key-numbers*];

Hierarchy Level [edit system ntp]

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

Description 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.

Options ***key-numbers***—One or more key numbers. Each key can be any 32-bit unsigned integer except 0.

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

Related Documentation

- *Configuring NTP Authentication Keys*
- *authentication-key*
- *broadcast*
- *peer*
- *server*

username (System)

Syntax username *username*;

Hierarchy Level [edit system proxy]

Release Information Statement introduced in Junos OS Release 11.4.

Description Configure the username as configured in the proxy server.

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

Related Documentation

- Example: Configuring a Proxy Server for License Updates on page 56

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virtual-memory-mapping

Syntax

```
virtual-memory-mapping {
  process process name {
    fixed-size size KB;
    page-pooling-size size KB;
  }
}
```

Hierarchy Level [edit system configuration-database]

Description 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.

Options

fixed-size *size KB*—Size in kilobytes to directly map for the initial portion of the configuration database for the specified process.

Range: Minimum 512 KB, maximum 680 MB

page-pooling-size *size KB*—Size in kilobytes to use for page-pooling the remaining data in the database.

Range: Minimum 512 KB, maximum 680 MB

Required Privilege Level

admin—To view this statement in the configuration.
admin-control—To add this statement to the configuration.

Related Documentation

- Using Virtual Memory for Process Configuration Data on page 82
- Example: Configuring Virtual Memory for Process Configuration Data on page 83
- configuration-database on page 109
- extend-size on page 114
- process on page 133

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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

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file archive

Syntax file archive destination *destination* source *source* <compress>

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
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 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 "Format for Specifying Filenames and URLs in Junos OS CLI Commands" on page 53.

Options **destination *destination***—Destination of the archived file or files. Specify the destination as a URL or filename. The Junos OS adds one of the following suffixes if the destination filename does not already have it:

- For archived files—The suffix **.tar**
- For archived and compressed files—The suffix **.tgz**

source *source*—Source of the original file or files. Specify the source as a URL or filename.

compress—(Optional) Compress the archived file with the GNU zip (gzip) compression utility. The compressed files have the suffix **.tgz**.

Required Privilege Level maintenance

Related Documentation
- Format for Specifying Filenames and URLs in Junos OS CLI Commands on page 53

List of Sample Output
file archive (Multiple Files) on page 154
file archive (Single File) on page 155
file archive (with Compression) on page 155

Output Fields 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
```


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```
/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.
```

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file checksum md5

Syntax file checksum md5 <*pathname*> *filename*

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
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 Calculate the Message Digest 5 (MD5) checksum of a file.

Options ***pathname***—(Optional) Path to a filename.

filename—Name of a local file for which to calculate the MD5 checksum.

Required Privilege Level maintenance

Related Documentation

- *Configuring Checksum Hashes for a Commit Script*
- *Configuring Checksum Hashes for an Event Script*
- *Configuring Checksum Hashes for an Op Script*
- *Configuring Checksum Hashes for an SNMP Script*
- *Executing an Op Script from a Remote Site*
- file checksum sha-256 on page 158
- file checksum sha1 on page 157

List of Sample Output file checksum md5 on page 156

Output Fields 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
```

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file checksum sha1

Syntax file checksum sha1 <*pathname*> *filename*

Release Information Command introduced in Junos OS Release 9.5.
Command introduced in Junos OS Release 9.5 for EX Series switches.
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 Calculate the Secure Hash Algorithm (SHA-1) checksum of a file.

Options ***pathname***—(Optional) Path to a filename.

filename—Name of a local file for which to calculate the SHA-1 checksum.

Required Privilege Level maintenance

Related Documentation

- *Configuring Checksum Hashes for a Commit Script*
- *Configuring Checksum Hashes for an Event Script*
- *Configuring Checksum Hashes for an Op Script*
- *Configuring Checksum Hashes for an SNMP Script*
- *Executing an Op Script from a Remote Site*
- file checksum md5 on page 156
- file checksum sha-256 on page 158

List of Sample Output file checksum sha1 on page 157

Output Fields 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
```

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file checksum sha-256

Syntax file checksum sha-256 <*pathname*> *filename*

Release Information Command introduced in Junos OS Release 9.5.
Command introduced in Junos OS Release 9.5 for EX Series switches.
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 Calculate the Secure Hash Algorithm 2 family (SHA-256) checksum of a file.

Options ***pathname***—(Optional) Path to a filename.

filename—Name of a local file for which to calculate the SHA-256 checksum.

Required Privilege Level maintenance

Related Documentation

- *Configuring Checksum Hashes for a Commit Script*
- *Configuring Checksum Hashes for an Event Script*
- *Configuring Checksum Hashes for an Op Script*
- *Configuring Checksum Hashes for an SNMP Script*
- *Executing an Op Script from a Remote Site*
- file checksum md5 on page 156
- file checksum sha1 on page 157

List of Sample Output file checksum sha-256 on page 158

Output Fields 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
```


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file compare

Syntax

file compare (files *filename filename*)
<context | unified>
<ignore-white-space>

Release Information

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

Compare two local files and describe the differences between them in default, context, or unified output styles:

- **Default**—In the first line of output, **c** means lines were changed between the two files, **d** means lines were deleted between the two files, and **a** means lines were added between the two files. The numbers preceding this alphabetical marker represent the first file, and the lines after the alphabetical marker represent the second file. A left angle bracket (**<**) in front of output lines refers to the first file. A right angle bracket (**>**) in front of output lines refers to the second file.
- **Context**—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 (**-**).
- **Unified**—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.

Options

files *filename*—Names of two local files to compare.

context—(Optional) Display output in context format.

ignore-white-space—(Optional) Ignore changes in the amount of white space.

unified—(Optional) Display output in unified format.

Required Privilege Level

none

Related Documentation

- Format for Specifying Filenames and URLs in Junos OS CLI Commands on page 53
- Viewing Core Files from Junos OS Processes on page 80

List of Sample Output

file compare files on page 161
file compare files context on page 161

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file compare files unified on page 161
file compare files unified ignore-white-space on page 162

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

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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;
                }
```

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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
             }
```


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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 53.

WARNING: Starting with Junos OS Release 15.1, the **sslv3-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 **sslv3-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 sslv3-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 sslv3-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 exhange 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

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Related Documentation

- Format for Specifying Filenames and URLs in Junos OS CLI Commands on page 53
- 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 164
Copy a Configuration File between Routing Engines on page 164
Copy a Log File between Routing Engines on page 164
Copy a File from a TX Matrix Plus Router to a T1600 Router Connected to the TX Matrix Plus on page 164
Copy a File Using File Transfer Protocol on page 164
Copy a File Using File Transfer Protocol and Requiring a Password on page 165
Copy a File Using Secure Copy Protocol (scp) on page 165

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.conffftp://hostname/juniper.conf
```


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```
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
```

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file delete

Syntax file delete *filename*
<purge>

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
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 Delete a file on the local router or switch.

Options *filename*—Name of the file to delete. For a routing matrix, include chassis information in the filename if the file to be deleted is not local to the Routing Engine from which the command is issued.

purge—(Optional) Overwrite regular files before deleting them.

Required Privilege Level maintenance

List of Sample Output file delete on page 166
file delete (Routing Matrix) on page 166

Output Fields 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
```


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file list

Syntax file list <detail | recursive> <*path*>

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 list of files on the local router or switch.

Options

none—Display a list of files in the default directory. The default directory is the home directory of the user logged in to the router or switch.

detail—(Optional) Display detailed information about the files. The output is similar to what is displayed by the Linux **ls -l** command.

recursive—(Optional) Display detailed information about the files in the directory and all subdirectories below it.

path—(Optional) List the files in a specified directory path.

Additional Information To view available directories, enter a space and then a slash (/) after the **file list** command. To view files within a specific directory, include a slash followed by the directory and, optionally, subdirectory name after the **file list** command.

Required Privilege Level maintenance

List of Sample Output

file list on page 167
file list (detailed) on page 168
file list (recursive) on page 168

Sample Output

file list

The following command lists the contents of the **/var/tmp** directory.

```
user@host> file list /var/tmp

/var/tmp:
trace_debug
package.log
pics/
downloads/
```

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file list (detailed)

The following command lists detailed information about the contents of the **/var/tmp** directory.

```
user@host> file list /var/tmp detail

/var/tmp/:
total blocks: 4276224
-rw-r--r--  1 user  group       1362 Oct 16 11:11 trace_debug
-rw-r--r--  1 user  group        108 Aug 9   2016 package.log
drwxrwxrwx  2 user  group        512 Jun 30  2016 pics/
drwxr-xr-x  3 user  group        512 Aug 9   2016 downloads/
total files: 2
```

file list (recursive)

The following command lists detailed information about the contents of the **/var/tmp** directory and all subdirectories below it.

```
user@host> file list /var/tmp recursive

/var/tmp/:
total blocks: 4276224
-rw-r--r--  1 user  group       1362 Oct 16 11:11 trace_debug
-rw-r--r--  1 user  group        108 Aug 9   2016 package.log
drwxrwxrwx  2 user  group        512 Jun 30  2016 pics/
drwxr-xr-x  3 user  group        512 Aug 9   2016 downloads/
total files: 2

/var/tmp/pics:
total blocks: 5120461
-rw-r--r--  1 user  group       1910 Oct 15  2016 image3.png
-rw-r--r--  1 user  group       1852 Oct 15  2016 image2.png
-rw-r--r--  1 user  group       1310 Aug 9   2016 image1.png
total files: 3

/var/tmp/downloads:
total blocks: 24
-rw-r--r--  1 user  group        108 Aug 21  2016 package2.log
-rw-r--r--  1 user  group        108 Aug 9   2016 package1.log
drwxr-xr-x  2 user  group        512 Aug 9   2016 sub-download/
total files: 2

/var/tmp/downloads/sub-download:
total blocks: 16
total files: 0
```


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file rename

Syntax file rename *source destination*

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
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 Rename a file on the local router or switch.

Options ***destination***—New name for the file.

source—Original name of the file. For a routing matrix, the filename must include the chassis information.

Required Privilege Level maintenance

List of Sample Output file rename on page 169
file rename (Routing Matrix) on page 169

Output Fields 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:
```

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```
.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
```


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file show

Syntax file show *filename*
<encoding (base64 | raw)>

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
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 the contents of a file.

Options ***filename***—Name of a file. For a routing matrix, the filename must include the chassis information.

encoding (base64 | raw)—(Optional) Encode file contents with base64 encoding or show raw text.

Required Privilege Level maintenance

List of Sample Output file show on page 171
file show (Routing Matrix) on page 171

Output Fields 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
```

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```
#####################################################################

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
```


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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

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- show version
- start shell

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clear system commit

Syntax clear system commit

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
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 Clear any pending commit operation.

Options This command has no options.

Required Privilege Level maintenance (or the actual user who scheduled the commit)

Related Documentation
- show system commit on page 504

List of Sample Output
clear system commit on page 175
clear system commit (None Pending) on page 175
clear system commit (User Does Not Have Required Privilege Level) on page 175

Output Fields 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
```

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clear system reboot

List of Syntax

Syntax on page 176
Syntax (EX Series Switches) on page 176
Syntax (TX Matrix Router) on page 176
Syntax (TX Matrix Plus Router) on page 176
Syntax (QFX Series) on page 176

Syntax

clear system reboot
<both-routing-engines>

Syntax (EX Series Switches)

clear system reboot
<all-members>
<both-routing-engines>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

clear system reboot
<both-routing-engines>
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

clear system reboot
<both-routing-engines>
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Syntax (QFX Series)

clear system reboot
<infrastructure *name*>
<interconnect-device *name*>
<node-group *name*>

Release Information

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

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.

Options

none—Clear all pending system software reboots or halts.

all-chassis—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Clear all halt or reboot requests for all the Routing Engines in the chassis.

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all-lcc—(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.

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Required Privilege Level maintenance

Related Documentation
- request system reboot on page 205
- *Routing Matrix with a TX Matrix Plus Router Solutions Page*

List of Sample Output
clear system reboot on page 179
clear system reboot (TX Matrix Router) on page 179
clear system reboot (QFX Series) on page 179

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

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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.
```

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configure

Syntax

configure
<batch>
<dynamic>
<exclusive>
<private>

Release Information

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

Description

Enter configuration mode. When this command is entered without any optional keywords, everyone can make configuration changes and commit all changes made to the configuration.

Options

none—Enter configuration mode.

batch—(Optional) Work in the batch commit mode where commit operations are executed in batches.

dynamic—(Optional) Configure routing policies and certain routing policy objects in a dynamic database that is not subject to the same verification required in the standard configuration database. As a result, the time it takes to commit changes to the dynamic database is much shorter than for the standard configuration database. You can then reference these policies and policy objects in routing policies you configure in the standard database.

exclusive—(Optional) Lock the candidate configuration for as long as you remain in configuration mode, allowing you to make changes without interference from other users. Other users can enter and exit configuration mode, but they cannot change the configuration.

private—(Optional) Allow multiple users to edit different parts of the configuration at the same time and to commit only their own changes, or to roll back without interfering with one another's changes. You cannot commit changes in configure private mode when another user is in configure exclusive mode.

Additional Information

For more information about the different methods of entering configuration mode and the restrictions that apply, see the *Junos OS Administration Library*.

Required Privilege Level

configure

Related Documentation

- show configuration on page 459

List of Sample Output

configure on page 181

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Output Fields When you enter this command, you are placed in configuration mode and the system prompt changes from ***hostname>*** to ***hostname#***.

Sample Output

configure

```
user@host> configure
Entering configuration mode
[edit]
user@host#
```

request message

Syntax
request message all message "*text*"
request message message "*text*" (terminal *terminal-name* | user *user-name*)

Release Information
Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
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 a message on the screens of all users who are logged in to the router or switch or on specific screens.

Options
all—Display a message on the terminal of all users who are currently logged in.

message "*text*"—Message to display.

terminal *terminal-name*—Name of the terminal on which to display the message.

user *user-name*—Name of the user to whom to direct the message.

Required Privilege Level
maintenance

List of Sample Output
request message message on page 182

Output Fields
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 ttyp0 at 20:27 ...
Maintenance window in 10 minutes
EOF
```


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request system configuration rescue delete

Syntax request system configuration rescue delete

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
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 Delete an existing rescue configuration.

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

Options This command has no options.

Required Privilege Level maintenance

Related Documentation

- request system configuration rescue save on page 184
- *request system software rollback*
- show system commit on page 504

List of Sample Output request system configuration rescue delete on page 183

Output Fields This command produces no output.

Sample Output

request system configuration rescue delete

```
user@host> request system configuration rescue delete
```

request system configuration rescue save

Syntax request system configuration rescue save

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
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 Save the most recently committed configuration as the rescue configuration so that you can return to it at any time by using the **rollback** command.

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

Options This command has no options.

Required Privilege Level maintenance

Related Documentation
- *request system software delete*
- *request system software rollback*
- show system commit on page 504

List of Sample Output request system configuration rescue save on page 184

Output Fields This command produces no output.

Sample Output

request system configuration rescue save

```
user@host> request system configuration rescue save
```


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request system halt

List of Syntax

Syntax on page 185
Syntax (EX Series Switches) on page 185
Syntax (PTX Series) on page 185
Syntax (TX Matrix Router) on page 185
Syntax (TX Matrix Plus Router) on page 186
Syntax (MX Series Router) on page 186
Syntax (QFX Series) on page 186

Syntax

request system halt
<at *time*>
<backup-routing-engine>
<both-routing-engines>
<other-routing-engine>
<in *minutes*>
<media (compact-flash | disk | removable-compact-flash | usb)>
<message "*text*">

Syntax (EX Series Switches)

request system halt
<all-members>
<at *time*>
<backup-routing-engine>
<both-routing-engines>
<in *minutes*>
<local>
<media (external | internal)>
<member *member-id*>
<message "*text*">
<other-routing-engine>
<slice *slice*>

Syntax (PTX Series)

request system halt
<at *time*>
<backup-routing-engine>
<both-routing-engines>
<other-routing-engine>
<in *minutes*>
<media (compact-flash | disk)>
<message "*text*">

Syntax (TX Matrix Router)

request system halt
<all-lcc | lcc *number* | scc>
<at *time*>
<backup-routing-engine>
<both-routing-engines>
<other-routing-engine>
<in *minutes*>
<media (compact-flash | disk)>
<message "*text*">

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Syntax (TX Matrix Plus Router)

request system halt
<all-chassis | all-lcc | lcc *number* | sfc *number*>
<at *time*>
<backup-routing-engine>
<both-routing-engines>
<other-routing-engine>
<in *minutes*>
<media (compact-flash | disk)>
<message "*text*">

Syntax (MX Series Router)

request system halt
<all-members>
<at *time*>
<backup-routing-engine>
<both-routing-engines>
<in *minutes*>
<local>
<media (external | internal)>
<member *member-id*>
<message "*text*">
<other-routing-engine>

Syntax (QFX Series)

request system halt
<all-members>
<at *time*>
<both-routing-engines>
<director-device *director-device-id*>
<in *minutes*>
<local>
<media >
<member *member-id*>
<message "*text*">
<other-routing-engine>
<slice *slice*>

Release Information

Command introduced before Junos OS Release 7.4.
other-routing-engine option introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
Command introduced in Junos OS Release 11.1 for the QFX Series.
director-device option introduced for QFabric systems in Junos OS Release 12.2.
backup-routing-engine option introduced in Junos OS Release 13.1.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description

Stop the router or switch software.

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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.
- ***yymmddhhmm***—Absolute time at which to stop the software, specified as year, month, day, hour, and minute.
- ***hh:mm***—Absolute time on the current day at which to stop the software.

backup-routing-engine—(Optional) Halt the backup Routing Engine. This command halts the backup Routing Engine, regardless from which Routing Engine the command is executed. For example, if you issue the command from the master Routing Engine, the backup Routing Engine is halted. If you issue the command from the backup Routing Engine, the backup Routing Engine is halted.

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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.

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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 176
- request system power-off on page 200
- *request vmhost halt*
- *Routing Matrix with a TX Matrix Plus Router Solutions Page*

List of Sample Output

request system halt on page 190
request system halt (In 2 Hours) on page 190
request system halt (Immediately) on page 190
request system halt (At 1:20 AM) on page 190

Output Fields

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

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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 yymmdd120
request system halt at 120
Halt the system at 120? [yes,no] (no) yes
```


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request system license add

Syntax request system license add (*filename* | terminal)

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 9.5 for SRX Series devices.
Command introduced in Junos OS Release 11.1 for the QFX Series.

Description Add a license key.

Options ***filename***—License key from a file or URL. Specify the filename or the URL where the key is located.

terminal—License key from the terminal.

Required Privilege Level maintenance

Related Documentation

List of Sample Output request system license add on page 191

Output Fields 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)
```

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request system license delete

Syntax request system license delete (*license-identifier* | license-identifier-list [*licenseid001 licenseid002 licenseid003*] | all)

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.
Option **license-identifier-list** introduced in Junos OS Release 13.1.

Description 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.

Options ***license-identifier***—Text string that uniquely identifies a license key.

license-identifier-list [***licenseid001 licenseid002 licenseid003....*** **]**—Delete multiple license identifiers as a list enclosed in brackets.

all—Delete all licenses on the device.

Required Privilege Level maintenance

Related Documentation

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request system license save

Syntax request system license save (*filename* | terminal)

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 11.1 for the QFX Series.
Command introduced in Junos OS Release 9.5 for SRX Series devices.

Description Save installed license keys to a file or URL.

Options ***filename***—License key from a file or URL. Specify the filename or the URL where the key is located.

terminal—License key from the terminal.

Required Privilege Level maintenance

Related Documentation

List of Sample Output request system license save on page 193

Output Fields 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
```

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request system logout

Syntax request system logout (pid *pid* | terminal *terminal* | user *username*)
<all>

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
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 Log out users from the router or switch and the configuration database. If a user held the **configure exclusive** lock, this command clears the exclusive lock.

Options

all—(Optional) Log out all sessions owned by a particular PID, terminal session, or user. (On a TX Matrix or TX Matrix Plus router, this command is broadcast to all chassis.)

pid *pid*—Log out the user session using the specified management process identifier (PID). The PID type must be management process.

terminal *terminal*—Log out the user for the specified terminal session.

user *username*—Log out the specified user.

Required Privilege Level configure

Related Documentation

- Log a User Out of the Router on page 76

List of Sample Output request system logout on page 194

Output Fields 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.
```


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request system partition abort

List of Syntax

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Syntax (TX Matrix Router) on page 195
Syntax (TX Matrix Plus Router) on page 195
Syntax (MX Series Router) on page 195

Syntax

request system partition abort

Syntax (TX Matrix Router)

request system partition abort
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

request system partition abort
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Syntax (MX Series Router)

request system partition abort
<all-members>
<local>
<member *member-id*>

Release Information

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

Description

Terminate a previously scheduled storage media partition operation. If the command is issued between the time of a partition request and a reboot, the partition request is aborted and the storage media is not affected.

Options

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Abort a previously scheduled partition operation for all chassis.

all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, abort a previously scheduled partition operation on all T640 routers (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.

all-members—(MX Series routers only) (Optional) Abort a previously scheduled partition operation for all members of the Virtual Chassis configuration.

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lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix Plus router, abort a previously scheduled partition operation on a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, abort a previously scheduled partition operation on a specific 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 197

List of Sample Output request system partition abort on page 196

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.
```


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request system partition hard-disk

List of Syntax

Syntax on page 197
Syntax (TX Matrix Router) on page 197
Syntax (TX Matrix Plus Router) on page 197
Syntax (MX Series Router) on page 197

Syntax

request system partition hard-disk

Syntax (TX Matrix Router)

request system partition hard-disk
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

request system partition hard-disk
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Syntax (MX Series Router)

request system partition hard-disk
<all-members>
<local>
<member *member-id*>

Release Information

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

Description

Set up the hard disk for partitioning. After this command is issued, the hard disk is partitioned the next time the system is rebooted. When the hard disk is partitioned, the contents of **/altroot** and **/altconfig** are saved and restored. All other data on the hard disk is at risk of being lost.

Options

all-chassis—(TX Matrix 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.

all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, schedule a partition of the hard disk on all T640 routers 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.

all-members—(MX Series routers only) (Optional) Schedule a partition of the hard disk for all members of the Virtual Chassis configuration.

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lcc ***number***—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix Plus router, schedule a partition of the hard disk on a specific T640 router connected to the TX Matrix router. On a TX Matrix Plus router, schedule a partition of the hard disk on a specific router that is connected to the TX Matrix Plus router. Replace *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 routersonly) (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 195
- *Routing Matrix with a TX Matrix Plus Router Solutions Page*

List of Sample Output

request system partition hard-disk on page 199

Output Fields

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

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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.
```

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request system power-off

List of Syntax
Syntax on page 200
Syntax (EX Series Switches) on page 200
Syntax (TX Matrix Router) on page 200
Syntax (TX Matrix Plus Router) on page 200
Syntax (MX Series Router) on page 200
Syntax (QFX Series) on page 201

Syntax

```
request system power-off
<both-routing-engines>
<other-routing-engine>
<at time>
<in minutes>
<media (compact-flash | disk | removable-compact-flash | usb)>
<message "text">
```

Syntax (EX Series Switches)

```
request system power-off
<all-members>
<at time>
<both-routing-engines>
<in minutes>
<local>
<media (external | internal)>
<member member-id>
<message "text">
<other-routing-engine>
<slice slice>
```

Syntax (TX Matrix Router)

```
request system power-off
<all-chassis | all-lcc | lcc number |  scc>
<both-routing-engines>
<other-routing-engine>
<at time>
<in minutes>
<media (compact-flash | disk)>
<message "text">
```

Syntax (TX Matrix Plus Router)

```
request system power-off
<all-chassis | all-lcc | lcc number |  sfc number>
<both-routing-engines>
<other-routing-engine>
<at time>
<in minutes>
<media (compact-flash | disk)>
<message "text">
```

Syntax (MX Series Router)

```
request system power-off
<all-members>
<at time>
<both-routing-engines>
```


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<in *minutes*>
<local>
<media (external | internal)>
<member *member-id*>
<message "*text*">
<other-routing-engine>

Syntax (QFX Series)

request system power-off
<at *time*>
<in *minutes*>
<media (external | internal)>
<message "*text*">
<slice *slice*>

Release Information

Command introduced in Junos OS Release 8.0.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 11.1 for the QFX Series.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description

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.

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Options

none—Power off the router or switch software immediately.

all-chassis—(Optional) (TX Matrix and TX Matrix Plus router only) Power off all Routing Engines in the chassis.

all-lcc—(Optional) (TX Matrix and TX Matrix Plus router only) On a TX Matrix router, power off all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, power off all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router.

all-members—(EX4200 switches 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:

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- **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.

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Required Privilege Level maintenance

List of Sample Output request system power-off on page 204

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]
```

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request system reboot

List of Syntax

Syntax on page 205
Syntax (EX Series Switches) on page 205
Syntax (TX Matrix Router) on page 205
Syntax (TX Matrix Plus Router) on page 205
Syntax (MX Series Router) on page 205

Syntax

request system reboot
<at *time*>
<both-routing-engines>
<in *minutes*>
<media (compact-flash | disk | removable-compact-flash | usb)>
<message "*text*">
<other-routing-engine>

Syntax (EX Series Switches)

request system reboot
<all-members>
<at *time*>
<both-routing-engines>
<in *minutes*>
<local>
<media (external | internal)>
<member *member-id*>
<message "*text*">
<other-routing-engine>
<slice *slice*>

Syntax (TX Matrix Router)

request system reboot
<all-chassis | all-lcc | lcc *number* | scc>
<at *time*>
<both-routing-engines>
<in *minutes*>
<media (compact-flash | disk)>
<message "*text*">
<other-routing-engine>

Syntax (TX Matrix Plus Router)

request system reboot
<all-chassis | all-lcc | lcc *number* | sfc *number*>
<at *time*>
<both-routing-engines>
<in *minutes*>
<media (compact-flash | disk)>
<message "*text*">
<other-routing-engine>
<partition (1 | 2 | alternate)>

Syntax (MX Series Router)

request system reboot
<all-members>
<at *time*>
<both-routing-engines>

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<in *minutes*>
<local>
<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 andTX 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.

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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.

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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 176

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- request system halt on page 185
- *Routing Matrix with a TX Matrix Plus Router Solutions Page*
- *request vmhost reboot*

List of Sample Output

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request system reboot (at 2300) on page 209
request system reboot (in 2 Hours) on page 209
request system reboot (Immediately) on page 209
request system reboot (at 1:20 AM) on page 209

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
```

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request system snapshot

List of Syntax

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Syntax (ACX Series Routers) on page 210
Syntax (EX Series Switches) on page 210
Syntax (MX Series Routers) on page 210
Syntax (TX Matrix Routers) on page 210
Syntax (TX Matrix Plus Routers) on page 210

Syntax

```
request system snapshot
<partition>
```

Syntax (ACX Series Routers)

```
request system snapshot
<media type>
<partition>
```

Syntax (EX Series Switches)

```
request system snapshot
<all-members | local | member member-id>
<media type>
<partition>
<re0 | re1 | routing-engine routing-engine-id>
<slice alternate>
```

Syntax (MX Series Routers)

```
request system snapshot
<all-members>
<config-partition>
<local>
<member member-id>
<media usb-port-number>
<partition>
<root-partition>
```

Syntax (TX Matrix Routers)

```
request system snapshot
<all-chassis | all-lcc | lcc number |  scc>
<config-partition>
<partition>
<root-partition>
```

Syntax (TX Matrix Plus Routers)

```
request system snapshot
<all-chassis | all-lcc | lcc number |  sfc number>
<config-partition>
<partition>
<root-partition>
```

Release Information

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.

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Option **media** ***usb-port-number*** 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**

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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.

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- **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.

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- **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

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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 553
- *show system auto-snapshot*

List of Sample Output
request system snapshot (Routers) on page 215
request system snapshot (EX Series Switches) on page 215
request system snapshot (When the Partition Flag Is On) on page 216
request system snapshot (MX104 Routers When Media Device is Missing) on page 216
request system snapshot (When Mirroring Is Enabled) on page 216
request system snapshot all-lcc (Routing Matrix) on page 216
request system snapshot all-members (Virtual Chassis) on page 216

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
```

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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:
```


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```
--------------------------------------------------------------------------
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: /
```

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request system software abort

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

Release Information Command introduced in JUNOS Release 9.0.
Command introduced in Junos OS Release 13.2 for PTX5000 routers.

Description Abort a unified in-service software upgrade (ISSU). The unified ISSU must be in progress and you must issue this command from a router session other than the one on which you issued the **request system in-service-upgrade** command that launched the unified ISSU.

Options This command has no options.

Required Privilege Level view

Related Documentation

- *request system software in-service-upgrade*
- *show chassis in-service-upgrade*
- *Getting Started with Unified In-Service Software Upgrade*
- *Example: Performing a Unified ISSU*

List of Sample Output

request system software abort (New Router Session) on page 218
request system software in-service-upgrade (Unified ISSU Session) on page 218

Output Fields When you enter the **request system software abort** command on a new router session, you are provided feedback on the status of your request in the router session on which you issued the **request system software in-service-upgrade** command.

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 /
```


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```
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>
```

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request system software add

List of Syntax

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Syntax (EX Series Switches) on page 220
Syntax (TX Matrix Router) on page 220
Syntax (TX Matrix Plus Router) on page 221
Syntax (MX Series Router) on page 221
Syntax (QFX Series) on page 221
Syntax (OCX Series) on page 222

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*]>

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<unlink>
<upgrade-with-config>
<validate>
<validate-on-host *hostname*>
<validate-on-routing-engine *routing-engine*>

Syntax (TX Matrix Plus Router)

request system software add *package-name*
<best-effort-load>
<delay-restart>
<force>
<lcc *number* | sfc *number*>
<no-copy>
<no-validate>
<re0 | re1>
<reboot>
<set [*package-name package-name*]>
<unlink>
<upgrade-with-config>
<validate>
<validate-on-host *hostname*>
<validate-on-routing-engine *routing-engine*>

Syntax (MX Series Router)

request system software add *package-name*
<best-effort-load>
<delay-restart>
<device-alias *alias-name*>
<force>
<member *member-id*>
<no-copy>
<no-validate>
<re0 | re1>
<reboot>
<satellite *slot-id*>
<set [*package-name package-name*]>
<upgrade-group [all |*upgrade-group-name*]>
<unlink>
<upgrade-with-config>
<validate>
<version *version-string*>
<validate-on-host *hostname*>
<validate-on-routing-engine *routing-engine*>

Syntax (QFX Series)

request system software add *package-name*
<best-effort-load>
<component all>
<delay-restart>
<force>
<force-host>
<no-copy>
<no-validate>
<partition>
<reboot>
<unlink>
<upgrade-with-config>

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<validate>
<validate-on-host *hostname*>
<validate-on-routing-engine *routing-engine*>

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.

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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 53.

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

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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.

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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 authorixe providers, include the provider-id statement at the [edit system extensions provider] heirarchy 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).

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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.

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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

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backup Routing Engines that are connected to it are upgraded to the same version of software.

Required Privilege Level maintenance

Related Documentation

- Format for Specifying Filenames and URLs in Junos OS CLI Commands on page 53
- *request system software delete*
- *request system software rollback*
- *request system storage cleanup*
- *Upgrading Software*
- *Upgrading Software on a QFabric System*
- *Managing Satellite Software Upgrade Groups in a Junos Fusion*
- *request system software add (Maintenance)*
- *Routing Matrix with a TX Matrix Plus Router Solutions Page*

List of Sample Output

request system software add validate on page 228
request system software add validate-on-host on page 229
request system software add (Mixed EX4200 and EX4500 Virtual Chassis) on page 230
request system software add component all (QFabric Systems) on page 230
request system software add upgrade-group (Junos Fusion) on page 230

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

Sample Output

request system software add validate

```
user@host> request system software add validate /var/tmp/ jinstall-7.2R1.7-domestic-signed.tgz
Checking compatibility with configuration
Initializing...
Using jbase-7.1R2.2
Using /var/tmp/jinstall-7.2R1.7-domestic-signed.tgz
Verified jinstall-7.2R1.7-domestic.tgz signed by PackageProduction_7_2_0
Using /var/validate/tmp/jinstall-signed/jinstall-7.2R1.7-domestic.tgz
Using /var/validate/tmp/jinstall/jbundle-7.2R1.7-domestic.tgz
Checking jbundle requirements on /
Using /var/validate/tmp/jbundle/jbase-7.2R1.7.tgz
Using /var/validate/tmp/jbundle/jkernel-7.2R1.7.tgz
Using /var/validate/tmp/jbundle/jcrypto-7.2R1.7.tgz
Using /var/validate/tmp/jbundle/jpfe-7.2R1.7.tgz
Using /var/validate/tmp/jbundle/jdocs-7.2R1.7.tgz
Using /var/validate/tmp/jbundle/jroute-7.2R1.7.tgz
Validating against /config/juniper.conf.gz
mgd: commit complete
Validation succeeded
Validating against /config/rescue.conf.gz
mgd: commit complete
```


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```
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...
PACKAGETYPE: 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-3.0R1.1-signed.tgz
upgrade-group group1
```


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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

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.

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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.

NOTE: On QFX Series platforms running Junos OS Release 14.1X53 or earlier, the **media** option is not available. On QFX Series platforms running releases later than Junos OS Release 14.1X53 that do not have the FreeBSD 10 kernel, the **media** option is available, but if you use it, the system will issue a warning that the **media** option is not supported and will continue with the zeroize operation. On platforms that are not QFX Series platforms, the **media** option is not available in Junos OS Release 17.2 or later with the FreeBSD 10 kernel.

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.

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Required Privilege Level maintenance

Related Documentation

- request system snapshot on page 210
- *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 233
request system zeroize media on page 234

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.
```

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```
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.
All rights reserved.
Copyright (c) 1992-2006 The FreeBSD Project.
Copyright (c) 1979, 1980, 1983, 1986, 1988, 1989, 1991, 1992, 1993, 1994
        The Regents of the University of California. All rights reserved.
JUNOS 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 `vnlru' 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.
```


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```
Booting [/kernel] in 1 second... 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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Copyright (c) 1992-2006 The FreeBSD Project.
Copyright (c) 1979, 1980, 1983, 1986, 1988, 1989, 1991, 1992, 1993, 1994
 The Regents of the University of California. All rights reserved.
JUNOS 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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Copyright (c) 1979, 1980, 1983, 1986, 1988, 1989, 1991, 1992, 1993, 1994
 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)
```


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show chassis hardware

List of Syntax

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Syntax

```
show chassis hardware
<detail | extensive>
<clei-models>
<models>
```

Syntax (EX Series)

```
show chassis hardware
<clei-models>
<detail | extensive>
<models>
<satellite [slot-id slot-id |device-alias alias-name]>
```

Syntax (T4000 Router)

```
show chassis hardware
<clei-models>
<detail | extensive>
<models>
```

Syntax (TX Matrix Router)

```
show chassis hardware
<clei-models>
<detail | extensive>
<models>
<lcc number |  scc>
```

Syntax (TX Matrix Plus Router)

```
show chassis hardware
<clei-models>
<detail | extensive>
<models>
<lcc number |  sfc number>
```

Syntax (MX Series Routers)

```
show chassis hardware
<detail | extensive>
<clei-models>
<models>
<all-members>
```

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<local>
<member *member-id*>

Syntax (MX104, MX2010, MX2020, and MX2008 3D Universal Edge Routers)

show chassis hardware
<clei-models>
<detail | extensive>
<models>
<satellite [slot-id *slot-id* |device-alias *alias-name*]>

Syntax (QFX Series)

show chassis hardware
<detail | extensive>
<clei-models>
<interconnect-device *name*>
<node-device *name*>
<models>

Syntax (OCX Series)

show chassis hardware
<detail | extensive>
<clei-models>
<models>

Syntax (PTX Series Packet Transport Routers)

show chassis hardware
<detail | extensive>
<clei-models>
<models>

Syntax (ACX Series Universal Access Routers)

show chassis hardware
<detail | extensive>
<clei-models>
<models>

Syntax (ACX5048 and ACX5096 Routers)

show chassis hardware
<detail | extensive>
<clei-models>
<models>

Syntax (ACX500 Routers)

show chassis hardware
<detail | extensive>
<clei-models>
<models>

Release Information

Command introduced before Junos OS Release 7.4.
models option introduced in Junos OS Release 8.2.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced in Junos OS Release 9.6 for the TX Matrix Plus router.
Command introduced in Junos OS Release 11.1 for QFX Series.
Command introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.

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Command introduced in Junos OS Release 12.3 for MX2010 and MX2020 3D Universal Edge Routers.
Information for **disk** and **usb** introduced in Junos OS Release 15.1X53-D60 for QFX10002, QFX10008, and QFX10016 switches.
Command introduced in Junos OS Release 15.1X54-D20 for ACX5048 and ACX5096 Routers.
Command introduced in Junos OS Release 17.2 for MX2008 3D Universal Edge Routers.
Command introduced in Junos OS Release 17.2 for PTX10008 Routers.
Command introduced in Junos OS Release 17.2 for vMX on NFX250 Network Services Platform.

Description Display a list of all Flexible PIC Concentrators (FPCs) and PICs installed in the router or switch chassis, including the hardware version level and serial number.

In the EX Series switch command output, FPC refers to the following:

- On EX2200 switches, EX3200 switches, EX4200 standalone switches, and EX4500 switches—Refers to the switch; FPC *number* is always 0.
- On EX4200 switches in a Virtual Chassis configuration—Refers to the member of a Virtual Chassis; FPC *number* equals the member ID, from 0 through 9.
- On EX8208 and EX8216 switches—Refers to a line card; FPC *number* equals the slot number for the line card.

On 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).

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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**.

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Additional Information The **show chassis hardware detail** command now displays DIMM information for the following Routing Engines, as shown in Table 8 on page 241.

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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Output Fields Table 9 on page 246 lists the output fields for the **show chassis hardware** command. Output fields are listed in the approximate order in which they appear.

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Table 9: show chassis hardware Output Fields

Field Name	Field Description	Level of Output
Item	Chassis component: • (EX Series switches)—Information about the chassis, Routing Engine (SRE and 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. • (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). • (M Series routers, except for the M320 router)—Information about the backplane; power supplies; fan trays; Routing Engine; maxicab (the connection between the Routing Engine and the backplane, for the M40 router only); SCB, SSB, SFM, or FEB; MCS and PCG (for the M160 router only); each FPC and PIC; and each fan, blower, and impeller. • (M120, M320, and T Series routers)—Information about the backplane, power supplies, fan trays, midplane, FPM (craft interface), CIP, PEM, SCG, CB, FPC, PIC, SFP, SPMB, and SIB. • (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). • (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). • (MX2010, MX2020, and MX2008 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.	All levels
Version	Revision level of the chassis component.	All levels
Part number	Part number of the chassis component.	All levels
Serial number	Serial number of the chassis component. The serial number of the backplane is also the serial number of the router chassis. Use this serial number when you need to contact Juniper Networks Customer Support about the router or switch chassis.	All levels

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Table 9: show chassis hardware Output Fields *(continued)*

Field Name	Field Description	Level of Output
Assb ID or **Assembly ID**	(**extensive** keyword only) Identification number that describes the FRU hardware.	**extensive**
Assembly Version	(**extensive** keyword only) Version number of the FRU hardware.	**extensive**
Assembly Flags	(**extensive** keyword only) Flags.	**extensive**
FRU model number	(**clei-models**, **extensive**, and **models** keyword only) Model number of the FRU hardware component.	none specified
CLEI code	(**clei-models** and **extensive** keyword only) Common Language Equipment Identifier code. This value is displayed only for hardware components that use ID EEPROM format v2. This value is not displayed for components that use ID EEPROM format v1.	none specified
EEPROM Version	ID EEPROM version used by the hardware component: **0x00** (version 0), **0x01** (version 1), or **0x02** (version 2).	**extensive**
Description	Brief description of the hardware item: • Type of power supply. • Type of PIC. If the PIC type is not supported on the current software release, the output states **Hardware Not Supported**. • Type of FPC: **FPC Type 1**, **FPC Type 2**, **FPC Type 3**, **FPC Type 4** , or **FPC TypeOC192**. On EX Series switches, a brief description of the FPC. The following list shows the PIM abbreviation in the output and the corresponding PIM name. • **2x FE**—Either two built-in Fast Ethernet interfaces (fixed PIM) or dual-port Fast Ethernet PIM • **4x FE**—4-port Fast Ethernet ePIM • **1x GE Copper**—Copper Gigabit Ethernet ePIM (one 10-Mbps, 100-Mbps, or 1000-Mbps port) • **1x GE SFP**—SFP Gigabit Ethernet ePIM (one fiber port) • **2x Serial**—Dual-port serial PIM • **2x T1**—Dual-port T1 PIM • **2x E1**—Dual-port E1 PIM • **2x CT1E1**—Dual-port channelized T1/E1 PIM • **1x T3**—T3 PIM (one port) • **1x E3**—E3 PIM (one port) • **4x BRI S/T**—4-port ISDN BRI S/T PIM • **4x BRI U**—4-port ISDN BRI U PIM • **1x ADSL Annex A**—ADSL 2/2+ Annex A PIM (one port, for POTS) • **1x ADSL Annex B**—ADSL 2/2+ Annex B PIM (one port, for ISDN) • **2x SHDSL (ATM)**—G SHDSL PIM (2-port two-wire module or 1-port four-wire module)	All levels

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Table 9: show chassis hardware Output Fields *(continued)*

Field Name	Field Description	Level of Output
	• **1x TGM550**—TGM550 Telephony Gateway Module (Avaya VoIP gateway module with one console port, two analog **LINE** ports, and two analog **TRUNK** ports) • **1x DS1 TIM510**—TIM510 E1/T1 Telephony Interface Module (Avaya VoIP media module with one E1 or T1 trunk termination port and ISDN PRI backup) • **4x FXS, 4xFXO, TIM514**—TIM514 Analog Telephony Interface Module (Avaya VoIP media module with four analog **LINE** ports and four analog **TRUNK** ports) • **4x BRI TIM521**—TIM521 BRI Telephony Interface Module (Avaya VoIP media module with four ISDN BRI ports) • **Crypto Accelerator Module**—For enhanced performance of cryptographic algorithms used in IP Security (IPsec) services • **MPC M 16x 10GE**—16-port 10-Gigabit Module Port Concentrator that supports SFP+ optical transceivers. (Not on EX Series switches.) • For hosts, the Routing Engine type. • For small form-factor pluggable transceiver (SFP) modules, the type of fiber: **LX**, **SX**, **LH**, or **T**. • LCD description for EX Series switches (except EX2200 switches). • **MPC2**—1-port MPC2 that supports two separate slots for MICs. • **MPC3E**—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. • 100GBASE-LR4, pluggable CFP optics • Supports the Enhanced MX Switch Control Board with fabric redundancy and existing SCBs without fabric redundancy. • Interoperates with existing MX Series line cards, including Flexible Port Concentrators (FPC), Dense Port Concentrators (DPCs), and Modular Port Concentrators (MPCs). • **MPC4E**—Fixed configuration MPC4E that is available in two flavors: MPC4E-3D-32XGE-SFPP and MPC4E-3D-2CGE-8XGE on MX2020, MX960, MX480, and MX240 routers. • LCD description for MX Series routers	

Sample Output

show chassis hardware (EX8216 Switch)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis          REV 06                CY0109220035      EX8216
Midplane         REV 06   710-016845   BA0909120112      EX8216-MP
CB 0             REV 22   710-020771   AX0109197723      EX8216-RE320
CB 1             REV 22   710-020771   AX0109197726      EX8216-RE320
  Routing Engine 1        BUILTIN      BUILTIN           RE-EX8216
FPC 3            REV 19   710-020683   BC0109083125      EX8200-48F
  CPU            REV 13   710-020598   BF0109144549      EX8200-CPU
FPC 4            REV 17   710-020683   BC0108500127      EX8200-48F
```


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```
  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-1OC48-SON-SMSR
  PIC 2          REV 14   750-001901                     PB-4OC12-SON-SMIR
  PIC 3          REV 07   750-001900                     PB-1OC48-SON-SMSR
FPC 1            REV 06   710-013553                     T640-FPC1-E2
  PIC 0          REV 08   750-001072                     P-1GE-SX
  PIC 1          REV 10   750-012266                     PB-4GE-TYPE1-SFP-IQ2
  PIC 2          REV 22   750-005634                     PB-1CHOC12SMIR-QPP
FPC 2
  PIC 0          REV 16   750-007141                     PC-10GE-SFP
  PIC 1          REV 06   750-015217                     PC-8GE-TYPE3-SFP-IQ2
  PIC 2          REV 05   750-004695                     PC-TUNNEL
  PIC 3          REV 17   750-009553                     PC-4OC48-SON-SFP
FPC 3            REV 01   710-010154                     T640-FPC3-E
  PIC 0          REV 07   750-012793                     PC-1XGE-TYPE3-XFP-IQ2
  PIC 1          REV 25   750-007141                     PC-10GE-SFP
  PIC 2          REV 17   750-009553                     PC-4OC48-SON-SFP
  PIC 3          REV 32   750-003700                     PC-1OC192-SON-VSR
FPC 4            REV 16   710-013037                     T1600-FPC4-ES
 PIC 1           REV 06   750-034781                     PD-1CE-CFP
FPC 5            REV 02   710-013037                     T1600-FPC4-ES
  PIC 0          REV 16   750-012518                     PD-4OC192-SON-XFP
  PIC 1          REV 01   750-010850                     PD-1OC768-SON-SR
FPC 6            REV 14   710-013037                     T1600-FPC4-ES
  PIC 0          REV 11   750-017405                     PD-4XGE-XFP
  PIC 1          REV 13   750-017405                     PD-4XGE-XFP
FPC 7            REV 09   710-007529                     T640-FPC3
  PIC 0          REV 10   750-012793                     PC-1XGE-TYPE3-XFP-IQ2
  PIC 1          REV 01   750-015217                     PC-8GE-TYPE3-SFP-IQ2
  PIC 2          REV 01   750-015217                     PC-8GE-TYPE3-SFP-IQ2
  PIC 3          REV 15   750-009450                     PC-1OC192-SON-SR2
SIB 0            REV 07   710-013074                     SIB-I-T1600-S
SIB 1            REV 07   710-013074                     SIB-I-T1600-S
SIB 2            REV 07   710-013074                     SIB-I-T1600-S
SIB 3            REV 07   710-013074                     SIB-I-T1600-S
```


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```
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 clei-models (PTX10008 Routers)

```
user@host> show chassis hardware clei-models
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 27   750-054097   CMMUM00ARA        QFX10008-CHAS
CB 0             REV 02   750-068820   CMUCAH3CTB        QFX10000-RE
CB 1             REV 02   750-068820   CMUCAH3CTB        QFX10000-RE
FPC 0            REV 36   750-051354   CMUIAM9BAA        QFX10000-36Q
  PIC 0                   BUILTIN
FPC 1            REV 33   750-051354   CMUIAM9BAA        QFX10000-36Q
  PIC 0                   BUILTIN
FPC 2            REV 32   750-051357   CMUIANABAA        QFX10000-30C
  PIC 0                   BUILTIN
FPC 3            REV 35   750-051357   CMUIANABAA        QFX10000-30C
  PIC 0                   BUILTIN
FPC 5            REV 08   750-068822   CMUIAM9BAB        QFX10000-36Q
  PIC 0                   BUILTIN
FPC 6            REV 08   750-068822   CMUIAM9BAB        QFX10000-36Q
  PIC 0                   BUILTIN
FPD Board        REV 07   711-054687
Power Supply 0   REV 02   740-049388   CMUPADNBAA        QFX10000-PWR-AC
Power Supply 1   REV 02   740-049388   CMUPADNBAA        QFX10000-PWR-AC
Power Supply 2   REV 02   740-049388   CMUPADNBAA        QFX10000-PWR-AC
Power Supply 3   REV 02   740-049388   CMUPADNBAA        QFX10000-PWR-AC
Power Supply 4   REV 02   740-049388   CMUPADNBAA        QFX10000-PWR-AC
Power Supply 5   REV 02   740-049388   CMUPADNBAA        QFX10000-PWR-AC
FTC 0            REV 14   750-050108   CMUCAHZCAA        QFX10008-FAN-CTRL
FTC 1            REV 14   750-050108   CMUCAHZCAA        QFX10008-FAN-CTRL
Fan Tray 0       REV 09   760-054372   CMUCAHYCAA        QFX10008-FAN
Fan Tray 1       REV 09   760-054372   CMUCAHYCAA        QFX10008-FAN
SIB 0            REV 24   750-050058   CMUCAH0CAA        QFX10008-SF
SIB 1            REV 24   750-050058   CMUCAH0CAA        QFX10008-SF
SIB 2            REV 24   750-050058   CMUCAH0CAA        QFX10008-SF
SIB 3            REV 24   750-050058   CMUCAH0CAA        QFX10008-SF
SIB 4            REV 24   750-050058   CMUCAH0CAA        QFX10008-SF
SIB 5            REV 23   750-050058   CMUCAH0CAA        QFX10008-SF
```

show chassis hardware (EX2300-C Switch)

```
user@switch> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                               HV0215410003      EX2300-C-12P
Pseudo CB 0
Routing Engine 0          BUILTIN      BUILTIN           RE-EX2300C-12P
FPC 0            REV 04   650-059984   HV0215410003      EX2300-C-12P
  CPU                     BUILTIN      BUILTIN           FPC 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
```

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show chassis hardware (EX2300 Switch)

```
user@switch> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JY0215410033      EX2300-24P
Pseudo CB 0
Routing Engine 0          BUILTIN      BUILTIN           RE-EX2300-24P
FPC 0            REV 05   650-059968   JY0215410033      EX2300-24P
  CPU                     BUILTIN      BUILTIN           FPC 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   AJP0TDZ           SFP+-10G-SR
    Xcvr 3       REV 01   740-021309   A9401FL           SFP+-10G-LR
Power Supply 0                                          JPSU-450W-AC-AFO
Fan Tray 0                                              Fan Module, Airflow Out
 (AFO)
Fan Tray 1                                              Fan Module, Airflow Out
 (AFO)
```

show chassis hardware detail (EX4200 Switch)

```
user@host> show chassis hardware detail
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                BM0208327733      EX4200-24T
Routing Engine 0 REV 11   750-021256   BM0208327733      EX4200-24T, 8 POE
Routing Engine 0                       BM0208327733      EX4200-24T, 8 POE
FPC 0            REV 11   750-021256   BM0208327733      EX4200-24T, 8 POE
  CPU                     BUILTIN      BUILTIN           FPC CPU
  PIC 0                   BUILTIN      BUILTIN           24x 10/100/1000 Base-T
  PIC 1          REV 03B  711-021270   AR0208162285      4x GE SFP
  BRD            REV 08   711-021264   AK0208328289      EX4200-24T, 8 POE
Power Supply 0   REV 03   740-020957   AT0508346354      PS 320W AC
Fan Tray                                                Fan Tray
```

show chassis hardware (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-AFO-A
Fan Tray 0                                              Fan Module, Airflow Out
 (AFO)
Fan Tray 1                                              Fan Module, Airflow Out
 (AFO)
```

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
```


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```
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 detail (PTX10008 Routers)

```
user@switch> show chassis hardware detail

Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                DE487             JNP10008 [PTX10008 -
PILOT BUILD V1.1]
```

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```
Midplane         REV 27   750-054097   ACPD4307         Midplane 8
Routing Engine 0          BUILTIN      BUILTIN          RE-PTX-2X00x4
  vtbd0 15360 MB                                       Virtio Block Disk
  vtbd1 15360 MB                                       Virtio Block Disk
  ada0    128 MB  QEMU                 QM00002          Virtio Block Disk
  usb0 (addr 0.1) EHCI root HUB 0      Intel            uhub0
  usb1 (addr 0.2) product 0x0020 32    vendor 0x8087    uhub1
Routing Engine 1          BUILTIN      BUILTIN          RE-PTX-2X00x4
  vtbd0 15360 MB                                       Virtio Block Disk
  vtbd1 15360 MB                                       Virtio Block Disk
  ada0    128 MB  QEMU                 QM00002          Virtio Block Disk
  usb0 (addr 0.1) EHCI root HUB 0      Intel            uhub0
  usb1 (addr 0.2) product 0x0020 32    vendor 0x8087    uhub1
CB 0             REV 02   750-068820   ACNZ4440         Control Board
CB 1             REV 02   750-068820   ACNZ8284         Control Board
FPC 0            REV 36   750-051354   ACNP4679         LC1102 - 12C / 36Q /
144X
  CPU                     BUILTIN      BUILTIN          FPC CPU
  PIC 0                  BUILTIN      BUILTIN          12x100GE/36x40GE/144x10GE

    Xcvr 1       REV 01   740-058734   1ECQ113834D      QSFP-100GBASE-SR4
    Xcvr 5       REV 01   740-058734   1ECQ1137067      QSFP-100GBASE-SR4
    Xcvr 6       REV 01   740-054053   QF3205SD         QSFP+-4X10G-SR
    Xcvr 7       REV 01   740-058734   1ECQ11381MP      QSFP-100GBASE-SR4
    Xcvr 11      REV 01   740-061405   1ACQ110507K      QSFP-100GBASE-SR4
    Xcvr 13      REV 01   740-058734   1ECQ11390ZB      QSFP-100GBASE-SR4
    Xcvr 17      REV 01   740-058734   1ECQ11381M1      QSFP-100GBASE-SR4
    Xcvr 19      REV 01   740-058734   1ECQ11381JS      QSFP-100GBASE-SR4
    Xcvr 23      REV 01   740-058734   1ACQ112000E      QSFP-100GBASE-SR4
    Xcvr 25      REV 01   740-058734   1ECQ11381NT      QSFP-100GBASE-SR4
    Xcvr 28      REV 01   740-054053   QG1502WV         QSFP+-4X10G-SR
    Xcvr 29      REV 01   740-058734   1ACQ112000D      QSFP-100GBASE-SR4
    Xcvr 33      REV 01   740-058734   1ACQ1134065      QSFP-100GBASE-SR4
    Xcvr 34      REV 01   740-067442   XV20L4L          QSFP+-40G-SR4
FPC 1            REV 33   750-051354   ACNX8831         LC1102 - 12C / 36Q /
144X
  CPU                     BUILTIN      BUILTIN          FPC CPU
  PIC 0                  BUILTIN      BUILTIN          12x100GE/36x40GE/144x10GE

    Xcvr 5                NON-JNPR     37700171YY0084   QSFP-100GBASE-LR4
    Xcvr 25               NON-JNPR     GDA2017459       QSFP-100GBASE-LR4
    Xcvr 29               NON-JNPR     GDF2008750       QSFP-100GBASE-LR4
FPC 2            REV 32   750-051357   ACPB0341         LC1101 - 30C / 30Q / 96X

  CPU                     BUILTIN      BUILTIN          FPC CPU
  PIC 0                  BUILTIN      BUILTIN          30x100GE/30x40GE/96x10GE

    Xcvr 0                NON-JNPR     37700170YZC305   QSFP-100GBASE-LR4
    Xcvr 4                NON-JNPR     37700170YZC306   QSFP-100GBASE-LR4
    Xcvr 9       REV 01   740-054053   QF36013S         QSFP+-4X10G-SR
    Xcvr 12      REV 01   740-067442   XV301AU          QSFP+-40G-SR4
    Xcvr 14      REV 01   740-043308   UWE2CG9          QSFP+-40G-LR4
    Xcvr 16      REV 01   740-043308   UWH141S          QSFP+-40G-LR4
    Xcvr 17      REV 01   740-058734   1ECQ11180VH      QSFP-100GBASE-SR4
    Xcvr 18      REV 01   740-054050   INFAJ0492237     QSFP+-4X10G-LR
    Xcvr 26      REV 01   740-058734   1ACQ111803N      QSFP-100GBASE-SR4
    Xcvr 27      REV 01   740-058734   1ACQ113405S      QSFP-100GBASE-SR4
FPC 3            REV 35   750-051357   ACPD2186         LC1101 - 30C / 30Q / 96X

  CPU                     BUILTIN      BUILTIN          FPC CPU
  PIC 0                  BUILTIN      BUILTIN          30x100GE/30x40GE/96x10GE
```


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```
    Xcvr 0       REV 01   740-061409   1GCQA1470A3       QSFP-100GBASE-LR4
    Xcvr 1       REV 01   740-061409   1GCQA1470XC       QSFP-100GBASE-LR4
    Xcvr 7                NON-JNPR     FG4550500008      QSFP-100G-CWDM4
    Xcvr 24      REV 01   740-058734   1ECQ11381LX       QSFP-100GBASE-SR4
    Xcvr 29      REV 01   740-043308   UWE0UYS           QSFP+-40G-LR4
FPC 5            REV 08   750-068822   ACPF0057          LC1102 - 12C / 36Q /
144X
  CPU                     BUILTIN      BUILTIN           FPC CPU
  PIC 0                  BUILTIN      BUILTIN           12x100GE/36x40GE/144x10GE
FPC 6            REV 08   750-068822   ACPE9951          LC1102 - 12C / 36Q /
144X
  CPU                     BUILTIN      BUILTIN           FPC CPU
  PIC 0                  BUILTIN      BUILTIN           12x100GE/36x40GE/144x10GE

    Xcvr 1       REV 01   740-054053   QF3208LG          QSFP+-4X10G-SR
    Xcvr 7       REV 01   740-067442   XV20LGN           QSFP+-40G-SR4
    Xcvr 8       REV 01   740-067442   XV20VMV           QSFP+-40G-SR4
    Xcvr 9       REV 01   740-067442   XV20KCN           QSFP+-40G-SR4
    Xcvr 10      REV 01   740-067442   XU504QD           QSFP+-40G-SR4
    Xcvr 11      REV 01   740-067442   XU504X7           QSFP+-40G-SR4
    Xcvr 12      REV 01   740-067442   XU504W8           QSFP+-40G-SR4
    Xcvr 16      REV 01   740-032986   QF4301JP          QSFP+-40G-SR4
    Xcvr 17      REV 01   740-032986   QF4303AE          QSFP+-40G-SR4
    Xcvr 18      REV 01   740-054050   INFAJ0492400      QSFP+-4X10G-LR
    Xcvr 19      REV 01   740-054050   INFAJ0492142      QSFP+-4X10G-LR
    Xcvr 24      REV 01   740-032986   QF4301KB          QSFP+-40G-SR4
    Xcvr 25      REV 01   740-032986   QF4303YP          QSFP+-40G-SR4
    Xcvr 30      REV 01   740-067442   XV300ZX           QSFP+-40G-SR4
    Xcvr 31      REV 01   740-043308   UWH2KBW           QSFP+-40G-LR4
    Xcvr 34      REV 01   740-054053   QG1501YU          QSFP+-4X10G-SR
FPD Board        REV 07   711-054687   ACPC7142          Front Panel Display
Power Supply 0   REV 02   740-049388   1EDL62102N9       Power Supply AC
Power Supply 1   REV 02   740-049388   1EDL60300KX       Power Supply AC
Power Supply 2   REV 02   740-049388   1EDL60300DL       Power Supply AC
Power Supply 3   REV 02   740-049388   1EDL61701BT       Power Supply AC
Power Supply 4   REV 02   740-049388   1EDL62102P7       Power Supply AC
Power Supply 5   REV 02   740-049388   1EDL62102PP       Power Supply AC
FTC 0            REV 14   750-050108   ACPE4038          Fan Controller 8
FTC 1            REV 14   750-050108   ACPE4032          Fan Controller 8
Fan Tray 0       REV 09   760-054372   ACPD6799          Fan Tray 8
Fan Tray 1       REV 09   760-054372   ACNZ3584          Fan Tray 8
SIB 0            REV 24   750-050058   ACPD4587          Switch Fabric 8
SIB 1            REV 24   750-050058   ACNZ0635          Switch Fabric 8
SIB 2            REV 24   750-050058   ACPD4908          Switch Fabric 8
SIB 3            REV 24   750-050058   ACNZ0617          Switch Fabric 8
SIB 4            REV 24   750-050058   ACNZ0527          Switch Fabric 8
SIB 5            REV 23   750-050058   ACNX6980          Switch Fabric 8
```

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
```


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```
Routing Engine 0 REV 09   740-009459                    RE-400-256-S
CFEB 0           REV 05   750-010465                    FEB-M10i-M7i-S
FPC 0
  PIC 0          REV 10   750-002971                    PE-4OC3-SON-MM
  PIC 1          REV 11   750-002992                    PE-4FE-TX
  PIC 2          REV 03   750-002977                    PE-2OC3-ATM-MM
  PIC 3          REV 08   750-005724                    PE-2OC3-ATM2-MM
FPC 1
  PIC 2          REV 12   750-008425                    PE-AS
  PIC 3          REV 13   750-005636                    PE-4CHDS3-QPP
Fan Tray 0                                              FANTRAY-M10I-S
Fan Tray 1                                              FANTRAY-M10I-S
```

show chassis hardware (M20 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                20033             M20
Backplane        REV 07   710-001517   S/N AA7940
Power supply B   Rev 01   740-001465   S/N 000001        AC
Display          REV 02   710-001519   S/N AA9704
Host 0                                 98000004f8f27501  teknor
SSB slot 0       REV 01   710-001951   S/N AD5905        Internet Processor II
  SSRAM bank 0   REV 01   710-001385   S00480            2 MB
  SSRAM bank 1   REV 01   710-001385   S00490            2 MB
  SSRAM bank 2   REV 01   710-001385   S001:?            2 MB
  SSRAM bank 3   REV 01   710-001385   S00483            2 MB
SSB slot 1       N/A      N/A          N/A               Backup
FPC 1            REV 01   710-001292   S/N AB7528
  SSRAM          REV 01   710-000077   S/N 304209        1 MB
  SDRAM bank 0   REV 01   710-000099   S/N 000603        64 MB
  SDRAM bank 1   REV 01   710-000099   S/N 000414        64 MB
  PIC 0          REV 03   750-000612   S/N AB8433        2x OC-3 ATM, MM
  PIC 1          REV 01   750-000616   S/N AA1168        1x OC-12 ATM, MM
  PIC 2          REV 01   750-000613   S/N AA1008        1x OC-12 SONET, SMIR
  PIC 3          REV 01   750-002501   S/N AD5810        4x E3
FPC 2            REV 01   710-001292   S/N AC0119
  SSRAM          REV 01   710-000077   S/N 503241        1 MB
  SDRAM bank 0   REV 01   710-000099   S/N 306835        64 MB
  SDRAM bank 1   REV 01   710-000099   S/N 306832        64 MB
Fan Tray 0                                              Front Upper Fan Tray
Fan Tray 1                                              Front Middle Fan Tray
Fan Tray 2                                              Front Bottom Fan Tray
Fan Tray 3                                              Rear Fan Tray
```

show chassis hardware models (M20 Router)

```
user@host> show chassis hardware models
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Backplane        REV 03   710-002334                     CHAS-MP-M20-S
Power Supply A   REV 06   740-001465                     PWR-M20-AC-S
Display          REV 04   710-001519                     CRAFT-M20-S
Routing Engine 0 REV 06   740-003239                     RE-333-768-S
Routing Engine 1 REV 06   740-003239                     RE-333-768-S
SSB 0            REV 02   710-001951                     SSB-E-M20
SSB 1            N/A      N/A
FPC 0            REV 03   710-003308                     FPC-E
  PIC 0          REV 08   750-002303                     P-4FE-TX
```

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```
  PIC 1          REV 07   750-004745                    P-2MCDS3
  PIC 2          REV 03   750-002965                    PE-4CHDS3
FPC 1            REV 03   710-003308                    FPC-E
  PIC 0          REV 03   750-002914                    P-2OC3-ATM-MM
Fan Tray 0                                              FANTRAY-F-M20-S
Fan Tray 1                                              FANTRAY-F-M20-S
Fan Tray 2                                              FANTRAY-F-M20-S
Fan Tray 3                                              FANTRAY-R-M20-S
```

show chassis hardware (M40 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Backplane        REV 02   710-000073   S/N AA0053
Power supply A   Rev 2    740-000235   S/N 000042        DC
Maxicab          REV X1   710-000229   S/N AA0139
Minicab          REV X1   710-000482   S/N AA0201
Display          REV 06   710-000150   S/N AA0905
Host                                                    cpv5000
SCB              REV X1   710-000075   S/N AA0158        Internet Processor I
  SSRAM bank 0   REV 02   710-000077   S/N AA2267        1 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
```


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```
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
```

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```
    Xcvr 7       REV 01   740-011782   P8C29Y7          SFP-SX
  Board B        REV 02   710-011395   CN3754           M120 FPC Mezz
FPC 4            REV 02   710-011398   CP6741           M120 FPC Type 3
  PIC 0          REV 16   750-007141   NB2855           10x 1GE(LAN), 1000 BASE

    Xcvr 0       REV 01   740-011782   P922A1F          SFP-SX
    Xcvr 1       REV 01   740-011782   P922A16          SFP-SX
    Xcvr 2       REV 01   740-011782   P922A0U          SFP-SX
    Xcvr 3       REV 01   740-011782   P9229UZ          SFP-SX
    Xcvr 4       REV 01   740-009029   P11JXWP          SFP-LX
    Xcvr 6       REV 01   740-011613   P9F1ALW          SFP-SX
FPC 5            REV 01   710-011388   CJ9088           M120 FPC Type 1
  PIC 0          *** Hardware Not Supported ***
  PIC 1          REV 05   750-012052   NB0410           1x CHOC3 IQ SONET, SMLR

  PIC 2          REV 01   750-013167   CM3824           4x CHDS3 IQ
  PIC 3          REV 01   750-010240   CB5366           1x G/E SFP, 1000 BASE
  Board B        REV 01   710-011390   CJ9103           M120 FPC Mezz Board
FEB 3            REV 04   710-011663   CP6673           M120 FEB
FEB 4            REV 04   710-011663   CJ9368           M120 FEB
FEB 5            REV 04   710-011663   CJ9386           M120 FEB
Fan Tray 0                                             Front Top Fan Tray
Fan Tray 1                                             Front Bottom Fan Tray
Fan Tray 2                                             Rear Top Fan Tray
Fan Tray 3                                             Rear Bottom Fan Tray
```

show chassis hardware detail (M120 Router)

```
user@host> show chassis hardware detail
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                               JN000054AC        M120
Midplane         REV 01   710-013667   RB4170           M120 Midplane
FPM Board        REV 02   710-011407   CJ9186           M120 FPM Board
FPM Display      REV 02   710-011405   CJ9173           M120 FPM Display
FPM CIP          REV 02   710-011410   CJ9221           M120 FPM CIP
PEM 0            Rev 05   740-011936   RM28320          AC Power Entry Module
PEM 1            Rev 05   740-011936   RM28321          AC Power Entry Module
Routing Engine 0 REV 03   740-014080   1000642883       RE-A-1000
  ad0     248 MB  SILICONSYSTEMS INC 256M 126CT505S0763SC00110 Compact Flash
  ad2   38154 MB  HTE541040G9SA00      MPBBT0X2HS2E3M    Hard Disk
CB 0             REV 03   710-011403   CM8346           M120 Control Board
CB 1             REV 06   710-011403   CP6728           M120 Control Board
FPC 1            REV 02   710-015908   CP6925           M120 CFPC 10GE
  PIC 0                   BUILTIN      BUILTIN          1x 10GE(LAN/WAN) XFP
    Xcvr 0       REV 01   740-014279   62E204N00007     XFP-10G-LR
FPC 3            REV 03   710-011393   CJ9234           M120 FPC Type 2
  PIC 0          REV 16   750-008155   NB5229           2x G/E IQ, 1000 BASE
    Xcvr 0       REV 01   740-011613   P9F15JB          SFP-SX
    Xcvr 1       REV 01   740-007326   P4Q0R9G          SFP-SX
  PIC 1          REV 09   750-007745   CG4360           4x OC-3 SONET, SMIR
  PIC 2          REV 16   750-008155   ND7787           2x G/E IQ, 1000 BASE
    Xcvr 0       REV 01   740-011613   P9F12AS          SFP-SX
    Xcvr 1       REV 01   740-011613   P9F1ALU          SFP-SX
  PIC 3          REV 07   750-011800   JW1284           8x 1GE(LAN), IQ2
    Xcvr 0       REV 01   740-011613   P9F1AM6          SFP-SX
    Xcvr 6       REV 01   740-011613   P9F16NN          SFP-SX
    Xcvr 7       REV 01   740-011782   P8C29Y7          SFP-SX
  Board B        REV 02   710-011395   CN3754           M120 FPC Mezz
FPC 4            REV 02   710-011398   CP6741           M120 FPC Type 3
  PIC 0          REV 16   750-007141   NB2855           10x 1GE(LAN), 1000 BASE
```


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```
    Xcvr 0       REV 01   740-011782   P922A1F          SFP-SX
    Xcvr 1       REV 01   740-011782   P922A16          SFP-SX
    Xcvr 2       REV 01   740-011782   P922A0U          SFP-SX
    Xcvr 3       REV 01   740-011782   P9229UZ          SFP-SX
    Xcvr 4       REV 01   740-009029   P11JXWP          SFP-LX
    Xcvr 6       REV 01   740-011613   P9F1ALW          SFP-SX
FPC 5            REV 01   710-011388   CJ9088           M120 FPC Type 1
  PIC 0          *** Hardware Not Supported ***
  PIC 1          REV 05   750-012052   NB0410           1x CHOC3 IQ SONET, SMLR

  PIC 2          REV 01   750-013167   CM3824           4x CHDS3 IQ
  PIC 3          REV 01   750-010240   CB5366           1x G/E SFP, 1000 BASE
  Board B        REV 01   710-011390   CJ9103           M120 FPC Mezz Board
FEB 3            REV 04   710-011663   CP6673           M120 FEB
FEB 4            REV 04   710-011663   CJ9368           M120 FEB
FEB 5            REV 04   710-011663   CJ9386           M120 FEB
Fan Tray 0                                             Front Top Fan Tray
Fan Tray 1                                             Front Bottom Fan Tray
Fan Tray 2                                             Rear Top Fan Tray
Fan Tray 3                                             Rear Bottom Fan Tray
```

show chassis hardware models (M120 Router)

```
user@host> show chassis hardware models
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 01   710-013667
FPM CIP          REV 02   710-011410                     CRAFT-M120-S
PEM 0            Rev 05   740-011936                     PWR-M120-AC-S
PEM 1            Rev 05   740-011936                     PWR-M120-AC-S
Routing Engine 0 REV 03   740-014080                     RE-A-1000-2048-S
CB 0             REV 03   710-011403                     CB-M120-S
CB 1             REV 06   710-011403                     CB-M120-S
FPC 1            REV 02   710-015908                     M120-cFPC-1XGE-XFP
FPC 3
  PIC 0          REV 16   750-008155                     PB-2GE-SFP-QPP
  PIC 1          REV 09   750-007745                     PC-4OC3-SON-SMIR
  PIC 2          REV 16   750-008155                     PB-2GE-SFP-QPP
  PIC 3          REV 07   750-011800                     PB-8GE-TYPE2-SFP-IQ2
FPC 4
  PIC 0          REV 16   750-007141                     PC-10GE-SFP
FPC 5
  PIC 1          REV 05   750-012052                     PB-1CHOC3-SMIR-QPP
  PIC 2          REV 01   750-013167                     PE-4CHDS3-QPP
  PIC 3          REV 01   750-010240                     PB-1GE-SFP
Fan Tray 0                                             FFANTRAY-M120-S
Fan Tray 1                                             FFANTRAY-M120-S
Fan Tray 2                                             RFANTRAY-M120-S
Fan Tray 3                                             RFANTRAY-M120-S
```

show chassis hardware (M160 Router)

```
user@host> show chassis hardware
Item             Version  Part number  Serial number     Description
Chassis                               101               M160
Midplane         REV 02   710-001245   S/N AB4107
FPM CMB          REV 01   710-001642   S/N AA2911
FPM Display      REV 01   710-001647   S/N AA2999
CIP              REV 02   710-001593   S/N AA9563
```

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```
PEM 0            Rev 01   740-001243   S/N KJ35769       DC
PEM 1            Rev 01   740-001243   S/N KJ35765       DC
PCG 0            REV 01   710-001568   S/N AA9794
PCG 1            REV 01   710-001568   S/N AA9804
Host 1                                 da000004f8d57001  teknor
MCS 1            REV 03   710-001226   S/N AA9777
SFM 0 SPP        REV 04   710-001228   S/N AA2975
SFM 0 SPR        REV 02   710-001224   S/N AA9838        Internet Processor I
SFM 1 SPP        REV 04   710-001228   S/N AA2860
SFM 1 SPR        REV 01   710-001224   S/N AB0139        Internet Processor I
FPC 0            REV 03   710-001255   S/N AA9806        FPC Type 1
  CPU            REV 02   710-001217   S/N AA9590
  PIC 1          REV 05   750-000616   S/N AA1527        1x OC-12 ATM, MM
  PIC 2          REV 05   750-000616   S/N AA1535        1x OC-12 ATM, MM
  PIC 3          REV 01   750-000616   S/N AA1519        1x OC-12 ATM, MM
FPC 1            REV 02   710-001611   S/N AA9523        FPC Type 2
  CPU            REV 02   710-001217   S/N AA9571
  PIC 0          REV 03   750-001900   S/N AA9626        1x STM-16 SDH, SMIR
  PIC 1          REV 01   710-002381   S/N AD3633        2x G/E, 1000 BASE-SX
FPC 2                                                   FPC Type OC192
  CPU            REV 03   710-001217   S/N AB3329
  PIC 0          REV 01                                 1x OC-192 SM SR-2
Fan Tray 0                                              Rear Bottom Blower
Fan Tray 1                                              Rear Top Blower
Fan Tray 2                                              Front Top Blower
Fan Tray 3                                              Front Fan Tray
```

show chassis hardware models (M160 Router)

```
user@host> show chassis hardware models
 Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 03   710-009120                     CHAS-BP-M320-S
FPM Display      REV 02   710-009351                     CRAFT-M320-S
CIP              REV 03   710-005926                     CIP-M320-S
PEM 2            Rev X4   740-009148                     PWR-M-DC-S
PEM 3            Rev X4   740-009148                     PWR-M-DC-S
Routing Engine 0 REV 02   740-008883                     RE-1600-2048-S
Routing Engine 1 REV 02   740-008883                     RE-1600-2048-S
FPC 0            REV 02   710-010419                     M320-FPC1
  PIC 0          REV 01   750-001323                     P-TUNNEL
  PIC 1          REV 02   750-002987                     PE-1OC12-SON-SMIR
  PIC 2          REV 04   750-001894                     PB-1GE-SX
  PIC 3          REV 04   750-001896                     PB-1OC12-SON-SMIR
FPC 1            REV 02   710-010419                     M320-FPC1
  PIC 0          REV 04   750-001894                     PB-1GE-SX
  PIC 1          REV 04   750-001894                     PB-1GE-SX
  PIC 3          REV 03   750-001894                     PB-1GE-SX
FPC 2            REV 02   710-010419                     M320-FPC1
  PIC 0          REV 10   750-005634                     PB-1CHOC12SMIR-QPP
  PIC 1          REV 10   750-005634                     PB-1CHOC12SMIR-QPP
  PIC 2          REV 07   750-005634                     PB-1CHOC12SMIR-QPP
  PIC 3          REV 07   750-005634                     PB-1CHOC12SMIR-QPP
  PIC 1          REV 10   750-005634                     PB-1CHOC12SMIR-QPP
  PIC 2          REV 07   750-005634                     PB-1CHOC12SMIR-QPP
  PIC 3          REV 07   750-005634                     PB-1CHOC12SMIR-QPP
FPC 3
  PIC 0          REV 03   750-001895                     PB-1OC12-SON-MM
  PIC 1          REV 04   750-001894                     PB-1GE-SX
  PIC 3          REV 04   750-003141                     PB-1GE-SX-B
FPC 4            REV 02   710-010419                     M320-FPC1
```


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```
FPC 5            REV 02   710-010419                    M320-FPC1
FPC 6            REV 02   710-010419                    M320-FPC1
FPC 7
  PIC 0          REV 15   750-001901                    PB-4OC12-SON-SMIR
  PIC 1          REV 06   750-001900                    PB-1OC48-SON-SMSR
  PIC 2          REV 07   750-001900                    PB-1OC48-SON-SMSR
  PIC 3          REV 05   750-003737                    PB-4GE-SX
SIB 0            REV 03   710-009184                    SIB-M-S
SIB 1            REV 03   710-009184                    SIB-M-S
SIB 2            REV 03   710-009184                    SIB-M-S
SIB 3            REV 03   710-009184                    SIB-M-S
Fan Tray 0                                              FFANTRAY-M320-S
Fan Tray 1                                              FFANTRAY-M320-S
Fan Tray 2                                              RFANTRAY-M320-S
```

show chassis hardware detail (M160 Router)

```
user@host> show chassis hardware detail
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                               101               M160
Midplane         REV 02   710-001245   S/N AB4107
FPM CMB          REV 01   710-001642   S/N AA2911
FPM Display      REV 01   710-001647   S/N AA2999
CIP              REV 02   710-001593   S/N AA9563
PEM 0            Rev 01   740-001243   S/N KJ35769       DC
PEM 1            Rev 01   740-001243   S/N KJ35765       DC
PCG 0            REV 01   710-001568   S/N AA9794
PCG 1            REV 01   710-001568   S/N AA9804
Host 1                                da000004f8d57001  teknor
MCS 1            REV 03   710-001226   S/N AA9777
SFM 0 SPP        REV 04   710-001228   S/N AA2975
SFM 0 SPR        REV 02   710-001224   S/N AA9838        Internet Processor I
  SSRAM bank 0   REV 01   710-000077   S/N 306456        1 MB
  SSRAM bank 1   REV 01   710-000077   S/N 306474        1 MB
  SSRAM bank 2   REV 01   710-000077   S/N 306388        1 MB
  SSRAM bank 3   REV 01   710-000077   S/N 306392        1 MB
SFM 1 SPP        REV 04   710-001228   S/N AA2860
SFM 1 SPR        REV 01   710-001224   S/N AB0139        Internet Processor I
  SSRAM bank 0   REV 01   710-000077   S/N 302917        1 MB
  SSRAM bank 1   REV 01   710-000077   S/N 302662        1 MB
  SSRAM bank 2   REV 01   710-000077   S/N 302593        1 MB
  SSRAM bank 3   REV 01   710-000077   S/N 100160        1 MB
FPC 0            REV 03   710-001255   S/N AA9806        FPC Type 1
  CPU            REV 02   710-001217   S/N AA9590
  SSRAM          REV 01   710-000077   S/N 302836        1 MB
  SDRAM 0        REV 01   710-001196   S00141            32 MB
  SDRAM 1        REV 01   710-001196   S0010;            32 MB
  SSRAM          REV 01   710-000077   S/N 302633        1 MB
  SDRAM 0        REV 01   710-001196   S00143            32 MB
  SDRAM 1        REV 01   710-001196   S00115            32 MB
  SSRAM          REV 01   710-000077   S/N 302952        1 MB
  SDRAM 0        REV 01   710-001196   S00135            32 MB
  SDRAM 1        REV 01   710-001196   S001=3            32 MB
  SSRAM          REV 01   710-000077   S/N 302892        1 MB
  SDRAM 0        REV 01   710-001196   S000?6            32 MB
  SDRAM 1        REV 01   710-001196   S001=5            32 MB
  PIC 1          REV 05   750-000616   S/N AA1527        1x OC-12 ATM, MM
  PIC 2          REV 05   750-000616   S/N AA1535        1x OC-12 ATM, MM
  PIC 3          REV 01   750-000616   S/N AA1519        1x OC-12 ATM, MM
FPC 1            REV 02   710-001611   S/N AA9523        FPC Type 2
```

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```
  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
```


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```
Midplane         REV 03   710-009120                    CHAS-BP-M320-S
FPM Display      REV 02   710-009351                    CRAFT-M320-S
CIP              REV 03   710-005926                    CIP-M320-S
PEM 2            Rev X4   740-009148                    PWR-M-DC-S
PEM 3            Rev X4   740-009148                    PWR-M-DC-S
Routing Engine 0 REV 02   740-008883                    RE-1600-2048-S
Routing Engine 1 REV 02   740-008883                    RE-1600-2048-S
FPC 0            REV 02   710-010419                    M320-FPC1
  PIC 0          REV 01   750-001323                    P-TUNNEL
  PIC 1          REV 02   750-002987                    PE-1OC12-SON-SMIR
  PIC 2          REV 04   750-001894                    PB-1GE-SX
  PIC 3          REV 04   750-001896                    PB-1OC12-SON-SMIR
FPC 1            REV 02   710-010419                    M320-FPC1
  PIC 0          REV 04   750-001894                    PB-1GE-SX
  PIC 1          REV 04   750-001894                    PB-1GE-SX
  PIC 3          REV 03   750-001894                    PB-1GE-SX
FPC 2            REV 02   710-010419                    M320-FPC1
  PIC 0          REV 10   750-005634                    PB-1CHOC12SMIR-QPP
  PIC 1          REV 10   750-005634                    PB-1CHOC12SMIR-QPP
  PIC 2          REV 07   750-005634                    PB-1CHOC12SMIR-QPP
  PIC 3          REV 07   750-005634                    PB-1CHOC12SMIR-QPP
  PIC 1          REV 10   750-005634                    PB-1CHOC12SMIR-QPP
  PIC 2          REV 07   750-005634                    PB-1CHOC12SMIR-QPP
  PIC 3          REV 07   750-005634                    PB-1CHOC12SMIR-QPP
FPC 3
  PIC 0          REV 03   750-001895                    PB-1OC12-SON-MM
  PIC 1          REV 04   750-001894                    PB-1GE-SX
  PIC 3          REV 04   750-003141                    PB-1GE-SX-B
FPC 4            REV 02   710-010419                    M320-FPC1
FPC 5            REV 02   710-010419                    M320-FPC1
FPC 6            REV 02   710-010419                    M320-FPC1
FPC 7
  PIC 0          REV 15   750-001901                    PB-4OC12-SON-SMIR
  PIC 1          REV 06   750-001900                    PB-1OC48-SON-SMSR
  PIC 2          REV 07   750-001900                    PB-1OC48-SON-SMSR
  PIC 3          REV 05   750-003737                    PB-4GE-SX
SIB 0            REV 03   710-009184                    SIB-M-S
SIB 1            REV 03   710-009184                    SIB-M-S
SIB 2            REV 03   710-009184                    SIB-M-S
SIB 3            REV 03   710-009184                    SIB-M-S
Fan Tray 0                                              FFANTRAY-M320-S
Fan Tray 1                                              FFANTRAY-M320-S
Fan Tray 2                                              RFANTRAY-M320-S
```

show chassis hardware (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           Routing Engine
TFEB 0                    BUILTIN      BUILTIN           Forwarding Engine
Processor
  QXM 0          REV 05   711-028408   ZA9136            MPC QXM
FPC 0                     BUILTIN      BUILTIN           MPC BUILTIN
  MIC 0                   BUILTIN      BUILTIN           4x 10GE XFP
    PIC 0                 BUILTIN      BUILTIN           4x 10GE XFP
FPC 1                     BUILTIN      BUILTIN           MPC BUILTIN
```

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```
  MIC 0          REV 24   750-028392   YX9820           3D 20x 1GE(LAN) SFP
    PIC 0                 BUILTIN      BUILTIN          10x 1GE(LAN) SFP
      Xcvr 0     REV 01   740-031851   AM1045SUAQ3      SFP-SX
      Xcvr 1     REV 01   740-031851   AM1045SUAPA      SFP-SX
      Xcvr 2     REV 01   740-031851   AM1045SUAN7      SFP-SX
      Xcvr 3     REV 01   740-031851   AM1045SU91Q      SFP-SX
      Xcvr 4     REV 01   740-031851   AM1045SUDDR      SFP-SX
      Xcvr 9     REV 01   740-011613   AM0848SB6A1      SFP-SX
    PIC 1                 BUILTIN      BUILTIN          10x 1GE(LAN) SFP
      Xcvr 0     REV 01   740-031851   AM1045SUAN0      SFP-SX
      Xcvr 1     REV 01   740-011613   AS0812S0719      SFP-SX
      Xcvr 2     REV 01   740-011613   AM0821SA121      SFP-SX
      Xcvr 3     REV 01   740-011613   PF21K21          SFP-SX
      Xcvr 4     REV 01   740-011613   AM0848SB69Z      SFP-SX
      Xcvr 5     REV 01   740-011782   P9P0XV3          SFP-SX
      Xcvr 6     REV 01   740-011613   AM0812S8WJN      SFP-SX
      Xcvr 7     REV 01   740-011613   PAM3G9Q          SFP-SX
      Xcvr 8     REV 01   740-011613   AM0848SB4A6      SFP-SX
      Xcvr 9     REV 01   740-011782   P9M0U37          SFP-SX
  MIC 1          REV 20   750-028380   ZG2657           3D 2x 10GE XFP
    PIC 2                 BUILTIN      BUILTIN          1x 10GE XFP
    PIC 3                 BUILTIN      BUILTIN          1x 10GE XFP
Fan Tray                                                Fan Tray
```

show chassis hardware (MX10 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                E1372             MX10-T
Midplane         REV 01   711-038211   YF5285            MX10-T
PEM 0            Rev 04   740-028288   VB01678           AC Power Entry Module
Routing Engine            BUILTIN      BUILTIN           Routing Engine
TFEB 0                    BUILTIN      BUILTIN           Forwarding Engine
Processor
  QXM 0          REV 05   711-028408   ZA9053            MPC QXM
FPC 0                     BUILTIN      BUILTIN           MPC BUILTIN
  MIC 0                   BUILTIN      BUILTIN           4x 10GE XFP
    PIC 0                 BUILTIN      BUILTIN           4x 10GE XFP
FPC 1                     BUILTIN      BUILTIN           MPC BUILTIN
  MIC 0          REV 24   750-028392   YX9436            3D 20x 1GE(LAN) SFP
    PIC 0                 BUILTIN      BUILTIN           10x 1GE(LAN) SFP
      Xcvr 0     REV 01   740-031851   AM1107SUFQW       SFP-SX
    PIC 1                 BUILTIN      BUILTIN           10x 1GE(LAN) SFP
Fan Tray                                                 Fan Tray
```

show chassis hardware (MX40 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                E1367             MX40-T
Midplane         REV 01   711-038211   YF5284            MX40-T
PEM 0            Rev 04   740-028288   VB01680           AC Power Entry Module
PEM 1            Rev 04   740-028288   VB01700           AC Power Entry Module
Routing Engine            BUILTIN      BUILTIN           Routing Engine
TFEB 0                    BUILTIN      BUILTIN           Forwarding Engine
Processor
  QXM 0          REV 05   711-028408   ZA9048            MPC QXM
FPC 0                     BUILTIN      BUILTIN           MPC BUILTIN
```


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```
  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
```

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show chassis hardware (Modular MX80 Router)

```
user@host> show chassis hardware

Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                                  MX80
Midplane         REV 02   711-031594   JR7084            MX80
PEM 0            Rev 01   740-028288   000018            AC Power Entry Module
Routing Engine            BUILTIN      BUILTIN           Routing Engine
FEB 0                     BUILTIN      BUILTIN           Forwarding Engine Board

  QXM 0          REV 05   711-028408   JR7041            MPC QXM
FPC 0                     BUILTIN      BUILTIN           MPC BUILTIN
  MIC 0                   BUILTIN      BUILTIN           4x 10GE XFP
    PIC 0                 BUILTIN      BUILTIN           4x 10GE XFP
FPC 1                     BUILTIN      BUILTIN           MPC BUILTIN
  MIC 0          REV 02   750-028380   JR6598            3D 2x 10GE XFP
    PIC 0                 BUILTIN      BUILTIN           1x 10GE XFP
      Xcvr 0     REV 01   740-014289   T07M86365         XFP-10G-SR
    PIC 1                 BUILTIN      BUILTIN           1x 10GE XFP
      Xcvr 0     REV 01   740-014289   T07M71094         XFP-10G-SR
  MIC 1          REV 02   750-028380   JG8548            3D 2x 10GE XFP
    PIC 2                 BUILTIN      BUILTIN           1x 10GE XFP
      Xcvr 0     REV 02   740-014289   T08L86302         XFP-10G-SR
    PIC 3                 BUILTIN      BUILTIN           1x 10GE XFP
      Xcvr 0     REV 02   740-014289   C810XU0BA         XFP-10G-SR
Fan Tray                                                 Fan Tray
```

show chassis hardware (vMX on NFX250)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                               DD2316AF0078      VMX
Midplane         REV 04   650-066113   DD2316AF0078      VMX
Power Supply 0
Routing Engine 0                                         RE-VMX
CB 0                                                     VMX SCB
CB 1                                                     VMX SCB
FPC 0                                                    Virtual FPC
  CPU            Rev. 1.0 RIOT         BUILTIN
  MIC 0                                                  Virtual
    PIC 0                 BUILTIN      BUILTIN           Virtual
      Xcvr 10    REV 02   740-013111   A331846           SFP-T
      Xcvr 11    REV 02   740-013111   C248517           SFP-T
Fan Tray 0                                               fan-ctrl-0 0, Front to
Back Airflow - AFO
Fan Tray 1                                               fan-ctrl-0 1, Front to
Back Airflow - AFO
```

show chassis hardware models (vMX on NFX250)

```
user@host> show chassis hardware models
Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
Midplane         REV 04   650-066113   DD2316AF0163      NFX250-S2
Fan Tray 0                                               Assy,Sub,Fan
Tray,AFO,Opus-AFO
```


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```
Fan Tray 1                                                    Assy,Sub,Fan
Tray,AFO,Opus-AFO
```

show chassis hardware (MX104 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                G3503             MX104
Midplane         REV 28   750-044219   CAAX5741          MX104
PEM 0            REV 03   740-045933   1H072500016       AC Power Entry Module
PEM 1            REV 03   740-045932   1H073050017       DC Power Entry Module
Routing Engine 0 REV 20   750-044228   CAAY7935          RE-MX-104
Routing Engine 1 REV 13   750-044228   CAAM6380          RE-MX-104
AFEB 0                    BUILTIN      BUILTIN           Forwarding Engine
Processor
FPC 0                     BUILTIN      BUILTIN           MPC BUILTIN
FPC 1                     BUILTIN      BUILTIN           MPC BUILTIN
  MIC 0          REV 15   750-036132   CAAF7948          2xOC12/8xOC3 CC-CE
    PIC 0                 BUILTIN      BUILTIN           2xOC12/8xOC3 CC-CE
      Xcvr 0     REV 01   740-011615   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   PBK0NK3           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          2xOC12/8xOC3 CC-CE
    PIC 0                 BUILTIN      BUILTIN           2xOC12/8xOC3 CC-CE
```

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```
      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   PBK0NK3          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
```


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```
  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 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
```

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```
  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       SMSC              uhub1
  usb0 (addr 3)  ATP IG eUSB SSD 44801 ATP Electronics   umass0
Routing Engine 1 REV 13   750-044228   CAAM6380          RE-MX-104
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-044228        S/N:               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-8OC3-2OC12-ATM
 Board Information Record:
  Address 0x00: 12 01 05 03 05 ff 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
```


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```
  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   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   PBK0NK3           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 extensive (PTX10008 Router)

```
user@host> show chassis hardware extensive
Hardware inventory:
Item             Version  Part number  Serial number     Description
```

```
Chassis                                 DE487             JNP10008 [PTX10008 -
PILOT BUILD V1.1]
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
                                 S/N:               DE487
 Assembly ID:  0x0566            Assembly Version:  01.27
 Date:         08-08-2016        Assembly Flags:    0x00
                                 CLEI Code:         CMMUM00ARA
 ID: JNP10008                    FRU Model Number:  QFX10008-CHAS
 Board Information Record:
  Address 0x00: ad 01 08 00 30 b6 4f e9 74 c4 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 05 66 01 1b 00 45 56 20 32 37 00 00
  Address 0x10: 00 00 00 00 00 35 30 2d 30 35 34 30 39 37 00 00
  Address 0x20: 44 45 34 38 37 00 00 00 00 00 00 00 00 08 08 07
  Address 0x30: e0 ff ff ff ad 01 08 00 30 b6 4f e9 74 c4 ff ff
  Address 0x40: ff ff ff ff 01 43 4d 4d 55 4d 30 30 41 52 41 51
  Address 0x50: 46 58 31 30 30 30 38 2d 43 48 41 53 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 44 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 63 44 45 34 38 37 00 00 00 00 00 00 00
Midplane         REV 27   750-054097   ACPD4307          Midplane 8
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-054097        S/N:               ACPD4307
 Assembly ID:  0x0be3            Assembly Version:  01.27
 Date:         08-08-2016        Assembly Flags:    0x00
 Version:      REV 27            CLEI Code:         CMMUM00ARA
 ID: QFX10008 Midplane           FRU Model Number:  QFX10008-CHAS
 Board Information Record:
  Address 0x00: ad 01 08 00 30 b6 4f e9 74 c4 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 0b e3 01 1b 52 45 56 20 32 37 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 35 34 30 39 37 00 00
  Address 0x20: 53 2f 4e 20 41 43 50 44 34 33 30 37 00 08 08 07
  Address 0x30: e0 ff ff ff ad 01 08 00 30 b6 4f e9 74 c4 ff ff
  Address 0x40: ff ff ff ff 01 43 4d 4d 55 4d 30 30 41 52 41 51
  Address 0x50: 46 58 31 30 30 30 38 2d 43 48 41 53 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 44 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 63 44 45 34 38 37 00 00 00 00 00 00 00
Routing Engine 0          BUILTIN      BUILTIN           RE-PTX-2X00x4
  vtbd0 15360 MB                                       Virtio Block Disk
  vtbd1 15360 MB                                       Virtio Block Disk
  ada0    128 MB  QEMU                 QM00002           Virtio Block Disk
  usb0 (addr 0.1) EHCI root HUB 0      Intel             uhub0
  usb1 (addr 0.2) product 0x0020 32    vendor 0x8087     uhub1
Routing Engine 1          BUILTIN      BUILTIN           RE-PTX-2X00x4
  vtbd0 15360 MB                                       Virtio Block Disk
  vtbd1 15360 MB                                       Virtio Block Disk
  ada0    128 MB  QEMU                 QM00002           Virtio Block Disk
  usb0 (addr 0.1) EHCI root HUB 0      Intel             uhub0
  usb1 (addr 0.2) product 0x0020 32    vendor 0x8087     uhub1
CB 0             REV 02   750-068820   ACNZ4440          Control Board
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-068820        S/N:               ACNZ4440
 Assembly ID:  0x0b9d            Assembly Version:  01.02
 Date:         06-13-2016        Assembly Flags:    0x00
 Version:      REV 02            CLEI Code:         CMUCAH3CTB
 ID: Control Board               FRU Model Number:  QFX10000-RE
 Board Information Record:
  Address 0x00: ad 01 00 10 84 c1 c1 54 10 be ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 0b 9d 01 02 52 45 56 20 30 32 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 38 38 32 30 00 00
```


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```
  Address 0x20: 53 2f 4e 20 41 43 4e 5a 34 34 34 30 00 0d 06 07
  Address 0x30: e0 ff ff ff ad 01 00 10 84 c1 c1 54 10 be ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 43 41 48 33 43 54 42 51
  Address 0x50: 46 58 31 30 30 30 30 2d 52 45 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 42 41 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff db ff ff ff ff ff ff ff ff ff ff ff ff
CB 1             REV 02   750-068820   ACNZ8284          Control Board
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-068820        S/N:               ACNZ8284
 Assembly ID:  0x0b9d            Assembly Version:  01.02
 Date:         06-27-2016        Assembly Flags:    0x00
 Version:      REV 02            CLEI Code:         CMUCAH3CTB
 ID: Control Board               FRU Model Number:  QFX10000-RE
 Board Information Record:
  Address 0x00: ad 01 00 10 84 c1 c1 e5 b1 46 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 0b 9d 01 02 52 45 56 20 30 32 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 38 38 32 30 00 00
  Address 0x20: 53 2f 4e 20 41 43 4e 5a 38 32 38 34 00 1b 06 07
  Address 0x30: e0 ff ff ff ad 01 00 10 84 c1 c1 e5 b1 46 ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 43 41 48 33 43 54 42 51
  Address 0x50: 46 58 31 30 30 30 30 2d 52 45 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 42 41 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff db ff ff ff ff ff ff ff ff ff ff ff ff
FPC 0             REV 36   750-051354   ACNP4679          LC1102 - 12C / 36Q /
144X
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-051354        S/N:               ACNP4679
 Assembly ID:  0x0be7            Assembly Version:  01.36
 Date:         11-11-2016        Assembly Flags:    0x00
 Version:      REV 36            CLEI Code:         CMUIAM9BAA
 ID: ULC-36Q-12Q28               FRU Model Number:  QFX10000-36Q
 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 e7 01 24 52 45 56 20 33 36 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 35 31 33 35 34 00 00
  Address 0x20: 53 2f 4e 20 41 43 4e 50 34 36 37 39 00 0b 0b 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 49 41 4d 39 42 41 41 51
  Address 0x50: 46 58 31 30 30 30 30 2d 33 36 51 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 42 45 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff fe ff ff ff ff ff ff ff ff ff ff ff ff
  CPU                     BUILTIN      BUILTIN           FPC CPU
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          BUILTIN           S/N:               BUILTIN
 Assembly ID:  0xf020            Assembly Version:  02.17
 Date:         04-19-2012        Assembly Flags:    0x00
 Board Information Record:
  Address 0x00: ad 01 01 04 ac 4b c8 1d f7 b6 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff f0 20 02 11 00 e0 3c fa 09 00 70 87
  Address 0x10: 09 38 bb ff 42 55 49 4c 54 49 4e 00 00 e0 3c fa
  Address 0x20: 42 55 49 4c 54 49 4e 00 42 55 49 4c 00 13 04 07
  Address 0x30: dc ff ff ff ad 01 01 04 ac 4b c8 1d f7 b6 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 45 00 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff f3 50 36 36 36 36 00 00 00 00 00 00 00
  PIC 0                   BUILTIN      BUILTIN           12x100GE/36x40GE/144x10GE
```

```
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          BUILTIN           S/N:               BUILTIN
 Assembly ID:  0xf050            Assembly Version:  02.17
 Date:         04-19-2012        Assembly Flags:    0x00
 Board Information Record:
  Address 0x00: ad 01 01 04 ac 4b c8 1d f7 b6 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff f0 50 02 11 00 00 00 00 07 0a 20 45
  Address 0x10: 6c 61 70 73 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 13 04 07
  Address 0x30: dc ff ff ff ad 01 01 04 ac 4b c8 1d f7 b6 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 45 00 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff f3 55 55 55 55 55 55 55 55 55 55 55 55
    Xcvr 1       REV 01   740-058734   1ECQ113834D       QSFP-100GBASE-SR4
    Xcvr 5       REV 01   740-058734   1ECQ1137067       QSFP-100GBASE-SR4
    Xcvr 6       REV 01   740-054053   QF3205SD          QSFP+-4X10G-SR
    Xcvr 7       REV 01   740-058734   1ECQ11381MP       QSFP-100GBASE-SR4
    Xcvr 11      REV 01   740-061405   1ACQ110507K       QSFP-100GBASE-SR4
    Xcvr 13      REV 01   740-058734   1ECQ11390ZB       QSFP-100GBASE-SR4
    Xcvr 17      REV 01   740-058734   1ECQ11381M1       QSFP-100GBASE-SR4
    Xcvr 19      REV 01   740-058734   1ECQ11381JS       QSFP-100GBASE-SR4
    Xcvr 23      REV 01   740-058734   1ACQ112000E       QSFP-100GBASE-SR4
    Xcvr 25      REV 01   740-058734   1ECQ11381NT       QSFP-100GBASE-SR4
    Xcvr 28      REV 01   740-054053   QG1502WV          QSFP+-4X10G-SR
    Xcvr 29      REV 01   740-058734   1ACQ112000D       QSFP-100GBASE-SR4
    Xcvr 33      REV 01   740-058734   1ACQ1134065       QSFP-100GBASE-SR4
    Xcvr 34      REV 01   740-067442   XV20L4L           QSFP+-40G-SR4
FPC 1            REV 33   750-051354   ACNX8831          LC1102 - 12C / 36Q /
144X
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-051354        S/N:               ACNX8831
 Assembly ID:  0x0be7            Assembly Version:  01.33
 Date:         06-03-2016        Assembly Flags:    0x00
 Version:      REV 33            CLEI Code:         CMUIAM9BAA
 ID: ULC-36Q-12Q28               FRU Model Number:  QFX10000-36Q
 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 e7 01 21 52 45 56 20 33 33 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 35 31 33 35 34 00 00
  Address 0x20: 53 2f 4e 20 41 43 4e 58 38 38 33 31 00 03 06 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 49 41 4d 39 42 41 41 51
  Address 0x50: 46 58 31 30 30 30 30 2d 33 36 51 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 42 42 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff fb ff ff ff ff ff ff ff ff ff ff ff ff
  CPU                     BUILTIN      BUILTIN           FPC CPU
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          BUILTIN           S/N:               BUILTIN
 Assembly ID:  0xf020            Assembly Version:  02.17
 Date:         04-19-2012        Assembly Flags:    0x00
 Board Information Record:
  Address 0x00: ad 01 01 04 ac 4b c8 1d f7 b6 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff f0 20 02 11 00 20 3e fa 09 00 10 8a
  Address 0x10: 09 38 bb ff 42 55 49 4c 54 49 4e 00 00 20 3e fa
  Address 0x20: 42 55 49 4c 54 49 4e 00 42 55 49 4c 00 13 04 07
  Address 0x30: dc ff ff ff ad 01 01 04 ac 4b c8 1d f7 b6 ff ff
  Address 0x40: ff ff ff ff 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 45 00 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff f3 50 36 36 36 36 00 00 00 00 00 00 00
  PIC 0                 BUILTIN      BUILTIN          12x100GE/36x40GE/144x10GE

 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          BUILTIN           S/N:               BUILTIN
 Assembly ID:  0xf050            Assembly Version:  02.17
 Date:         04-19-2012        Assembly Flags:    0x00
 Board Information Record:
  Address 0x00: ad 01 01 04 ac 4b c8 1d f7 b6 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff f0 50 02 11 00 00 00 00 07 0a 20 45
  Address 0x10: 6c 61 70 73 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 13 04 07
  Address 0x30: dc ff ff ff ad 01 01 04 ac 4b c8 1d f7 b6 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 45 00 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff f3 55 55 55 55 55 55 55 55 55 55 55 55
    Xcvr 5                NON-JNPR     37700171YY0084    QSFP-100GBASE-LR4
    Xcvr 25               NON-JNPR     GDA2017459        QSFP-100GBASE-LR4
    Xcvr 29               NON-JNPR     GDF2008750        QSFP-100GBASE-LR4
FPC 2            REV 32   750-051357   ACPB0341          LC1101 - 30C / 30Q / 96X

 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-051357        S/N:               ACPB0341
 Assembly ID:  0x0be8            Assembly Version:  01.32
 Date:         06-04-2016        Assembly Flags:    0x00
 Version:      REV 32            CLEI Code:         CMUIANABAA
 ID: ULC-30Q28                   FRU Model Number:  QFX10000-30C
 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 e8 01 20 52 45 56 20 33 32 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 35 31 33 35 37 00 00
  Address 0x20: 53 2f 4e 20 41 43 50 42 30 33 34 31 00 04 06 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 49 41 4e 41 42 41 41 51
  Address 0x50: 46 58 31 30 30 30 30 2d 33 30 43 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 42 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff ef ff ff ff ff ff ff ff ff ff ff ff ff
  CPU                   BUILTIN      BUILTIN          FPC CPU
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          BUILTIN           S/N:               BUILTIN
 Assembly ID:  0xf020            Assembly Version:  02.17
 Date:         04-19-2012        Assembly Flags:    0x00
 Board Information Record:
  Address 0x00: ad 01 01 04 ac 4b c8 1d f7 b6 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff f0 20 02 11 00 00 67 00 0a 00 b0 8c
  Address 0x10: 09 38 bb ff 42 55 49 4c 54 49 4e 00 00 00 67 00
  Address 0x20: 42 55 49 4c 54 49 4e 00 42 55 49 4c 00 13 04 07
  Address 0x30: dc ff ff ff ad 01 01 04 ac 4b c8 1d f7 b6 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 45 00 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff f3 50 36 36 36 36 00 00 00 00 00 00 00
  PIC 0                 BUILTIN      BUILTIN          30x100GE/30x40GE/96x10GE

 Jedec Code:   0x7fb0            EEPROM Version:    0x02
```

```
 P/N:          BUILTIN           S/N:               BUILTIN
 Assembly ID:  0xf050            Assembly Version:  02.17
 Date:         04-19-2012        Assembly Flags:    0x00
 Board Information Record:
  Address 0x00: ad 01 01 04 ac 4b c8 1d f7 b6 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff f0 50 02 11 00 00 00 00 07 0a 20 45
  Address 0x10: 6c 61 70 73 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 13 04 07
  Address 0x30: dc ff ff ff ad 01 01 04 ac 4b c8 1d f7 b6 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 45 00 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff f3 de ad be ef de ad be ef de ad be ef
    Xcvr 0               NON-JNPR     37700170YZC305    QSFP-100GBASE-LR4
    Xcvr 4               NON-JNPR     37700170YZC306    QSFP-100GBASE-LR4
    Xcvr 9       REV 01  740-054053   QF36013S          QSFP+-4X10G-SR
    Xcvr 12      REV 01  740-067442   XV301AU           QSFP+-40G-SR4
    Xcvr 14      REV 01  740-043308   UWE2CG9           QSFP+-40G-LR4
    Xcvr 16      REV 01  740-043308   UWH141S           QSFP+-40G-LR4
    Xcvr 17      REV 01  740-058734   1ECQ11180VH       QSFP-100GBASE-SR4
    Xcvr 18      REV 01  740-054050   INFAJ0492237      QSFP+-4X10G-LR
    Xcvr 26      REV 01  740-058734   1ACQ111803N       QSFP-100GBASE-SR4
    Xcvr 27      REV 01  740-058734   1ACQ113405S       QSFP-100GBASE-SR4
FPC 3            REV 35  750-051357   ACPD2186          LC1101 - 30C / 30Q / 96X

 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-051357        S/N:               ACPD2186
 Assembly ID:  0x0be8            Assembly Version:  01.35
 Date:         09-21-2016        Assembly Flags:    0x00
 Version:      REV 35            CLEI Code:         CMUIANABAA
 ID: ULC-30Q28                   FRU Model Number:  QFX10000-30C
 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 e8 01 23 52 45 56 20 33 35 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 35 31 33 35 37 00 00
  Address 0x20: 53 2f 4e 20 41 43 50 44 32 31 38 36 00 15 09 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 49 41 4e 41 42 41 41 51
  Address 0x50: 46 58 31 30 30 30 30 2d 33 30 43 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 44 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff f1 ff ff ff ff ff ff ff ff ff ff ff ff
  CPU                     BUILTIN      BUILTIN           FPC CPU
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          BUILTIN           S/N:               BUILTIN
 Assembly ID:  0xf020            Assembly Version:  02.17
 Date:         04-19-2012        Assembly Flags:    0x00
 Board Information Record:
  Address 0x00: ad 01 01 04 ac 4b c8 1d f7 b6 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff f0 20 02 11 00 80 70 fa 09 00 50 8f
  Address 0x10: 09 38 bb ff 42 55 49 4c 54 49 4e 00 00 80 70 fa
  Address 0x20: 42 55 49 4c 54 49 4e 00 42 55 49 4c 00 13 04 07
  Address 0x30: dc ff ff ff ad 01 01 04 ac 4b c8 1d f7 b6 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 45 00 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff f3 50 36 36 36 36 00 00 00 00 00 00 00
  PIC 0                   BUILTIN      BUILTIN           30x100GE/30x40GE/96x10GE
```


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```
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          BUILTIN           S/N:               BUILTIN
 Assembly ID:  0xf050            Assembly Version:  02.17
 Date:         04-19-2012        Assembly Flags:    0x00
 Board Information Record:
  Address 0x00: ad 01 01 04 ac 4b c8 1d f7 b6 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff f0 50 02 11 00 00 00 00 07 0a 20 45
  Address 0x10: 6c 61 70 73 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 13 04 07
  Address 0x30: dc ff ff ff ad 01 01 04 ac 4b c8 1d f7 b6 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 45 00 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff f3 55 55 55 55 55 55 55 55 55 55 55 55
    Xcvr 0       REV 01   740-061409   1GCQA1470A3       QSFP-100GBASE-LR4
    Xcvr 1       REV 01   740-061409   1GCQA1470XC       QSFP-100GBASE-LR4
    Xcvr 7                NON-JNPR     FG4550500008      QSFP-100G-CWDM4
    Xcvr 24      REV 01   740-058734   1ECQ11381LX       QSFP-100GBASE-SR4
    Xcvr 29      REV 01   740-043308   UWE0UYS           QSFP+-40G-LR4
FPC 5            REV 08   750-068822   ACPF0057          LC1102 - 12C / 36Q /
144X
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-068822        S/N:               ACPF0057
 Assembly ID:  0x0be7            Assembly Version:  01.08
 Date:         09-01-2016        Assembly Flags:    0x00
 Version:      REV 08            CLEI Code:         CMUIAM9BAB
 ID: ULC-36Q-12Q28               FRU Model Number:  QFX10000-36Q
 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 e7 01 08 52 45 56 20 30 38 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 38 38 32 32 00 00
  Address 0x20: 53 2f 4e 20 41 43 50 46 30 30 35 37 00 01 09 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 49 41 4d 39 42 41 42 51
  Address 0x50: 46 58 31 30 30 30 30 2d 33 36 51 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 42 45 00 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
  CPU                     BUILTIN      BUILTIN           FPC CPU
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          BUILTIN           S/N:               BUILTIN
 Assembly ID:  0xf020            Assembly Version:  02.17
 Date:         04-19-2012        Assembly Flags:    0x00
 Board Information Record:
  Address 0x00: ad 01 01 04 ac 4b c8 1d f7 b6 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff f0 20 02 11 00 00 3d fa 09 00 90 94
  Address 0x10: 09 38 bb ff 42 55 49 4c 54 49 4e 00 00 00 3d fa
  Address 0x20: 42 55 49 4c 54 49 4e 00 42 55 49 4c 00 13 04 07
  Address 0x30: dc ff ff ff ad 01 01 04 ac 4b c8 1d f7 b6 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 45 00 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff f3 50 36 36 36 36 00 00 00 00 00 00 00
  PIC 0                   BUILTIN      BUILTIN           12x100GE/36x40GE/144x10GE

 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          BUILTIN           S/N:               BUILTIN
 Assembly ID:  0xf050            Assembly Version:  02.17
 Date:         04-19-2012        Assembly Flags:    0x00
```

```
 Board Information Record:
  Address 0x00: ad 01 01 04 ac 4b c8 1d f7 b6 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff f0 50 02 11 00 00 00 00 07 0a 20 45
  Address 0x10: 6c 61 70 73 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 13 04 07
  Address 0x30: dc ff ff ff ad 01 01 04 ac 4b c8 1d f7 b6 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 45 00 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff f3 55 55 55 55 55 55 55 55 55 55 55 55
FPC 6            REV 08   750-068822   ACPE9951          LC1102 - 12C / 36Q /
144X
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-068822        S/N:               ACPE9951
 Assembly ID:  0x0be7            Assembly Version:  01.08
 Date:         09-01-2016        Assembly Flags:    0x00
 Version:      REV 08            CLEI Code:         CMUIAM9BAB
 ID: ULC-36Q-12Q28               FRU Model Number:  QFX10000-36Q
 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 e7 01 08 52 45 56 20 30 38 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 38 38 32 32 00 00
  Address 0x20: 53 2f 4e 20 41 43 50 45 39 39 35 31 00 01 09 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 49 41 4d 39 42 41 42 51
  Address 0x50: 46 58 31 30 30 30 30 2d 33 36 51 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 42 45 00 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
  CPU                     BUILTIN      BUILTIN           FPC CPU
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          BUILTIN           S/N:               BUILTIN
 Assembly ID:  0xf020            Assembly Version:  02.17
 Date:         04-19-2012        Assembly Flags:    0x00
 Board Information Record:
  Address 0x00: ad 01 01 04 ac 4b c8 1d f7 b6 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff f0 20 02 11 00 c0 3e fa 09 00 30 97
  Address 0x10: 09 38 bb ff 42 55 49 4c 54 49 4e 00 00 c0 3e fa
  Address 0x20: 42 55 49 4c 54 49 4e 00 42 55 49 4c 00 13 04 07
  Address 0x30: dc ff ff ff ad 01 01 04 ac 4b c8 1d f7 b6 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 45 00 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff f3 50 36 36 36 36 00 00 00 00 00 00 00
  PIC 0                   BUILTIN      BUILTIN           12x100GE/36x40GE/144x10GE

 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          BUILTIN           S/N:               BUILTIN
 Assembly ID:  0xf050            Assembly Version:  02.17
 Date:         04-19-2012        Assembly Flags:    0x00
 Board Information Record:
  Address 0x00: ad 01 01 04 ac 4b c8 1d f7 b6 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff f0 50 02 11 00 00 00 00 07 0a 20 45
  Address 0x10: 6c 61 70 73 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 13 04 07
  Address 0x30: dc ff ff ff ad 01 01 04 ac 4b c8 1d f7 b6 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
```


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```
  Address 0x60: 00 00 00 00 00 00 45 00 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff f3 55 55 55 55 55 55 55 55 55 55 55 55
    Xcvr 1       REV 01   740-054053   QF3208LG          QSFP+-4X10G-SR
    Xcvr 7       REV 01   740-067442   XV20LGN           QSFP+-40G-SR4
    Xcvr 8       REV 01   740-067442   XV20VMV           QSFP+-40G-SR4
    Xcvr 9       REV 01   740-067442   XV20KCN           QSFP+-40G-SR4
    Xcvr 10      REV 01   740-067442   XU504QD           QSFP+-40G-SR4
    Xcvr 11      REV 01   740-067442   XU504X7           QSFP+-40G-SR4
    Xcvr 12      REV 01   740-067442   XU504W8           QSFP+-40G-SR4
    Xcvr 16      REV 01   740-032986   QF4301JP          QSFP+-40G-SR4
    Xcvr 17      REV 01   740-032986   QF4303AE          QSFP+-40G-SR4
    Xcvr 18      REV 01   740-054050   INFAJ0492400      QSFP+-4X10G-LR
    Xcvr 19      REV 01   740-054050   INFAJ0492142      QSFP+-4X10G-LR
    Xcvr 24      REV 01   740-032986   QF4301KB          QSFP+-40G-SR4
    Xcvr 25      REV 01   740-032986   QF4303YP          QSFP+-40G-SR4
    Xcvr 30      REV 01   740-067442   XV300ZX           QSFP+-40G-SR4
    Xcvr 31      REV 01   740-043308   UWH2KBW           QSFP+-40G-LR4
    Xcvr 34      REV 01   740-054053   QG1501YU          QSFP+-4X10G-SR
FPD Board        REV 07   711-054687   ACPC7142          Front Panel Display
 Jedec Code:   0x7fb0            EEPROM Version:    0x01
 P/N:          711-054687        S/N:               ACPC7142
 Assembly ID:  0x0bf2            Assembly Version:  01.07
 Date:         07-22-2016        Assembly Flags:    0x00
 Version:      REV 07
 ID: QFX10000 FPD
 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 f2 01 07 52 45 56 20 30 37 00 00
  Address 0x10: 00 00 00 00 37 31 31 2d 30 35 34 36 38 37 00 00
  Address 0x20: 53 2f 4e 20 41 43 50 43 37 31 34 32 00 16 07 07
  Address 0x30: e0 ff 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 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
Power Supply 0   REV 02   740-049388   1EDL62102N9       Power Supply AC
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-049388        S/N:               1EDL62102N9
 Assembly ID:  0x0483            Assembly Version:  01.02
 Date:         05-25-2016        Assembly Flags:    0x00
 Version:      REV 02            CLEI Code:         CMUPADNBAA
 ID: QFX10000 AC                 FRU Model Number:  QFX10000-PWR-AC
 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 83 01 02 52 45 56 20 30 32 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 34 39 33 38 38 00 00
  Address 0x20: 31 45 44 4c 36 32 31 30 32 4e 39 00 00 19 05 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 50 41 44 4e 42 41 41 51
  Address 0x50: 46 58 31 30 30 30 30 2d 50 57 52 2d 41 43 00 00
  Address 0x60: 00 00 00 00 00 00 01 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff dc ff ff ff ff ff ff ff ff ff ff ff ff
Power Supply 1   REV 02   740-049388   1EDL60300KX       Power Supply AC
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-049388        S/N:               1EDL60300KX
 Assembly ID:  0x0483            Assembly Version:  01.02
 Date:         01-20-2016        Assembly Flags:    0x00
 Version:      REV 02            CLEI Code:         CMUPADNBAA
 ID: QFX10000 AC                 FRU Model Number:  QFX10000-PWR-AC
```

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```
  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 83 01 02 52 45 56 20 30 32 00 00
   Address 0x10: 00 00 00 00 37 34 30 2d 30 34 39 33 38 38 00 00
   Address 0x20: 31 45 44 4c 36 30 33 30 30 4b 58 00 00 14 01 07
   Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
   Address 0x40: ff ff ff ff 01 43 4d 55 50 41 44 4e 42 41 41 51
   Address 0x50: 46 58 31 30 30 30 30 2d 50 57 52 2d 41 43 00 00
   Address 0x60: 00 00 00 00 00 00 01 30 31 ff ff ff ff ff ff ff
   Address 0x70: ff ff ff dc ff ff ff ff ff ff ff ff ff ff ff ff
Power Supply 2   REV 02   740-049388   1EDL60300DL       Power Supply AC
  Jedec Code:   0x7fb0            EEPROM Version:    0x02
  P/N:          740-049388        S/N:               1EDL60300DL
  Assembly ID:  0x0483            Assembly Version:  01.02
  Date:         01-20-2016        Assembly Flags:    0x00
  Version:      REV 02            CLEI Code:         CMUPADNBAA
  ID: QFX10000 AC                 FRU Model Number:  QFX10000-PWR-AC
  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 83 01 02 52 45 56 20 30 32 00 00
   Address 0x10: 00 00 00 00 37 34 30 2d 30 34 39 33 38 38 00 00
   Address 0x20: 31 45 44 4c 36 30 33 30 30 44 4c 00 00 14 01 07
   Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
   Address 0x40: ff ff ff ff 01 43 4d 55 50 41 44 4e 42 41 41 51
   Address 0x50: 46 58 31 30 30 30 30 2d 50 57 52 2d 41 43 00 00
   Address 0x60: 00 00 00 00 00 00 01 30 31 ff ff ff ff ff ff ff
   Address 0x70: ff ff ff dc ff ff ff ff ff ff ff ff ff ff ff ff
Power Supply 3   REV 02   740-049388   1EDL61701BT       Power Supply AC
  Jedec Code:   0x7fb0            EEPROM Version:    0x02
  P/N:          740-049388        S/N:               1EDL61701BT
  Assembly ID:  0x0483            Assembly Version:  01.02
  Date:         05-01-2016        Assembly Flags:    0x00
  Version:      REV 02            CLEI Code:         CMUPADNBAA
  ID: QFX10000 AC                 FRU Model Number:  QFX10000-PWR-AC
  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 83 01 02 52 45 56 20 30 32 00 00
   Address 0x10: 00 00 00 00 37 34 30 2d 30 34 39 33 38 38 00 00
   Address 0x20: 31 45 44 4c 36 31 37 30 31 42 54 00 00 01 05 07
   Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
   Address 0x40: ff ff ff ff 01 43 4d 55 50 41 44 4e 42 41 41 51
   Address 0x50: 46 58 31 30 30 30 30 2d 50 57 52 2d 41 43 00 00
   Address 0x60: 00 00 00 00 00 00 01 30 31 ff ff ff ff ff ff ff
   Address 0x70: ff ff ff dc ff ff ff ff ff ff ff ff ff ff ff ff
Power Supply 4   REV 02   740-049388   1EDL62102P7       Power Supply AC
  Jedec Code:   0x7fb0            EEPROM Version:    0x02
  P/N:          740-049388        S/N:               1EDL62102P7
  Assembly ID:  0x0483            Assembly Version:  01.02
  Date:         05-25-2016        Assembly Flags:    0x00
  Version:      REV 02            CLEI Code:         CMUPADNBAA
  ID: QFX10000 AC                 FRU Model Number:  QFX10000-PWR-AC
  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 83 01 02 52 45 56 20 30 32 00 00
   Address 0x10: 00 00 00 00 37 34 30 2d 30 34 39 33 38 38 00 00
   Address 0x20: 31 45 44 4c 36 32 31 30 32 50 37 00 00 19 05 07
   Address 0x30: e0 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 43 4d 55 50 41 44 4e 42 41 41 51
  Address 0x50: 46 58 31 30 30 30 30 2d 50 57 52 2d 41 43 00 00
  Address 0x60: 00 00 00 00 00 00 01 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff dc ff ff ff ff ff ff ff ff ff ff ff ff
Power Supply 5   REV 02   740-049388   1EDL62102PP       Power Supply AC
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-049388        S/N:               1EDL62102PP
 Assembly ID:  0x0483            Assembly Version:  01.02
 Date:         05-25-2016        Assembly Flags:    0x00
 Version:      REV 02            CLEI Code:         CMUPADNBAA
 ID: QFX10000 AC                 FRU Model Number:  QFX10000-PWR-AC
 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 83 01 02 52 45 56 20 30 32 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 34 39 33 38 38 00 00
  Address 0x20: 31 45 44 4c 36 32 31 30 32 50 50 00 00 19 05 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 50 41 44 4e 42 41 41 51
  Address 0x50: 46 58 31 30 30 30 30 2d 50 57 52 2d 41 43 00 00
  Address 0x60: 00 00 00 00 00 00 01 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff dc ff ff ff ff ff ff ff ff ff ff ff ff
FTC 0            REV 14   750-050108   ACPE4038          Fan Controller 8
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-050108        S/N:               ACPE4038
 Assembly ID:  0x0bee            Assembly Version:  01.14
 Date:         09-27-2016        Assembly Flags:    0x00
 Version:      REV 14            CLEI Code:         CMUCAHZCAA
 ID: QFX10000 FTC                FRU Model Number:  QFX10008-FAN-CTRL
 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 ee 01 0e 52 45 56 20 31 34 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 35 30 31 30 38 00 00
  Address 0x20: 53 2f 4e 20 41 43 50 45 34 30 33 38 00 1b 09 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 43 41 48 5a 43 41 41 51
  Address 0x50: 46 58 31 30 30 30 38 2d 46 41 4e 2d 43 54 52 4c
  Address 0x60: 00 00 00 00 00 00 41 44 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 98 ff ff ff ff ff ff ff ff ff ff ff ff
FTC 1            REV 14   750-050108   ACPE4032          Fan Controller 8
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-050108        S/N:               ACPE4032
 Assembly ID:  0x0bee            Assembly Version:  01.14
 Date:         09-27-2016        Assembly Flags:    0x00
 Version:      REV 14            CLEI Code:         CMUCAHZCAA
 ID: QFX10000 FTC                FRU Model Number:  QFX10008-FAN-CTRL
 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 ee 01 0e 52 45 56 20 31 34 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 35 30 31 30 38 00 00
  Address 0x20: 53 2f 4e 20 41 43 50 45 34 30 33 32 00 1b 09 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 43 41 48 5a 43 41 41 51
  Address 0x50: 46 58 31 30 30 30 38 2d 46 41 4e 2d 43 54 52 4c
  Address 0x60: 00 00 00 00 00 00 41 44 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 98 ff ff ff ff ff ff ff ff ff ff ff ff
Fan Tray 0       REV 09   760-054372   ACPD6799          Fan Tray 8
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          760-054372        S/N:               ACPD6799
```

```
 Assembly ID:  0x0bf0            Assembly Version:  01.09
 Date:         09-28-2016        Assembly Flags:    0x00
 Version:      REV 09            CLEI Code:         CMUCAHYCAA
 ID: QFX10008 FHB                FRU Model Number:  QFX10008-FAN
 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 f0 01 09 52 45 56 20 30 39 00 00
  Address 0x10: 00 00 00 00 37 36 30 2d 30 35 34 33 37 32 00 00
  Address 0x20: 53 2f 4e 20 41 43 50 44 36 37 39 39 00 1c 09 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 43 41 48 59 43 41 41 51
  Address 0x50: 46 58 31 30 30 30 38 2d 46 41 4e 00 00 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 f1 ff ff ff ff ff ff ff ff ff ff ff ff
Fan Tray 1       REV 09   760-054372   ACNZ3584          Fan Tray 8
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          760-054372        S/N:               ACNZ3584
 Assembly ID:  0x0bf0            Assembly Version:  01.09
 Date:         08-30-2016        Assembly Flags:    0x00
 Version:      REV 09            CLEI Code:         CMUCAHYCAA
 ID: QFX10008 FHB                FRU Model Number:  QFX10008-FAN
 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 f0 01 09 52 45 56 20 30 39 00 00
  Address 0x10: 00 00 00 00 37 36 30 2d 30 35 34 33 37 32 00 00
  Address 0x20: 53 2f 4e 20 41 43 4e 5a 33 35 38 34 00 1e 08 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 43 41 48 59 43 41 41 51
  Address 0x50: 46 58 31 30 30 30 38 2d 46 41 4e 00 00 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 f1 ff ff ff ff ff ff ff ff ff ff ff ff
SIB 0            REV 24   750-050058   ACPD4587          Switch Fabric 8
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-050058        S/N:               ACPD4587
 Assembly ID:  0x0bec            Assembly Version:  01.24
 Date:         06-19-2016        Assembly Flags:    0x00
 Version:      REV 24            CLEI Code:         CMUCAH0CAA
 ID: QFX10008 SIB                FRU Model Number:  QFX10008-SF
 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 ec 01 18 52 45 56 20 32 34 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 35 30 30 35 38 00 00
  Address 0x20: 53 2f 4e 20 41 43 50 44 34 35 38 37 00 13 06 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 43 41 48 30 43 41 41 51
  Address 0x50: 46 58 31 30 30 30 38 2d 53 46 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 45 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff d1 00 00 00 00 00 00 00 00 00 00 00 00
SIB 1            REV 24   750-050058   ACNZ0635          Switch Fabric 8
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-050058        S/N:               ACNZ0635
 Assembly ID:  0x0bec            Assembly Version:  01.24
 Date:         06-06-2016        Assembly Flags:    0x00
 Version:      REV 24            CLEI Code:         CMUCAH0CAA
 ID: QFX10008 SIB                FRU Model Number:  QFX10008-SF
 Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
 I2C Hex Data:
```


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```
  Address 0x00: 7f b0 02 ff 0b ec 01 18 52 45 56 20 32 34 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 35 30 30 35 38 00 00
  Address 0x20: 53 2f 4e 20 41 43 4e 5a 30 36 33 35 00 06 06 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 43 41 48 30 43 41 41 51
  Address 0x50: 46 58 31 30 30 30 38 2d 53 46 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 45 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff d1 00 00 00 00 00 00 00 00 00 00 00 00
SIB 2             REV 24   750-050058   ACPD4908          Switch Fabric 8
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-050058        S/N:               ACPD4908
 Assembly ID:  0x0bec            Assembly Version:  01.24
 Date:         07-12-2016        Assembly Flags:    0x00
 Version:      REV 24            CLEI Code:         CMUCAH0CAA
 ID: QFX10008 SIB                FRU Model Number:  QFX10008-SF
 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 ec 01 18 52 45 56 20 32 34 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 35 30 30 35 38 00 00
  Address 0x20: 53 2f 4e 20 41 43 50 44 34 39 30 38 00 0c 07 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 43 41 48 30 43 41 41 51
  Address 0x50: 46 58 31 30 30 30 38 2d 53 46 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 45 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff d1 00 00 00 00 00 00 00 00 00 00 00 00
SIB 3             REV 24   750-050058   ACNZ0617          Switch Fabric 8
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-050058        S/N:               ACNZ0617
 Assembly ID:  0x0bec            Assembly Version:  01.24
 Date:         06-07-2016        Assembly Flags:    0x00
 Version:      REV 24            CLEI Code:         CMUCAH0CAA
 ID: QFX10008 SIB                FRU Model Number:  QFX10008-SF
 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 ec 01 18 52 45 56 20 32 34 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 35 30 30 35 38 00 00
  Address 0x20: 53 2f 4e 20 41 43 4e 5a 30 36 31 37 00 07 06 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 43 41 48 30 43 41 41 51
  Address 0x50: 46 58 31 30 30 30 38 2d 53 46 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 45 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff d1 00 00 00 00 00 00 00 00 00 00 00 00
SIB 4             REV 24   750-050058   ACNZ0527          Switch Fabric 8
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-050058        S/N:               ACNZ0527
 Assembly ID:  0x0bec            Assembly Version:  01.24
 Date:         06-06-2016        Assembly Flags:    0x00
 Version:      REV 24            CLEI Code:         CMUCAH0CAA
 ID: QFX10008 SIB                FRU Model Number:  QFX10008-SF
 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 ec 01 18 52 45 56 20 32 34 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 35 30 30 35 38 00 00
  Address 0x20: 53 2f 4e 20 41 43 4e 5a 30 35 32 37 00 06 06 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 43 41 48 30 43 41 41 51
  Address 0x50: 46 58 31 30 30 30 38 2d 53 46 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 45 00 ff ff ff ff ff ff ff
```

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```
  Address 0x70: ff ff ff d1 00 00 00 00 00 00 00 00 00 00 00 00
SIB 5            REV 23   750-050058   ACNX6980          Switch Fabric 8
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-050058        S/N:               ACNX6980
 Assembly ID:  0x0bec            Assembly Version:  01.23
 Date:         05-16-2016        Assembly Flags:    0x00
 Version:      REV 23            CLEI Code:         CMUCAH0CAA
 ID: QFX10008 SIB                FRU Model Number:  QFX10008-SF
 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 ec 01 17 52 45 56 20 32 33 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 35 30 30 35 38 00 00
  Address 0x20: 53 2f 4e 20 41 43 4e 58 36 39 38 30 00 10 05 07
  Address 0x30: e0 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 43 4d 55 43 41 48 30 43 41 41 51
  Address 0x50: 46 58 31 30 30 30 38 2d 53 46 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 42 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff ce 00 00 00 00 00 00 00 00 00 00 00 00
```

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                    BUILTIN      BUILTIN
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 models (PTX10008 Router)

```
user@host> show chassis hardware models
Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
Midplane         REV 27   750-054097   ACPD4307          QFX10008-CHAS
CB 0             REV 02   750-068820   ACNZ4440          QFX10000-RE
CB 1             REV 02   750-068820   ACNZ8284          QFX10000-RE
FPC 0            REV 36   750-051354   ACNP4679          QFX10000-36Q
  PIC 0                   BUILTIN      BUILTIN
FPC 1            REV 33   750-051354   ACNX8831          QFX10000-36Q
  PIC 0                   BUILTIN      BUILTIN
FPC 2            REV 32   750-051357   ACPB0341          QFX10000-30C
  PIC 0                   BUILTIN      BUILTIN
FPC 3            REV 35   750-051357   ACPD2186          QFX10000-30C
  PIC 0                   BUILTIN      BUILTIN
FPC 5            REV 08   750-068822   ACPF0057          QFX10000-36Q
  PIC 0                   BUILTIN      BUILTIN
FPC 6            REV 08   750-068822   ACPE9951          QFX10000-36Q
  PIC 0                   BUILTIN      BUILTIN
FPD Board        REV 07   711-054687   ACPC7142
Power Supply 0   REV 02   740-049388   1EDL62102N9       QFX10000-PWR-AC
Power Supply 1   REV 02   740-049388   1EDL60300KX       QFX10000-PWR-AC
Power Supply 2   REV 02   740-049388   1EDL60300DL       QFX10000-PWR-AC
Power Supply 3   REV 02   740-049388   1EDL61701BT       QFX10000-PWR-AC
```


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```
Power Supply 4   REV 02   740-049388   1EDL62102P7       QFX10000-PWR-AC
Power Supply 5   REV 02   740-049388   1EDL62102PP       QFX10000-PWR-AC
FTC 0            REV 14   750-050108   ACPE4038          QFX10008-FAN-CTRL
FTC 1            REV 14   750-050108   ACPE4032          QFX10008-FAN-CTRL
Fan Tray 0       REV 09   760-054372   ACPD6799          QFX10008-FAN
Fan Tray 1       REV 09   760-054372   ACNZ3584          QFX10008-FAN
SIB 0            REV 24   750-050058   ACPD4587          QFX10008-SF
SIB 1            REV 24   750-050058   ACNZ0635          QFX10008-SF
SIB 2            REV 24   750-050058   ACPD4908          QFX10008-SF
SIB 3            REV 24   750-050058   ACNZ0617          QFX10008-SF
SIB 4            REV 24   750-050058   ACNZ0527          QFX10008-SF
SIB 5            REV 23   750-050058   ACNX6980          QFX10008-SF
```

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                    BUILTIN
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
```

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```
    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   AARCHOO           RE-S-1800x4
  ad0    3764 MB  STEC M2+ CF 9.0.2    STIM2Q3209239145303 Removable Compact Flash

  ad1   28626 MB  WDC SSD-F0030S-5000  C933Z036237215548S00 Compact Flash
  usb0 (addr 1)  EHCI root hub 0       Intel             uhub0
  usb0 (addr 2)  product 0x0020 32     vendor 0x8087     uhub1
  DIMM 0         VL31B5263E-F8S DIE REV-0 PCB REV-0      MFR ID-ce80
  DIMM 1         VL31B5263E-F8S DIE REV-0 PCB REV-0      MFR ID-ce80
  DIMM 2         VL31B5263E-F8S DIE REV-0 PCB REV-0      MFR ID-ce80
  DIMM 3         SL31B5263E-F8S DIE REV-0 PCB REV-0      MFR ID-ce80
CB 0             REV 03   710-021523   XD7225            MX SCB
Fan Tray 0       REV 01   710-021113   WZ4986            MX240 Fan Tray
```

show chassis hardware (MX240 Router with Enhanced MX SCB)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN10C7F7EAFC      MX240
Midplane         REV 01   710-021041   TR1502            MX240 Backplane
FPM Board        REV 01   710-017254   KD4017            Front Panel Display
PEM 0            Rev 02   740-017330   000332            PS 1.2-1.7kW; 100-240V
AC in
PEM 1            Rev 02   740-017330   000226            PS 1.2-1.7kW; 100-240V
AC in
Routing Engine 0 REV 06   740-013063   1000703522        RE-S-2000
Routing Engine 1 REV 06   740-015113   1000687625        RE-S-1300
CB 0             REV 02   710-031391   YE8494            Enhanced MX SCB
CB 1             REV 05   710-031391   YOP5764           Enhanced MX SCB
FPC 1            REV 01   750-021679   KC7340            DPCE 40x 1GE R
  CPU            REV 06   710-013713   KD4078            DPC PMB
  PIC 0                   BUILTIN      BUILTIN           10x 1GE(LAN)
    Xcvr 0       REV 01   740-011613   P9F18ME           SFP-SX
  PIC 1                   BUILTIN      BUILTIN           10x 1GE(LAN)
  PIC 2                   BUILTIN      BUILTIN           10x 1GE(LAN)
```


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```
  PIC 3                 BUILTIN      BUILTIN          10x 1GE(LAN)
FPC 2           REV 04  710-016669   JS4529           DPCE 40x 1GE R EQ
  CPU           REV 06  710-013713   KB3969           DPC PMB
  PIC 0                 BUILTIN      BUILTIN          10x 1GE(LAN) EQ
    Xcvr 0      REV 01  740-011613   PBG3Y79          SFP-SX
    Xcvr 1      REV 01  740-011613   PBG3XU8          SFP-SX
    Xcvr 2      REV 01  740-011613   PBG3YG6          SFP-SX
    Xcvr 3      REV 01  740-011613   PBG3XUG          SFP-SX
    Xcvr 4      REV 01  740-011613   PBG3XTJ          SFP-SX
  PIC 1                 BUILTIN      BUILTIN          10x 1GE(LAN) EQ
    Xcvr 0      REV 01  740-011613   PBG3ZUM          SFP-SX
    Xcvr 1      REV 01  740-011613   PBG3Y5H          SFP-SX
    Xcvr 2      REV 01  740-011613   PBG3UZT          SFP-SX
    Xcvr 3      REV 01  740-011613   PBG3US1          SFP-SX
  PIC 2                 BUILTIN      BUILTIN          10x 1GE(LAN) EQ
    Xcvr 0      REV 01  740-011613   PBG3YG7          SFP-SX
    Xcvr 1      REV 01  740-011613   PBG3XZ9          SFP-SX
    Xcvr 2      REV 01  740-011613   PBG3XTY          SFP-SX
    Xcvr 3      REV 01  740-011613   PBG3UZG          SFP-SX
  PIC 3                 BUILTIN      BUILTIN          10x 1GE(LAN) EQ
    Xcvr 0      REV 01  740-011613   PBG3Y8W          SFP-SX
    Xcvr 1      REV 01  740-011613   PBG3YVX          SFP-SX
    Xcvr 2      REV 01  740-011613   PBG3YB3          SFP-SX
    Xcvr 3      REV 01  740-011613   PBG43VQ          SFP-SX
Fan Tray 0      REV 01  710-021113   JS4642           MX240 Fan Tray
```

show chassis hardware (MX480 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN10C7F7FAFB      MX480
Midplane         REV 04   710-017414   TR2071            MX480 Midplane
FPM Board        REV 02   710-017254   KB8459            Front Panel Display
PEM 0            Rev 02   740-017330   QCS07519029       PS 1.2-1.7kW; 100-240V
AC in
PEM 1            Rev 02   740-017330   QCS07519041       PS 1.2-1.7kW; 100-240V
AC in
PEM 2            Rev 02   740-017330   QCS07519097       PS 1.2-1.7kW; 100-240V
AC in
Routing Engine 0 REV 07   740-013063   1000733381        RE-S-2000
Routing Engine 1 REV 07   740-013063   1000733540        RE-S-2000
CB 0             REV 07   710-013385   KA8022            MX SCB
CB 1             REV 07   710-013385   KA8303            MX SCB
FPC 0            REV 09   750-020452   KA8660            DPCE 40x 1GE X EQ
  CPU            REV 06   710-013713   KA8185            DPC PMB
  PIC 0                   BUILTIN      BUILTIN           10x 1GE(LAN) EQ
  PIC 1                   BUILTIN      BUILTIN           10x 1GE(LAN) EQ
  PIC 2                   BUILTIN      BUILTIN           10x 1GE(LAN) EQ
  PIC 3                   BUILTIN      BUILTIN           10x 1GE(LAN) EQ
Fan Tray                                                 Left Fan Tray
```

show chassis hardware (MX480 Router with Enhanced MX SCB)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN10C7F7FAFB      MX480
Midplane         REV 04   710-017414   TR2071            MX480 Midplane
FPM Board        REV 02   710-017254   KB8459            Front Panel Display
```

```
PEM 0            Rev 02   740-017330   QCS07519029       PS 1.2-1.7kW; 100-240V
AC in
PEM 1            Rev 02   740-017330   QCS07519041       PS 1.2-1.7kW; 100-240V
AC in
PEM 2            Rev 02   740-017330   QCS07519097       PS 1.2-1.7kW; 100-240V
AC in
Routing Engine 0 REV 07   740-013063   1000733381        RE-S-2000
Routing Engine 1 REV 07   740-013063   1000733540        RE-S-2000
CB 0             REV 07   710-013385   KA8022            Enhanced MX SCB
CB 1             REV 07   710-013385   KA8303            Enhanced MX SCB
FPC 0            REV 09   750-020452   KA8660            DPCE 40x 1GE X EQ
  CPU            REV 06   710-013713   KA8185            DPC PMB
  PIC 0                   BUILTIN      BUILTIN           10x 1GE(LAN) EQ
  PIC 1                   BUILTIN      BUILTIN           10x 1GE(LAN) EQ
  PIC 2                   BUILTIN      BUILTIN           10x 1GE(LAN) EQ
  PIC 3                   BUILTIN      BUILTIN           10x 1GE(LAN) EQ
Fan Tray                                                 Left Fan Tray
```

show chassis hardware (MX480 Routers with MPC5E and Built-In OTN PIC)

```
user@host> show chassis hardware
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
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   AHN0WR5           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   ANA0ND0           SFP+-10G-SR
    Xcvr 1       REV 01   740-021308   ANA0NGF           SFP+-10G-SR
    Xcvr 2       REV 01   740-021308   ANA0NG9           SFP+-10G-SR
    Xcvr 3       REV 01   740-021308   ANA0MP9           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
```


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```
    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 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 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   AHN0WR5            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   ANA0ND0            SFP+-10G-SR
    Xcvr 1       REV 01   740-021308   ANA0NGF            SFP+-10G-SR
    Xcvr 2       REV 01   740-021308   ANA0NG9            SFP+-10G-SR
    Xcvr 3       REV 01   740-021308   ANA0MP9            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
```


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```
    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 ff
```

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```
  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 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 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 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 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
```


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```
  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 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 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  UGB94ARF32HOS3-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  UGB94ARF32HOS3-KC    UNIGEN-499551-000273 Disk 1
```

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...

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
```


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```
    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
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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   PDS0MRY          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   AHN0X1Z          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   PDS0MPZ          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
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    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
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show chassis hardware models (MX960 Router with Enhanced MX SCB)

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user@host> show chassis hardware models
Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
Midplane         REV 03   710-013698   TR0183            CHAS-BP-MX960-S
Fan Extender     REV 02   710-018051   JY5227            ECM-MX960
FPM Board        REV 03   710-014974   JZ6876            CRAFT-MX960-S
Routing Engine 0 REV 06   740-013063   1000687969        RE-S-2000-4096-S
Routing Engine 1 REV 06   740-013063   1000687955        RE-S-2000-4096-S
CB 0             REV 11   750-031391   YZ6072            SCBE-MX-S
CB 1             REV 11   750-031391   YZ6068            SCBE-MX-S
CB 2             REV 11   750-031391   YZ6081            SCBE-MX-S
FPC 0            REV 01   750-018122   KA5576            DPCE-R-40GE-SFP
FPC 1            REV 16   750-031089   YL0719            MX-MPC2-3D
  MIC 0          REV 07   750-028387   JR6500            MIC-3D-4XGE-XFP
  MIC 1          REV 24   750-028387   YJ3950            MIC-3D-4XGE-XFP
FPC 2            REV 08   710-014219   JY9654            DPC-R-4XGE-XFP
FPC 3            REV 10   750-024199   XJ6692            MX-FPC3
  PIC 0          REV 17   750-009553   RJ2945            PC-4OC48-SON-SFP
  PIC 1          REV 32   750-003700   DP2113            PC-1OC192-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-4OC3-1OC12-SON2-SFP
  PIC 1          REV 08   750-014637   DM3671            PB-4OC3-4OC12-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
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show chassis hardware (MX960 Router with MPC5EQ)

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user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                               JN1214852AFA      MX960
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
Routing Engine 1 REV 08   740-031116   9009124913        RE-S-1800x4
CB 0             REV 18   750-031391   CABF0579          Enhanced MX SCB
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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   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 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   AQG0M1E           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   AQG0LYC           SFP+-10G-SR
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    Xcvr 1       REV 01   740-021308   AQG0LYB          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   AQG0MXE          SFP+-10G-SR
    Xcvr 1       REV 01   740-021308   AQG0LVY          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   AQG0LW1          SFP+-10G-SR
    Xcvr 1       REV 01   740-021308   AQG0LW3          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   AQG0MS6          SFP+-10G-SR
    Xcvr 1       REV 01   740-021308   AQG0MRX          SFP+-10G-SR
    Xcvr 2       REV 01   740-021308   AQG0M6Y          SFP+-10G-SR
    Xcvr 3       REV 01   740-021308   AQG0LZM          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         RMPC 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         RMPC 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
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    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 detail (MX960 Router)

```
user@host> show chassis hardware detail
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                                  MX960
Midplane         REV 01   710-013698   AA6082            MX960 Midplane
PIM              Rev 01   740-013110   000008            Power Inlet Module
PEM 2
PEM 3            Rev 01   740-013682   000038            PS 1.7kW; 200-240VAC in
Routing Engine 0 REV 00   740-015113   1000617944        RE-S-1300
  ad0     245 MB  SanDisk SDCFB-256    111419E1805T1141  Compact Flash
  ad2   38154 MB  FUJITSU MHT2040BH    NR0WT5925N77      Hard Disk
CB 0             REV 05   710-013725   JK6947            MX960 Test SCB
FPC 4            REV 01   710-013305   JM7617            MX960 Test DPC
  CPU
  PIC 0                   BUILTIN      BUILTIN           1x 10GE(LAN/WAN)
  PIC 1                   BUILTIN      BUILTIN           10x 1GE
FPC 7            REV 01   710-013305   JL9634            MX960 Test DPC
  CPU
  PIC 0                   BUILTIN      BUILTIN           1x 10GE(LAN/WAN)
    Xcvr 0                NON-JNPR     MYBG65I82C        XFP-10G-SR
```


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```
  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 detail (MX960 Router with MPC5EQ)

```
user@host> show chassis hardware detail
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                               JN1214852AFA      MX960
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
  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          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   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
```

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```
      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        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         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   AQG0M1E          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   AQG0LYC          SFP+-10G-SR
    Xcvr 1        REV 01   740-021308   AQG0LYB          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   AQG0MXE          SFP+-10G-SR
    Xcvr 1        REV 01   740-021308   AQG0LVY          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   AQG0LW1          SFP+-10G-SR
    Xcvr 1        REV 01   740-021308   AQG0LW3          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   AQG0MS6          SFP+-10G-SR
    Xcvr 1        REV 01   740-021308   AQG0MRX          SFP+-10G-SR
    Xcvr 2        REV 01   740-021308   AQG0M6Y          SFP+-10G-SR
```


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```
    Xcvr 3       REV 01   740-021308   AQG0LZM          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         RMPC 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         RMPC 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
```

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```
    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                                JN1214852AFA      MX960
 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
  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
```


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```
 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 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 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
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
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 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
```

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  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 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 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:
```


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```
  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 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
 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
```

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```
 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 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 ff
  Address 0x40: 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
```


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```
  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
   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   AQG0MRQ            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
  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 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
```


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```
  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 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 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 ff
   Address 0x40: ff ff ff ff 01 00 00 00 00 00 00 00 00 00 00 4d
   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 ff
   Address 0x70: ff 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 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 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           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 00
  I2C Hex Data:
   Address 0x00: 00 00 00 00 02 fe 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
```

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```
  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 00
 I2C Hex Data:
  Address 0x00: 00 00 00 00 02 fe 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 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
    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
```


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```
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                     CRAFT-MX960-S
PEM 0            Rev 10   740-027760                     PWR-MX960-4100-AC-S
PEM 1            Rev 04   740-027760                     PWR-MX960-4100-AC-S
PEM 2            Rev 09   740-027760                     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                     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
```

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```
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   UTH0H0W           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   COUIBBNBAC        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
```


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```
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
```

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```
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   IPUPAK0KAB        PSM-SFF-PTX-AC-S
PSM 3            REV 06   740-044981   IPUPAK0KAB        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
```


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```
SFB 5            REV 07   711-032385   ZZ2579          Switch Fabric Board
SFB 6            REV 07   711-032385   CAAB4882        Switch Fabric Board
SFB 7            REV 07   711-032385   CAAB4898        Switch Fabric Board
FPC 0            REV 33   750-028467   CAAB1919        MPC 3D 16x 10GE
  CPU            REV 11   711-029089   CAAB7174        AMPC PMB
  PIC 0                   BUILTIN      BUILTIN         4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-021308   AMH02RE         SFP+-10G-SR
    Xcvr 1       REV 01   740-021308   AMH038C         SFP+-10G-SR
    Xcvr 2       REV 01   740-021308   AMH0390         SFP+-10G-SR
    Xcvr 3       REV 01   740-021308   AMG0SUA         SFP+-10G-SR
  PIC 1                   BUILTIN      BUILTIN         4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-021308   AMH0579         SFP+-10G-SR
    Xcvr 1       REV 01   740-021308   AMG0SGP         SFP+-10G-SR
    Xcvr 2       REV 01   740-021308   AMH04SV         SFP+-10G-SR
    Xcvr 3       REV 01   740-021308   AMH04X3         SFP+-10G-SR
  PIC 2                   BUILTIN      BUILTIN         4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-021308   AMH0135         SFP+-10G-SR
    Xcvr 1       REV 01   740-021308   AMH02NC         SFP+-10G-SR
    Xcvr 2       REV 01   740-021308   AMH02XB         SFP+-10G-SR
    Xcvr 3       REV 01   740-021308   AMH02PN         SFP+-10G-SR
  PIC 3                   BUILTIN      BUILTIN         4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-021308   AMH057Y         SFP+-10G-SR
    Xcvr 1       REV 01   740-021308   AMG0JHE         SFP+-10G-SR
    Xcvr 2       REV 01   740-021308   AMH02HT         SFP+-10G-SR
    Xcvr 3       REV 01   740-021308   AMH04V4         SFP+-10G-SR
FPC 1            REV 21   750-033205   ZG5027          MPC Type 3
  CPU            REV 04   711-035209   YT4780          HMPC PMB 2G
  MIC 0          REV 03   750-033307   ZV6299          10X10GE SFPP
    PIC 0                 BUILTIN      BUILTIN         10X10GE SFPP
      Xcvr 0     REV 01   740-031980   083363A00410    SFP+-10G-SR
      Xcvr 1     REV 01   740-031980   083363A00334    SFP+-10G-SR
      Xcvr 2     REV 01   740-031980   113363A00125    SFP+-10G-SR
      Xcvr 3     REV 01   740-031980   083363A00953    SFP+-10G-SR
      Xcvr 4     REV 01   740-031980   AHR013D         SFP+-10G-SR
      Xcvr 5     REV 01   740-031980   AJ40JUR         SFP+-10G-SR
      Xcvr 6     REV 01   740-031980   AJ40JKL         SFP+-10G-SR
      Xcvr 7     REV 01   740-031980   AJ30ECK         SFP+-10G-SR
      Xcvr 8     REV 01   740-021308   19T511100864    SFP+-10G-SR
      Xcvr 9     REV 01   740-021308   19T511100868    SFP+-10G-SR
  MIC 1          REV 03   750-033307   ZV6268          10X10GE SFPP
    PIC 2                 BUILTIN      BUILTIN         10X10GE SFPP
      Xcvr 0     REV 01   740-031980   AJC0JML         SFP+-10G-SR
      Xcvr 1     REV 01   740-031980   AJ403PC         SFP+-10G-SR
      Xcvr 2     REV 01   740-031980   AJ10N25         SFP+-10G-SR
      Xcvr 3     REV 01   740-031980   AJ40JF4         SFP+-10G-SR
      Xcvr 4     REV 01   740-031980   AJ40JSJ         SFP+-10G-SR
      Xcvr 5     REV 01   740-031980   AJ403V7         SFP+-10G-SR
      Xcvr 6     REV 01   740-031980   AJ40JN3         SFP+-10G-SR
      Xcvr 7     REV 01   740-031980   AJ40JSU         SFP+-10G-SR
      Xcvr 8     REV 01   740-021308   19T511100468    SFP+-10G-SR
      Xcvr 9     REV 01   740-021308   19T511101363    SFP+-10G-SR
FPC 8            REV 22   750-031089   ZT9746          MPC Type 2 3D
  CPU            REV 06   711-030884   ZS1271          MPC PMB 2G
  MIC 0          REV 26   750-028392   ABBS1150        3D 20x 1GE(LAN) SFP
    PIC 0                 BUILTIN      BUILTIN         10x 1GE(LAN) SFP
      Xcvr 0     REV 01   740-031851   PLG023C         SFP-SX
      Xcvr 1     REV 01   740-031851   PLG09C6         SFP-SX
      Xcvr 2     REV 02   740-011613   AM0950SF9L7     SFP-SX
      Xcvr 3     REV 02   740-011613   AM1001SFN1H     SFP-SX
      Xcvr 4     REV 02   740-011613   AM1001SFM9D     SFP-SX
      Xcvr 5     REV 02   740-011613   AM1001SFLTJ     SFP-SX
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    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   ALP0TR1           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
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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
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PSM 2            REV 01   740-045050   1E022240010       DC 52V Power Supply
Module
PSM 3            REV 01   740-045050   1E02224000G       DC 52V Power Supply
Module
PSM 4            REV 01   740-045050   1E022240013       DC 52V Power Supply
Module
PSM 5            REV 01   740-045050   1E022240007       DC 52V Power Supply
Module
PSM 6            REV 01   740-045050   1E02224001C       DC 52V Power Supply
Module
PSM 7            REV 01   740-045050   1E02224001D       DC 52V Power Supply
Module
PSM 8            REV 01   740-045050   1E02224001B       DC 52V Power Supply
Module
PDM 0            REV 01   740-045234   1E262250067       DC Power Dist Module
Routing Engine 0 REV 02   740-041821   9009099704        RE-S-1800x4
  ad0     3831 MB  UGB30SFA4000T1       SFA4000T1 00000651 Compact Flash
  ad1   30533 MB  UGB94BPH32H0S1-KCI   11000019592       Disk 1
  usb0 (addr 1)  EHCI root hub 0       Intel             uhub0
  usb0 (addr 2)  product 0x0020 32     vendor 0x8087     uhub1
  DIMM 0         SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 1         SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 2         SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 3         SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
Routing Engine 1 REV 02   740-041821   9009099706        RE-S-1800x4
  ad0     3998 MB  Virtium - TuffDrive VCF P1T0200262860208 114 Compact Flash
  ad1   30533 MB  UGB94ARF32H0S3-KC    UNIGEN-499551-000404 Disk 1
CB 0             REV 13   750-040257   CAAF8436          Control Board
CB 1             REV 13   750-040257   CAAF8434          Control Board
SPMB 0           REV 02   711-041855   ABBV3825          PMB Board
SPMB 1           REV 02   711-041855   ABBV3833          PMB Board
SFB 0            REV 05   711-044466   ABBX5682          Switch Fabric Board
SFB 1            REV 05   711-044466   ABBX5676          Switch Fabric Board
SFB 2            REV 05   711-044466   ABBX5665          Switch Fabric Board
SFB 3            REV 05   711-044466   ABBX5699          Switch Fabric Board
SFB 4            REV 05   711-044466   ABBX5603          Switch Fabric Board
SFB 5            REV 05   711-044466   ABBX5587          Switch Fabric Board
SFB 6            REV 05   711-044466   ABBX5607          Switch Fabric Board
SFB 7            REV 05   711-044466   ABBX5669          Switch Fabric Board
FPC 0            REV 09   750-037355   CAAF0924          MPC Type 4-2
  CPU            REV 08   711-035209   CAAB9842          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
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    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
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    Xcvr 3       REV 01   740-021308   973152A00012      SFP+-10G-SR
FPC 4            REV 21   750-033205   ZG5028            MPC Type 3
  CPU            REV 05   711-035209   YX3911            HMPC PMB 2G
  MIC 0          REV 03   750-036233   ZL2036            2X40GE QSFP
    PIC 0                 BUILTIN      BUILTIN           2X40GE QSFP
      Xcvr 0     REV 01   740-032986   QB220708          QSFP+-40G-SR4
      Xcvr 1     REV 01   740-032986   QB220735          QSFP+-40G-SR4
  MIC 1          REV 03   750-036233   ZL2028            2X40GE QSFP
    PIC 2                 BUILTIN      BUILTIN           2X40GE QSFP
      Xcvr 0     REV 01   740-032986   QB220727          QSFP+-40G-SR4
      Xcvr 1     REV 01   740-032986   QB220715          QSFP+-40G-SR4
FPC 5            REV 11   750-037358   CAAE2196          MPC Type 4-1
  CPU            REV 08   711-035209   CAAD9074          HMPC PMB 2G
  PIC 0                   BUILTIN      BUILTIN           8X10GE SFPP
    Xcvr 0       REV 01   740-031980   AMA062S           SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   AMA062P           SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   AMA052R           SFP+-10G-SR
    Xcvr 3       REV 01   740-031980   AMA0632           SFP+-10G-SR
    Xcvr 4       REV 01   740-031980   193363A00564      SFP+-10G-SR
    Xcvr 5       REV 01   740-031980   193363A00229      SFP+-10G-SR
    Xcvr 6       REV 01   740-031980   193363A00363      SFP+-10G-SR
    Xcvr 7       REV 01   740-031980   193363A00278      SFP+-10G-SR
  PIC 1                   BUILTIN      BUILTIN           8X10GE SFPP
    Xcvr 0       REV 01   740-031980   AMA04CC           SFP+-10G-SR
    Xcvr 1       REV 01   740-021308   AD0927A001W       SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   AMA04N2           SFP+-10G-SR
    Xcvr 3       REV 01   740-031980   AMA062U           SFP+-10G-SR
    Xcvr 4       REV 01   740-031980   193363A00491      SFP+-10G-SR
    Xcvr 5       REV 01   740-031980   183363A01511      SFP+-10G-SR
    Xcvr 6       REV 01   740-031980   193363A00565      SFP+-10G-SR
    Xcvr 7       REV 01   740-031980   193363A00405      SFP+-10G-SR
  PIC 2                   BUILTIN      BUILTIN           8X10GE SFPP
    Xcvr 0       REV 01   740-031980   AMA07QX           SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   AMA06MS           SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   193363A00318      SFP+-10G-SR
    Xcvr 3       REV 01   740-031980   193363A00402      SFP+-10G-SR
    Xcvr 4       REV 01   740-031980   193363A00174      SFP+-10G-SR
    Xcvr 5       REV 01   740-031980   193363A00388      SFP+-10G-SR
    Xcvr 6       REV 01   740-031980   193363A00377      SFP+-10G-SR
    Xcvr 7       REV 01   740-031980   193363A00234      SFP+-10G-SR
  PIC 3                   BUILTIN      BUILTIN           8X10GE SFPP
    Xcvr 0       REV 01   740-031980   AMA062T           SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   193363A00550      SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   193363A00364      SFP+-10G-SR
Xcvr 3       REV 01   740-031980   AMA0630           SFP+-10G-SR
    Xcvr 4       REV 01   740-031980   193363A00509      SFP+-10G-SR
    Xcvr 5       REV 01   740-031980   193363A00459      SFP+-10G-SR
    Xcvr 6       REV 01   740-031980   113363A00191      SFP+-10G-SR
    Xcvr 7       REV 01   740-031980   193363A00352      SFP+-10G-SR
FPC 6            REV 33   750-028467   CAAF5552          MPC 3D 16x 10GE
  CPU            REV 11   711-029089   CAAH7601          AMPC PMB
  PIC 0                   BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-021308   AD0927A0036       SFP+-10G-SR
    Xcvr 1       REV 01   740-021308   AD0927A003M       SFP+-10G-SR
    Xcvr 2       REV 01   740-021308   AD0927A003G       SFP+-10G-SR
    Xcvr 3       REV 01   740-021308   AD0927A0031       SFP+-10G-SR
  PIC 1                   BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-031980   193363A00331      SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   193363A00325      SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   193363A00417      SFP+-10G-SR
    Xcvr 3       REV 01   740-031980   183363A02509      SFP+-10G-SR
```

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```
  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
```


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```
    Xcvr 0       REV 01   740-031980   193363A00525      SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   193363A00504      SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   193363A00368      SFP+-10G-SR
    Xcvr 3       REV 01   740-031980   AJ40JSS           SFP+-10G-SR
  PIC 1                   BUILTIN      BUILTIN           1X100GE CFP
  PIC 2                   BUILTIN      BUILTIN           4x10GE SFPP
    Xcvr 0       REV 01   740-031980   123363A00042      SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   B10M00023         SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   AJ802EM           SFP+-10G-SR
    Xcvr 3       REV 01   740-031980   B11E02348         SFP+-10G-SR
  PIC 3                   BUILTIN      BUILTIN           1X100GE CFP
ADC 0            REV 13   750-043596   ABBX5532          Adapter Card
ADC 1            REV 13   750-043596   ABBX5550          Adapter Card
ADC 2            REV 13   750-043596   ABBX5571          Adapter Card
ADC 3            REV 13   750-043596   ABBX5568          Adapter Card
ADC 4            REV 13   750-043596   ABBX5556          Adapter Card
ADC 5            REV 13   750-043596   ABBX5553          Adapter Card
ADC 6            REV 13   750-043596   ABBX5541          Adapter Card
ADC 7            REV 13   750-043596   ABBX5578          Adapter Card
ADC 8            REV 13   750-043596   ABBX5560          Adapter Card
ADC 9            REV 07   750-043596   ABBV7188          Adapter Card
Fan Tray 0       REV 03   760-046960   ACAY0127          172mm FanTray - 6 Fans
Fan Tray 1       REV 2A   760-046960   ACAY0068          172mm FanTray - 6 Fans
Fan Tray 2       REV 2A   760-046960   ACAY0072          172mm FanTray - 6 Fans
Fan Tray 3       REV 2A   760-046960   ACAY0070          172mm FanTray - 6 Fans
```

show chassis hardware extensive (MX2010 Router)

```
user@host > show chassis hardware extensive
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN11E233DAFK      MX2010
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
                                 S/N:               JN11E233DAFK
 Assembly ID:  0x0557            Assembly Version:  00.00
 Date:         00-00-0000        Assembly Flags:    0x00
 ID: MX2010
 Board Information Record:
  Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 05 57 00 00 00 00 00 00 00 00 00 00
  Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x20: 4a 4e 31 31 45 32 33 33 44 41 46 4b 00 00 00 00
  Address 0x30: 00 00 00 ff 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane          REV 26   750-044636   ABAB9357          Lower Backplane
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-044636        S/N:               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:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 01 ff 04 5d 01 04 52 45 56 20 30 34 00 00
  Address 0x10: 00 00 00 00 37 31 31 2d 30 33 32 34 32 36 00 00
  Address 0x20: 53 2f 4e 20 41 43 41 4a 31 36 37 37 00 14 07 07
  Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff ff
  Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
FPM Board        REV 08   760-044634   ABBV9726          Front Panel Display
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          760-044634        S/N:               ABBV9726
 Assembly ID:  0x0b64            Assembly Version:  01.08
 Date:         09-10-2012        Assembly Flags:    0x00
 Version:      REV 08            CLEI Code:         IPMYA4EJRA
 ID: Front Panel Display         FRU Model Number:  MX2010-CRAFT-S
 Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 0b 64 01 08 52 45 56 20 30 38 00 00
  Address 0x10: 00 00 00 00 37 36 30 2d 30 34 34 36 33 34 00 00
  Address 0x20: 53 2f 4e 20 41 42 42 56 39 37 32 36 00 0a 09 07
  Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff 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
```


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```
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-045050        S/N:               1E02224000P
 Assembly ID:  0x0478            Assembly Version:  01.01
 Date:         12-06-2012        Assembly Flags:    0x00
 Version:      REV 01            CLEI Code:         XXXXXXXXXX
 ID: DC 52V Power Supply Module  FRU Model Number:  MX2000-PSM-HC-DC-S-A
 Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 34 35 30 35 30 00 00
  Address 0x20: 31 45 30 32 32 32 34 30 30 30 50 00 00 06 0c 07
  Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 58 58 58 58 58 58 58 58 58 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 48 43 2d 44 43 2d
  Address 0x60: 53 2d 41 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 4a 00 00 00 00 00 00 00 00 00 00 00 00
PSM 1            REV 01   740-045050   1E02224000M       DC 52V Power Supply
Module
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-045050        S/N:               1E02224000M
Assembly ID:  0x0478            Assembly Version:  01.01
 Date:         12-06-2012        Assembly Flags:    0x00
 Version:      REV 01            CLEI Code:         XXXXXXXXXX
 ID: DC 52V Power Supply Module  FRU Model Number:  MX2000-PSM-HC-DC-S-A
 Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 34 35 30 35 30 00 00
  Address 0x20: 31 45 30 32 32 32 34 30 30 30 4d 00 00 06 0c 07
  Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 58 58 58 58 58 58 58 58 58 4d
  Address 0x50: 58 32 30 30 30 2d 50 53 4d 2d 48 43 2d 44 43 2d
  Address 0x60: 53 2d 41 00 00 00 31 30 31 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 4a 00 00 00 00 00 00 00 00 00 00 00 00
...
PDM 0            REV 01   740-045234   1E262250067       DC Power Dist Module
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-045234        S/N:               1E262250067
 Assembly ID:  0x047b            Assembly Version:  01.01
 Date:         06-28-2012        Assembly Flags:    0x00
 Version:      REV 01            CLEI Code:         IPUPAJSKAA
 ID: DC Power Dist Module        FRU Model Number:  MX2000-PDM-DC-S-A
 Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 7b 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 34 35 32 33 34 00 00
  Address 0x20: 31 45 32 36 32 32 35 30 30 36 37 00 00 1c 06 07
  Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff 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
```

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```
 ID: RE-S-1800x4                 FRU Model Number:  RE-S-1800X4-16G-S
 Board Information Record:
  Address 0x00: 54 32 30 32 37 44 41 2d 34 34 47 42 23 41 23 00
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 09 c0 01 02 52 45 56 20 30 32 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 34 31 38 32 31 00 00
  Address 0x20: 39 30 30 39 30 39 39 37 30 34 00 00 00 0f 03 07
  Address 0x30: dc ff ff ff 54 32 30 32 37 44 41 2d 34 34 47 42
  Address 0x40: 23 41 23 00 01 00 00 00 00 00 00 00 00 00 00 52
  Address 0x50: 45 2d 53 2d 31 38 30 30 58 34 2d 31 36 47 2d 53
  Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 8c ff ff ff ff ff ff ff ff ff ff ff ff
  ad0    3831 MB  UGB30SFA4000T1       SFA4000T1 00000651 Compact Flash
  ad1   30533 MB  UGB94BPH32H0S1-KCI   11000019592       Disk 1
  usb0 (addr 1)  EHCI root hub 0       Intel             uhub0
  usb0 (addr 2)  product 0x0020 32     vendor 0x8087     uhub1
  DIMM 0         SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 1         SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 2         SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
  DIMM 3         SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
Routing Engine 1 REV 02   740-041821   9009099706        RE-S-1800x4
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-041821        S/N:               9009099706
 Assembly ID:  0x09c0            Assembly Version:  01.02
 Date:         02-23-2012        Assembly Flags:    0x00
 Version:      REV 02
 ID: RE-S-1800x4                 FRU Model Number:  RE-S-1800X4-16G-S
 Board Information Record:
  Address 0x00: 54 32 30 32 37 44 41 2d 34 34 47 42 23 41 23 00
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 09 c0 01 02 52 45 56 20 30 32 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 34 31 38 32 31 00 00
 Address 0x20: 39 30 30 39 30 39 39 37 30 36 00 00 00 17 02 07
  Address 0x30: dc ff ff ff 54 32 30 32 37 44 41 2d 34 34 47 42
  Address 0x40: 23 41 23 00 01 00 00 00 00 00 00 00 00 00 00 52
  Address 0x50: 45 2d 53 2d 31 38 30 30 58 34 2d 31 36 47 2d 53
  Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 8c ff ff ff ff ff ff ff ff ff ff ff ff
  ad0    3998 MB  Virtium - TuffDrive VCF P1T0200262860208 114 Compact Flash
  ad1   30533 MB  UGB94ARF32H0S3-KC    UNIGEN-499551-000404 Disk 1
CB 0            REV 13   750-040257   CAAF8436          Control Board
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-040257        S/N:               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
```


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```
 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
  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
```

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```
 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 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 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 ff
  Address 0x70: ff ff ff 3a 00 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           00000000000000000000
PSM 5            REV 0B   740-033727   VG00015           00000000000000000000
```


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```
PSM 6            REV 0B   740-033727   VH00097          00000000000000000000
PSM 7            REV 0C   740-033727   VJ00151          00000000000000000000
PSM 8            REV 0C   740-033727   VJ00149          00000000000000000000
PDM 0            REV 0B   740-038109   WA00008
PDM 1            REV 0B   740-038109   WA00014
Routing Engine 0 REV 02   740-041821   9009094134       RE-S-1800X4-16G-S
Routing Engine 1 REV 02   740-041821   9009094141       RE-S-1800X4-16G-S
CB 0             REV 08   750-040257   CAAB3491         750-040257
CB 1             REV 08   750-040257   CAAB3489         750-040257
SFB 0            REV 06   711-032385   ZV1828           711-032385
SFB 1            REV 07   711-032385   ZZ2568           711-032385
SFB 2            REV 07   711-032385   ZZ2563           711-032385
SFB 3            REV 07   711-032385   ZZ2564           711-032385
SFB 4            REV 07   711-032385   ZZ2580           711-032385
SFB 5            REV 07   711-032385   ZZ2579           711-0323856
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   ABBS1150         MIC-3D-20GE-SFP
  MIC 1          REV 26   750-028387   ABBR9582         MIC-3D-4XGE-XFP
FPC 9            REV 11   750-036284   ZL3591           MPCE-3D-16XGE-SFPP
ADC 0            REV 05   750-043596   CAAC2073         750-043596
ADC 1            REV 01   750-043596   ZV4117           750-043596
ADC 8            REV 01   750-043596   ZV4107           750-043596
ADC 9            REV 02   750-043596   ZW1555           750-043596
Fan Tray 0       REV 2A   760-046960   ACAY0015
Fan Tray 1       REV 2A   760-046960   ACAY0019
Fan Tray 2       REV 2A   760-046960   ACAY0020
Fan Tray 3       REV 2A   760-046960   ACAY0021
```

show chassis hardware clei-models (MX2010 Routers)

```
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       00000000000000000000
PSM 5            REV 0B   740-033727   0000000000       00000000000000000000
PSM 6            REV 0B   740-033727   0000000000       00000000000000000000
PSM 7            REV 0C   740-033727   0000000000       00000000000000000000
PSM 8            REV 0C   740-033727   0000000000       00000000000000000000
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                                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
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            REV 59   750-044130   ABCT7676          MPC6E 3D
  CPU            REV 10   711-045719   ABCK8527          RMPC PMB
```


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```
  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            HMPC 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          RMPC 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          RMPC 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          RMPC 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           AMPC 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   ALM0A6D           SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   AQF0RB3           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   AQF0H44           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
```

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```
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          RMPC PMB
  XLM 0          REV 13   711-046638   ABCT7810          MPC6E XL
  XLM 1          REV 13   711-046638   ABCT7811          MPC6E XL
```


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```
FPC 2            REV 27   750-033205   ZL6014           MPCE Type 3 3D
  CPU            REV 07   711-035209   ZK9068           HMPC 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         RMPC 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         RMPC 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         RMPC 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           AMPC 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   ALM0A6D          SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   AQF0RB3          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   AQF0H44          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
```

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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                                JN11C9AFEAFK      MX2010
 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
```


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```
 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 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 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 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   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
```

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```
 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 4a 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 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 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 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 3            REV 01   740-050037   1EDB32101JW       DC 52V Power Supply
Module
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 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 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 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 ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 78 01 01 52 45 56 20 30 31 00 00
```


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```
  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 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 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 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
```

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```
  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
  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 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 ff
..
```

show chassis hardware (MX2020 Router)

```
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
```


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```
FPM Board         REV 06   760-040242   ABBT8837          Front Panel Display
PSM 0             REV 01   740-045050   1E022240056       DC 52V Power Supply
Module
PSM 1             REV 01   740-045050   1E022240054       DC 52V Power Supply
Module
PSM 2             REV 01   740-045050   1E02224005H       DC 52V Power Supply
Module
PSM 3             REV 01   740-045050   1E022240053       DC 52V Power Supply
Module
PSM 4             REV 01   740-045050   1E02224004K       DC 52V Power Supply
Module
PSM 7             REV 01   740-045050   1E02224006W       DC 52V Power Supply
Module
PSM 8             REV 01   740-045050   1E022240062       DC 52V Power Supply
Module
PSM 9             REV 01   740-045050   1E02224005B       DC 52V Power Supply
Module
PSM 10            REV 01   740-045050   1E02224005A       DC 52V Power Supply
Module
PSM 11            REV 01   740-045050   1E022240052       DC 52V Power Supply
Module
PSM 12            REV 01   740-045050   1E022240051       DC 52V Power Supply
Module
PSM 13            REV 01   740-045050   1E022240058       DC 52V Power Supply
Module
PSM 14            REV 01   740-045050   1E02224004L       DC 52V Power Supply
Module
PSM 15            REV 01   740-045050   1E02224005M       DC 52V Power Supply
Module
PSM 16            REV 01   740-045050   1E02224006S       DC 52V Power Supply
Module
PSM 17            REV 01   740-045050   1E02224005Z       DC 52V Power Supply
Module
PDM 0             REV 01   740-045234   1E012150033       DC Power Dist Module
PDM 1             REV 01   740-045234   1E012150027       DC Power Dist Module
PDM 2             REV 01   740-045234   1E012150028       DC Power Dist Module
PDM 3             REV 01   740-045234   1E012150045       DC Power Dist Module
Routing Engine 0  REV 02   740-041821   9009089704        RE-S-1800x4
Routing Engine 1  REV 02   740-041821   9009094138        RE-S-1800x4
CB 0              REV 14   750-040257   CAAF8430          Control Board
CB 1              REV 08   750-040257   CAAB3482          Control Board
SPMB 0            REV 01   711-041855   ZS2290            PMB Board
SPMB 1            REV 02   711-041855   CAAA6141          PMB Board
SFB 0             REV 03   711-044466   ABBV6789          Switch Fabric Board
SFB 1             REV 05   711-044466   ABBX5666          Switch Fabric Board
SFB 2             REV 05   711-044466   ABBX5678          Switch Fabric Board
SFB 3             REV 05   711-044466   ABBX5687          Switch Fabric Board
SFB 4             REV 05   711-044466   ABBX5609          Switch Fabric Board
SFB 5             REV 05   711-044466   ABBX5675          Switch Fabric Board
SFB 6             REV 03   711-044466   ABBV6805          Switch Fabric Board
SFB 7             REV 05   711-044466   ABBX5701          Switch Fabric Board
FPC 0             REV 30   750-028467   ABBN0284          MPC 3D 16x 10GE
  CPU             REV 10   711-029089   ABBN0507          AMPC PMB
  PIC 0                    BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
    Xcvr 0        REV 01   740-030658   B11E00990         SFP+-10G-USR
    Xcvr 1        REV 01   740-030658   B11E04357         SFP+-10G-USR
    Xcvr 2        REV 01   740-030658   B11F01327         SFP+-10G-USR
    Xcvr 3        REV 01   740-030658   B11E04375         SFP+-10G-USR
  PIC 1                    BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
    Xcvr 0        REV 01   740-030658   B11E02760         SFP+-10G-USR
    Xcvr 1        REV 01   740-030658   B11E02904         SFP+-10G-USR
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    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
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    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
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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
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  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
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  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
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  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
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  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
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    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
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show chassis hardware detail (MX2020 Router)

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user@host> show chassis hardware detail
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   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
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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
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    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
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    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
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    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
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    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
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    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   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 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
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  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+
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    Xcvr 0       REV 01   740-031980   163363A02736      SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   163363A02568      SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   163363A02747      SFP+-10G-SR
    Xcvr 3       REV 01   740-031980   163363A02579      SFP+-10G-SR
FPC 18           REV 30   750-028467   ABBN0281          MPC 3D 16x 10GE
  CPU            REV 10   711-029089   ABBN0526          AMPC PMB
PIC 0                  BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-030658   B11F01326         SFP+-10G-USR
    Xcvr 1       REV 01   740-030658   B11E03973         SFP+-10G-USR
    Xcvr 2       REV 01   740-030658   B11E00950         SFP+-10G-USR
    Xcvr 3       REV 01   740-030658   B11E00674         SFP+-10G-USR
  PIC 1                   BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-030658   B11E00775         SFP+-10G-USR
    Xcvr 1       REV 01   740-030658   B11E04461         SFP+-10G-USR
    Xcvr 2       REV 01   740-030658   B11E01074         SFP+-10G-USR
    Xcvr 3       REV 01   740-030658   B11E02821         SFP+-10G-USR
  PIC 2                   BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-030658   B11E04501         SFP+-10G-USR
    Xcvr 1       REV 01   740-030658   B11E00757         SFP+-10G-USR
    Xcvr 2       REV 01   740-030658   B11F01623         SFP+-10G-USR
    Xcvr 3       REV 01   740-030658   B11E01022         SFP+-10G-USR
  PIC 3                   BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-030658   B11E04359         SFP+-10G-USR
    Xcvr 1       REV 01   740-030658   B11E02751         SFP+-10G-USR
    Xcvr 2       REV 01   740-030658   B11E02736         SFP+-10G-USR
    Xcvr 3       REV 01   740-030658   B11E01178         SFP+-10G-USR
FPC 19           REV 32   750-028467   ABBN6813          MPC 3D 16x 10GE
  CPU            REV 10   711-029089   ABBK6542          AMPC PMB
  PIC 0                   BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-031980   AK80NA3           SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   AK80NLF           SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   AK80MRH           SFP+-10G-SR
    Xcvr 3       REV 01   740-031980   AK80KE4           SFP+-10G-SR
  PIC 1                   BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-021308   973152A00030      SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   AK80L9H           SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   AK80ME8           SFP+-10G-SR
    Xcvr 3       REV 01   740-031980   AK80NLR           SFP+-10G-SR
  PIC 2                   BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-031980   AK80NG1           SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   AK80MCA           SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   AK80LFC           SFP+-10G-SR
    Xcvr 3       REV 01   740-031980   AK80LEM           SFP+-10G-SR
  PIC 3                   BUILTIN      BUILTIN           4x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-031980   AK80N9X           SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   AK80LAC           SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   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
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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
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show chassis hardware models (MX2020 Router)

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user@host > show chassis hardware models
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
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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
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show chassis hardware clei-models (MX2020 Router)

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user@ host > show chassis hardware clei-models
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 27   750-040240   PROTOXCLEI        750-040240
FPM Board        REV 06   760-040242   PROTOXCLEI        760-040242
PSM 0            REV 01   740-045050   IPUPAJMKAA        MX2000-PSM-HC-DC-S-A
PSM 1            REV 01   740-045050   IPUPAJMKAA        MX2000-PSM-HC-DC-S-A
PSM 2            REV 01   740-045050   IPUPAJMKAA        MX2000-PSM-HC-DC-S-A
PSM 3            REV 01   740-045050   IPUPAJMKAA        MX2000-PSM-HC-DC-S-A
PSM 4            REV 01   740-045050   IPUPAJMKAA        MX2000-PSM-HC-DC-S-A
PSM 5            REV 01   740-045050   IPUPAJMKAA        MX2000-PSM-HC-DC-S-A
PSM 6            REV 01   740-045050   IPUPAJMKAA        MX2000-PSM-HC-DC-S-A
PSM 7            REV 01   740-045050   IPUPAJMKAA        MX2000-PSM-HC-DC-S-A
PSM 8            REV 01   740-045050   IPUPAJMKAA        MX2000-PSM-HC-DC-S-A
PSM 9            REV 03   740-045050   IPUPAJMKAA        MX2000-PSM-DC-S-A
PSM 10           REV 03   740-045050   IPUPAJMKAA        MX2000-PSM-DC-S-A
PSM 11           REV 03   740-045050   IPUPAJMKAA        MX2000-PSM-DC-S-A
PSM 12           REV 03   740-045050   IPUPAJMKAA        MX2000-PSM-DC-S-A
PSM 13           REV 03   740-045050   IPUPAJMKAA        MX2000-PSM-DC-S-A
PSM 15           REV 03   740-045050   IPUPAJMKAA        MX2000-PSM-DC-S-A
PDM 0            REV 01   740-045234
PDM 1            REV 01   740-045234
PDM 2            REV 01   740-045234   IPUPAJSKAA        MX2000-PDM-DC-S-A
Routing Engine 0 REV 02   740-041821                     RE-S-1800X4-16G-S
Routing Engine 1 REV 02   740-041821                     RE-S-1800X4-16G-S
CB 0             REV 08   750-040257   PROTOXCLEI        750-040257
CB 1             REV 04   750-040257   PROTOXCLEI        750-040257
SFB 0            REV 05   711-044466   IPUCBA6CAA        MX2000-SFB-S
SFB 1            REV 05   711-044466   IPUCBA6CAA        MX2000-SFB-S
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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)

```
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
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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
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          RMPC 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
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 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          HMPC 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   AMC0LVV           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          HMPC 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
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  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         RMPC 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   AQG0MN1          SFP+-10G-SR
      Xcvr 5    REV 01  740-021308   AQE1L9M          SFP+-10G-SR
      Xcvr 6    REV 01  740-021308   AQG0MPD          SFP+-10G-SR
      Xcvr 7    REV 01  740-021308   AQE1Y2B          SFP+-10G-SR
      Xcvr 8    REV 01  740-021308   AQG0LT5          SFP+-10G-SR
      Xcvr 9    REV 01  740-021308   AQD2ET4          SFP+-10G-SR
      Xcvr 10   REV 01  740-021308   AQG0MPC          SFP+-10G-SR
      Xcvr 11   REV 01  740-021308   AQG0M63          SFP+-10G-SR
      Xcvr 12   REV 01  740-021308   AQG0LT1          SFP+-10G-SR
      Xcvr 13   REV 01  740-021308   AQG0M4L          SFP+-10G-SR
      Xcvr 14   REV 01  740-021308   AQG0LS7          SFP+-10G-SR
      Xcvr 15   REV 01  740-021308   AQE1MQB          SFP+-10G-SR
      Xcvr 16   REV 01  740-021308   AQG0LZP          SFP+-10G-SR
      Xcvr 17   REV 01  740-021308   AQE1LU9          SFP+-10G-SR
      Xcvr 18   REV 01  740-021308   AQG0MRZ          SFP+-10G-SR
      Xcvr 19   REV 01  740-021308   AQE1MQ9          SFP+-10G-SR
      Xcvr 20   REV 01  740-021308   AQG0LRX          SFP+-10G-SR
      Xcvr 21   REV 01  740-021308   AQE1UWD          SFP+-10G-SR
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    Xcvr 22     REV 01   740-021308   AQG0LT4          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         RMPC 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   AQG0MRT          SFP+-10G-SR
    Xcvr 13     REV 01   740-031980   AMC0JTC          SFP+-10G-SR
    Xcvr 14     REV 01   740-021308   ANA0MQ0          SFP+-10G-SR
    Xcvr 15     REV 01   740-021308   AQ502GS          SFP+-10G-SR
    Xcvr 16     REV 01   740-021308   AQG0M0J          SFP+-10G-SR
    Xcvr 17     REV 01   740-021308   AQG0MUR          SFP+-10G-SR
    Xcvr 18     REV 01   740-021308   AQG0MRR          SFP+-10G-SR
    Xcvr 19     REV 01   740-021308   AQG0M0F          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         RMPC 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         QSFP+-40G-SR4
    Xcvr 1      REV 01   740-046565   QD130193         QSFP+-40G-SR4
    Xcvr 2      REV 01   740-046565   QD130196         QSFP+-40G-SR4
  PIC 3                  BUILTIN      BUILTIN          3X40GE QSFPP
    Xcvr 0      REV 01   740-046565   QD130191         QSFP+-40G-SR4
    Xcvr 1      REV 01   740-046565   QD130198         QSFP+-40G-SR4
    Xcvr 2      REV 01   740-046565   QD130192         QSFP+-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         RMPC 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
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    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         QSFP+-40G-SR4
    Xcvr 1       REV 01   740-046565   QD130245         QSFP+-40G-SR4
    Xcvr 2       REV 01   740-046565   QD130613         QSFP+-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>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
```

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```
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                                JN120BADBAFJ      MX2020
```


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```
  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         REV 51   750-040240   ABAB9243          Lower Backplane
  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 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 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 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 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 ff
```

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```
  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 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 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 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 ff
   Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff ff
   Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
   Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
   Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
FPM Board         REV 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:         IPMYAE5JRA
  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 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 ff
   Address 0x40: ff ff ff ff 01 49 50 55 50 41 4b 52 4b 41 41 4d
```


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```
  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 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 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 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 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 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   1EDB3130077       DC 52V Power Supply
```

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```
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 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 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   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 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 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
```


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```
 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
```


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```
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
```

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```
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
```


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```
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
```

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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 ff ff ff ff ff ff
  Address 0x70: ff ff ff f6 c0 03 e1 bc 00 00 00 00 00 00 00 00
    PIC 0                BUILTIN      BUILTIN          AS-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
```


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```
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
```

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```
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-OC192-SR
  MIC 1          REV 14   750-031967   ZM6103           MIC-3D-8OC3OC12-4OC48
    PIC 2                 BUILTIN      BUILTIN          MIC-3D-8OC3OC12-4OC48
      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   AHP0GPM          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
```


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```
    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
```

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```
    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     PFR0V6J          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            BUILTIN      BUILTIN
TFEB 0                    BUILTIN      BUILTIN
FPC 0                     BUILTIN      BUILTIN
FPC 1                     BUILTIN      BUILTIN
  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 (MX2008 Router)

```
user@host>show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN1259E1CAFL      MX2008
Midplane         REV 47   750-044636   ABAD1739          Lower Backplane
PMP              REV 01   711-051406   ACVD0738          Power Midplane
FPM Board        REV 02   760-068193   ABDG7408          Front Panel Display
PSM 1            REV 06   740-050037   1EDB61200R8       DC 52V Power Supply
Module
PSM 2            REV 06   740-050037   1EDB61200WA       DC 52V Power Supply
Module
PSM 3            REV 06   740-050037   1EDB61200NY       DC 52V Power Supply
Module
PSM 4            REV 06   740-050037   1EDB61200N2       DC 52V Power Supply
Module
PSM 5            REV 06   740-050037   1EDB61200RN       DC 52V Power Supply
Module
PSM 6            REV 06   740-050037   1EDB61200RF       DC 52V Power Supply
Module
PSM 7            REV 06   740-050037   1EDB61200R7       DC 52V Power Supply
Module
PDM 0            REV 01   740-060189   1EFF5250143       DC PDM Optimized
PDM 1            REV 01   740-060189   1EFF5250074       DC PDM Optimized
Routing Engine 0          BUILTIN      BUILTIN           RE-S-2X00x8
Routing Engine 1          BUILTIN      BUILTIN           RE-S-2X00x8
CB 0             REV 01   750-067373   ABDJ0047          Control Board
CB 1             REV 03   750-067373   ABDH3016          Control Board
SFB 0            REV 08   750-067371   ABDK7180          Switch Fabric Board
SFB 1            REV 08   750-067371   ABDK7024          Switch Fabric Board
SFB 2            REV 08   750-067371   ABDK7188          Switch Fabric Board
SFB 3            REV 08   750-067371   ABDK7143          Switch Fabric Board
```


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```
SFB 4            REV 08   750-067371   ABDK7030          Switch Fabric Board
SFB 5            REV 08   750-067371   ABDK7146          Switch Fabric Board
SFB 6            REV 08   750-067371   ABDK7203          Switch Fabric Board
SFB 7            REV 08   750-067371   ABDK7238          Switch Fabric Board
FPC 0            REV 36   750-044130   ABCS8607          MPC6E 3D
  CPU            REV 09   711-045719   ABCS8776          RMPC PMB
  MIC 0          REV 21   750-050008   ABCT5920          4X100GE CXP
    PIC 0                 BUILTIN      BUILTIN           4X100GE CXP
  XLM 0          REV 07.2.00 711-046638 ABCK3488         MPC6E XL
  XLM 1          REV 07.2.00 711-046638 ABCK5482         MPC6E XL
FPC 1            REV 22   750-063414   CAFJ3026          MPC9E 3D
  CPU            REV 16   750-057177   CAFF9332          SMPC PMB
FPC 7            REV 08   750-038492   ZX4080            MPCE Type 2 3D EQ
  CPU            REV 03   711-038484   ZX3665            MPCE PMB 2G
  MIC 0          REV 05   750-037128   ZR4031            1xCOC12/4xCOC3 CH-CE
    PIC 0                 BUILTIN      BUILTIN           1xCOC12/4xCOC3 CH-CE
  MIC 1          REV 23   750-032479   CADE8614          MIC-3D-8DS3-E3
    PIC 2                 BUILTIN      BUILTIN           MIC-3D-8DS3-E3
  QXM 0          REV 06   711-028408   ZW8299            MPC QXM
  QXM 1          REV 06   711-028408   ZY0609            MPC QXM
ADC 7            REV 17   750-043596   ABCA0990          Adapter Card
Fan Tray 0       REV 01   760-052467   ACAY6190          172mm FanTray - 6 Fans
Fan Tray 1       REV 01   760-052467   ACAY6414          172mm FanTray - 6 Fans
```

show chassis hardware detail (MX2008 Router)

```
user@host>show chassis hardware detail
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN1259E1CAFL      MX2008
Midplane         REV 47   750-044636   ABAD1739          Lower Backplane
PMP              REV 01   711-051406   ACVD0738          Power Midplane
FPM Board        REV 02   760-068193   ABDG7408          Front Panel Display
PSM 1            REV 06   740-050037   1EDB61200R8       DC 52V Power Supply
Module
PSM 2            REV 06   740-050037   1EDB61200WA       DC 52V Power Supply
Module
PSM 3            REV 06   740-050037   1EDB61200NY       DC 52V Power Supply
Module
PSM 4            REV 06   740-050037   1EDB61200N2       DC 52V Power Supply
Module
PSM 5            REV 06   740-050037   1EDB61200RN       DC 52V Power Supply
Module
PSM 6            REV 06   740-050037   1EDB61200RF       DC 52V Power Supply
Module
PSM 7            REV 06   740-050037   1EDB61200R7       DC 52V Power Supply
Module
PDM 0            REV 01   740-060189   1EFF5250143       DC PDM Optimized
PDM 1            REV 01   740-060189   1EFF5250074       DC PDM Optimized
Routing Engine 0          BUILTIN      BUILTIN           RE-S-2X00x8
  vtbd0 15361 MB                                        Virtio Block Disk
  vtbd1 15360 MB                                        Virtio Block Disk
  ada0    511 MB  QEMU HARDDISK        QM00002           Emulated IDE Disk
  usb0 (addr 1)  XHCI root HUB 0       0x8086            uhub0
Routing Engine 1          BUILTIN      BUILTIN           RE-S-2X00x8
  vtbd0 15361 MB                                        Virtio Block Disk
  vtbd1 15360 MB                                        Virtio Block Disk
  ada0    511 MB  QEMU HARDDISK        QM00002           Emulated IDE Disk
  usb0 (addr 1)  XHCI root HUB 0       0x8086            uhub0
CB 0             REV 01   750-067373   ABDJ0047          Control Board
CB 1             REV 03   750-067373   ABDH3016          Control Board
```

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```
SFB 0            REV 08   750-067371   ABDK7180          Switch Fabric Board
SFB 1            REV 08   750-067371   ABDK7024          Switch Fabric Board
SFB 2            REV 08   750-067371   ABDK7188          Switch Fabric Board
SFB 3            REV 08   750-067371   ABDK7143          Switch Fabric Board
SFB 4            REV 08   750-067371   ABDK7030          Switch Fabric Board
SFB 5            REV 08   750-067371   ABDK7146          Switch Fabric Board
SFB 6            REV 08   750-067371   ABDK7203          Switch Fabric Board
SFB 7            REV 08   750-067371   ABDK7238          Switch Fabric Board
FPC 0            REV 36   750-044130   ABCS8607          MPC6E 3D
  CPU            REV 09   711-045719   ABCS8776          RMPC PMB
  MIC 0          REV 21   750-050008   ABCT5920          4X100GE CXP
    PIC 0                 BUILTIN      BUILTIN           4X100GE CXP
  XLM 0          REV 07.2.00 711-046638 ABCK3488         MPC6E XL
  XLM 1          REV 07.2.00 711-046638 ABCK5482         MPC6E XL
FPC 1            REV 22   750-063414   CAFJ3026          MPC9E 3D
  CPU            REV 16   750-057177   CAFF9332          SMPC PMB
FPC 7            REV 08   750-038492   ZX4080            MPCE Type 2 3D EQ
  CPU            REV 03   711-038484   ZX3665            MPCE PMB 2G
  MIC 0          REV 05   750-037128   ZR4031            1xCOC12/4xCOC3 CH-CE
    PIC 0                 BUILTIN      BUILTIN           1xCOC12/4xCOC3 CH-CE
  MIC 1          REV 23   750-032479   CADE8614          MIC-3D-8DS3-E3
    PIC 2                 BUILTIN      BUILTIN           MIC-3D-8DS3-E3
  QXM 0          REV 06   711-028408   ZW8299            MPC QXM
  QXM 1          REV 06   711-028408   ZY0609            MPC QXM
ADC 7            REV 17   750-043596   ABCA0990          Adapter Card
Fan Tray 0       REV 01   760-052467   ACAY6190          172mm FanTray - 6 Fans
Fan Tray 1       REV 01   760-052467   ACAY6414          172mm FanTray - 6 Fans
```

show chassis hardware extensive (MX2008 Router)

```
user@host>show chassis hardware extensive
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN1259E1CAFL      MX2008
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
                                 S/N:               JN1259E1CAFL
 Assembly ID:  0x0557            Assembly Version:  00.00
 Date:         00-00-0000        Assembly Flags:    0x00
 ID: MX2008
 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 35 39 45 31 43 41 46 4c 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 47   750-044636   ABAD1739          Lower Backplane
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-044636        S/N:               ABAD1739
 Assembly ID:  0x0b66            Assembly Version:  01.47
 Date:         06-08-2016        Assembly Flags:    0x00
 Version:      REV 47            CLEI Code:         IPMU810ARB
 ID: Lower Backplane             FRU Model Number:  CHAS-BP-MX2010-S
 Board Information Record:
  Address 0x00: ad 01 08 00 f4 cc 55 3e 35 00 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 0b 66 01 2f 52 45 56 20 34 37 00 00
```


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```
  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 44 31 37 33 39 00 08 06 07
  Address 0x30: e0 ff ff ff ad 01 08 00 f4 cc 55 3e 35 00 ff ff
  Address 0x40: ff ff ff ff 01 49 50 4d 55 38 31 30 41 52 42 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 42 43 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 18 ff ff ff ff ff ff ff ff ff ff ff ff
PMP              REV 01   711-051406   ACVD0738          Power Midplane
 Jedec Code:   0x7fb0            EEPROM Version:    0x01
 P/N:          711-051406        S/N:               ACVD0738
 Assembly ID:  0x045d            Assembly Version:  01.01
 Date:         06-06-2016        Assembly Flags:    0x00
 Version:      REV 01
 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 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 31 31 2d 30 35 31 34 30 36 00 00
  Address 0x20: 53 2f 4e 20 41 43 56 44 30 37 33 38 00 06 06 07
  Address 0x30: e0 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 02   760-068193   ABDG7408          Front Panel Display
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          760-068193        S/N:               ABDG7408
 Assembly ID:  0x0cac            Assembly Version:  01.02
 Date:         06-06-2016        Assembly Flags:    0x00
 Version:      REV 02            CLEI Code:         PROTOXCLEI
 ID: Front Panel Display         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 fe 0c ac 01 02 52 45 56 20 30 32 00 00
  Address 0x10: 00 00 00 00 37 36 30 2d 30 36 38 31 39 33 00 00
  Address 0x20: 53 2f 4e 20 41 42 44 47 37 34 30 38 00 06 06 07
  Address 0x30: e0 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
PSM 1            REV 06   740-050037   1EDB61200R8       DC 52V Power Supply
Module
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-050037        S/N:               1EDB61200R8
 Assembly ID:  0x0478            Assembly Version:  01.06
 Date:         03-16-2016        Assembly Flags:    0x00
 Version:      REV 06            CLEI Code:         IPUPAPDKAA
 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 06 52 45 56 20 30 36 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 36 31 32 30 30 52 38 00 00 10 03 07
  Address 0x30: e0 72 75 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 50 44 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 36 ff ff ff ff ff ff ff
```

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```
  Address 0x70: ff ff ff 26 00 00 00 00 00 00 00 00 00 00 00 00
PSM 2            REV 06   740-050037   1EDB6120OWA       DC 52V Power Supply
Module
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-050037        S/N:               1EDB6120OWA
 Assembly ID:  0x0478            Assembly Version:  01.06
 Date:         03-16-2016        Assembly Flags:    0x00
 Version:      REV 06            CLEI Code:         IPUPAPDKAA
 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 06 52 45 56 20 30 36 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 36 31 32 30 30 57 41 00 00 10 03 07
  Address 0x30: e0 72 75 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 50 44 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 36 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 26 00 00 00 00 00 00 00 00 00 00 00 00
PSM 3            REV 06   740-050037   1EDB6120ONY       DC 52V Power Supply
Module
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-050037        S/N:               1EDB6120ONY
 Assembly ID:  0x0478            Assembly Version:  01.06
 Date:         03-16-2016        Assembly Flags:    0x00
 Version:      REV 06            CLEI Code:         IPUPAPDKAA
 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 06 52 45 56 20 30 36 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 36 31 32 30 30 4e 59 00 00 10 03 07
  Address 0x30: e0 72 75 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 50 44 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 36 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 26 00 00 00 00 00 00 00 00 00 00 00 00
PSM 4            REV 06   740-050037   1EDB6120ON2       DC 52V Power Supply
Module
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-050037        S/N:               1EDB6120ON2
 Assembly ID:  0x0478            Assembly Version:  01.06
 Date:         03-16-2016        Assembly Flags:    0x00
 Version:      REV 06            CLEI Code:         IPUPAPDKAA
 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 06 52 45 56 20 30 36 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 36 31 32 30 30 4e 32 00 00 10 03 07
  Address 0x30: e0 72 75 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 50 44 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 36 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 26 00 00 00 00 00 00 00 00 00 00 00 00
PSM 5            REV 06   740-050037   1EDB6120ORN       DC 52V Power Supply
Module
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
```


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```
 P/N:          740-050037        S/N:               1EDB61200RN
 Assembly ID:  0x0478            Assembly Version:  01.06
 Date:         03-16-2016        Assembly Flags:    0x00
 Version:      REV 06            CLEI Code:         IPUPAPDKAA
 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 06 52 45 56 20 30 36 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 36 31 32 30 30 52 4e 00 00 10 03 07
  Address 0x30: e0 72 75 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 50 44 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 36 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 26 00 00 00 00 00 00 00 00 00 00 00 00
PSM 6            REV 06   740-050037   1EDB61200RF       DC 52V Power Supply
Module
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-050037        S/N:               1EDB61200RF
 Assembly ID:  0x0478            Assembly Version:  01.06
 Date:         03-16-2016        Assembly Flags:    0x00
 Version:      REV 06            CLEI Code:         IPUPAPDKAA
 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 06 52 45 56 20 30 36 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 36 31 32 30 30 52 46 00 00 10 03 07
  Address 0x30: e0 72 75 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 50 44 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 36 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 26 00 00 00 00 00 00 00 00 00 00 00 00
PSM 7            REV 06   740-050037   1EDB61200R7       DC 52V Power Supply
Module
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-050037        S/N:               1EDB61200R7
 Assembly ID:  0x0478            Assembly Version:  01.06
 Date:         03-16-2016        Assembly Flags:    0x00
 Version:      REV 06            CLEI Code:         IPUPAPDKAA
 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 06 52 45 56 20 30 36 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 36 31 32 30 30 52 37 00 00 10 03 07
  Address 0x30: e0 72 75 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 50 44 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 36 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 26 00 00 00 00 00 00 00 00 00 00 00 00
PDM 0            REV 01   740-060189   1EFF5250143       DC PDM Optimized
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-060189        S/N:               1EFF5250143
 Assembly ID:  0x0495            Assembly Version:  01.01
 Date:         07-21-2015        Assembly Flags:    0x00
 Version:      REV 01            CLEI Code:         IPUPAN1KAA
 ID: DC PDM Optimized            FRU Model Number:  MX2K-PDM-OP-DC-S
```

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```
  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 95 01 01 52 45 56 20 30 31 00 00
   Address 0x10: 00 00 00 00 37 34 30 2d 30 36 30 31 38 39 00 00
   Address 0x20: 31 45 46 46 35 32 35 30 31 34 33 00 00 15 07 07
   Address 0x30: df 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 4e 31 4b 41 41 4d
   Address 0x50: 58 32 4b 2d 50 44 4d 2d 4f 50 2d 44 43 2d 53 00
   Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
   Address 0x70: ff ff ff 84 00 00 00 00 00 00 00 00 00 00 00 00
PDM 1            REV 01   740-060189   1EFF5250074       DC PDM Optimized
  Jedec Code:   0x7fb0            EEPROM Version:    0x02
  P/N:          740-060189        S/N:               1EFF5250074
  Assembly ID:  0x0495            Assembly Version:  01.01
  Date:         07-21-2015        Assembly Flags:    0x00
  Version:      REV 01            CLEI Code:         IPUPAN1KAA
  ID: DC PDM Optimized            FRU Model Number:  MX2K-PDM-OP-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 95 01 01 52 45 56 20 30 31 00 00
   Address 0x10: 00 00 00 00 37 34 30 2d 30 36 30 31 38 39 00 00
   Address 0x20: 31 45 46 46 35 32 35 30 30 37 34 00 00 15 07 07
   Address 0x30: df 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 4e 31 4b 41 41 4d
   Address 0x50: 58 32 4b 2d 50 44 4d 2d 4f 50 2d 44 43 2d 53 00
   Address 0x60: 00 00 00 00 00 00 31 30 31 ff ff ff ff ff ff ff
   Address 0x70: ff ff ff 84 00 00 00 00 00 00 00 00 00 00 00 00
Routing Engine 0          BUILTIN      BUILTIN           RE-S-2X00x8
  Jedec Code:   0x0000            EEPROM Version:    0x00
  P/N:          BUILTIN           S/N:               BUILTIN
  Assembly ID:  0x0c10            Assembly Version:  00.00
  Date:         00-00-0000        Assembly Flags:    0x00
  ID: RE-S-2X00x8
  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 0c 10 00 00 00 00 00 00 00 00 00 00
   Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 00 00 00 00
   Address 0x20: 42 55 49 4c 54 49 4e 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
   vtbd0 15361 MB                                          Virtio Block Disk
   vtbd1 15360 MB                                          Virtio Block Disk
   ada0    511 MB  QEMU HARDDISK        QM00002           Emulated IDE Disk
   usb0 (addr 1)  XHCI root HUB 0       0x8086            uhub0
Routing Engine 1          BUILTIN      BUILTIN           RE-S-2X00x8
  Jedec Code:   0x0000            EEPROM Version:    0x00
  P/N:          BUILTIN           S/N:               BUILTIN
  Assembly ID:  0x0c10            Assembly Version:  00.00
  Date:         00-00-0000        Assembly Flags:    0x00
  ID: RE-S-2X00x8
  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 0c 10 00 00 00 00 00 00 00 00 00 00
   Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 00 00 00 00
```


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```
  Address 0x20: 42 55 49 4c 54 49 4e 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
  vtbd0 15361 MB                                        Virtio Block Disk
  vtbd1 15360 MB                                        Virtio Block Disk
  ada0    511 MB  QEMU HARDDISK        QM00002          Emulated IDE Disk
  usb0 (addr 1)  XHCI root HUB 0       0x8086           uhub0
CB 0             REV 01   750-067373   ABDJ0047         Control Board
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-067373        S/N:               ABDJ0047
 Assembly ID:  0x0c96            Assembly Version:  01.01
 Date:         06-21-2016        Assembly Flags:    0x00
 Version:      REV 01            CLEI Code:         PROTOXCLEI
 ID: Control Board               FRU Model Number:  PROTO-ASSEMBLY
 Board Information Record:
  Address 0x00: ad 01 00 20 28 8a 1c 6d c4 7e ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 fe 0c 96 01 01 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 37 33 37 33 00 00
  Address 0x20: 53 2f 4e 20 41 42 44 4a 30 30 34 37 00 15 06 07
  Address 0x30: e0 ff ff ff ad 01 00 20 28 8a 1c 6d c4 7e 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
CB 1              REV 03   750-067373   ABDH3016         Control Board
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-067373        S/N:               ABDH3016
 Assembly ID:  0x0c96            Assembly Version:  01.03
 Date:         05-07-2016        Assembly Flags:    0x00
 Version:      REV 03            CLEI Code:         PROTOXCLEI
 ID: Control Board               FRU Model Number:  PROTO-ASSEMBLY
 Board Information Record:
  Address 0x00: ad 01 00 20 f4 cc 55 35 71 a0 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 fe 0c 96 01 03 52 45 56 20 30 33 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 37 33 37 33 00 00
  Address 0x20: 53 2f 4e 20 41 42 44 48 33 30 31 36 00 07 05 07
  Address 0x30: e0 ff ff ff ad 01 00 20 f4 cc 55 35 71 a0 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
SFB 0             REV 08   750-067371   ABDK7180         Switch Fabric Board
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-067371        S/N:               ABDK7180
 Assembly ID:  0x0c97            Assembly Version:  01.08
 Date:         09-27-2016        Assembly Flags:    0x00
 Version:      REV 08            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 fe 0c 97 01 08 52 45 56 20 30 38 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 37 33 37 31 00 00
  Address 0x20: 53 2f 4e 20 41 42 44 4b 37 31 38 30 00 1b 09 07
  Address 0x30: e0 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
```

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  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 07 00 00 00 00 00 00 00 00 00 48 00
SFB 1            REV 08   750-067371   ABDK7024          Switch Fabric Board
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-067371        S/N:               ABDK7024
 Assembly ID:  0x0c97            Assembly Version:  01.08
 Date:         09-27-2016        Assembly Flags:    0x00
 Version:      REV 08            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 fe 0c 97 01 08 52 45 56 20 30 38 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 37 33 37 31 00 00
  Address 0x20: 53 2f 4e 20 41 42 44 4b 37 30 32 34 00 1b 09 07
  Address 0x30: e0 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 07 00 00 00 00 00 00 00 01 00 48 00
SFB 2            REV 08   750-067371   ABDK7188          Switch Fabric Board
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-067371        S/N:               ABDK7188
 Assembly ID:  0x0c97            Assembly Version:  01.08
 Date:         09-28-2016        Assembly Flags:    0x00
 Version:      REV 08            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 fe 0c 97 01 08 52 45 56 20 30 38 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 37 33 37 31 00 00
  Address 0x20: 53 2f 4e 20 41 42 44 4b 37 31 38 38 00 1c 09 07
  Address 0x30: e0 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 07 00 00 00 00 00 00 00 02 00 48 00
SFB 3            REV 08   750-067371   ABDK7143          Switch Fabric Board
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-067371        S/N:               ABDK7143
 Assembly ID:  0x0c97            Assembly Version:  01.08
 Date:         09-27-2016        Assembly Flags:    0x00
 Version:      REV 08            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 fe 0c 97 01 08 52 45 56 20 30 38 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 37 33 37 31 00 00
  Address 0x20: 53 2f 4e 20 41 42 44 4b 37 31 34 33 00 1b 09 07
  Address 0x30: e0 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 07 00 00 00 00 00 00 00 03 00 48 00
SFB 4            REV 08   750-067371   ABDK7030          Switch Fabric Board
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-067371        S/N:               ABDK7030
 Assembly ID:  0x0c97            Assembly Version:  01.08
```


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```
 Date:         09-24-2016        Assembly Flags:    0x00
 Version:      REV 08            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 fe 0c 97 01 08 52 45 56 20 30 38 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 37 33 37 31 00 00
  Address 0x20: 53 2f 4e 20 41 42 44 4b 37 30 33 30 00 18 09 07
  Address 0x30: e0 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 07 00 00 00 00 00 00 00 04 00 48 00
SFB 5            REV 08   750-067371   ABDK7146          Switch Fabric Board
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-067371        S/N:               ABDK7146
 Assembly ID:  0x0c97            Assembly Version:  01.08
 Date:         09-27-2016        Assembly Flags:    0x00
 Version:      REV 08            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 fe 0c 97 01 08 52 45 56 20 30 38 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 37 33 37 31 00 00
  Address 0x20: 53 2f 4e 20 41 42 44 4b 37 31 34 36 00 1b 09 07
  Address 0x30: e0 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 07 00 00 00 00 00 00 00 05 00 48 00
SFB 6            REV 08   750-067371   ABDK7203          Switch Fabric Board
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-067371        S/N:               ABDK7203
 Assembly ID:  0x0c97            Assembly Version:  01.08
 Date:         09-28-2016        Assembly Flags:    0x00
 Version:      REV 08            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 fe 0c 97 01 08 52 45 56 20 30 38 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 37 33 37 31 00 00
  Address 0x20: 53 2f 4e 20 41 42 44 4b 37 32 30 33 00 1c 09 07
  Address 0x30: e0 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 07 00 00 00 00 00 00 00 06 00 48 00
SFB 7            REV 08   750-067371   ABDK7238          Switch Fabric Board
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-067371        S/N:               ABDK7238
 Assembly ID:  0x0c97            Assembly Version:  01.08
 Date:         09-27-2016        Assembly Flags:    0x00
 Version:      REV 08            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 fe 0c 97 01 08 52 45 56 20 30 38 00 00
```

```
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 37 33 37 31 00 00
  Address 0x20: 53 2f 4e 20 41 42 44 4b 37 32 33 38 00 1b 09 07
  Address 0x30: e0 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 07 00 00 00 00 00 00 00 07 00 48 00
FPC 0            REV 36   750-044130   ABCS8607          MPC6E 3D
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-044130        S/N:               ABCS8607
 Assembly ID:  0x0b86            Assembly Version:  01.36
 Date:         10-29-2013        Assembly Flags:    0x00
 Version:      REV 36            CLEI Code:         PROTOXCLEI
 ID: MPC6E 3D                    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 fe 0b 86 01 24 52 45 56 20 33 36 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 34 34 31 33 30 00 00
  Address 0x20: 53 2f 4e 20 41 42 43 53 38 36 30 37 00 1d 0a 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   ABCS8776          RMPC PMB
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          711-045719        S/N:               ABCS8776
 Assembly ID:  0x0b85            Assembly Version:  01.09
 Date:         10-24-2013        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 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 41 42 43 53 38 37 37 36 00 18 0a 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 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 16 47 1f b0 00 00 00 00
  MIC 0          REV 21   750-050008   ABCT5920          4X100GE CXP
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-050008        S/N:               ABCT5920
 Assembly ID:  0x0a83            Assembly Version:  01.21
 Date:         09-29-2014        Assembly Flags:    0x00
 Version:      REV 21            CLEI Code:         IP9IATYDAA
 ID: 4X100GE CXP                 FRU Model Number:  MIC6-100G-CXP
 Board Information Record:
  Address 0x00: 12 01 07 02 03 ff ff ff ff ff ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 0a 83 01 15 52 45 56 20 32 31 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 35 30 30 30 38 00 00
  Address 0x20: 53 2f 4e 20 41 42 43 54 35 39 32 30 00 1d 09 07
  Address 0x30: de ff ff ff 12 01 07 02 03 ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 49 50 39 49 41 54 59 44 41 41 4d
  Address 0x50: 49 43 36 2d 31 30 30 47 2d 43 58 50 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 41 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 74 00 00 00 00 10 09 73 3c c0 02 70 3c
```


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```
    PIC 0                 BUILTIN      BUILTIN           4X100GE CXP
  XLM 0          REV 07.2.00 711-046638 ABCK3488         MPC6E XL
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          711-046638        S/N:               ABCK3488
 Assembly ID:  0x0b88            Assembly Version:  01.07
 Date:         11-11-2013        Assembly Flags:    0x00
 Version:      REV 07.2.00
 ID: MPC6E XL
 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 88 01 07 52 45 56 20 30 37 2e 32
  Address 0x10: 2e 30 30 00 37 31 31 2d 30 34 36 36 33 38 00 00
  Address 0x20: 53 2f 4e 20 41 42 43 4b 33 34 38 38 00 0b 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 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
  XLM 1          REV 07.2.00 711-046638 ABCK5482         MPC6E XL
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          711-046638        S/N:               ABCK5482
 Assembly ID:  0x0b88            Assembly Version:  01.07
 Date:         10-21-2013        Assembly Flags:    0x00
 Version:      REV 07.2.00
 ID: MPC6E XL
 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 88 01 07 52 45 56 20 30 37 2e 32
  Address 0x10: 2e 30 30 00 37 31 31 2d 30 34 36 36 33 38 00 00
  Address 0x20: 53 2f 4e 20 41 42 43 4b 35 34 38 32 00 15 0a 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 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
FPC 1            REV 22   750-063414   CAFJ3026          MPC9E 3D
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-063414        S/N:               CAFJ3026
 Assembly ID:  0x0c43            Assembly Version:  01.22
 Date:         03-28-2016        Assembly Flags:    0x00
 Version:      REV 22            CLEI Code:         IPUCBMUCAA
 ID: MPC9E 3D                    FRU Model Number:  MX2K-MPC9E
 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 0c 43 01 16 52 45 56 20 32 32 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 36 33 34 31 34 00 00
  Address 0x20: 53 2f 4e 20 43 41 46 4a 33 30 32 36 00 1c 03 07
  Address 0x30: e0 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 43 42 4d 55 43 41 41 4d
  Address 0x50: 58 32 4b 2d 4d 50 43 39 45 00 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 41 00 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 00 ff ff ff ff ff ff ff ff ff ff ff ff
  CPU            REV 16   750-057177   CAFF9332          SMPC PMB
 Jedec Code:   0x7fb0            EEPROM Version:    0x01
 P/N:          750-057177        S/N:               CAFF9332
 Assembly ID:  0x0c22            Assembly Version:  01.16
 Date:         03-20-2016        Assembly Flags:    0x00
 Version:      REV 16
```

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```
  ID: SMPC 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 01 ff 0c 22 01 10 52 45 56 20 31 36 00 00
   Address 0x10: 00 00 00 00 37 35 30 2d 30 35 37 31 37 37 00 00
   Address 0x20: 53 2f 4e 20 43 41 46 46 39 33 33 32 00 14 03 07
   Address 0x30: e0 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 38 f9 0d e0 4f d1 4b 08
 FPC 7            REV 08   750-038492   ZX4080           MPCE Type 2 3D EQ
  Jedec Code:   0x7fb0            EEPROM Version:    0x02
  P/N:          750-038492        S/N:               ZX4080
  Assembly ID:  0x0b35            Assembly Version:  01.08
  Date:         02-03-2012        Assembly Flags:    0x00
  Version:      REV 08            CLEI Code:         COUIBA5BAA
  ID: MPCE Type 2 3D EQ           FRU Model Number:  MX-MPC2E-3D-EQ
  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 35 01 08 52 45 56 20 30 38 00 00
   Address 0x10: 00 00 00 00 37 35 30 2d 30 33 38 34 39 32 00 00
   Address 0x20: 53 2f 4e 20 5a 58 34 30 38 30 00 00 00 03 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 43 4f 55 49 42 41 35 42 41 41 4d
   Address 0x50: 58 2d 4d 50 43 32 45 2d 33 44 2d 45 51 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 74 ff ff ff ff ff ff ff ff ff ff ff ff
   CPU            REV 03   711-038484   ZX3665           MPCE PMB 2G
  Jedec Code:   0x7fb0            EEPROM Version:    0x01
  P/N:          711-038484        S/N:               ZX3665
  Assembly ID:  0x0b36            Assembly Version:  01.03
  Date:         02-01-2012        Assembly Flags:    0x00
  Version:      REV 03
  ID: MPCE 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 36 01 03 52 45 56 20 30 33 00 00
   Address 0x10: 00 00 00 00 37 31 31 2d 30 33 38 34 38 34 00 00
   Address 0x20: 53 2f 4e 20 5a 58 33 36 36 35 00 00 00 01 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 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 02 00 00 0c 00 42 5f c0 a4
   MIC 0           REV 05   750-037128   ZR4031           1xCOC12/4xCOC3 CH-CE
  Jedec Code:   0x7fb0            EEPROM Version:    0x02
  P/N:          750-037128        S/N:               ZR4031
  Assembly ID:  0x0a1b            Assembly Version:  01.05
  Date:         12-04-2011        Assembly Flags:    0x00
  Version:      REV 05            CLEI Code:         PROTOXCLEI
  ID: 1xCOC12/4xCOC3 CH-CE        FRU Model Number:  MIC-3D-4CHOC3-1OC12-CE
  Board Information Record:
   Address 0x00: 12 01 05 03 05 ff ff ff ff ff ff ff ff ff ff ff
  I2C Hex Data:
   Address 0x00: 7f b0 02 ff 0a 1b 01 05 52 45 56 20 30 35 00 00
   Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 31 32 38 00 00
   Address 0x20: 53 2f 4e 20 5a 52 34 30 33 31 00 00 00 04 0c 07
```


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```
 Address 0x30: db ff ff ff 12 01 05 03 05 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: 49 43 2d 33 44 2d 34 43 48 4f 43 33 2d 31 4f 43
 Address 0x60: 31 32 2d 43 45 00 30 32 00 ff ff ff ff ff ff ff
 Address 0x70: ff ff ff 98 c0 02 61 bc 7f b0 02 ff 0a 11 01 17
   PIC 0                 BUILTIN      BUILTIN           1xCOC12/4xCOC3 CH-CE
 MIC 1          REV 23   750-032479   CADE8614          MIC-3D-8DS3-E3
Jedec Code:   0x7fb0            EEPROM Version:    0x02
P/N:          750-032479        S/N:               CADE8614
Assembly ID:  0x0a11            Assembly Version:  01.23
Date:         07-24-2014        Assembly Flags:    0x00
Version:      REV 23            CLEI Code:         COUIA8DBAA
ID: MIC-3D-8DS3-E3              FRU Model Number:  MIC-3D-8DS3-E3
Board Information Record:
 Address 0x00: 56 01 ff ff 03 ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
 Address 0x00: 7f b0 02 ff 0a 11 01 17 52 45 56 20 32 33 00 00
 Address 0x10: 00 00 00 00 37 35 30 2d 30 33 32 34 37 39 00 00
 Address 0x20: 53 2f 4e 20 43 41 44 45 38 36 31 34 00 18 07 07
 Address 0x30: de ff ff ff 56 01 ff ff 03 ff ff ff ff ff ff ff
 Address 0x40: ff ff ff ff 01 43 4f 55 49 41 38 44 42 41 41 4d
 Address 0x50: 49 43 2d 33 44 2d 38 44 53 33 2d 45 33 00 00 00
 Address 0x60: 00 00 00 00 00 00 41 41 00 ff ff ff ff ff ff ff
 Address 0x70: ff ff ff 7b c0 03 e5 7c 4f 8a 9e 10 00 00 00 02
   PIC 2                 BUILTIN      BUILTIN           MIC-3D-8DS3-E3
 QXM 0          REV 06   711-028408   ZW8299            MPC QXM
Jedec Code:   0x7fb0            EEPROM Version:    0x01
P/N:          711-028408        S/N:               ZW8299
Assembly ID:  0x097a            Assembly Version:  02.06
Date:         01-19-2012        Assembly Flags:    0x00
Version:      REV 06
ID: MPC QXM
Board Information Record:
 Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
 Address 0x00: 7f b0 01 ff 09 7a 02 06 52 45 56 20 30 36 00 00
 Address 0x10: 00 00 00 00 37 31 31 2d 30 32 38 34 30 38 00 00
 Address 0x20: 53 2f 4e 20 5a 57 38 32 39 39 00 00 00 13 01 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
 QXM 1          REV 06   711-028408   ZY0609            MPC QXM
Jedec Code:   0x7fb0            EEPROM Version:    0x01
P/N:          711-028408        S/N:               ZY0609
Assembly ID:  0x097a            Assembly Version:  02.06
Date:         01-19-2012        Assembly Flags:    0x00
Version:      REV 06
ID: MPC QXM
Board Information Record:
 Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
 Address 0x00: 7f b0 01 ff 09 7a 02 06 52 45 56 20 30 36 00 00
 Address 0x10: 00 00 00 00 37 31 31 2d 30 32 38 34 30 38 00 00
 Address 0x20: 53 2f 4e 20 5a 59 30 36 30 39 00 00 00 13 01 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
```

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```
ADC 7            REV 17   750-043596   ABCA0990          Adapter Card
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          750-043596        S/N:               ABCA0990
 Assembly ID:  0x0b3d            Assembly Version:  01.17
 Date:         03-07-2013        Assembly Flags:    0x00
 Version:      REV 17            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 ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 0b 3d 01 11 52 45 56 20 31 37 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 43 41 30 39 39 30 00 07 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 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 ff
  Address 0x70: ff ff ff 3a 00 00 00 00 00 00 00 00 00 00 00 00
Fan Tray 0       REV 01   760-052467   ACAY6190          172mm FanTray - 6 Fans
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          760-052467        S/N:               ACAY6190
 Assembly ID:  0x0b96            Assembly Version:  02.10
 Date:         09-18-2015        Assembly Flags:    0x00
 Version:      REV 01            CLEI Code:         IPUCBENCAA
 ID: 172mm FanTray - 6 Fans      FRU Model Number:  MX2000-FANTRAY-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 96 02 0a 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 36 30 2d 30 35 32 34 36 37 00 00
  Address 0x20: 53 2f 4e 20 41 43 41 59 36 31 39 30 00 12 09 07
  Address 0x30: df 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 43 42 45 4e 43 41 41 4d
  Address 0x50: 58 32 30 30 30 2d 46 41 4e 54 52 41 59 2d 53 00
  Address 0x60: 00 00 00 00 00 00 31 ff ff ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 1a ff ff ff ff ff ff ff ff ff ff ff ff
Fan Tray 1       REV 01   760-052467   ACAY6414          172mm FanTray - 6 Fans
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          760-052467        S/N:               ACAY6414
 Assembly ID:  0x0b96            Assembly Version:  02.10
 Date:         10-28-2015        Assembly Flags:    0x00
 Version:      REV 01            CLEI Code:         IPUCBENCAA
 ID: 172mm FanTray - 6 Fans      FRU Model Number:  MX2000-FANTRAY-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 96 02 0a 52 45 56 20 30 31 00 00
  Address 0x10: 00 00 00 00 37 36 30 2d 30 35 32 34 36 37 00 00
  Address 0x20: 53 2f 4e 20 41 43 41 59 36 34 31 34 00 1c 0a 07
  Address 0x30: df 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 43 42 45 4e 43 41 41 4d
  Address 0x50: 58 32 30 30 30 2d 46 41 4e 54 52 41 59 2d 53 00
  Address 0x60: 00 00 00 00 00 00 31 ff ff ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 1a ff ff ff ff ff ff ff ff ff ff ff ff
```

show chassis hardware models (MX2008 Router)

```
user@host>show chassis hardware models
Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
Midplane         REV 47   750-044636   ABAD1739          CHAS-BP-MX2010-S
```


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```
PMP              REV 01   711-051406   ACVD0738
FPM Board        REV 02   760-068193   ABDG7408          PROTO-ASSEMBLY
PSM 1            REV 06   740-050037   1EDB61200R8       MX2000-PSM-DC-S
PSM 2            REV 06   740-050037   1EDB61200WA       MX2000-PSM-DC-S
PSM 3            REV 06   740-050037   1EDB61200NY       MX2000-PSM-DC-S
PSM 4            REV 06   740-050037   1EDB61200N2       MX2000-PSM-DC-S
PSM 5            REV 06   740-050037   1EDB61200RN       MX2000-PSM-DC-S
PSM 6            REV 06   740-050037   1EDB61200RF       MX2000-PSM-DC-S
PSM 7            REV 06   740-050037   1EDB61200R7       MX2000-PSM-DC-S
PDM 0            REV 01   740-060189   1EFF5250143       MX2K-PDM-OP-DC-S
PDM 1            REV 01   740-060189   1EFF5250074       MX2K-PDM-OP-DC-S
CB 0             REV 01   750-067373   ABDJ0047          PROTO-ASSEMBLY
CB 1             REV 03   750-067373   ABDH3016          PROTO-ASSEMBLY
SFB 0            REV 08   750-067371   ABDK7180          PROTO-ASSEMBLY
SFB 1            REV 08   750-067371   ABDK7024          PROTO-ASSEMBLY
SFB 2            REV 08   750-067371   ABDK7188          PROTO-ASSEMBLY
SFB 3            REV 08   750-067371   ABDK7143          PROTO-ASSEMBLY
SFB 4            REV 08   750-067371   ABDK7030          PROTO-ASSEMBLY
SFB 5            REV 08   750-067371   ABDK7146          PROTO-ASSEMBLY
SFB 6            REV 08   750-067371   ABDK7203          PROTO-ASSEMBLY
SFB 7            REV 08   750-067371   ABDK7238          PROTO-ASSEMBLY
FPC 0            REV 36   750-044130   ABCS8607          PROTO-ASSEMBLY
  MIC 0          REV 21   750-050008   ABCT5920          MIC6-100G-CXP
FPC 1            REV 22   750-063414   CAFJ3026          MX2K-MPC9E
FPC 7            REV 08   750-038492   ZX4080            MX-MPC2E-3D-EQ
  MIC 0          REV 05   750-037128   ZR4031            MIC-3D-4CHOC3-1OC12-CE
  MIC 1          REV 23   750-032479   CADE8614          MIC-3D-8DS3-E3
ADC 7            REV 17   750-043596   ABCA0990          MX2000-LC-ADAPTER
Fan Tray 0       REV 01   760-052467   ACAY6190          MX2000-FANTRAY-S
Fan Tray 1       REV 01   760-052467   ACAY6414          MX2000-FANTRAY-S
```

show chassis hardware clei-models (MX2008 Router)

```
user@host>show chassis hardware clei-models
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 47   750-044636   IPMU810ARB        CHAS-BP-MX2010-S
PMP              REV 01   711-051406
FPM Board        REV 02   760-068193   PROTOXCLEI        PROTO-ASSEMBLY
PSM 1            REV 06   740-050037   IPUPAPDKAA        MX2000-PSM-DC-S
PSM 2            REV 06   740-050037   IPUPAPDKAA        MX2000-PSM-DC-S
PSM 3            REV 06   740-050037   IPUPAPDKAA        MX2000-PSM-DC-S
PSM 4            REV 06   740-050037   IPUPAPDKAA        MX2000-PSM-DC-S
PSM 5            REV 06   740-050037   IPUPAPDKAA        MX2000-PSM-DC-S
PSM 6            REV 06   740-050037   IPUPAPDKAA        MX2000-PSM-DC-S
PSM 7            REV 06   740-050037   IPUPAPDKAA        MX2000-PSM-DC-S
PDM 0            REV 01   740-060189   IPUPAN1KAA        MX2K-PDM-OP-DC-S
PDM 1            REV 01   740-060189   IPUPAN1KAA        MX2K-PDM-OP-DC-S
CB 0             REV 01   750-067373   PROTOXCLEI        PROTO-ASSEMBLY
CB 1             REV 03   750-067373   PROTOXCLEI        PROTO-ASSEMBLY
SFB 0            REV 08   750-067371   PROTOXCLEI        PROTO-ASSEMBLY
SFB 1            REV 08   750-067371   PROTOXCLEI        PROTO-ASSEMBLY
SFB 2            REV 08   750-067371   PROTOXCLEI        PROTO-ASSEMBLY
SFB 3            REV 08   750-067371   PROTOXCLEI        PROTO-ASSEMBLY
SFB 4            REV 08   750-067371   PROTOXCLEI        PROTO-ASSEMBLY
SFB 5            REV 08   750-067371   PROTOXCLEI        PROTO-ASSEMBLY
SFB 6            REV 08   750-067371   PROTOXCLEI        PROTO-ASSEMBLY
SFB 7            REV 08   750-067371   PROTOXCLEI        PROTO-ASSEMBLY
FPC 0            REV 36   750-044130   PROTOXCLEI        PROTO-ASSEMBLY
  MIC 0          REV 21   750-050008   IP9IATYDAA        MIC6-100G-CXP
FPC 1            REV 22   750-063414   IPUCBMUCAA        MX2K-MPC9E
```

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```
FPC 7            REV 08   750-038492   COUIBA5BAA        MX-MPC2E-3D-EQ
  MIC 0          REV 05   750-037128   PROTOXCLEI        MIC-3D-4CHOC3-1OC12-CE
  MIC 1          REV 23   750-032479   COUIA8DBAA        MIC-3D-8DS3-E3
ADC 7            REV 17   750-043596   IPUCBA8CAA        MX2000-LC-ADAPTER
Fan Tray 0       REV 01   760-052467   IPUCBENCAA        MX2000-FANTRAY-S
Fan Tray 1       REV 01   760-052467   IPUCBENCAA        MX2000-FANTRAY-S
```

show chassis hardware (T320 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                19093             T320
Midplane         REV 04   710-004339   BC1436            T320 Backplane
FPM GBUS         REV 03   710-004461   BC1407            T320 FPM Board
FPM Display      REV 04   710-002897   BE0763            FPM Display
CIP              REV 05   710-002895   BB2311            T Series CIP
PEM 0            Rev 01   740-004359   NB12546           Power Entry Module
SCG 0            REV 06   710-004455   AY4522            T320 Sonet
Clock Gen.
Routing Engine 0                                        unknown
CB 0             REV 13   710-002728   BC1577            T Series
Control Board
CB 1             REV 13   710-002728   BC1595            T Series
Control Board
FPC 1            REV 09   710-007531   HS1572            FPC Type 2
   CPU            REV 15   710-001726   HR8763             FPC CPU
   PIC 0          REV 01   750-010618   CB5579             4x G/E SFP,
1000 BASE
     SFP 0        REV 01   740-007326   P5809Z1            SFP-SX
     SFP 1        REV 01   740-007326   P4Q10XU            SFP-SX
     SFP 2                 NON-JNPR     RA45020031         SFP-SX
     SFP 3                 NON-JNPR     RA45020032         SFP-SX
   PIC 1          REV 01   750-010618   CD9587             4x G/E SFP,
1000 BASE
     SFP 0                 NON-JNPR     P5A08QZ            SFP-T
     SFP 1        REV 01   740-007326   P4Q133K            SFP-SX
     SFP 2        REV 01   740-007326   P5809YY            SFP-SX
     SFP 3        REV 01   740-007327   4C81704            SFP-LX
   MMB 1          REV 03   710-005555   HR9401             MMB-288mbit
   PPB 0          REV 04   710-003758   HR2886             PPB Type 2
FPC 2            REV 07   710-005860   HP2392            FPC Type 1
   CPU            REV 14   710-001726   HP7797             FPC CPU
   PIC 0          REV 02   750-007643   HM0853             1x G/E QPP,
1000 BASE
     SFP 0        REV 01   740-007326   P11E9JJ            SFP-SX
   MMB 1          REV 02   710-005555   HN2379             MMB-288mbit
   PPB 0          REV 04   710-003758   HP8092             PPB Type 2
FPC 3            REV 07   710-005860   HP2393            FPC Type 1
   CPU            REV 14   710-001726   HP0968             FPC CPU
   PIC 0          REV 01   750-010240   CB5363             1x G/E SFP,
1000 BASE
     SFP 0        REV 01   740-007326   P4R0PNH            SFP-SX
   PIC 1          REV 03   750-003034   HD2832             4x OC-3 SONET,
SMIR
   MMB 1          REV 02   710-005555   HN6307             MMB-288mbit
   PPB 0          REV 04   710-003758   HP5051             PPB Type 2
FPC 4            REV 01   710-010845   JD3872            FPC Type 4
   CPU            REV 02   710-011481   JB6042             FPC CPU
 5            REV 01   710-005802   BC1566           FPC Type 2
   CPU            REV 09   710-001726   AY4922             FPC CPU
```


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```
   PIC 0          REV 02   750-008155   BE2114           2x G/E QPP,
1000 BASE
     SFP 0        REV 01   740-007326   P4R0PMQ          SFP-SX
     SFP 1        REV 01   740-007326   P4R0PN9          SFP-SX
   PIC 1          REV 01   750-008155   BE2116           2x G/E QPP,
1000 BASE
     SFP 0        REV 01   740-007326   P4R0PNZ          SFP-SX
     SFP 1                 NON-JNPR     2908             SFP-T
   MMB 1          REV 01   710-005555   AZ2246           MMB-288mbit
   PPB 0          REV 03   710-003758   AY4839           PPB Type 2
FPC 7           REV 01   710-005803   AZ2123           FPC Type 3
...
```

show chassis hardware (T640 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                19182             T640
Midplane         REV 04   710-002726   AX5608            T640 Backplane
FPM GBUS         REV 02   710-002901   HE3064            T640 FPM Board
FPM Display      REV 02   710-002897   HE7864            FPM Display
CIP              REV 05   710-002895   HA5024            T Series CIP
PEM 0            Rev 02   740-029522   VH26235           AC PEM 10kW US
PEM 1            Rev 02   740-029522   VH26230           AC PEM 10kW US
SCG 0            REV 03   710-003423   HA4508            T640 Sonet Clock Gen.
Routing Engine 0 REV 02   740-005022   210865700483      RE-3.0 (RE-600)
CB 0             REV 01   710-002728   HD3044            T Series Control Board
FPC 2            REV 04   710-001721   HD5572            FPC Type 3
  CPU            REV 06   710-001726   HA4712            FPC CPU
  PIC 1          REV 03   750-009567   HV2331            1x 10GE(LAN),XENPAK
    SFP 0        REV 01   740-009898   USC202R103        XENPAK-SR
  PIC 2          REV 03   750-009567   HV2332            1x 10GE(LAN),XENPAK
    SFP 0        REV 01   740-011268   USC202R112        XENPAK-ZR
  PIC 3          REV 03   750-009567   HX4416            1x 10GE(LAN),XENPAK
    SFP 0        REV 01   740-012056   434TC004          XENPAK-CX4
  PIC 4          REV 03   750-009567   HX4420            1x 10GE(LAN),XENPAK
    SFP 0        REV 01   740-012058   434TC124          XENPAK-LX4
FPC 5            REV 01   710-013553   JE4839            E2-FPC Type 1
  CPU            REV 01   710-013569   JW9163            FPC CPU
  PIC 0          REV 01   750-009567   HX4419            1x 10GE(LAN),XENPAK
    SFP 0        REV 01   740-009898   USC202RT05        XENPAK-LR
  PIC 1          REV 03   750-009567   HN7426            1x 10GE(LAN),XENPAK
    SFP 0        REV 01   740-009550   03L90051          XENPAK-ER
  PIC 2          REV 03   750-009467   HT7423            1x 10GE(LAN),XENPAK
    SFP 0                 NON-JNPR                       UNKNOWON
  PIC 3          REV 04   750-005100   AY4850            1x 10GE(LAN),DWDM
FPC 4            REV 01   710-010845   JD3872            FPC Type 4
  CPU            REV 02   710-011481   JB6042            FPC CPU
Fan Tray 0                                               Front Top Fan Tray
Fan Tray 1                                               Front Bottom Fan Tray
Fan Tray 2                                               Rear Fan Tray
```

show chassis hardware models (T640 Router)

```
user@host> show chassis hardware models
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 04   710-002726                     CHAS-BP-T640-S
FPM Display      REV 02   710-002897                     CRAFT-T640-S
```

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```
CIP              REV 05   710-002895                   CIP-L-T640-S
PEM 0            Rev 01   740-002595                   PWR-T-DC-S
SCG 0            REV 04   710-003423                   SCG-T-S
SCG 1            REV 04   710-003423                   SCG-T-S
Routing Engine 0 REV 01   740-005022                   RE-600-2048-S
Routing Engine 1 REV 07   740-005022                   RE-600-2048-S
CB 0             REV 06   710-002726                   CHAS-BP-T640-S
CB 1             REV 06   710-002728                   CB-L-T-S
FPC 5            REV 05   710-007527                   T640-FPC2
  PIC 0          REV 05   750-002510                   PB-2GE-SX
  PIC 1          REV 05   750-001901                   PB-4OC12-SON-SMIR
FPC 6            REV 03   710-001721                   T640-FPC3
  PIC 1          REV 01   750-009553                   PC-4OC48-SON-SFP
SIB 4            REV 02   750-005486                   SIB-I-T640-S
Fan Tray 0                                             FANTRAY-T-S
Fan Tray 1                                             FANTRAY-T-S
Fan Tray 2                                             FAN-REAR-TX-T640-S
```

show chassis hardware extensive (T640 Router)

```
user@host> show chassis hardware extensive
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                                  T640
 Jedec Code:   0x7fb0            EEPROM Version:    0x01
 P/N:        ...........       S/N:             ...........
 Assembly ID:  0x0507            Assembly Version:  00.00
 Date:         00-00-0000        Assembly Flags:    0x00
 Version:    ...........
 ID: Gibson LCC Chassis
 Board Information Record:
  Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
 I2C Hex Data:
  Address 0x00: 7f b0 01 ff 05 07 00 00 00 00 00 00 00 00 00 00
  Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x20: ff ff ff ff ff ff ff ff ff ff ff ff 00 00 00 00
  Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane         REV 04   710-002726   AX5633
 Jedec Code:   0x7fb0            EEPROM Version:    0x01
 P/N:          710-002726.       S/N:               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
 ...
```


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```
SCG 0            REV 04   710-003423   HF6023
 ...
SCG 1            REV 04   710-003423   HF6061
 ...
Routing Engine 0 REV 01   740-005022   210865700292      RE-3.0
...
CB 0             REV 06   710-002728   HE3614
...
FPC 1            REV 01   710-002385   HE3009            FPC Type 1
...              REV 06   710-001726   HC0010
```

show chassis hardware (T4000 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN1172F25AHA      T4000
Midplane         REV 01   710-027486   RC8355            T-series Backplane
FPM GBUS         REV 13   710-002901   BBAE0927          T640 FPM Board
FPM Display      REV 01   710-021387   EF6764            T1600 FPM Display
CIP              REV 06   710-002895   BBAD9210          T-series CIP
PEM 0            REV 01   740-036442   VA00016           Power Entry Module 6x60
SCG 0            REV 18   710-003423   BBAD7248          T640 Sonet Clock Gen.
SCG 1            REV 18   710-003423   BBAE3874          T640 Sonet Clock Gen.
Routing Engine 0 REV 05   740-026941   P737F-002248      RE-DUO-1800
Routing Engine 1 REV 06   740-026941   P737F-002653      RE-DUO-1800
CB 0             REV 09   710-022597   ED0295            LCC Control Board
CB 1             REV 09   710-022597   EA6050            LCC Control Board
FPC 0            REV 26   750-032819   EK1173            FPC Type 5-3D
  CPU            REV 12   711-030686   EJ8584            SNG PMB
  PIC 0          REV 07   750-034624   EF6837            12x10GE (LAN/WAN) SFPP
    Xcvr 0       REV 01   740-031980   123363A01145      SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   123363A01147      SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   AJJ01P3           SFP+-10G-SR
    Xcvr 3       REV 01   740-031980   B10M03256         SFP+-10G-SR
    Xcvr 4       REV 01   740-031980   AJJ01M2           SFP+-10G-SR
    Xcvr 5       REV 01   740-031980   123363A01137      SFP+-10G-SR
    Xcvr 6       REV 01   740-031980   AJJ01PN           SFP+-10G-SR
    Xcvr 7       REV 01   740-031980   AJJ01NW           SFP+-10G-SR
    Xcvr 8       REV 01   740-031980   123363A01139      SFP+-10G-SR
    Xcvr 9       REV 01   740-031980   AJJ01KE           SFP+-10G-SR
    Xcvr 10      REV 01   740-031980   123363A01336      SFP+-10G-SR
    Xcvr 11      REV 01   740-031980   B10M01325         SFP+-10G-SR
  PIC 1          REV 07   750-034624   EF6800            12x10GE (LAN/WAN) SFPP
    Xcvr 0       REV 01   740-031980   AJJ01SA           SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   AJJ01QZ           SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   AJH0217           SFP+-10G-SR
    Xcvr 3       REV 01   740-031980   AJJ01TE           SFP+-10G-SR
    Xcvr 4       REV 01   740-031980   AJJ01KV           SFP+-10G-SR
    Xcvr 5       REV 01   740-031980   AJJ01MU           SFP+-10G-SR
    Xcvr 6       REV 01   740-031980   AJJ01RO           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
```

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```
  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
```


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```
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
```

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```
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 01   710-027486   IPMJ70ODRD        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 01   740-036442   IPUPAG6KAA        PWR-T-6-60-DC
SCG 0            REV 18   710-003423                     SCG-T-S
SCG 1            REV 18   710-003423                     SCG-T-S
Routing Engine 0 REV 05   740-026941                     RE-DUO-C1800-8G-S
Routing Engine 1 REV 06   740-026941                     RE-DUO-C1800-8G-S
CB 0             REV 09   710-022597                     CB-LCC-S
CB 1             REV 09   710-022597                     CB-LCC-S
FPC 3
  PIC 0          REV 08   750-035293   XXXXXXXXBB        PF-1CGE-CFP
  PIC 1          REV 10   750-034624   XXXXXXXXCC        PF-12XGE-SFPP
FPC 5            REV 03   710-033871   IPUCAMBCTD        T1600-FPC4-ES
  PIC 1          REV 03   750-034781   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
```


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```
    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
```

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```
    Xcvr 3       REV 01   740-031980   AJJ032L          SFP+-10G-SR
    Xcvr 4       REV 01   740-031980   B10M01593        SFP+-10G-SR
    Xcvr 5       REV 01   740-031980   AJD0FF1          SFP+-10G-SR
    Xcvr 6       REV 01   740-031980   AJJ01NU          SFP+-10G-SR
    Xcvr 7       REV 01   740-031980   123363A01305     SFP+-10G-SR
    Xcvr 8       REV 01   740-031980   B10M00361        SFP+-10G-SR
    Xcvr 9       REV 01   740-031980   AJJ01M7          SFP+-10G-SR
    Xcvr 10      REV 01   740-031980   AJJ032X          SFP+-10G-SR
    Xcvr 11      REV 01   740-031980   AJJ01PG          SFP+-10G-SR
  LMB 0          REV 04   711-034381   EF3838           Type-0 LMB
  LMB 1          REV 03   711-035774   EF3821           Type-1 LMB
  LMB 2          REV 04   711-034381   EF3834           Type-0 LMB
SPMB 0           REV 05   710-023321   ED1990           LCC Switch CPU
SPMB 1           REV 05   710-023321   EA2768           LCC Switch CPU
SIB 0            REV 02   711-036340   EF8802           SIB-HC-3D
SIB 1            REV 07   711-036340   EG2286           SIB-HC-3D
SIB 2            REV 07   711-036340   EG2252           SIB-HC-3D
SIB 3            REV 02   711-036340   EF1358           SIB-HC-3D
SIB 4            REV 02   711-036340   EF8806           SIB-HC-3D
Fan Tray 0                                              Front Top Fan Tray
Fan Tray 1                                              Front Bottom Fan Tray
-- Rev 2
Fan Tray 2                                              Rear Fan Tray -- Rev 3
```

show chassis hardware models (T4000 Router)

```
user@host> show chassis hardware models

Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
Midplane         REV 01   710-027486   RC8355           CHAS-BP-T1600-S
FPM Display      REV 01   710-021387   EF6764           CRAFT-T1600-S
CIP              REV 06   710-002895   BBAD9210         CIP-L-T640-S
PEM 0            REV 01   740-036442   VA00016          PWR-T-6-60-DC
SCG 0            REV 18   710-003423   BBAD7248         SCG-T-S
SCG 1            REV 18   710-003423   BBAE3874         SCG-T-S
Routing Engine 0 REV 05   740-026941   P737F-002248     RE-DUO-C1800-8G-S
Routing Engine 1 REV 06   740-026941   P737F-002653     RE-DUO-C1800-8G-S
CB 0             REV 09   710-022597   ED0295           CB-LCC-S
CB 1             REV 09   710-022597   EA6050           CB-LCC-S
FPC 3
  PIC 0          REV 08   750-035293   EF3657           PF-1CGE-CFP
  PIC 1          REV 10   750-034624   BBAN4098         PF-12XGE-SFPP
FPC 5            REV 03   710-033871   BBAJ0768         T1600-FPC4-ES
  PIC 1          REV 03   750-034781   EE6655           PD-1CE-CFP-FPC4
FPC 6
  PIC 0          REV 10   750-034624   BBAN4109         PF-12XGE-SFPP
Fan Tray 0                                              FANTRAY-T-S
Fan Tray 1                                              FANTRAY-T4000-S
Fan Tray 2                                              FAN-REAR-TXP-LCC
```

show chassis hardware lcc (TX Matrix Router)

```
user@host> show chassis hardware lcc 0
lcc0-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                               65751            T640
Midplane         REV 03   710-005608   RA1408           T640 Backplane
```


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```
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)
```

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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
```


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```
    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
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    Xcvr 0       REV 01   740-011613   AM0812S8XBZ       SFP-SX
    Xcvr 1       REV 01   740-011613   AM0812S8XAP       SFP-SX
    Xcvr 2       REV 01   740-011613   AM0812S8XBY       SFP-SX
    Xcvr 3       REV 01   740-011613   AM0812S8XBX       SFP-SX
    Xcvr 4       REV 01   740-011613   P9F1652           SFP-SX
    Xcvr 5       REV 01   740-011782   P8Q21YC           SFP-SX
    Xcvr 6       REV 01   740-011782   P8Q27HQ           SFP-SX
    Xcvr 7       REV 01   740-011613   P8E2SSU           SFP-SX
  PIC 3          REV 15   750-009450   NB6790            1x OC-192 SM SR2
  MMB 0          REV 03   710-005555   HZ3450            MMB-288mbit
  MMB 1          REV 03   710-005555   HZ3415            MMB-288mbit
  PPB 0          REV 04   710-002845   HP0887            PPB Type 3
  PPB 1          REV 04   710-002845   HW5255            PPB Type 3
SPMB 0           REV 10   710-003229   HX3699            T-series Switch CPU
SPMB 1           REV 12   710-003229   DT3091            T-series Switch CPU
SIB 0            REV 07   710-013074   DS4747            SIB-I8-SF
SIB 1            REV 07   710-013074   DS4942            SIB-I8-SF
SIB 2            REV 07   710-013074   DS4965            SIB-I8-SF
SIB 3            REV 07   710-013074   DS4990            SIB-I8-SF
SIB 4            REV 07   710-013074   DS4944            SIB-I8-SF
Fan Tray 0                                                Front Top Fan Tray
Fan Tray 1                                                Front Bottom Fan Tray
Fan Tray 2                                                Rear Fan Tray -- Rev 2
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show chassis hardware (TX Matrix Plus Router)

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user@host> show chassis hardware
sfc0-re0:
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Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN113186EAHB      TXP
Midplane         REV 05   710-022574   TS3822            SFC Midplane
FPM Display      REV 03   710-024027   DW4701            TXP FPM Display
CIP 0            REV 05   710-023792   DW7998            TXP CIP
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
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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

lcc0-re0:
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Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN11036F8AHA      T1600
Midplane         REV 03   710-017247   RC3799            T-series Backplane
FPM GBUS         REV 10   710-002901   DP7009            T640 FPM Board
FPM Display      REV 01   710-021387   DN7026            T1600 FPM Display
CIP              REV 06   710-002895   DP6024            T-series CIP
PEM 1           Rev 02   740-023211   WA50019          Power Entry Module 4x60A
SCG 0            REV 15   710-003423   DR6757            T640 Sonet Clock Gen.
SCG 1            REV 15   710-003423   DS2225            T640 Sonet Clock Gen.
Routing Engine 0 REV 01   740-026941   737F-1040         RE-DUO-1800
Routing Engine 1 REV 01   740-026941   737F-1016         RE-DUO-1800
CB 0             REV 06   710-022597   DX4011            LCC Control Board
CB 1             REV 06   710-022597   DX4017            LCC Control Board
FPC 1            REV 07   710-013035   DN5847            FPC Type 3-ES
  CPU            REV 08   710-016744   DP2570            ST-PMB2
  PIC 0          REV 05   750-015217   DB0418            8x 1GE(TYPE3), IQ2
    Xcvr 0       REV 01   740-011782   P8Q27ZG           SFP-SX
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    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
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  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
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  MMB 1          REV 04   710-025563   BBAA5401          ST-MMB2
FPC 3            REV 10   710-021534   DZ0941            FPC Type 1-ES
  CPU            REV 09   710-016744   DY6364            ST-PMB2
  PIC 0          REV 13   750-012266   DK9192            4x 1GE(LAN), IQ2
    Xcvr 0       REV 01   740-011613   AM0812S8WVD       SFP-SX
    Xcvr 1                NON-JNPR     PDD63Q4           SFP-SX
    Xcvr 2                NON-JNPR     PDE4G54           SFP-SX
    Xcvr 3                NON-JNPR     PD40MAG           SFP-SX
  PIC 1          REV 01   750-007641   HJ2003            1x G/E IQ, 1000 BASE
    Xcvr 0       REV 01   740-011613   AM0812S8WVG       SFP-SX
  PIC 3          REV 17   750-007444   JB6873            1x CHSTM1 IQ SDH, SMIR
  MMB 0          REV 04   710-025563   DZ0281            ST-MMB2
FPC 4            REV 06   710-013035   DK0614            FPC Type 3-ES
  CPU            REV 07   710-016744   DK1616            ST-PMB2
  PIC 0          REV 22   750-007141   DM1870            10x 1GE(LAN), 1000 BASE

    Xcvr 0       REV 01   740-011782   PCL3UKW           SFP-SX
    Xcvr 1       REV 01   740-011782   P7E0T73           SFP-SX
    Xcvr 2       REV 01   740-007326   P4T0WLR           SFP-SX
    Xcvr 3       REV 01   740-011782   PAR1LRL           SFP-SX
    Xcvr 4       REV 01   740-011782   P9M0U3Z           SFP-SX
    Xcvr 5       REV 01   740-011782   P9M0U0C           SFP-SX
    Xcvr 6       REV 01   740-011782   P9M0TLG           SFP-SX
    Xcvr 7       REV 01   740-011782   P9M0U0F           SFP-SX
    Xcvr 8       REV 01   740-011613   PFA6LAP           SFP-SX
    Xcvr 9       REV 01   740-011782   PCH2P0U           SFP-SX
  PIC 1          REV 16   750-009450   CV2565            1x OC-192 SM SR2
  PIC 2          REV 05   750-004424   HH3057            1x 10GE(LAN),10GBASE-LR

  PIC 3          REV 12   750-013423   DP0403            MultiServices 500
  MMB 0          REV 04   710-016036   DK1988            ST-MMB2
FPC 5            REV 07   710-013560   DR0004            E2-FPC Type 3
  CPU            REV 05   710-013563   DR0089            FPC CPU-Enhanced
  PIC 0          REV 11   750-012793   DR6107            1x 10GE(LAN/WAN) IQ2
    Xcvr 0       REV 01   740-014289   C743XU074         XFP-10G-SR
  PIC 1          REV 01   750-004695   HD5980            1x Tunnel
  PIC 2          REV 32   750-003700   DL3770            1x OC-192 12xMM VSR
  PIC 3          REV 12   750-009553   WB8901            4x OC-48 SONET
    Xcvr 0       REV 01   740-011785   P9D1GTQ           SFP-SR
    Xcvr 1       REV 01   740-011785   PDS0MMB           SFP-SR
    Xcvr 3       REV 01   740-011785   PDE1KXP           SFP-SR
  MMB 0          REV 07   710-010171   DP7374            MMB-5M3-288mbit
  MMB 1          REV 07   710-010171   DP7404            MMB-5M3-288mbit
FPC 6            REV 07   710-013035   DM0994            FPC Type 3-ES
  CPU            REV 07   710-016744   DM3651            ST-PMB2
  PIC 0          REV 07   750-015217   DN4743            8x 1GE(TYPE3), IQ2
    Xcvr 3       REV 01   740-011613   AM0812S8XB0       SFP-SX
    Xcvr 4       REV 01   740-011782   PB829RB           SFP-SX
    Xcvr 5       REV 01   740-011782   P8J1SYX           SFP-SX
  PIC 1          REV 03   750-003336   HJ9954            4x OC-48 SONET, SMSR
  PIC 3          REV 02   750-012793   JM7665            1x 10GE(LAN/WAN) IQ2
  MMB 0          REV 04   710-016036   DN6913            ST-MMB2
FPC 7            REV 08   710-010845   JM3958            FPC Type 4
  CPU            REV 04   710-011481   JK3669            FPC CPU-Enhanced
  PIC 0          REV 11   750-017405   DP8837            4x 10GE (LAN/WAN) XFP
    Xcvr 1       REV 01   740-014279   753019A00277      XFP-10G-LR
    Xcvr 2       REV 02   740-011571   C850XJ00P         XFP-10G-SR
    Xcvr 3       REV 01   740-014279   AA0813N1RTG       XFP-10G-LR
  MMB 0          REV 04   710-010842   JN1971            ST-MMB
SPMB 0           REV 04   710-023321   DW3629            LCC Switch CPU
SPMB 1           REV 04   710-023321   DW3621            LCC Switch CPU
```


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```
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:
--------------------------------------------------------------------------
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
```

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```
  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
```


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```
  Address 0x70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane         REV 05   710-022574   TS4027           SFC Midplane
 Jedec Code:   0x7fb0            EEPROM Version:    0x01
 P/N:          710-022574        S/N:               TS4027
 Assembly ID:  0x0962            Assembly Version:  01.05
 Date:         03-23-2009        Assembly Flags:    0x00
 Version:      REV 05
 ID: SFC Midplane
 Board Information Record:
  Address 0x00: ad 01 ff ff 00 1d b5 14 00 00 ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 01 ff 09 62 01 05 52 45 56 20 30 35 00 00
  Address 0x10: 00 00 00 00 37 31 30 2d 30 32 32 35 37 34 00 00
  Address 0x20: 53 2f 4e 20 54 53 34 30 32 37 00 00 00 17 03 07
  Address 0x30: d9 ff ff ff ad 01 ff ff 00 1d b5 14 00 00 ff ff
  Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff ff
  Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
FPM Display      REV 03   710-024027   DX0282           TXP FPM Display
 Jedec Code:   0x7fb0            EEPROM Version:    0x01
 P/N:          710-024027        S/N:               DX0282
 Assembly ID:  0x096c            Assembly Version:  01.03
 Date:         02-10-2009        Assembly Flags:    0x00
 Version:      REV 03
 ID: TXP FPM Display             FRU Model Number:  CRAFT-TXP
 Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 01 ff 09 6c 01 03 52 45 56 20 30 33 00 00
  Address 0x10: 00 00 00 00 37 31 30 2d 30 32 34 30 32 37 00 00
  Address 0x20: 53 2f 4e 20 44 58 30 32 38 32 00 00 00 0a 02 07
  Address 0x30: d9 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 00 00 00 00 00 00 00 00 00 00 43
  Address 0x50: 52 41 46 54 2d 54 58 50 00 00 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 ff ff ff ff ff ff ff ff ff ff
  Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
CIP 0            REV 04   710-023792   DW4889           TXP CIP
 Jedec Code:   0x7fb0            EEPROM Version:    0x01
 P/N:          710-023792        S/N:               DW4889
 Assembly ID:  0x0969            Assembly Version:  01.04
 Date:         01-26-2009        Assembly Flags:    0x00
 Version:      REV 04
 ID: TXP CIP                     FRU Model Number:  CIP-TXP
 Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
```

show chassis hardware clei-models (TX Matrix Plus Router)

```
user@host> show chassis hardware clei-models
sfc0-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 05   710-022574                     CHAS-BP-TXP-S
FPM Display      REV 03   710-024027                     CRAFT-TXP-S
CIP 0            REV 05   710-023792                     CIP-TXP-S
CIP 1            REV 05   710-023792                     CIP-TXP-S
PEM 0            Rev 04   740-027463   IPUPAFGKTA        PWR-TXP-7-60-DC
PEM 1            Rev 04   740-027463   IPUPAFGKTA        PWR-TXP-7-60-DC
Routing Engine 0 REV 06   740-026942                     RE-DUO-C2600-16G-S
```

```
Routing Engine 1 REV 06   740-026942                    RE-DUO-C2600-16G-S
CB 0             REV 05   710-022606                    CB-TXP-S
CB 1             REV 09   710-022606                    CB-TXP-S
SIB F13 0        REV 04   750-024564                    SIB-TXP-F13
SIB F13 3        REV 04   750-024564                    SIB-TXP-F13
SIB F13 8        REV 04   750-024564                    SIB-TXP-F13
SIB F13 11       REV 04   750-024564                    SIB-TXP-F13
SIB F13 12       REV 03   750-024564                    SIB-TXP-F13
SIB F2S 0/0      REV 05   710-022603                    SIB-TXP-F2S-S
SIB F2S 0/2      REV 05   710-022603                    SIB-TXP-F2S-S
SIB F2S 0/4      REV 04   710-022603                    SIB-TXP-F2S-S
SIB F2S 0/6      REV 04   710-022603                    SIB-TXP-F2S-S
SIB F2S 1/0      REV 04   710-022603                    SIB-TXP-F2S-S
SIB F2S 1/2      REV 05   710-022603                    SIB-TXP-F2S-S
SIB F2S 1/4      REV 04   710-022603                    SIB-TXP-F2S-S
SIB F2S 1/6      REV 05   710-022603                    SIB-TXP-F2S-S
SIB F2S 2/0      REV 04   710-022603                    SIB-TXP-F2S-S
SIB F2S 2/2      REV 04   710-022603                    SIB-TXP-F2S-S
SIB F2S 2/4      REV 05   710-022603                    SIB-TXP-F2S-S
SIB F2S 2/6      REV 04   710-022603                    SIB-TXP-F2S-S
SIB F2S 3/0      REV 05   710-022603                    SIB-TXP-F2S-S
SIB F2S 3/2      REV 03   710-022603                    SIB-TXP-F2S-S
SIB F2S 3/4      REV 05   710-022603                    SIB-TXP-F2S-S
SIB F2S 3/6      REV 03   710-022603                    SIB-TXP-F2S-S
SIB F2S 4/0      REV 03   710-022603                    SIB-TXP-F2S-S
SIB F2S 4/2      REV 05   710-022603                    SIB-TXP-F2S-S
SIB F2S 4/4      REV 04   710-022603                    SIB-TXP-F2S-S
SIB F2S 4/6      REV 03   710-022603                    SIB-TXP-F2S-S
Fan Tray 0       REV 02   760-024497                    FANTRAY-TXP-H-S
Fan Tray 1       REV 02   760-024497                    FANTRAY-TXP-H-S
Fan Tray 2       REV 05   760-024502                    FANTRAY-TXP-V-S
Fan Tray 3
Fan Tray 4       REV 05   760-024502                    FANTRAY-TXP-V-S
Fan Tray 5       REV 02   760-024502                    FANTRAY-TXP-V-S

lcc0-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 03   710-017247                     CHAS-BP-T1600-S
FPM Display      REV 01   710-021387                     CRAFT-T1600-S
CIP              REV 06   710-002895                     CIP-L-T640-S
PEM 1            Rev 02   740-023211   IPUPAC8KTA        PWR-T1600-4-60-DC-S
SCG 0            REV 15   710-003423                     SCG-T-S
SCG 1            REV 15   710-003423                     SCG-T-S
Routing Engine 0 REV 01   740-026941                     RE-DUO-C1800-8G-S
Routing Engine 1 REV 01   740-026941                     RE-DUO-C1800-8G-S
CB 0             REV 06   710-022597                     CB-LCC-S
CB 1             REV 06   710-022597                     CB-LCC-S
FPC 1            REV 07   710-013035                     T640-FPC3-ES
  PIC 0          REV 05   750-015217                     PC-8GE-TYPE3-SFP-IQ2
  PIC 1          REV 03   750-004424                     PC-1XGE-LR
  PIC 2          REV 01   750-003336                     PC-4OC48-SON-SMSR
FPC 3            REV 12   710-013037                     T1600-FPC4-ES
  PIC 0          REV 02   750-010850                     PD-1OC768-SON-SR
FPC 4            REV 05   710-021534                     T640-FPC1-ES
  PIC 0          REV 04   750-014627                     PB-4OC3-1OC12-SON-SFP
  PIC 1          REV 22   750-005634                     PB-1CHOC12SMIR-QPP
  PIC 2          REV 09   750-002911                     PB-4FE-TX
  PIC 3          REV 08   750-021652                     PB-1CHOC12-STM4-IQE-SFP
FPC 5            REV 07   710-007529                     T640-FPC3
```


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```
  PIC 0          REV 14   750-009567                    PC-1XGE-XENPAK
  PIC 1          REV 16   750-007141                    PC-10GE-SFP
  PIC 2          REV 12   750-009567                    PC-1XGE-XENPAK
FPC 6            REV 07   710-013035                    T640-FPC3-ES
  PIC 0          REV 09   750-009567                    PC-1XGE-XENPAK
  PIC 1          REV 06   750-015217                    PC-8GE-TYPE3-SFP-IQ2
  PIC 2          REV 06   750-015217                    PC-8GE-TYPE3-SFP-IQ2
FPC 7            REV 03   710-021540                    T640-FPC2-ES
  PIC 0          REV 13   750-001901                    PB-4OC12-SON-SMIR
  PIC 1          REV 05   750-001900                    PB-1OC48-SON-SMSR
  PIC 2          REV 10   750-008155                    PB-2GE-SFP-QPP
  PIC 3          REV 03   750-014638                    PB-1OC48-SON-B-SFP
SIB 0            REV 07   710-022594                    SIB-TXP-T1600-S
SIB 1            REV 07   710-022594                    SIB-TXP-T1600-S
SIB 3            REV 06   710-022594                    SIB-TXP-T1600-S
SIB 4            REV 08   710-022594                    SIB-TXP-T1600-S
Fan Tray 0                                              FANTRAY-T-S
Fan Tray 1                                              FANTRAY-T-S
Fan Tray 2                                              FANTRAY-TXP-R-S

lcc1-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 04   710-017247                    CHAS-BP-T1600-S
FPM Display      REV 01   710-021387                    CRAFT-T1600-S
CIP              REV 06   710-002895                    CIP-L-T640-S
PEM 0            Rev 02   740-023211   IPUPAC8KTA       PWR-T1600-4-60-DC-S
SCG 0            REV 15   710-003423                    SCG-T-S
SCG 1            REV 15   710-003423                    SCG-T-S
Routing Engine 0 REV 01   740-026941                    RE-DUO-C1800-8G-S
Routing Engine 1 REV 01   740-026941                    RE-DUO-C1800-8G-S
CB 0             REV 06   710-022597                    CB-LCC-S
CB 1             REV 06   710-022597                    CB-LCC-S
FPC 0            REV 02   710-010845                    T640-FPC4-ES
  PIC 0          REV 11   750-017405                    PD-4XGE-XFP
FPC 1            REV 16   710-013037                    T1600-FPC4-ES
  PIC 1          REV 06   750-034781                    PD-1CE-CFP
FPC 2            REV 16   710-013037                    T1600-FPC4-ES
  PIC 1          REV 05   750-034781                    PD-1CE-CFP
FPC 3            REV 10   710-021534                    T640-FPC1-ES
  PIC 0          REV 13   750-012266                    PB-4GE-TYPE1-SFP-IQ2
  PIC 1          REV 01   750-007641                    PE-1GE-SFP-QPP
  PIC 3          REV 17   750-007444                    PB-1CHSTM1-SMIR-QPP
FPC 4            REV 06   710-013035                    T640-FPC3-ES
  PIC 0          REV 22   750-007141                    PC-10GE-SFP
  PIC 1          REV 16   750-009450                    PC-1OC192-SON-SR2
  PIC 2          REV 05   750-004424                    PC-1XGE-LR
  PIC 3          REV 12   750-013423                    PC-MS-500-3
FPC 5            REV 07   710-013560                    T640-FPC3-E2
  PIC 0          REV 11   750-012793                    PC-1XGE-TYPE3-XFP-IQ2
  PIC 1          REV 01   750-004695                    PC-TUNNEL
  PIC 2          REV 32   750-003700                    PC-1OC192-SON-VSR
  PIC 3          REV 12   750-009553                    PC-4OC48-SON-SFP
FPC 6            REV 07   710-013035                    T640-FPC3-ES
  PIC 0          REV 07   750-015217                    PC-8GE-TYPE3-SFP-IQ2
  PIC 1          REV 03   750-003336                    PC-4OC48-SON-SMSR
  PIC 3          REV 02   750-012793                    PC-1XGE-TYPE3-XFP-IQ2
FPC 7            REV 08   710-010845                    T640-FPC4-ES
  PIC 0          REV 11   750-017405                    PD-4XGE-XFP
SIB 0            REV 07   710-022594                    SIB-TXP-T1600-S
```

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```
SIB 1            REV 07   710-022594                    SIB-TXP-T1600-S
SIB 3            REV 07   710-022594                    SIB-TXP-T1600-S
SIB 4            REV 08   710-022594                    SIB-TXP-T1600-S
Fan Tray 0                                              FANTRAY-T-S
Fan Tray 1                                              FANTRAY-T-S
Fan Tray 2                                              FANTRAY-TXP-R-S
```

show chassis hardware detail (TX Matrix Plus Router)

```
user@host> show chassis hardware detail
sfc0-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN111B023AHB      TXP
Midplane         REV 01   710-022574   TR7990            SFC Midplane
FPM Display      REV 03   710-024027   DW4699            TXP FPM Display
CIP 0            REV 01   710-023792   DR1437            TXP CIP
CIP 1            REV 02   710-023792   DS4564            TXP CIP
PEM 0            Rev 07   740-027463   UM2636O           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
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Fan Tray 5       REV 06   760-024502   DV7813           Rear Fan Tray

lcc0-re0:
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Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN1101F27AHA      T1600
Midplane         REV 04   710-017247   RC5317            T Series Backplane
FPM GBUS         REV 10   710-002901   DS8197            T640 FPM Board
FPM Display      REV 01   710-021387   DS6433            T1600 FPM Display
CIP              REV 06   710-002895   DS1493            T Series CIP
PEM 0            Rev 08   740-017906   UD26601           Power Entry Module 3x80
SCG 0            REV 15   710-003423   DP5847            T640 Sonet Clock Gen.
SCG 1            REV 15   710-003423   DR0924            T640 Sonet Clock Gen.
Routing Engine 0 REV 01   740-026942   737F-1024         LCC RE
  ad0    3887 MB  SMART CF             2008110502B63E513E51 Compact Flash
  ad1   30533 MB  SAMSUNG MCBQE32G8MPP-0V SY814A1208     Disk 1
Routing Engine 1 REV 01   740-026942   737F-1024         LCC RE
  ad0    3887 MB  SMART CF             2008110500F9A8A8A8A8 Compact Flash
  ad1   30533 MB  SAMSUNG MCBQE32G8MPP-0V SY814A1076     Disk 1
CB 0             REV 05   710-022597   DV4264            LCC Control Board
CB 1             REV 03   710-022597   DP8558            LCC Control Board
FPC 0            REV 14   710-013037   DS9967            FPC Type 4-ES
  CPU            REV 08   710-016744   DS3989            ST-PMB2
  PIC 0          REV 12   750-013198   DL7506            1x Tunnel
  PIC 1          REV 12   750-013198   DL7505            1x Tunnel
  MMB 0          REV 01   710-025563   DS8524            ST-MMB2
  MMB 1          REV 01   710-025563   DS8373            ST-MMB2
FPC 1            REV 14   710-013037   DT0027            FPC Type 4-ES
  CPU            REV 09   710-016744   DS7684            ST-PMB2
  PIC 0          REV 12   750-013198   DL7512            1x Tunnel
  PIC 1          REV 12   750-013198   DL7498            1x Tunnel
  MMB 0          REV 01   710-025563   DS8494            ST-MMB2
  MMB 1          REV 01   710-025563   DS8436            ST-MMB2
SPMB 0           REV 04   710-023321   DV3867            LCC Switch CPU
SPMB 1           REV 02   710-023321   DP0238            LCC Switch CPU
SIB 0            REV 06   710-022594   DT8268            LCC SIB
  B Board        REV 06   710-023185   DT5791            LCC SIB Mezz
SIB 1            REV 06   710-022594   DT8261            LCC SIB
  B Board        REV 06   710-023185   DT5769            LCC SIB Mezz
SIB 2            REV 04   710-022594   DS2315            LCC SIB
  B Board        REV 06   710-023185   DT5788            LCC SIB Mezz
SIB 3            REV 06   710-022594   DT8253            LCC SIB
  B Board        REV 06   710-023185   DT5811            LCC SIB Mezz
SIB 4            REV 06   710-022594   DT8248            LCC SIB
  B Board        REV 06   710-023185   DT5812            LCC SIB Mezz
Fan Tray 0                                               Front Top Fan Tray
Fan Tray 1                                               Front Bottom Fan Tray
Fan Tray 2                                               Rear Fan Tray
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show chassis hardware models (TX Matrix Plus Router)

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user@host> show chassis hardware models
sfc0-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
FPM Display      REV 03   710-024027   DX0282            CRAFT-TXP
CIP 0            REV 04   710-023792   DW4889            CIP-TXP
CIP 1            REV 04   710-023792   DW4887            CIP-TXP
PEM 0            Rev 07   740-027463   UM26368           ÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿ
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Routing Engine 0 REV 01   740-026942   737A-1064         RE-TXP-SFC-DUO-2600-16G
Routing Engine 1 REV 01   740-026942   737A-1082         RE-TXP-SFC-DUO-2600-16G
CB 0             REV 09   710-022606   DW6099            CB-TXP
CB 1             REV 09   710-022606   DW6096            CB-TXP
SIB F13 1        REV 04   750-024564   DW5776            SIB-TXP-F13
SIB F13 3        REV 04   750-024564   DW5762            SIB-TXP-F13
SIB F13 4        REV 04   750-024564   DW5797            SIB-TXP-F13
SIB F13 6        REV 04   750-024564   DW5770            SIB-TXP-F13
SIB F13 7        REV 04   750-024564   DW5758            SIB-TXP-F13
SIB F13 8        REV 04   750-024564   DW5761            SIB-TXP-F13
SIB F13 9        REV 04   750-024564   DW5754            SIB-TXP-F13
SIB F13 12       REV 04   750-024564   DW5794            SIB-TXP-F13
SIB F2S 0/0      REV 05   710-022603   DW7897
SIB F2S 0/2      REV 05   710-022603   DW7833
SIB F2S 0/4      REV 05   710-022603   DW7875
SIB F2S 0/6      REV 05   710-022603   DW7860
SIB F2S 1/0      REV 04   710-022603   DW4820
SIB F2S 1/2      REV 05   710-022603   DW7849
SIB F2S 1/4      REV 05   710-022603   DW7927            SIB-TXP-F2S
SIB F2S 1/6      REV 05   710-022603   DW7866
SIB F2S 2/0      REV 05   710-022603   DW7880
SIB F2S 2/2      REV 05   710-022603   DW7895
SIB F2S 2/4      REV 05   710-022603   DW7907
SIB F2S 2/6      REV 05   710-022603   DW7785
SIB F2S 3/0      REV 05   710-022603   DW7782
SIB F2S 3/2      REV 05   710-022603   DW7793
SIB F2S 3/4      REV 05   710-022603   DW7779
SIB F2S 3/6      REV 05   710-022603   DW7930
SIB F2S 4/0      REV 05   710-022603   DW7867
SIB F2S 4/2      REV 05   710-022603   DW7917
SIB F2S 4/4      REV 05   710-022603   DW7929
SIB F2S 4/6      REV 05   710-022603   DW7870
Fan Tray 0       REV 06   760-024497   DV7831            FANTRAY-TXP-F
Fan Tray 1       REV 06   760-024497   DV9614            FANTRAY-TXP-F
Fan Tray 2       REV 06   760-024502   DV9618            FANTRAY-TXP-R
Fan Tray 3       REV 06   760-024502   DV9616            FANTRAY-TXP-R
Fan Tray 4       REV 06   760-024502   DV7807            FANTRAY-TXP-R
Fan Tray 5       REV 06   760-024502   DV7828            FANTRAY-TXP-R

lcc0-re0:
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Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
Midplane         REV 03   710-017247   RC3765            CHAS-BP-T1600-S
FPM Display      REV 01   710-021387   DN5441            CRAFT-T1600-S
CIP              REV 06   710-002895   DP6021            CIP-L-T640-S
PEM 0            Rev 07   740-017906   UA26384           PWR-T1600-3-80-DC-S
PEM 1            Rev 07   740-017906   UA26296           PWR-T1600-3-80-DC-S
SCG 0            REV 15   710-003423   DR0875            SCG-T-S
CB 0             REV 06   710-022597   DW8534            CB-LCC
CB 1             REV 06   710-022597   DW8527            CB-LCC
FPC 4            REV 12   710-013037   DJ8717            T1600-FPC4-ES
  PIC 0          REV 11   750-017405   DP8795            PD-4XGE-XFP
  PIC 1          REV 11   750-017405   DP8794            PD-4XGE-XFP
FPC 6            REV 14   710-013037   DS5335            T1600-FPC4-ES
  PIC 0          REV 13   750-017405   DS7634            PD-4XGE-XFP
  PIC 1          REV 13   750-017405   DS7637            PD-4XGE-XFP
FPC 7            REV 07   710-013035   DM0990            T1600-FPC3-ES
  PIC 0          REV 16   750-007141   JJ8067            PC-10GE-SFP
  PIC 1          REV 08   750-015749   WE9598            PC-1OC192-SON-XFP
  PIC 2          REV 10   750-009450   HX6466            PC-1OC192-SON-SR2
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SIB 0            REV 08   710-022594   DW8033           SIB-TXP-T1600-S
SIB 1            REV 08   710-022594   DW8044           SIB-TXP-T1600-S
SIB 2            REV 08   710-022594   DW8020           SIB-TXP-T1600-S
SIB 3            REV 08   710-022594   DW8063           SIB-TXP-T1600-S
SIB 4            REV 08   710-022594   DW8064           SIB-TXP-T1600-S
Fan Tray 0                                              FANTRAY-T-S
Fan Tray 1                                              FANTRAY-T-S
Fan Tray 2                                              FANTRAY-TXP-R-S

lcc1-re0:
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Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
Midplane         REV 04   710-017247   RC5361           CHAS-BP-T1600-S
FPM Display      REV 01   710-021387   DS6430           CRAFT-T1600-S
CIP              REV 06   710-002895   DS4239           CIP-L-T640-S
PEM 0            Rev 08   740-017906   UD26649          PWR-T1600-3-80-DC-S
SCG 0            REV 15   710-003423   DP5820           SCG-T-S
CB 0             REV 06   710-022597   DW8523           CB-LCC
CB 1             REV 06   710-022597   DW8528           CB-LCC
FPC 4            REV 12   710-013037   DP8509           T1600-FPC4-ES
  PIC 0          REV 11   750-017405   DP8808           PD-4XGE-XFP
  PIC 1          REV 11   750-017405   DP7263           PD-4XGE-XFP
FPC 6            REV 14   710-013037   DS9961           T1600-FPC4-ES
  PIC 0          REV 13   750-017405   DS5532           PD-4XGE-XFP
  PIC 1          REV 13   750-017405   DS7639           PD-4XGE-XFP
FPC 7            REV 03   710-013035   DF5564           T1600-FPC3-ES
  PIC 0          REV 16   750-007141   JJ8063           PC-10GE-SFP
SIB 0            REV 08   710-022594   DW8035           SIB-TXP-T1600-S
SIB 1            REV 10   710-022594   DX7672           SIB-TXP-T1600-S
SIB 2            REV 08   710-022594   DW8060           SIB-TXP-T1600-S
SIB 3            REV 08   710-022594   DW8072           SIB-TXP-T1600-S
SIB 4            REV 08   710-022594   DW8043           SIB-TXP-T1600-S
Fan Tray 0                                              FANTRAY-T-S
Fan Tray 1                                              FANTRAY-T-S
Fan Tray 2                                              FANTRAY-TXP-R-S

lcc2-re0:
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Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
Midplane         REV 03   710-017247   RC3956           CHAS-BP-T1600-S
FPM Display      REV 01   710-021387   DN7030           CRAFT-T1600-S
CIP              REV 06   710-002895   DM3962           CIP-L-T640-S
PEM 0            Rev 08   740-017906   UD26519          PWR-T1600-3-80-DC-S
PEM 1            Rev 07   740-017906   UC26601          PWR-T1600-3-80-DC-S
SCG 0            REV 15   710-003423   DP0277           SCG-T-S
CB 0             REV 06   710-022597   DW8524           CB-LCC
CB 1             REV 06   710-022597   DW8536           CB-LCC
FPC 4            REV 12   710-013037   DR1194           T1600-FPC4-ES
  PIC 0          REV 11   750-017405   DP8811           PD-4XGE-XFP
  PIC 1          REV 11   750-017405   DP8823           PD-4XGE-XFP
FPC 5            REV 12   710-013037   DR1184           T1600-FPC4-ES
  PIC 1          REV 11   750-017405   DP4744           PD-4XGE-XFP
FPC 6            REV 12   710-013037   DN8622           T1600-FPC4-ES
  PIC 0          REV 14   750-012518   JY9924           PD-4OC192-SON-XFP
  PIC 1          REV 11   750-017405   DP8776           PD-4XGE-XFP
FPC 7            REV 04   710-013560   JR3968           T640-FPC3-E2
  PIC 0          REV 16   750-007141   NC9330           PC-10GE-SFP
SIB 0            REV 07   710-022594   DW4217           SIB-TXP-T1600-S
SIB 1            REV 07   710-022594   DW4213           SIB-TXP-T1600-S
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SIB 2            REV 07   710-022594   DW4189           SIB-TXP-T1600-S
SIB 3            REV 07   710-022594   DW4173           SIB-TXP-T1600-S
SIB 4            REV 07   710-022594   DW4201           SIB-TXP-T1600-S
Fan Tray 0                                              FANTRAY-T-S
Fan Tray 1                                              FANTRAY-T-S
Fan Tray 2                                              FANTRAY-TXP-R-S

lcc3-re0:
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Hardware inventory:
Item             Version  Part number  Serial number     FRU model number
Midplane         REV 04   710-017247   RC5319           CHAS-BP-T1600-S
FPM Display      REV 01   710-021387   DS6402           CRAFT-T1600-S
CIP              REV 06   710-002895   DR9973           CIP-L-T640-S
PEM 0            Rev 07   740-017906   UC26496          PWR-T1600-3-80-DC-S
PEM 1            Rev 07   740-017906   UC26599          PWR-T1600-3-80-DC-S
SCG 0            REV 15   710-003423   DP5831           SCG-T-S
CB 0             REV 06   710-022597   DW8533           CB-LCC
CB 1             REV 06   710-022597   DW8538           CB-LCC
FPC 0            REV 14   710-013037   DS5345           T1600-FPC4-ES
  PIC 0          REV 13   750-017405   DS7641           PD-4XGE-XFP
  PIC 1          REV 13   750-017405   DS5479           PD-4XGE-XFP
FPC 1            REV 14   710-013037   DS7338           T1600-FPC4-ES
  PIC 0          REV 13   750-017405   DS7631           PD-4XGE-XFP
  PIC 1          REV 13   750-017405   DS7632           PD-4XGE-XFP
FPC 2            REV 14   710-013037   DS9962           T1600-FPC4-ES
  PIC 0          REV 13   750-017405   DS7581           PD-4XGE-XFP
  PIC 1          REV 13   750-017405   DS7627           PD-4XGE-XFP
FPC 4            REV 10   710-010845   JZ6573           T640-FPC4-ES
  PIC 0          REV 14   750-012518   JT5124           PD-4OC192-SON-XFP
FPC 5            REV 14   710-013037   DT0016           T1600-FPC4-ES
  PIC 0          REV 14   750-012518   JY9918           PD-4OC192-SON-XFP
FPC 7            REV 07   710-013035   DM0967           T1600-FPC3-ES
  PIC 0          REV 16   750-007141   JJ8059           PC-10GE-SFP
  PIC 1          REV 13   750-004695   DM5712           PC-TUNNEL
SIB 0            REV 07   710-022594   DW4174           SIB-TXP-T1600-S
SIB 1            REV 07   710-022594   DW4207           SIB-TXP-T1600-S
SIB 2            REV 06   710-022594   DT8231           SIB-TXP-T1600-S
SIB 3            REV 07   710-022594   DW4175           SIB-TXP-T1600-S
SIB 4            REV 07   710-022594   DW4209           SIB-TXP-T1600-S
Fan Tray 0                                              FANTRAY-T-S
Fan Tray 1                                              FANTRAY-T-S
Fan Tray 2                                              FANTRAY-TXP-R-S
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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
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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
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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

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
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Fan Tray 1                                                        Front Bottom Fan Tray
Fan Tray 2                                                        Rear Fan Tray -- Rev 4

lcc2-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN11B3975AHA      T1600
Midplane         REV 01   710-027486   RC9826            T-series Backplane
FPM GBUS         REV 13   710-002901   BBAG5124          T640 FPM Board
FPM Display      REV 03   710-021387   BBAJ1112          T1600 FPM Display
CIP              REV 06   710-002895   BBAL3744          T-series CIP
PEM 0            REV 05   740-036442   1G022060081       Power Entry Module 6x60
PEM 1            REV 05   740-036442   1G022060188       Power Entry Module 6x60
SCG 0            REV 18   710-003423   BBAH8775          T640 Sonet Clock Gen.
SCG 1            REV 18   710-003423   BBAL7272          T640 Sonet Clock Gen.
Routing Engine 0 REV 07   740-026941   P737F-002992      RE-DUO-1800
Routing Engine 1 REV 07   740-026941   P737F-002938      RE-DUO-1800
CB 0             REV 11   710-022597   EH4805            LCC Control Board
CB 1             REV 11   710-022597   EH4786            LCC Control Board
FPC 1            REV 01   710-033873   BBAH0320          FPC Type 3-ES
  CPU            REV 11   710-016744   BBAF3281          ST-PMB2
  MMB 0          REV 06   710-025563   BBAF5061          ST-MMB2
FPC 5            REV 04   710-033871   BBAM5070          FPC Type 4-ES
  CPU            REV 11   710-016744   BBAM6653          ST-PMB2
  PIC 1          REV 20   750-017405   BBAM1296          4x 10GE (LAN/WAN) XFP
    Xcvr 0       REV 03   740-014289   T10B42981         XFP-10G-SR
  MMB 0          REV 07   710-025563   BBAN2631          ST-MMB2
  MMB 1          REV 07   710-025563   BBAN2538          ST-MMB2
SPMB 0           REV 05   710-023321   EH3903            LCC Switch CPU
SPMB 1           REV 05   710-023321   EH3902            LCC Switch CPU
SIB 0            REV 01   750-041657   EH8019            LCC SIB 3D
  B Board        REV 01   711-042424   EH7680            LCC SIB 3D Mezz
  Xcvr 0         REV 01   740-047547   XB48FB04F         CXP Module
  Xcvr 2         REV 01   740-047547   XB48FB04S         CXP Module
  Xcvr 4         REV 01   740-047547   XB48FB04B         CXP Module
  Xcvr 6         REV 01   740-047547   XB48FB043         CXP Module
SIB 1            REV 01   750-041657   EH8012            LCC SIB 3D
  B Board        REV 01   711-042424   EH7658            LCC SIB 3D Mezz
  Xcvr 0         REV 01   740-047547   XB48FB05E         CXP Module
  Xcvr 2         REV 01   740-047547   XB48FB01Z         CXP Module
  Xcvr 4         REV 01   740-047547   XB48FB018         CXP Module
  Xcvr 6         REV 01   740-047547   XB48FB054         CXP Module
SIB 2            REV 01   750-041657   EH7993            LCC SIB 3D
  B Board        REV 01   711-042424   EH7678            LCC SIB 3D Mezz
  Xcvr 0         REV 01   740-047547   XB48FB05C         CXP Module
  Xcvr 2         REV 01   740-047547   XB47FB00N         CXP Module
  Xcvr 4         REV 01   740-047547   XB48FB05U         CXP Module
  Xcvr 6         REV 01   740-047547   XB48FB05L         CXP Module
Fan Tray 0                                                        Front Top Fan Tray
Fan Tray 1                                                        Front Bottom Fan Tray
Fan Tray 2                                                        Rear Fan Tray -- Rev 4
```

show chassis hardware clei-models (TX Matrix Plus Router with 3D SIBs)

```
user@host> show chassis hardware clei-models
sfc0-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  CLEI code         FRU model number
Midplane         REV 05   710-022574                     CHAS-BP-TXP-S
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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
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  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
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  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:
--------------------------------------------------------------------------
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
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  PIC 1          REV 17   750-034624   IP9IAL2DAA        PF-12XGE-SFPP
FPC 5            REV 01   750-045173   IP9IAL4DAB        T4000-FPC5-3D
  PIC 0          REV 17   750-034624   IP9IAL2DAA        PF-12XGE-SFPP
  PIC 1          REV 17   750-034624   IP9IAL2DAA        PF-12XGE-SFPP
FPC 6            REV 01   750-045173   IP9IAL4DAB        T4000-FPC5-3D
  PIC 0          REV 17   750-034624   IP9IAL2DAA        PF-12XGE-SFPP
  PIC 1          REV 10   750-035293   IP9IAL3DAA        PF-1CGE-CFP
SIB 0            REV 06   750-041657   PROTOXCLEI        SIB-TXP-3D-LCC
  Xcvr 0         REV 01   740-048813
  Xcvr 1         REV 01   740-048813
  Xcvr 2         REV 01   740-048813
  Xcvr 3         REV 01   740-048813
  Xcvr 4         REV 01   740-048813
  Xcvr 5         REV 01   740-048813
  Xcvr 6         REV 01   740-048813
  Xcvr 7         REV 01   740-048813
SIB 1            REV 06   750-041657   PROTOXCLEI        SIB-TXP-3D-LCC
  Xcvr 0         REV 01   740-048813
  Xcvr 1         REV 01   740-048813
  Xcvr 2         REV 01   740-048813
  Xcvr 3         REV 01   740-048813
  Xcvr 4         REV 01   740-048813
  Xcvr 5         REV 01   740-048813
  Xcvr 6         REV 01   740-048813
  Xcvr 7         REV 01   740-048813
SIB 2            REV 06   750-041657   PROTOXCLEI        SIB-TXP-3D-LCC
  Xcvr 0         REV 01   740-048813
  Xcvr 1         REV 01   740-048813
  Xcvr 2         REV 01   740-048813
  Xcvr 3         REV 01   740-048813
  Xcvr 4         REV 01   740-048813
  Xcvr 5         REV 01   740-048813
  Xcvr 6         REV 01   740-048813
  Xcvr 7         REV 01   740-048813
SIB 3            REV 07   750-041657   PROTOXCLEI        SIB-TXP-3D-LLC
  Xcvr 0         REV 01   740-048813
  Xcvr 1         REV 01   740-048813
  Xcvr 2         REV 01   740-048813
  Xcvr 3         REV 01   740-048813
  Xcvr 4         REV 01   740-048813
  Xcvr 5         REV 01   740-048813
  Xcvr 6         REV 01   740-048813
  Xcvr 7         REV 01   740-048813
SIB 4            REV 06   750-041657   PROTOXCLEI        SIB-TXP-3D-LCC
  Xcvr 0         REV 01   740-048813
  Xcvr 1         REV 01   740-048813
  Xcvr 2         REV 01   740-048813
  Xcvr 3         REV 01   740-048813
  Xcvr 4         REV 01   740-048813
  Xcvr 5         REV 01   740-048813
  Xcvr 6         REV 01   740-048813
  Xcvr 7         REV 01   740-048813
Fan Tray 0                                            FANTRAY-T-S
Fan Tray 1                                            FANTRAY-T-S
Fan Tray 2                                            FANTRAY-TXP3D-LCC-R-S
[Output Truncated]
```

show chassis hardware detail (TX Matrix Plus Router with 3D SIBs)

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

```
sfc0-re0:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN11CAAA4AHB      TXP
Midplane         REV 05   710-022574   ABAC4696          SFC Midplane
FPM Display      REV 09   710-024027   EH3138            TXP FPM Display
CIP 0            REV 12   710-023792   EF6349            TXP CIP
CIP 1            REV 12   710-023792   EG5294            TXP CIP
PEM 0            Rev 06   740-027463   XH04595           Power Entry Module
PEM 1            Rev 06   740-027463   XH04592           Power Entry Module
Routing Engine 0 REV 07   740-026942   P737A-002541      RE-DUO-2600
  ad0    3823 MB  SMART CF             2011030400062C132C13 Compact Flash
  ad1   62720 MB  SMART Lite SATA Drive 201105100009A452A452 Disk 1
Routing Engine 1 REV 07   740-026942   P737A-002602      RE-DUO-2600
  ad0    3823 MB  SMART CF             20110508085EE471E471 Compact Flash
  ad1   62720 MB  SMART Lite SATA Drive 201110210089DF39DF39 Disk 1
CB 0             REV 15   710-022606   EH4376            SFC Control Board
CB 1             REV 15   710-022606   EH4379            SFC Control Board
SPMB 0                    BUILTIN                        SFC Switch CPU
SPMB 1                    BUILTIN                        SFC Switch CPU
SIB F13 0        REV 10   750-035002   EM9305            F13 SIB 3D
  B Board        REV 06   711-035082   EM9667            F13 SIB 3D Mezz
  P Board        REV 05   711-043544   EM9708            F13 SIB 3D Power
  Xcvr 0         REV 01   740-047547   XB34FB00S         CXP Module
  Xcvr 2         REV 01   740-047547   XB48FB01H         CXP Module
  Xcvr 4         REV 01   740-047547   XB34FB02W         CXP Module
  Xcvr 6         REV 01   740-047547   XB34FB01T         CXP Module
  Xcvr 8         REV 01   740-047547   XB48FB00W         CXP Module
  Xcvr 10        REV 01   740-047547   XB34FB01S         CXP Module
  Xcvr 12        REV 01   740-047547   XB34FB03H         CXP Module
  Xcvr 14        REV 01   740-047547   XB34FB023         CXP Module
SIB F13 3        REV 01   710-035001   EJ2612            F13 SIB 3D
  B Board        REV 01   711-035082   EJ3815            F13 SIB 3D Mezz
  P Board        REV 01   711-043544   EJ2678            F13 SIB 3D Power
  Xcvr 0         REV 01   740-047547   XB48FB04C         CXP Module
  Xcvr 2         REV 01   740-047547   XB48FB00Z         CXP Module
  Xcvr 4         REV 01   740-047547   XB47FB036         CXP Module
  Xcvr 6         REV 01   740-047547   XB47FB029         CXP Module
  Xcvr 8         REV 01   740-047547   XB48FB02N         CXP Module
  Xcvr 10        REV 01   740-047547   XB42FB0CS         CXP Module
  Xcvr 12        REV 01   740-047547   XB47FB01X         CXP Module
  Xcvr 14        REV 01   740-047547   XB48FB02F         CXP Module
SIB F13 6        REV 05   750-035002   EK2675            F13 SIB 3D
  B Board        REV 03   711-035082   EK2612            F13 SIB 3D Mezz
  P Board        REV 04   711-043544   EK1179            F13 SIB 3D Power
  Xcvr 0         REV 01   740-047547   XB48FB01T         CXP Module
  Xcvr 2         REV 01   740-047547   XB48FB02M         CXP Module
  Xcvr 4         REV 01   740-047547   XB48FB031         CXP Module
  Xcvr 6         REV 01   740-047547   XB48FB04P         CXP Module
  Xcvr 8         REV 01   740-047547   XB48FB02T         CXP Module
  Xcvr 10        REV 01   740-047547   XB34FB01V         CXP Module
  Xcvr 12        REV 01   740-047547   XB48FB02C         CXP Module
  Xcvr 14                 NON-JNPR                       No Module
SIB F13 12       REV 01   710-035001   EJ2631            F13 SIB 3D
  B Board        REV 01   711-035082   EJ3808            F13 SIB 3D Mezz
  P Board        REV 01   711-043544   EJ2676            F13 SIB 3D Power
SIB F2S 0/0      REV 01   711-034977   EH9829            F2S SIB 3D
  B Board        REV 01   711-034979   EH9927            F2S SIB 3D Mezz
SIB F2S 0/2      REV 01   711-034977   EH9791            F2S SIB 3D
  B Board        REV 01   711-034979   EH9852            F2S SIB 3D Mezz
```


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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

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
  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
```

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  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:
--------------------------------------------------------------------------
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                               JN11B3975AHA      T1600
Midplane         REV 01   710-027486   RC9826           T-series Backplane
FPM GBUS         REV 13   710-002901   BBAG5124         T640 FPM Board
FPM Display      REV 03   710-021387   BBAJ1112         T1600 FPM Display
CIP              REV 06   710-002895   BBAL3744         T-series CIP
PEM 0            REV 05   740-036442   1G022060081      Power Entry Module 6x60
PEM 1            REV 05   740-036442   1G022060188      Power Entry Module 6x60
SCG 0            REV 18   710-003423   BBAH8775         T640 Sonet Clock Gen.
SCG 1            REV 18   710-003423   BBAL7272         T640 Sonet Clock Gen.
Routing Engine 0 REV 07   740-026941   P737F-002992     RE-DUO-1800
  ad0    3823 MB  SMART CF             201103030356329E329E Compact Flash
  ad1   62720 MB  SMART Lite SATA Drive 2011051000488D8B8D8B Disk 1
Routing Engine 1 REV 07   740-026941   P737F-002938     RE-DUO-1800
  ad0    3823 MB  SMART CF             20110304000F02680268 Compact Flash
  ad1   62720 MB  SMART Lite SATA Drive 201105300A70F325F325 Disk 1
CB 0             REV 11   710-022597   EH4805           LCC Control Board
CB 1             REV 11   710-022597   EH4786           LCC Control Board
FPC 1            REV 01   710-033873   BBAH0320         FPC Type 3-ES
  CPU            REV 11   710-016744   BBAF3281         ST-PMB2
  MMB 0          REV 06   710-025563   BBAF5061         ST-MMB2
FPC 5            REV 04   710-033871   BBAM5070         FPC Type 4-ES
  CPU            REV 11   710-016744   BBAM6653         ST-PMB2
  PIC 1          REV 20   750-017405   BBAM1296         4x 10GE (LAN/WAN) XFP
    Xcvr 0       REV 03   740-014289   T10B42981        XFP-10G-SR
  MMB 0          REV 07   710-025563   BBAN2631         ST-MMB2
  MMB 1          REV 07   710-025563   BBAN2538         ST-MMB2
SPMB 0           REV 05   710-023321   EH3903           LCC Switch CPU
SPMB 1           REV 05   710-023321   EH3902           LCC Switch CPU
SIB 0            REV 01   750-041657   EH8019           LCC SIB 3D
  B Board        REV 01   711-042424   EH7680           LCC SIB 3D Mezz
  Xcvr 0         REV 01   740-047547   XB48FB04F        CXP Module
  Xcvr 2         REV 01   740-047547   XB48FB04S        CXP Module
```


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  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
```

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  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                                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
```


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```
  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
```


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```
  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 Airlfow
Fan Tray 1                                               QFX Fan Tray, Back to
Front Airlfow
Fan Tray 2                                               QFX Fan Tray, Back to
Front Airlfow
```

show chassis hardware detail (QFX3500 Switches)

```
user@switch> 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
```

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```
    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
```


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```
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 (QFX10002 Switches)

```
user@switch> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                12345             QFX10002-36Q
Pseudo CB 0
Routing Engine 0          BUILTIN      BUILTIN           RE-QFX10002-36Q
FPC 0            REV 26   750-059497   ACNL1387          QFX10002-36Q
  CPU                     BUILTIN      BUILTIN           FPC CPU
  PIC 0                   BUILTIN      BUILTIN           36X40G
    Xcvr 0       REV 01   740-038623   MOC15476230389    QSFP+-40G-CU1M
    Xcvr 1       REV 01   740-038623   MOC15476230438    QSFP+-40G-CU1M
    Xcvr 2       REV 01   740-038623   MOC15446231917    QSFP+-40G-CU1M
    Xcvr 3       REV 01   740-038623   MOC15446232043    QSFP+-40G-CU1M
    Xcvr 4       REV      740-038624   APF15470032AVB    QSFP+-40G-CU3M
    Xcvr 5       REV      740-038624   APF15470032H15    QSFP+-40G-CU3M
    Xcvr 6       REV      740-038624   APF15470032A9J    QSFP+-40G-CU3M
    Xcvr 7       REV      740-038624   APF15470032AG7    QSFP+-40G-CU3M
    Xcvr 8       REV      740-038624   APF15470032ALD    QSFP+-40G-CU3M
    Xcvr 9       REV 01   740-053203   APF15470071V43    QSFP+-40G-ACU7M
    Xcvr 10      REV 01   740-053203   APF15470071V15    QSFP+-40G-ACU7M
    Xcvr 11      REV 01   740-053203   APF15470071V12    QSFP+-40G-ACU7M
    Xcvr 13      REV      740-038624   APF15470032H1N    QSFP+-40G-CU3M
    Xcvr 18      REV 01   740-053203   APF154800738HW    QSFP+-40G-ACU7M
    Xcvr 19      REV 01   740-038153   MOC12161530041    QSFP+-40G-CU3M
    Xcvr 20      REV 01   740-038153   APF15500034A29    QSFP+-40G-CU3M
    Xcvr 30      REV 01   740-038623   MOC15476230444    QSFP+-40G-CU1M
    Xcvr 31      REV 01   740-032986   QC330038          QSFP+-40G-SR4
    Xcvr 32      REV 01   740-032986   QC290540          QSFP+-40G-SR4
  Mezz           REV 02   711-059316   ACNG9344          QFX10002 36X40G Mezz
Power Supply 0   REV 03   740-054405   1EDN5389293       AC AFO 1600W PSU
```

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```
Power Supply 1   REV 03   740-054405   1EDN5346300       AC AFO 1600W PSU
Fan Tray 0                                              QFX10002 Fan Tray 0,
Front to Back Airflow - AFO
Fan Tray 1                                              QFX10002 Fan Tray 1,
Front to Back Airflow - AFO
Fan Tray 2                                              QFX10002 Fan Tray 2,
Front to Back Airflow - AFO
```

show chassis hardware detail (QFX10002 Switches)

```
user@switch> show chassis hardware detail
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                12345             QFX10002-72Q
Pseudo CB 0
Routing Engine 0          BUILTIN      BUILTIN           RE-QFX10002-72Q
ada0   8193 MB  QEMU                 QM00001           Virtio Block Disk
ada1   4096 MB  QEMU                 QM00002           Virtio Block Disk
ada2    512 MB  QEMU                 QM00003           Virtio Block Disk
ada3   1024 MB  QEMU                 QM00004           Virtio Block Disk
usb0 (addr 0.1)  UHCI root HUB 0      Intel             uhub0
usb0 (addr 1.1)  EHCI root HUB 0      Intel             uhub1
usb0 (addr 1.2)  product 0x0020 32    vendor 0x8087     uhub2
usb0 (addr 1.3)  Ultra Fit  21891     SanDisk           umass0
FPC 0            REV 05   750-055415 ACAM4724          QFX10002-72Q
CPU                      BUILTIN      BUILTIN           FPC CPU
```

show chassis hardware (QFX10008 and QFX10016 Switches)

```
user@switch> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                DE994             QFX10008
Midplane         REV 28   750-054097   ACPG3671          QFX10008 Midplane
Routing Engine 0          BUILTIN      BUILTIN           Routing Engine
Routing Engine 1          BUILTIN      BUILTIN           Routing Engine
CB 0             REV 03   750-068820   ACPA3224          Control Board
CB 1             REV 03   750-068820   ACPM9059          Control Board
FPC 0            REV 33   750-051354   ACNP4522          ULC-36Q-12Q28
  CPU                     BUILTIN      BUILTIN           FPC CPU
  PIC 0                   BUILTIN      BUILTIN           36X40G
    Xcvr 0       REV 01   740-038623   MOC16016230802    QSFP+-40G-CU1M
    Xcvr 1       REV 01   740-038623   MOC16016230802    QSFP+-40G-CU1M
    Xcvr 2       REV 01   740-038623   MOC16016231080    QSFP+-40G-CU1M
    Xcvr 3       REV 01   740-038623   MOC16016231080    QSFP+-40G-CU1M
    Xcvr 4       REV      740-038624   APF16220038H15    QSFP+-40G-CU3M
    Xcvr 5       REV      740-038624   APF16220038H5M    QSFP+-40G-CU3M
    Xcvr 6       REV      740-038624   APF160600308W8    QSFP+-40G-CU3M
    Xcvr 8       REV      740-038624   APF16210038FFL    QSFP+-40G-CU3M
    Xcvr 9       REV      740-038624   APF16210038F6F    QSFP+-40G-CU3M
    Xcvr 10      REV      740-038624   APF1605003032B    QSFP+-40G-CU3M
    Xcvr 11      REV      740-038624   APF16070030CDB    QSFP+-40G-CU3M
    Xcvr 13      REV      740-038624   APF16210038FEW    QSFP+-40G-CU3M
    Xcvr 15      REV 01   740-052307   APF16100071C1L    QSFP+-40G-ACU7M
    Xcvr 16      REV      740-038625   APF1623005048E    QSFP+-40G-CU5M
    Xcvr 17      REV      740-038625   APF16230050471    QSFP+-40G-CU5M
    Xcvr 18      REV      740-038625   APF1623005044D    QSFP+-40G-CU5M
    Xcvr 19      REV 01   740-052307   APF16100071C30    QSFP+-40G-ACU7M
    Xcvr 20      REV      740-038625   APF16290055004    QSFP+-40G-CU5M
```


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```
    Xcvr 21      REV 01   740-038153   APF1622003970G    QSFP+-40G-CU3M
    Xcvr 22      REV      740-038624   APF16190036R90    QSFP+-40G-CU3M
    Xcvr 23      REV      740-038624   APF16050030374    QSFP+-40G-CU3M
    Xcvr 24      REV 01   740-038153   APF162400318HC    QSFP+-40G-CU3M
    Xcvr 30      REV      740-038624   APF1606003097A    QSFP+-40G-CU3M
    Xcvr 31      REV 01   740-052307   APF160500702R9    QSFP+-40G-ACU7M
    Xcvr 32      REV      740-038624   APF16220038GVR    QSFP+-40G-CU3M
FPD Board        REV 07   711-054687   ACPC7158          QFX10000 FPD
Power Supply 0   REV 02   740-049388   1EDL63104D6       QFX10000 AC
Power Supply 1   REV 02   740-049388   1EDL62503XC       QFX10000 AC
Power Supply 2   REV 02   740-049388   1EDL62503XS       QFX10000 AC
Power Supply 3   REV 02   740-049388   1EDL62503T8       QFX10000 AC
Power Supply 4   REV 02   740-049388   1EDL62503TR       QFX10000 AC
Power Supply 5   REV 02   740-049388   1EDL62503T5       QFX10000 AC
FTC 0            REV 15   750-050108   ACPF4227          QFX10000 FTC
FTC 1            REV 15   750-050108   ACPF4228          QFX10000 FTC
Fan Tray 0       REV 09   760-054372   ACNV5506          QFX10008 FHB
Fan Tray 1       REV 09   760-054372   ACNV5365          QFX10008 FHB
SIB 0            REV 27   750-050058   ACPM4212          QFX10008 SIB
SIB 1            REV 27   750-050058   ACPM4253          QFX10008 SIB
SIB 2            REV 27   750-050058   ACPM4174          QFX10008 SIB
SIB 3            REV 27   750-050058   ACPM4191          QFX10008 SIB
SIB 4            REV 27   750-050058   ACPM4216          QFX10008 SIB
SIB 5            REV 27   750-050058   ACPM4286          QFX10008 SIB
```

show chassis hardware detail (QFX10008 and QFX10016 Switches)

```
user@switch> show chassis hardware details
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                12345             QFX10008
Midplane         REV 01   750-054097   ACAM1754          QFX10008 Midplane
Routing Engine 0          BUILTIN      BUILTIN           Routing Engine
ada0   8193 MB  QEMU                  QM00001           Virtio Block Disk
ada1   4096 MB  QEMU                  QM00002           Virtio Block Disk
ada2    512 MB  QEMU                  QM00003           Virtio Block Disk
ada3   1024 MB  QEMU                  QM00004           Virtio Block Disk
usb0 (addr 1)  UHCI root HUB 0        Intel             uhub0
usb0 (addr 1)  EHCI root HUB 0        Intel             uhub1
usb0 (addr 2)  product 0x0020 32      vendor 0x8087     uhub2
Routing Engine 1          BUILTIN      BUILTIN           Routing Engine
ada0   8193 MB  QEMU                  QM00001           Virtio Block Disk
ada1   4096 MB  QEMU                  QM00002           Virtio Block Disk
ada2    512 MB  QEMU                  QM00003           Virtio Block Disk
ada3   1024 MB  QEMU                  QM00004           Virtio Block Disk
usb0 (addr 0.1)  UHCI root HUB 0      Intel             uhub0
usb0 (addr 1.1)  EHCI root HUB 0      Intel             uhub1
usb0 (addr 1.2)  product 0x0020 32    vendor 0x8087     uhub2
CB 0             REV 16   750-052688   ACAM7936          Control Board
CB 1             REV 18   750-052688   ACAM7708          Control Board
FPC 0            REV 26   750-051351   ACPJ1372          ULC-60S-6Q Main Board
CPU                      BUILTIN      BUILTIN           FPC CPU
```

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                                  QFX_olive
```

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```
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                                JN11D1FD7AJA      PTX5000
Midplane         REV 03   711-031896   ABAC5589          Midplane-8S
FPM              REV 08   760-030647   EG1679            Front Panel Display
PDU 0            Rev 05   740-032019   ZE00006           DC Power Dist Unit
  PSM 0          Rev 05   740-032022   ZJ00018           DC 12V Power Supply
  PSM 1          Rev 04   740-032022   ZC00052           DC 12V Power Supply
  PSM 2          Rev 04   740-032022   ZD00051           DC 12V Power Supply
  PSM 3          Rev 05   740-032022   ZJ00060           DC 12V Power Supply
CCG 0            REV 04   750-030653   EG3703            Clock Generator
CCG 1            REV 04   750-030653   EG3698            Clock Generator
Routing Engine 0 REV 05   740-026942   P737A-002231      RE-DUO-2600
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
```


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```
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
```

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```
  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 3            REV 13   750-036844   PROTOXCLEI        FPC-PTX-P1-A
FPC 5
  PIC 0          REV 14   750-031913   PROTOXCLEI        P1-PTX-24-10GE-SFPP
FPC 6            REV 18   750-036844   PROTOXCLEI        FPC-PTX-P1-A
FPC 7            REV 18   750-036844   PROTOXCLEI        FPC-PTX-P1-A
SIB 0            REV 07   750-030631   PROTOXCLEI        SIB-I-PTX5008
SIB 1            REV 07   750-030631   PROTOXCLEI        SIB-I-PTX5008
```


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```
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
...
```

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show chassis hardware detail (PTX5000 Packet Transport Router)

```
user@host> show chassis hardware detail
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN11D1FD7AJA      PTX5000
Midplane         REV 03   711-031896   ABAC5589          Midplane-8S
FPM              REV 08   760-030647   EG1679            Front Panel Display
PDU 0            Rev 05   740-032019   ZE00006           DC Power Dist Unit
  PSM 0          Rev 05   740-032022   ZJ00018           DC 12V Power Supply
  PSM 1          Rev 04   740-032022   ZC00052           DC 12V Power Supply
  PSM 2          Rev 04   740-032022   ZD00051           DC 12V Power Supply
  PSM 3          Rev 05   740-032022   ZJ00060           DC 12V Power Supply
CCG 0            REV 04   750-030653   EG3703            Clock Generator
CCG 1            REV 04   750-030653   EG3698            Clock Generator
Routing Engine 0 REV 05   740-026942   P737A-002231      RE-DUO-2600
  ad0    3823 MB  SMART CF             201006190039C02DC02D Compact Flash
  ad1   62720 MB  SMART Lite SATA Drive 2011042300CF4C6B4C6B Disk 1
Routing Engine 1 REV 06   740-026942   P737A-002438      RE-DUO-2600
  ad0    3823 MB  SMART CF             20100619053455F055F0 Compact Flash
  ad1   62720 MB  SMART Lite SATA Drive 20110423000AE8E7E8E7 Disk 1
CB 0             REV 08   750-030625   EG5519            Control Board
CB 1             REV 08   750-030625   EG5516            Control Board
FPC 0            REV 18   750-036844   EJ3080            FPC
  CPU            REV 12   711-030686   EJ3260            SNG PMB
FPC 2            REV 13   750-036844   EG5065            FPC
  CPU            REV 09   711-030686   EG4082            SNG PMB
  PIC 0          REV 14   750-031913   EG5127            24x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-031980   143363A00240      SFP+-10G-SR
    Xcvr 1       REV 01   740-031981   UK90PZ1           SFP+-10G-LR
    Xcvr 2       REV 01   740-031980   AD1141A04XH       SFP+-10G-SR
    Xcvr 3       REV 01   740-031981   UK90Q46           SFP+-10G-LR
    Xcvr 4       REV 01   740-031980   AD1141A04X4       SFP+-10G-SR
    Xcvr 6       REV 01   740-031980   B11H02560         SFP+-10G-SR
    Xcvr 7       REV 01   740-031980   B11C01589         SFP+-10G-SR
    Xcvr 8       REV 01   740-031980   AD1141A04XF       SFP+-10G-SR
    Xcvr 10      REV 01   740-031980   123363A01094      SFP+-10G-SR
    Xcvr 11      REV 01   740-031980   AK80LKF           SFP+-10G-SR
    Xcvr 12      REV 01   740-031980   183363A01528      SFP+-10G-SR
    Xcvr 14      REV 01   740-031980   193363A01079      SFP+-10G-SR
    Xcvr 15      REV 01   740-031980   AK80MC8           SFP+-10G-SR
    Xcvr 16      REV 01   740-031980   AJC0BHC           SFP+-10G-SR
    Xcvr 19      REV 01   740-021309   J08D26856         SFP+-10G-LR
    Xcvr 21      REV 01   740-031980   AK80KCT           SFP+-10G-SR
    Xcvr 22      REV 01   740-031981   UK90PZL           SFP+-10G-LR
    Xcvr 23      REV 01   740-031980   AK80N1V           SFP+-10G-SR
FPC 3            REV 13   750-036844   EG5074            FPC
  CPU            REV 09   711-030686   EG4064            SNG PMB
  PIC 1          REV 10   750-031903   EG0325            SNG Load
FPC 5            REV 06   750-036844   EH3198            FPC
  CPU
  PIC 0          REV 14   750-031913   EG5134            24x 10GE(LAN) SFP+
    Xcvr 0       REV 01   740-031980   AK80LBH           SFP+-10G-SR
    Xcvr 1       REV 01   740-031980   B11B03724         SFP+-10G-SR
    Xcvr 2       REV 01   740-031980   AK80FMH           SFP+-10G-SR
    Xcvr 5       REV 01   740-031980   B11J00818         SFP+-10G-SR
    Xcvr 6       REV 01   740-031980   193363A00743      SFP+-10G-SR
    Xcvr 7       REV 01   740-031980   B11B06125         SFP+-10G-SR
    Xcvr 10      REV 01   740-031980   B11H02529         SFP+-10G-SR
    Xcvr 11      REV 01   740-031980   AK80LFB           SFP+-10G-SR
    Xcvr 12      REV 01   740-031980   193363A01061      SFP+-10G-SR
```


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```
    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
```

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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> 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
```


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show chassis hardware models (PTX5000 Packet Transport Router with AC PSM and PDU)

```
user@host> 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
```

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```
 Version:      Rev 04            CLEI Code:         032022XXXX
 ID: DC Power Dist Unit          FRU Model Number:  PWR-SAN-PDU-DC
 Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 3d 04 00 52 65 76 20 30 34 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 33 32 30 31 39 00 00
  Address 0x20: 53 2f 4e 20 55 45 30 30 30 33 00 00 00 1d 0b 07
  Address 0x30: da ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 30 33 32 30 32 32 58 58 58 58 50
  Address 0x50: 57 52 2d 53 41 4e 2d 50 44 55 2d 44 43 00 00 00
  Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x70: 00 00 00 a3 ff ff ff ff ff ff ff ff ff ff ff ff
  PSM 0          Rev 04   740-032022   YG00065           DC 12V Power Supply
Module
 Jedec Code:   0x7fb0            EEPROM Version:    0x02
 P/N:          740-032022        S/N:               YG00065
 Assembly ID:  0x0440            Assembly Version:  04.00
 Date:         07-30-2010        Assembly Flags:    0x00
 Version:      Rev 04            CLEI Code:         032022XXXX
 ID: DC 12V Power Supply Module  FRU Model Number:  PWR-SAN-12-DC
 Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
 I2C Hex Data:
  Address 0x00: 7f b0 02 ff 04 40 04 00 52 65 76 20 30 34 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 33 32 30 32 32 00 00
  Address 0x20: 53 2f 4e 20 59 47 30 30 30 36 35 00 00 1e 07 07
  Address 0x30: da ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 30 33 32 30 32 32 58 58 58 58 50
  Address 0x50: 57 52 2d 53 41 4e 2d 31 32 2d 44 43 20 20 20 20
  Address 0x60: 20 20 20 20 20 20 01 00 ff ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 0c ff ff ff ff ff ff ff ff ff ff ff ff
```

show chassis hardware 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          BUILTIN      BUILTIN           RE-PTX1000
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
```


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```
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 00
  MIC 0          REV 06   750-037214   ZW3574            AS-MSC
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-MSC          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 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 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 00
 Address 0x60: 00 00 00 00 00 00 30 36 00 ff 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-MSC
 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 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 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 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          BUILTIN      BUILTIN           ACX5K Routing Engine
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
```


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```
    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                                              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
Fan Tray 3                                              ACX5K Fan Tray 3, Front
 to Back Airflow - AFO
Fan Tray 4                                              ACX5K Fan Tray 4, Front
 to Back Airflow - AFO
```

show chassis hardware detail (ACX5048 Router)

```
user@host> show chassis hardware detail
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                VF3714170810      ACX5048
Pseudo CB 0
Routing Engine 0          BUILTIN      BUILTIN           ACX5K Routing Engine
  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 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                                              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
Fan Tray 3                                              ACX5K Fan Tray 3, Front
 to Back Airflow - AFO
Fan Tray 4                                              ACX5K Fan Tray 4, Front
 to Back Airflow - AFO
```

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
  PIC 0                   BUILTIN      CMMRG00BRA        ACX5048
Power Supply 1   REV 03   740-041741   CMUPABHBAA        JPSU-650W-AC-AFO
```

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```
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          BUILTIN      BUILTIN           ACX5048
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                                              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 (ACX5096 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                VB3714510139      ACX5096
Pseudo CB 0
Routing Engine 0          BUILTIN      BUILTIN           ACX5K Routing Engine
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 2       REV 01   740-031851   AM1045SUA1G       SFP-SX
    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 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   AMS0YSS           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                                              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 detail (ACX5096 Router)

```
user@host> show chassis hardware detail
Hardware inventory:
Item             Version  Part number  Serial number     Description
```


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```
Chassis                                 VB3714510139      ACX5096
Pseudo CB 0
Routing Engine 0          BUILTIN       BUILTIN           ACX5K Routing Engine
  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
```

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show chassis hardware (ACX500 Router)

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


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```
  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
```

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```
 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
```


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show configuration

Syntax show configuration
<*statement-path*>

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

Description Display the configuration that currently is running on the router or switch, which is the last committed configuration.

Options **none**—Display the entire configuration.

statement-path—(Optional) Display one of the following hierarchies in a configuration. (Each ***statement-path*** option has additional suboptions not described here. See the appropriate feature guide or EX Series switch documentation for more information.)

- **access**—Network access configuration.
- **access-profile**—Access profile configuration.
- **accounting-options**—Accounting data configuration.
- **applications**—Applications defined by protocol characteristics.
- **apply-groups**—Groups from which configuration data is inherited.
- **chassis**—Chassis configuration.
- **chassis network-services**—Current running mode.
- **class-of-service**—Class-of-service configuration.
- **diameter**—Diameter base protocol layer configuration.
- **ethernet-switching-options**—(EX Series switch only) Ethernet switching configuration.
- **event-options**—Event processing configuration.
- **firewall**—Firewall configuration.
- **forwarding-options**—Options that control packet sampling.
- **groups**—Configuration groups.
- **interfaces**—Interface configuration.
- **jsrc**—JSRC partition configuration.
- **jsrc-partition**—JSRC partition configuration.
- **logical-systems**—Logical system configuration.
- **poe**—(EX Series switch only) Power over Ethernet configuration.
- **policy-options**—Routing policy option configuration.

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- **protocols**—Routing protocol configuration.
- **routing-instances**—Routing instance configuration.
- **routing-options**—Protocol-independent routing option configuration.
- **security**—Security configuration.
- **services**—Service PIC applications configuration.
- **snmp**—Simple Network Management Protocol configuration.
- **system**—System parameters configuration.
- **virtual-chassis**—(EX Series switch only) Virtual Chassis configuration.
- **vlans**—(EX Series switch only) VLAN configuration.

Additional Information

The portions of the configuration that you can view depend on the user class that you belong to and the corresponding permissions. If you do not have permission to view a portion of the configuration, the text **ACCESS-DENIED** is substituted for that portion of the configuration. If you do not have permission to view authentication keys and passwords in the configuration, because the **secret** permission bit is not set for your user account, the text **SECRET-DATA** is substituted for that portion of the configuration. If an identifier in the configuration contains a space, the identifier is displayed in quotation marks.

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 460
show configuration policy-options on page 461

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;
```


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```
   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

Syntax show host *hostname*

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
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 Domain Name System (DNS) hostname information.

Options ***hostname***—Hostname or address.

Additional Information The **show host** command displays the raw data received from the DNS server.

Required Privilege Level view

List of Sample Output show host on page 462

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:
```


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show log

List of Syntax

Syntax on page 463
Syntax (QFX Series and OCX Series) on page 463
Syntax (TX Matrix Router) on page 463

Syntax

show log
<*filename* | user <*username*>>

Syntax (QFX Series and OCX Series)

show log *filename*
<*device-type (device-id* | *device-alias*)>

Syntax (TX Matrix Router)

show log
<all-lcc | lcc *number* | scc>
<*filename* | user <*username*>>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 11.1 for the QFX Series.
Option *device-type (device-id* | *device-alias*) 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.

Description

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).

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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 464
show log filename on page 465
show log filename (QFabric System) on page 465
show log user on page 466

Sample Output

show log

```
user@host> show log
```


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```
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)
```

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```
Mar 28 18:00:50 qfabric file: QFABRIC_INTERNAL_SYSLOG: Mar 28 18:00:50
_DCF_default___NW-INE-0_RE0_ 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_RE0_ 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)
```


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show system connections

List of Syntax

Syntax on page 467
Syntax (EX Series) on page 467
Syntax (TX Matrix Router) on page 467
Syntax (TX Matrix Plus Router) on page 467
Syntax (MX Series Router) on page 467
Syntax (QFX Series) on page 467
Syntax (OCX Series) on page 468

Syntax

show system connections
<extensive>
<all-chassis | all-lcc | lcc *number* | scc>
<inet | inet6>
<show-routing-instances>

Syntax (EX Series)

show system connections
<extensive>
<all-members>
<inet | inet6>
<local>
<member *member-id*>
<show-routing-instances>

Syntax (TX Matrix Router)

show system connections
<extensive>
<all-chassis | all-lcc | lcc *number* | scc>
<inet | inet6>
<show-routing-instances>

Syntax (TX Matrix Plus Router)

show system connections
<extensive>
<all-chassis | all-lcc | lcc *number* | sfc *number*>
<inet | inet6>
<show-routing-instances>

Syntax (MX Series Router)

show system connections
<extensive>
<all-members>
<inet | inet6>
<local>
<member *member-id*>
<show-routing-instances>

Syntax (QFX Series)

show system connections
<extensive>
<inet>
<infrastructure *name*>
<interconnect-device *name*>
<node-group *name*>

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<show-routing-instances>

Syntax (OCX Series)

show system connections
<extensive>
<inet>
<show-routing-instances>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
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 information about the active IP sockets on the Routing Engine. Use this command to verify which servers are active on a system and what connections are currently in progress.

Options

none—Display information about all active IP sockets on the Routing Engine.

extensive—(Optional) Display exhaustive system process information, which, for TCP connections, includes the TCP control block. This option is useful for debugging TCP connections.

all-chassis—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display system connection activity for all the routers in the chassis.

all-lcc—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system connection activity for all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display system connection activity for all connected T1600 or T4000 LCCs

all-members—(EX4200 switches and MX Series routers only) (Optional) Display system connection activity for all members of the Virtual Chassis configuration.

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

infrastructure *name*—(QFabric systems only) (Optional) Display system connection activity for the fabric control Routing Engines or fabric manager Routing Engines.

interconnect-device *name*—(QFabric systems only) (Optional) Display system connection activity for the Interconnect device.

lcc *number*—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display system connection activity for a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, display system connection activity for a specific router that is connected to the TX Matrix Plus router.

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Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

local—(EX4200 switches and MX Series routers only) (Optional) Display system connection activity for the local Virtual Chassis member.

member *member-id*—(EX4200 switches and MX Series routers only) (Optional) Display system connection activity for the specified member of the Virtual Chassis configuration. For EX4200 switches, replace ***member-id*** with a value from 0 through 9. For an MX Series Virtual Chassis, replace ***member-id*** with a value of 0 or 1.

node-group *name*—(QFabric systems only) (Optional) Display system connection activity for the Node group.

scc—(TX Matrix routers only) (Optional) Display system connection activity for the TX Matrix router (or switch-card chassis).

sfc—(TX Matrix routers only) (Optional) Display system connection activity for the TX Matrix Plus router.

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

Additional Information

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

Required Privilege Level

view

Related Documentation

- *Routing Matrix with a TX Matrix Plus Router Solutions Page*

List of Sample Output

show system connections on page 470
show system connections extensive on page 471
show system connections lcc (TX Matrix Router) on page 472
show system connections show-routing-instances on page 472
show system connections (TX Matrix Plus Router) on page 473

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show system connections sfc (TX Matrix Plus Router) on page 476
show system connections show-routing-instances (TX Matrix Plus Router) on page 478

Output Fields Table 10 on page 470 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
Proto	Protocol of the socket: **IP**, **TCP**, or **UDP** for IPv4 or IPv6.
Recv-Q	Number of input packets received by the protocol and waiting to be processed by the application.
Send-Q	Number of output packets sent by the application and waiting to be processed by the protocol.
Local Address	Local address and port of the socket, separated by a period. An asterisk (*) indicates that the bound address is the wildcard address. Server sockets typically have the wildcard address and a well-known port bound to them.
Foreign Address	Foreign address and port of the socket, separated by a period. An asterisk (*) indicates that the address or port is a wildcard.
Routing Instance	(Displayed only when the **show-routing-instance** option is used.) Routing instances associated with active IP sockets on the Routing Engine.
(state)	For TCP, the protocol state of the socket.

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      2  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     *.*
```


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```
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> 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: 2555961065      sndup: 2555995917
    snduna: 2555995917     sndnxt: 2555995917      sndwnd:      16384
    sndmax: 2555995917    sndcwnd:       1000 sndssthresh: 1073725440
       irs: 2123825753      rcvup: 2123860681
    rcvnxt: 2123860681     rcvadv: 2123877065      rcvwnd:      16384
       rtt:          0       srtt:       3309        rttv:         72
    rxtcur:       1200   rxtshift:          0       rtseq: 2555995898
    rttmin:       1000  mss:        500
     flags: REQ_SCALE RCVD_SCALE REQ_TSTMP RCVD_TSTMP SACK_PERMIT [0x3e0]
tcp4       0      0  10.255.165.203.65141
10.255.165.93.179                             ESTABLISHED
   sndsbcc:          0 sndsbmbcnt:          0  sndsbmbmax:     131072
sndsblowat:       2048 sndsbhiwat:      16384
   rcvsbcc:          0 rcvsbmbcnt:          0  rcvsbmbmax:     131072
rcvsblowat:          1 rcvsbhiwat:      16384
   proc id:       5022  proc name:        rpd
       iss: 2123825753      sndup: 2123860662
    snduna: 2123860681     sndnxt: 2123860681      sndwnd:      16384
    sndmax: 2123860681    sndcwnd:       1000 sndssthresh: 1073725440
       irs: 2555961065      rcvup: 2555995917
    rcvnxt: 2555995917     rcvadv: 2556012301      rcvwnd:      16384
       rtt:          0       srtt:       3279        rttv:         22
```

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```
    rxtcur:       1200   rxtshift:          0       rtseq: 2123860662
    rttmin:       1000  mss:        500
     flags: REQ_SCALE RCVD_SCALE REQ_TSTMP RCVD_TSTMP SACK_PERMIT [0x100003e0]
tcp4       0      0  10.255.165.203.179
10.255.165.113.52404                          ESTABLISHED
   sndsbcc:          0 sndsbmbcnt:          0  sndsbmbmax:     131072
sndsblowat:       2048 sndsbhiwat:      16384
   rcvsbcc:          0 rcvsbmbcnt:          0  rcvsbmbmax:     131072
rcvsblowat:          1 rcvsbhiwat:      16384
   proc id:          0  proc name:
       iss: 1109297190      sndup: 1109332099
    snduna: 1109332118     sndnxt: 1109332118      sndwnd:      16384
    sndmax: 1109332118    sndcwnd:       1000 sndssthresh: 1073725440
       irs: 1476831634      rcvup: 1476866449
    rcvnxt: 1476866449     rcvadv: 1476882833      rcvwnd:      16384
       rtt:          0       srtt:       3235        rttv:         18
    rxtcur:       1200   rxtshift:          0       rtseq: 1109332099
    rttmin:       1000  mss:        500
     flags: REQ_SCALE RCVD_SCALE REQ_TSTMP RCVD_TSTMP SACK_PERMIT [0x3e0]
```

show system connections lcc (TX Matrix Router)

```
user@host> show system connections lcc 2

lcc2-re0:
--------------------------------------------------------------------------------
Active Internet connections (including servers)
Proto Recv-Q Send-Q  Local Address          Foreign Address        (state)
tcp4       0      0  192.0.2.131.1342    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
```


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```
__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                                  *.*
```


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```
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)
```


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```
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                                      *.*
```

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

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

```
user@host> show system connections show-routing-instances
sfc0-re0:
-
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q  Local Address                          Foreign Address
                              Routing Instance       (state)
tcp4       0      0  *.6156                                 *.*
                                __juniper_private1__   LISTEN
tcp4       0      0  *.9000                                 *.*
                                __juniper_private1__   LISTEN
tcp4       0      0  *.666                                  *.*
```


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```
                                    __juniper_private1__   LISTEN
tcp4       0      2  192.168.178.11.23
172.17.28.19.3565                              default                ESTABLISHED
tcp4       0      0  192.168.178.11.23
172.17.28.204.62719                            default                ESTABLISHED
tcp4       0      0  192.168.178.11.23
192.168.69.199.51255                           default                ESTABLISHED
tcp4       0      0  192.168.178.11.23
172.24.26.227.42860                            default                ESTABLISHED
tcp4       0      0  162.0.0.4.32012                              162.0.0.5.58935
                                 __juniper_private1__   ESTABLISHED
tcp4       0      0  *.32012                                        *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.33007                                        *.*
                                    __juniper_private2__   LISTEN
tcp4       0      0  162.0.0.4.6161                               162.0.0.5.62026
                                 __juniper_private1__   ESTABLISHED
tcp4       0      0  *.33005                                        *.*
                                    __juniper_private2__   LISTEN
tcp4       0      0  162.0.0.4.9000                               162.0.0.4.51611
                                 __juniper_private1__   FIN_WAIT_2
tcp4       0      0  162.0.0.4.51611                               162.0.0.4.9000
                                  __juniper_private1__   CLOSE_WAIT
tcp4       0      0  *.6151                                         *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.6154                                         *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.6153                                         *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.31343                                        *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.31341                                        *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.6152                                         *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.32003                                        *.*
                                    __juniper_private2__   LISTEN
tcp4       0      0  *.33009                                        *.*
                                    __juniper_private2__   LISTEN
tcp4       0      0  *.3221                                         *.*
                                    default                LISTEN
tcp4       0      0  *.23                                           *.*
                                    default                LISTEN
tcp4       0      0  *.22                                           *.*
                                    default                LISTEN
tcp4       0      0  *.514                                          *.*
                                    default                LISTEN
tcp4       0      0  *.513                                          *.*
                                    default                LISTEN
tcp4       0      0  *.21                                           *.*
                                    default                LISTEN
tcp4       0      0  *.79                                           *.*
                                    default                LISTEN
tcp4       0      0  *.514                                          *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.513                                          *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.6234                                         *.*
                                    __juniper_private1__   LISTEN
udp4       0      0  127.0.0.1.123                                  *.*
                                    default
```

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```
udp4       0      0  10.255.178.11.123                      *.*
                                 default
udp4       0      0  *.123                                  *.*
                                 default
udp46      0      0  *.514                                  *.*
                                 default
udp4       0      0  *.514                                  *.*
                                 default
udp46      0      0  *.50895                                *.*
                                 default
udp4       0      0  *.50794                                *.*
                                 default
udp4       0      0  *.31342                                *.*
                                 __juniper_private1__
udp46      0      0  *.161                                  *.*
                                 default
udp4       0      0  *.161                                  *.*
                                 default
udp4       0      0  *.31340                                *.*
                                 __juniper_private2__
udp4       0      0  *.31340                                *.*
                                 __juniper_private1__
udp46      0      0  *.49152                                *.*
                                 default
udp46      0      0  *.4784                                 *.*
                                 default
udp46      0      0  *.3784                                 *.*
                                 default
udp4       0      0  *.49152                                *.*
                                 default
udp4       0      0  *.4784                                 *.*
                                 default
udp4       0      0  *.3784                                 *.*
                                 default
udp4       0      0  *.6333                                 *.*
                                 __juniper_private1__
ip4        0      0  *.*                                    *.*
                                 default
ip4        0      0  *.*                                    *.*
                                 default
ip4        0      0  *.*                                    *.*
                                 default

lcc0-re0:
-
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q  Local Address                              Foreign Address
                           Routing Instance       (state)
tcp4       0      0  *.7000                                     *.*
                                 __juniper_private1__   LISTEN
tcp4       0      0  192.0.2.3.23                          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                                       *.*
```


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```
                                    default                LISTEN
tcp4       0      0  *.22                                          *.*
                                    default                LISTEN
tcp4       0      0  *.514                                         *.*
                                    default                LISTEN
tcp4       0      0  *.513                                         *.*
                                    default                LISTEN
tcp4       0      0  *.21                                          *.*
                                    default                LISTEN
tcp4       0      0  *.79                                          *.*
                                    default                LISTEN
tcp4       0      0  *.514                                         *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.513                                         *.*
                                    __juniper_private1__   LISTEN
udp46      0      0  *.514                                         *.*
                                    default
udp4       0      0  *.514                                         *.*
                                    default
udp46      0      0  *.59924                                       *.*
                                    default
udp4       0      0  *.59412                                       *.*
                                    default
udp46      0      0  *.161                                         *.*
                                    default
udp4       0      0  *.161                                         *.*
                                    default
udp4       0      0  *.31342                                       *.*
                                    __juniper_private1__
udp4       0      0  *.6333                                        *.*
                                    __juniper_private1__

lcc1-re0:
-
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q  Local Address                              Foreign Address
                                 Routing Instance       (state)
tcp4       0      0  *.7000                                        *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.6234                                        *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.9000                                        *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.3221                                        *.*
                                    default                LISTEN
tcp4       0      0  *.23                                          *.*
                                    default                LISTEN
tcp4       0      0  *.22                                          *.*
                                    default                LISTEN
tcp4       0      0  *.514                                         *.*
                                    default                LISTEN
tcp4       0      0  *.513                                         *.*
                                    default                LISTEN
tcp4       0      0  *.21                                          *.*
                                    default                LISTEN
tcp4       0      0  *.79                                          *.*
                                    default                LISTEN
tcp4       0      0  *.514                                         *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.513                                         *.*
                                    __juniper_private1__   LISTEN
```

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

lcc2-re0:
-
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q  Local Address                          Foreign Address
                               Routing Instance       (state)
tcp4       0      0  *.7000                                 *.*
                                __juniper_private1__   LISTEN
tcp4       0      0  *.6234                                 *.*
                                __juniper_private1__   LISTEN
tcp4       0      0  *.9000                                 *.*
                                __juniper_private1__   LISTEN
tcp4       0      0  *.33009                                *.*
                                __juniper_private2__   LISTEN
tcp4       0      0  *.3221                                 *.*
                                default                LISTEN
tcp4       0      0  *.23                                   *.*
                                default                LISTEN
tcp4       0      0  *.22                                   *.*
                                default                LISTEN
tcp4       0      0  *.514                                  *.*
                                default                LISTEN
tcp4       0      0  *.513                                  *.*
                                default                LISTEN
tcp4       0      0  *.21                                   *.*
                                default                LISTEN
tcp4       0      0  *.79                                   *.*
                                default                LISTEN
tcp4       0      0  *.514                                  *.*
                                __juniper_private1__   LISTEN
tcp4       0      0  *.513                                  *.*
                                __juniper_private1__   LISTEN
udp46      0      0  *.514                                  *.*
                                default
udp4       0      0  *.514                                  *.*
                                default
udp4       0      0  *.31342                                *.*
                                __juniper_private1__
udp46      0      0  *.62103                                *.*
                                default
udp4       0      0  *.59924                                *.*
                                default
udp46      0      0  *.161                                  *.*
```


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```
                                    default
udp4       0      0  *.161                                          *.*
                                    default
udp4       0      0  *.6333                                         *.*
                                    __juniper_private1__

lcc3-re0:
-
Active Internet connections (including servers) (including routing-instances)
Proto Recv-Q Send-Q  Local Address                                  Foreign Address
                                 Routing Instance       (state)
tcp4       0      0  *.7000                                         *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.6234                                         *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.9000                                         *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.33009                                        *.*
                                    __juniper_private2__   LISTEN
tcp4       0      0  *.3221                                         *.*
                                    default                LISTEN
tcp4       0      0  *.23                                           *.*
                                    default                LISTEN
tcp4       0      0  *.22                                           *.*
                                    default                LISTEN
tcp4       0      0  *.514                                          *.*
                                    default                LISTEN
tcp4       0      0  *.513                                          *.*
                                    default                LISTEN
tcp4       0      0  *.21                                           *.*
                                    default                LISTEN
tcp4       0      0  *.79                                           *.*
                                    default                LISTEN
tcp4       0      0  *.514                                          *.*
                                    __juniper_private1__   LISTEN
tcp4       0      0  *.513                                          *.*
                                    __juniper_private1__   LISTEN
udp46      0      0  *.514                                          *.*
                                    default
udp4       0      0  *.514                                          *.*
                                    default
udp46      0      0  *.62103                                        *.*
                                    default
udp4       0      0  *.59924                                        *.*
                                    default
udp4       0      0  *.31342                                        *.*
                                    __juniper_private1__
udp46      0      0  *.161                                          *.*
                                    default
udp4       0      0  *.161                                          *.*
                                    default
udp4       0      0  *.6333                                         *.*
                                    __juniper_private1__
```

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show system name-resolution

Syntax show system name-resolution

Release Information Command introduced in Junos OS Release 9.6.

Description Display hostname-to-IP-address mappings.

Options This command has no options.

Required Privilege Level view

Output Fields Table 11 on page 484 lists the output fields for the **show system name-resolution** 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
```


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```
      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
```

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show version

List of Syntax

Syntax on page 486
Syntax (EX Series Switches) on page 486
Syntax (TX Matrix Router) on page 486
Syntax (TX Matrix Plus Router) on page 486
Syntax (MX Series Router) on page 486
Syntax (QFX Series) on page 486
Syntax (ACX5048 and ACX5096 Routers) on page 486

Syntax

show version
<brief | detail>

Syntax (EX Series Switches)

show version
<all-members>
<brief | detail>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show version
<brief | detail>
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show version
<all-chassis | all-lcc | lcc *number* | sfc *number*>
<brief | detail>

Syntax (MX Series Router)

show version
<brief | detail>
<all-members>
<local>
<member *member-id*>

Syntax (QFX Series)

show version
<brief | detail>
<component *component-name* | all>

Syntax (ACX5048 and ACX5096 Routers)

show version
<brief | detail>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
Command introduced in Junos OS Release 11.1 for the QFX Series.
Command introduced in Junos OS Release 15.1X54-D20 for ACX5048 and ACX5096 Routers.

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Description Display the hostname and version information about the software running on the router or switch.

Beginning in Junos OS Release 13.3, the **show version** command output includes the **Junos** field that displays the Junos OS version running on the device. This field provides a 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.

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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 489
show version on page 489
show version (TX Matrix Plus Router) on page 490
show version (TX Matrix Plus Router with 3D SIBs) on page 492
show version (MX Series Router) on page 496
show version (QFX3500 Switch) on page 496
show version (QFabric System) on page 496
show version component all (QFabric System) on page 497
show version (ACX5048 Router) on page 498
show version (ACX5096 Router) on page 499

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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 [113.3R1.4]
JUNOS Services AACL 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}
```

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```
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]
```


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```
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 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]

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]
```

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```
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:
--------------------------------------------------------------------------
```


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```
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 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]

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 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]
```

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```
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]
```


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```
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]
```

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```
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
```


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```
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
```

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```
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]
```


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```
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]
```

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start shell

Syntax start shell (csh | sh)
<user *username*>

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
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 Exit from the CLI environment and create a UNIX-level shell. To return to the CLI, type **exit** from the shell.

NOTE:

- To issue this command, the user must have the required login access privileges configured by including the **permissions** statement at the **[edit system login class *class-name*]** hierarchy level.
- UNIX wheel group membership or permissions are no longer required to issue this command.

Options **csh**—Create a UNIX C shell.

sh—Create a UNIX Bourne shell.

user *username*—(Optional) Start the shell as another user.

Additional Information When you are in the shell, the shell prompt has the following format:

username@*hostname*%

An example of the prompt is:

root@host%

Required Privilege Level shell and maintenance

List of Sample Output start shell csh on page 501

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

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Sample Output

start shell csh

```
user@host> start shell csh
%

exit
%

username@hostname% start shell sh
%

exit
user@host>
```

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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

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show system commit

Syntax

show system commit
<revision>
<server>

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.
Option **server** introduced in Junos OS Release 12.1 for the PTX Series router.
Option **revision** introduced in Junos OS Release 14.1.
Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.

Description

Display the system commit history and any pending commit operation.

Options

none—Display the last 50 commit operations listed, most recent to first.

revision—(Optional) Display the revision number of the active configuration of the Routing Engine(s).

server— (Optional) Display commit server status.

NOTE: 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.

Required Privilege Level

view

Related Documentation

- clear system commit on page 175
- *show system commit revision*

List of Sample Output

show system commit on page 506
show system commit (At a Particular Time) on page 506
show system commit (At the Next Reboot) on page 506
show system commit (Rollback Pending) on page 506
show system commit (QFX Series) on page 506

Output Fields

Table 12 on page 505 describes the output fields for the **show system commit** command. Output fields are listed in the approximate order in which they appear.

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Table 12: show system commit Output Fields

Field Name	Field Description	Level of Output
<number>	Displays the last 50 commit operations listed, most recent to first. The identifier *<number>* designates a configuration created for recovery using the **request system configuration rescue save** command.	**none**
<time-stamp>	Date and time of the commit operation.	**none**
<root>/<username>	User who executed the commit operation.	**none**
<method>	Method used to execute the commit operation: • **CLI**—CLI interactive user performed the commit operation. • **Junos XML protocol**—Junos XML protocol client performed the commit operation. • **synchronize**—The **commit synchronize** command was performed on the other Routing Engine. • **snmp**—An SNMP **set** request caused the commit operation. • **button**—A button on the router or switch was pressed to commit a rescue configuration for recovery. • **autoinstall**—A configuration obtained through autoinstallation was committed. • **other**—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.	**none**

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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
```


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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 507

Sample Output

show system configuration archival

```
user@host> show system configuration archival

/var/transfer/config/:
total 8
```

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show system configuration database usage

Syntax show system configuration database usage

Release Information Command introduced in Junos OS Release 15.1.

Description Display configuration database disk space usage statistics.

Options This command has no options.

Required Privilege Level maintenance

Related Documentation
- *Overview for Routing Devices*

List of Sample Output show system configuration database usage on page 508

Output Fields Table 13 on page 508 describes the output fields for the **show system configuration database usage** 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
```


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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 507

List of Sample Output show system configuration rescue on page 509

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;
                }
            }
        }
    ....
```


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show system processes

List of Syntax

Syntax on page 511
Syntax (EX Series Switches) on page 511
Syntax (QFX Series Switches) on page 511
Syntax (MX Series Routers) on page 511
Syntax (OCX Series) on page 511
Syntax (TX Matrix Routers) on page 512
Syntax (TX Matrix Plus Router) on page 512

Syntax

show system processes
<brief | detail | extensive | summary>
<health (pid *process-identifer* | process-name *process-name*)>
<providers>
<resource-limits (brief | detail) *process-name*>
<wide>

Syntax (EX Series Switches)

show system processes
<all-members>
<brief | detail | extensive | summary>
<health (pid *process-identifer* | process-name *process-name*)>
<local>
<member *member-id*>
<providers>
<resource-limits (brief | detail) *process-name*>
<wide>

Syntax (QFX Series Switches)

show system processes
<all-members>
<brief | detail | extensive | summary>
<health (pid *process-identifer* | process-name *process-name*)>
host-processes (brief|detail)
<local>
<member *member-id*>
<providers>
<resource-limits (brief | detail) *process-name*>
<wide>

Syntax (MX Series Routers)

show system processes
<all-members>
<brief | detail | extensive | summary>
<health (pid *process-identifer* | process-name *process-name*)>
<local>
<member *member-id*>
<providers>
<resource-limits (brief | detail) *process-name*>
<wide>

Syntax (OCX Series)

show system processes
<brief | detail | extensive | summary >
<health (pid *process-identifer* | process-name *process-name*)>

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host-processes (brief|detail)
<providers>
<resource-limits>
<wide>

Syntax (TX Matrix Routers)

show system processes
<brief | detail | extensive | summary>
<all-chassis| all-lcc | lcc *number* | scc>
<wide>

Syntax (TX Matrix Plus Router)

show system processes
<brief | detail | extensive | summary>
<all-chassis| all-lcc | lcc *number* | sfc *number*>
<wide>

Release Information

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

Description

Display information about software processes that are running on the router or switch and that have controlling terminals.

Options

none—Display standard information about system processes.

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

adaptive-services—(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.

alarm-control—(Optional) Display the process to configure the system alarm.

all-chassis—(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.

all-lcc—(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.

all-members—(EX4200 switches, QFX Series Virtual Chassis, and MX Series routers) (Optional) Display standard system process information for all members of the Virtual Chassis configuration.

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ancpd-service—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.

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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-identifer* | 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.

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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.

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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 subcribers 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.

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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.

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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

show system processes on page 522
show system processes brief on page 522
show system processes detail on page 522
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show system processes extensive (EX9200 Switch) on page 523
show system processes host processes (OCX1100 Switch) on page 524
show system processes lcc wide (TX Matrix Routing Matrix) on page 524
show system processes summary on page 525
show system processes (TX Matrix Plus Router) on page 525
show system processes sfc (TX Matrix Plus Router) on page 533
show system processes lcc wide (TX Matrix Plus Routing Matrix) on page 535
show system processes (QFX Series and OCX Series) on page 537

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Output Fields Table 14 on page 519 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
last pid	Last process identifier assigned to the process.	**brief extensive summary**
load averages	Three load averages followed by the current time.	**brief extensive summary**
processes	Number of existing processes and the number of processes in each state (**sleeping, running, starting, zombies**, and **stopped**).	**brief extensive summary**
CPU	(For systems running Junos OS with upgraded FreeBSD only) Breakdown of the percent usage on a per-CPU basis into the following categories: **% user**, **% nice**, **% system**, **% interrupt**, **% idle**. NOTE: This field shows up in the second frame of output. To see which platforms run Junos OS with upgraded FreeBSD, see *Understanding Junos OS with Upgraded FreeBSD*.	**extensive**
Mem	Information about physical and virtual memory allocation.	**brief extensive summary**
Active	Memory allocated and actively used by the program. When the system is under memory pressure, the pageout process reuses memory from the free, cache, inact and, if necessary, active 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 **Active** and **Inact** memory is only used by the pageout process to determine which pool of pages to free first at the time of a memory shortage. The pageout process first scans the **Inact** 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 **Inact** list to the **Active** 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 **Inact** list, pages from the **Active** list get freed up. Because the pageout process runs only when the system is under memory pressure, the pages on the **Inact** list remain untouched – even if they have not been accessed recently – when the amount of **Free** memory is adequate.	**brief extensive summary**
Inact	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. Any amount of memory freed by the routing protocol process might still be considered part of the **RES** value. Generally, the kernel delays the migrating of memory out of the **Inact** queue into the **Cache** or **Free** list unless there is a memory shortage.	**brief extensive summary**

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Table 14: show system processes Output Fields *(continued)*

Field Name	Field Description	Level of Output
Wired	Memory that is not eligible to be swapped, usually used for in-kernel memory structures and/or memory physically locked by a process.	**brief extensive summary**
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 **Inactive**, **Cache**, or **Free**, depending on the method used by the process to free the memory.	**brief extensive summary**
Swap	Information about physical and virtual memory allocation. NOTE: 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: • **D**—In disk or other short-term, uninterruptible wait • **I**—Idle (sleeping longer than about 20 seconds) • **R**—Runnable • **S**—Sleeping for less than 20 seconds • **T**—Stopped • **Z**—Dead (zombie) • **+** —The process is in the foreground process group of its control terminal. • **<**—The process has raised CPU scheduling priority. • **>**—The process has specified a soft limit on memory requirements and is currently exceeding that limit; such a process is not swapped. • **A**—The process requested random page replacement. • **E**—The process is trying to exit. • **L**—The process has pages locked in core. • **N**—The process has reduced CPU scheduling priority. • **S**—The process requested first-in, first-out (FIFO) page replacement. • **s**—The process is a session leader. • **V**—The process is temporarily suspended. • **W**—The process is swapped out. • **X**—The process is being traced or debugged.	none **detail**

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Table 14: show system processes Output Fields *(continued)*

Field Name	Field Description	Level of Output
UID	User identifier.	**detail**
USERNAME	Process owner.	**extensive summary**
PPID	Parent process identifier.	**detail**
CPU	(D)—Short-term CPU usage. (E and S)—Raw (unweighted) CPU usage. The value of this field is used to sort the processes in the output.	**detail extensive summary**
RSS	Resident set size.	**detail**
WCHAN	Symbolic name of the wait channel.	**detail**
STARTED	Local time when the process started running.	**detail**
PRI	Current priority of the process. A lower number indicates a higher priority.	**detail extensive summary**
NI or NICE	UNIX "niceness" value. A lower number indicates a higher priority.	**detail extensive summary**
SIZE	Total size of the process (text, data, and stack), in kilobytes.	**extensive summary**
RES	Current amount of program resident memory, in kilobytes. This is also known as RSS or Resident Set Size. The **RES** value includes shared library pages used by the process. Any amount of memory freed by the process might still be considered part of the **RES** value. Generally, the kernel delays the migrating of memory out of the **Inact** queue into the **Cache** or **Free** 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, **sleep**, **wait**, **run**, **idle**, **zombie**, or **stop**).	**extensive summary**
TIME	(S)—Number of system and user CPU seconds that the process has used. (None, D, and E)—Total amount of time that the command has been running.	**detail extensive summary**
WCPU	Weighted CPU usage.	**extensive summary**
COMMAND	Command that is currently running. (MX Series routers only) When you display the software processes for an MX Series Virtual Chassis, the **show system processes** command does not display information about the relayd process.	**detail extensive summary**
THR	Number of threads in the process	**extensive**

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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
```


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```
  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     0K    12K RUN    807.5H 98.73% idle
   13 root        1 -20 -139     0K    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     0K    12K WAIT    10:28  0.00% irq10: em0 em1+++*

 1490 root        1  96    0 11792K  4336K select   9:44  0.00% shm-rtsdbd
 1618 root        1  96    0 39584K  7464K select   8:47  0.00% pfed
 1622 root        1  96    0 15268K 10988K select   6:16  0.00% snmpd
 1466 root        1  96    0  7408K  2896K select   5:44  0.00% alarmd
    7 root        1 -16    0     0K    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     0K    12K WAIT     4:15  0.00% swi2: netisr 0
 1462 root        1  96    0  1836K  1240K select   3:57  0.00% bslockd
   55 root        1 -16    0     0K    12K -        3:44  0.00% schedcpu
 1392 root        1  16    0     0K    12K bcmsem   3:37  0.00% bcmLINK.0
   47 root        1 -16    0     0K    12K psleep   3:25  0.00% vmkmemdaemon
   36 root        1  20    0     0K    12K syncer   2:46  0.00% syncer
 1484 root        1  96    0  7484K  3428K select   2:38  0.00% clksyncd
 1616 root        1  96    0  4848K  2848K select   2:18  0.00% irsd
 1487 root        1  96    0 32800K  6992K select   2:10  0.00% smid
 1623 root        1  96    0 34616K  5464K select   2:01  0.00% dcd
   15 root        1 -16    0     0K    12K -        1:59  0.00% yarrow
   49 root        1 -16    0     0K    12K .        1:51  0.00% ddostasks
```

show system processes 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
```

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```
  10 root        1 171   52     0K    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     0K    16K mdwait   0:16  0.00% md16
  19 root        1 -68 -187     0K    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     0K    16K WAIT     0:07  0.00% swi7: clock sio
 154 root        1  -8    0     0K    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  (vmdaemon)
    4  ??  DL     0:00.00  (bufdaemon)
    5  ??  DL     0:00.04  (syncer)
    6  ??  DL     0:00.00  (netdaemon)
    7  ??  IL     0:00.00  (if_pic_listen)
    8  ??  IL     0:00.00  (scs_housekeeping)
```


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```
    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]
```

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```
   13  ??  WL     0:27.58 [swi7: clock sio]
   14  ??  WL     0:00.00 [swi6: vm]
   15  ??  DL     0:03.02 [yarrow]
   16  ??  WL     0:00.00 [swi9: +]
   17  ??  WL     0:00.00 [swi8: +]
   18  ??  WL     0:00.00 [swi5: cambio]
   19  ??  WL     0:00.00 [swi9: task queue]
   20  ??  WL     0:11.41 [irq16: uhci0 uhci*]
   21  ??  DL     0:00.00 [usb0]
   22  ??  DL     0:00.00 [usbtask]
   23  ??  WL     0:39.51 [irq17: uhci1 uhci*]
   24  ??  DL     0:00.00 [usb1]
   25  ??  WL     0:00.00 [irq18: uhci2 uhci*]
   26  ??  DL     0:00.83 [usb2]
   27  ??  DL     0:00.00 [usb3]
   28  ??  DL     0:00.00 [usb4]
   29  ??  DL     0:00.00 [usb5]
   30  ??  DL     0:00.73 [usb6]
   31  ??  DL     0:00.00 [usb7]
   32  ??  WL     0:00.00 [irq14: ata0]
   33  ??  WL     0:00.00 [irq15: ata1]
   34  ??  WL     0:00.00 [irq1: atkbd0]
   35  ??  WL     0:00.00 [swi0: sio]
   36  ??  WL     0:00.00 [irq11: isab0]
   37  ??  WL     0:00.00 [swi3: ip6opt ipopt]
   38  ??  WL     0:00.00 [swi4: ip6mismatch+]
   39  ??  WL     0:00.00 [swi1: ipfwd]
   40  ??  DL     0:00.02 [bufdaemon]
   41  ??  DL     0:00.02 [vnlru]
   42  ??  DL     0:00.39 [syncer]
   43  ??  DL     0:00.05 [softdepflush]
   44  ??  DL     0:00.00 [netdaemon]
   45  ??  DL     0:00.02 [vmuncachedaemon]
   46  ??  DL     0:00.00 [if_pic_listen]
   47  ??  DL     0:00.35 [vmkmemdaemon]
   48  ??  DL     0:00.00 [cb_poll]
   49  ??  DL     0:00.06 [if_pfe_listen]
   50  ??  DL     0:00.00 [scs_housekeeping]
   51  ??  IL     0:00.00 [kern_dump_proc]
   52  ??  IL     0:00.00 [nfsiod 0]
   53  ??  IL     0:00.00 [nfsiod 1]
   54  ??  IL     0:00.00 [nfsiod 2]
   55  ??  IL     0:00.00 [nfsiod 3]
   56  ??  DL     0:00.37 [schedcpu]
   57  ??  DL     0:00.56 [md0]
   79  ??  DL     0:02.58 [md1]
  100  ??  DL     0:00.03 [md2]
  118  ??  DL     0:00.01 [md3]
  139  ??  DL     0:00.95 [md4]
  160  ??  DL     0:00.12 [md5]
  181  ??  DL     0:00.00 [md6]
  217  ??  DL     0:00.02 [md7]
  227  ??  DL     0:00.05 [md8]
 1341  ??  SL     0:01.34 [bcmTX]
 1342  ??  SL     0:01.68 [bcmXGS3AsyncTX]
 1343  ??  SL     0:41.40 [bcmLINK.0]
 1345  ??  SL     0:33.83 [bcmLINK.1]
 1350  ??  Is     0:00.01 /usr/sbin/cron
 1502  ??  S      0:00.01 /sbin/watchdog -t-1
 1503  ??  S      0:00.86 /usr/libexec/bslockd -mp -N
 1504  ??  S      0:00.01 /usr/sbin/tnetd -N
```


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```
 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)
```

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```
23881  p2  I      0:00.00 -csh (csh)
23925  p2  S+     0:00.03 cli
 7332  p3  Is     0:00.00 login [pam] (login)
 7333  p3  I      0:00.00 -csh (csh)
23780  p3  S+     0:00.02 telnet aj

lcc0-re0:
--------------------------------------------------------------------------------
  PID  TT  STAT      TIME COMMAND
    0  ??  WLs    0:00.00 [swapper]
    1  ??  ILs    0:00.16 /packages/mnt/jbase/sbin/init --
    2  ??  DL     0:00.01 [g_event]
    3  ??  DL     0:00.16 [g_up]
    4  ??  DL     0:00.11 [g_down]
    5  ??  DL     0:00.00 [thread taskq]
    6  ??  DL     0:00.00 [kqueue taskq]
    7  ??  DL     0:00.00 [pagedaemon]
    8  ??  DL     0:00.00 [vmdaemon]
    9  ??  DL     0:01.77 [pagezero]
   10  ??  DL     0:00.00 [ktrace]
   11  ??  RL    17:22.31 [idle]
   12  ??  WL     0:00.32 [swi2: net]
   13  ??  WL     0:01.21 [swi7: clock sio]
   14  ??  WL     0:00.00 [swi6: vm]
   15  ??  DL     0:00.10 [yarrow]
   16  ??  WL     0:00.00 [swi9: +]
   17  ??  WL     0:00.00 [swi8: +]
   18  ??  WL     0:00.00 [swi5: cambio]
   19  ??  WL     0:00.00 [swi9: task queue]
   20  ??  WL     0:02.73 [irq10: bcm0 uhci1*]
   21  ??  WL     0:00.02 [irq11: cb0 uhci0+*]
   22  ??  DL     0:00.00 [usb0]
   23  ??  DL     0:00.00 [usbtask]
   24  ??  DL     0:00.00 [usb1]
   25  ??  DL     0:00.05 [usb2]
   26  ??  DL     0:00.00 [usb3]
   27  ??  DL     0:00.00 [usb4]
   28  ??  DL     0:00.00 [usb5]
   29  ??  DL     0:00.04 [usb6]
   30  ??  DL     0:00.00 [usb7]
   31  ??  WL     0:00.00 [irq14: ata0]
   32  ??  WL     0:00.00 [irq15: ata1]
   33  ??  WL     0:00.00 [irq1: atkbd0]
   34  ??  WL     0:00.00 [swi0: sio]
   35  ??  WL     0:00.00 [swi3: ip6opt ipopt]
   36  ??  WL     0:00.00 [swi4: ip6mismatch+]
   37  ??  WL     0:00.00 [swi1: ipfwd]
   38  ??  DL     0:00.00 [bufdaemon]
   39  ??  DL     0:00.00 [vnlru]
   40  ??  DL     0:00.01 [syncer]
   41  ??  DL     0:00.00 [softdepflush]
   42  ??  DL     0:00.00 [netdaemon]
   43  ??  DL     0:00.00 [vmuncachedaemon]
   44  ??  DL     0:00.00 [if_pic_listen]
   45  ??  DL     0:00.02 [vmkmemdaemon]
   46  ??  DL     0:00.01 [cb_poll]
   47  ??  DL     0:00.00 [if_pfe_listen]
   48  ??  DL     0:00.00 [scs_housekeeping]
   49  ??  IL     0:00.00 [kern_dump_proc]
   50  ??  IL     0:00.00 [nfsiod 0]
   51  ??  IL     0:00.00 [nfsiod 1]
```


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```
   52  ??  IL     0:00.00 [nfsiod 2]
   53  ??  IL     0:00.00 [nfsiod 3]
   54  ??  DL     0:00.01 [schedcpu]
   55  ??  DL     0:00.73 [md0]
   77  ??  DL     0:03.54 [md1]
   98  ??  DL     0:00.37 [md2]
  116  ??  DL     0:00.02 [md3]
  137  ??  DL     0:00.56 [md4]
  158  ??  DL     0:00.15 [md5]
  179  ??  DL     0:00.00 [md6]
  215  ??  DL     0:00.03 [md7]
  225  ??  DL     0:00.03 [md8]
 1078  ??  DL     0:00.00 [jsr_kkcm]
 1363  ??  SL     0:00.09 [bcmTX]
 1364  ??  SL     0:00.10 [bcmXGS3AsyncTX]
 1365  ??  SL     0:03.08 [bcmLINK.0]
 1370  ??  Is     0:00.00 /usr/sbin/cron
 1522  ??  S      0:00.00 /sbin/watchdog -t-1
 1523  ??  S      0:00.05 /usr/libexec/bslockd -mp -N
 1524  ??  I      0:00.01 /usr/sbin/tnetd -N
 1526  ??  S      0:04.98 /usr/sbin/chassisd -N
 1527  ??  S      0:00.04 /usr/sbin/alarmd -N
 1528  ??  I      0:00.40 /usr/sbin/craftd -N
 1529  ??  S      0:00.08 /usr/sbin/mgd -N
 1532  ??  I      0:00.04 /usr/sbin/inetd -N
 1533  ??  I      0:00.00 /usr/sbin/tnp.sntpd -N
 1534  ??  I      0:00.00 /usr/sbin/tnp.sntpc -N
 1536  ??  S      0:00.01 /usr/sbin/smartd -N
 1540  ??  I      0:00.07 /usr/sbin/jcsd -N
 1541  ??  S      0:00.11 /usr/sbin/idpd -N
 1542  ??  I      0:00.00 /usr/libexec/getty Pc ttyv0
 2089  ??  DL     0:00.01 [peer proxy]
 2090  ??  DL     0:00.01 [peer proxy]
 2091  ??  DL     0:00.01 [peer proxy]
 2657  ??  S      0:00.02 /usr/sbin/dfwd -N
 2658  ??  S      0:00.02 /sbin/dcd -N
 2659  ??  S      0:00.05 /usr/sbin/snmpd -N
 2660  ??  S      0:00.01 /usr/sbin/mib2d -N
 2661  ??  S      0:00.01 /usr/sbin/pfed -N
 2662  ??  S      0:00.01 /usr/sbin/irsd -N
 2667  ??  S      0:00.13 /usr/sbin/ksyncd -N
 2690  ??  Ss     0:00.00 mgd: (mgd) (root) (mgd)
 2691  ??  R      0:00.00 /bin/ps -ax
 1164  d0- S      0:00.00 /usr/sbin/usbd -N
 1182  d0- S      0:00.34 /usr/sbin/eventd -N -r -s -A
 1543  d0  Is+    0:00.00 /usr/libexec/getty std.9600 ttyd0

lcc1-re0:
--------------------------------------------------------------------------
  PID  TT  STAT      TIME COMMAND
    0  ??  WLs    0:00.00 [swapper]
    1  ??  ILs    0:00.17 /packages/mnt/jbase/sbin/init --
    2  ??  DL     0:00.01 [g_event]
    3  ??  DL     0:00.16 [g_up]
    4  ??  DL     0:00.11 [g_down]
    5  ??  DL     0:00.00 [thread taskq]
    6  ??  DL     0:00.00 [kqueue taskq]
    7  ??  DL     0:00.00 [pagedaemon]
    8  ??  DL     0:00.00 [vmdaemon]
    9  ??  DL     0:01.77 [pagezero]
   10  ??  DL     0:00.00 [ktrace]
```

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```
   11  ??  RL    17:22.83 [idle]
   12  ??  WL     0:00.35 [swi2: net]
   13  ??  WL     0:01.20 [swi7: clock sio]
   14  ??  WL     0:00.00 [swi6: vm]
   15  ??  DL     0:00.10 [yarrow]
   16  ??  WL     0:00.00 [swi9: +]
   17  ??  WL     0:00.00 [swi8: +]
   18  ??  WL     0:00.00 [swi5: cambio]
   19  ??  WL     0:00.00 [swi9: task queue]
   20  ??  WL     0:02.87 [irq10: bcm0 uhci1*]
   21  ??  WL     0:00.02 [irq11: cb0 uhci0+*]
   22  ??  DL     0:00.00 [usb0]
   23  ??  DL     0:00.00 [usbtask]
   24  ??  DL     0:00.00 [usb1]
   25  ??  DL     0:00.05 [usb2]
   26  ??  DL     0:00.00 [usb3]
   27  ??  DL     0:00.00 [usb4]
   28  ??  DL     0:00.00 [usb5]
   29  ??  DL     0:00.04 [usb6]
   30  ??  DL     0:00.00 [usb7]
   31  ??  WL     0:00.00 [irq14: ata0]
   32  ??  WL     0:00.00 [irq15: ata1]
   33  ??  WL     0:00.00 [irq1: atkbd0]
   34  ??  WL     0:00.00 [swi0: sio]
   35  ??  WL     0:00.00 [swi3: ip6opt ipopt]
   36  ??  WL     0:00.00 [swi4: ip6mismatch+]
   37  ??  WL     0:00.00 [swi1: ipfwd]
   38  ??  DL     0:00.00 [bufdaemon]
   39  ??  DL     0:00.00 [vnlru]
   40  ??  DL     0:00.01 [syncer]
   41  ??  DL     0:00.00 [softdepflush]
   42  ??  DL     0:00.00 [netdaemon]
   43  ??  DL     0:00.00 [vmuncachedaemon]
   44  ??  DL     0:00.00 [if_pic_listen]
   45  ??  DL     0:00.02 [vmkmemdaemon]
   46  ??  DL     0:00.01 [cb_poll]
   47  ??  DL     0:00.00 [if_pfe_listen]
   48  ??  DL     0:00.00 [scs_housekeeping]
   49  ??  IL     0:00.00 [kern_dump_proc]
   50  ??  IL     0:00.00 [nfsiod 0]
   51  ??  IL     0:00.00 [nfsiod 1]
   52  ??  IL     0:00.00 [nfsiod 2]
   53  ??  IL     0:00.00 [nfsiod 3]
   54  ??  DL     0:00.02 [schedcpu]
   55  ??  DL     0:00.75 [md0]
   77  ??  DL     0:03.40 [md1]
   98  ??  DL     0:00.37 [md2]
  116  ??  DL     0:00.02 [md3]
  137  ??  DL     0:00.56 [md4]
  158  ??  DL     0:00.15 [md5]
  179  ??  DL     0:00.00 [md6]
  215  ??  DL     0:00.03 [md7]
  225  ??  DL     0:00.03 [md8]
 1052  ??  DL     0:00.00 [jsr_kkcm]
 1337  ??  SL     0:00.09 [bcmTX]
 1338  ??  SL     0:00.10 [bcmXGS3AsyncTX]
 1339  ??  SL     0:03.10 [bcmLINK.0]
 1344  ??  Is     0:00.00 /usr/sbin/cron
 1496  ??  S      0:00.00 /sbin/watchdog -t-1
 1497  ??  S      0:00.05 /usr/libexec/bslockd -mp -N
 1498  ??  I      0:00.01 /usr/sbin/tnetd -N
```


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```
 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]
```

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```
   31  ??  WL      0:00.00 [irq14: ata0]
   32  ??  WL      0:00.00 [irq15: ata1]
   33  ??  WL      0:00.00 [irq1: atkbd0]
   34  ??  WL      0:00.00 [swi0: sio]
   35  ??  WL      0:00.00 [swi3: ip6opt ipopt]
   36  ??  WL      0:00.00 [swi4: ip6mismatch+]
   37  ??  WL      0:00.00 [swi1: ipfwd]
   38  ??  DL      0:00.00 [bufdaemon]
   39  ??  DL      0:00.00 [vnlru]
   40  ??  DL      0:00.01 [syncer]
   41  ??  DL      0:00.00 [softdepflush]
   42  ??  DL      0:00.00 [netdaemon]
   43  ??  DL      0:00.00 [vmuncachedaemon]
   44  ??  DL      0:00.00 [if_pic_listen]
   45  ??  DL      0:00.02 [vmkmemdaemon]
   46  ??  DL      0:00.01 [cb_poll]
   47  ??  DL      0:00.00 [if_pfe_listen]
   48  ??  DL      0:00.00 [scs_housekeeping]
   49  ??  IL      0:00.00 [kern_dump_proc]
   50  ??  IL      0:00.00 [nfsiod 0]
   51  ??  IL      0:00.00 [nfsiod 1]
   52  ??  IL      0:00.00 [nfsiod 2]
   53  ??  IL      0:00.00 [nfsiod 3]
   54  ??  DL      0:00.02 [schedcpu]
   55  ??  DL      0:00.75 [md0]
   77  ??  DL      0:03.48 [md1]
   98  ??  DL      0:00.59 [md2]
  116  ??  DL      0:00.02 [md3]
  137  ??  DL      0:00.56 [md4]
  158  ??  DL      0:00.15 [md5]
  179  ??  DL      0:00.00 [md6]
  215  ??  DL      0:00.03 [md7]
  225  ??  DL      0:00.03 [md8]
 1052  ??  DL      0:00.00 [jsr_kkcm]
 1337  ??  SL      0:00.09 [bcmTX]
 1338  ??  SL      0:00.10 [bcmXGS3AsyncTX]
 1339  ??  SL      0:03.22 [bcmLINK.0]
 1344  ??  Is      0:00.00 /usr/sbin/cron
 1496  ??  S       0:00.00 /sbin/watchdog -t-1
 1497  ??  S       0:00.05 /usr/libexec/bslockd -mp -N
 1498  ??  S       0:00.01 /usr/sbin/tnetd -N
 1500  ??  R       0:05.17 /usr/sbin/chassisd -N
 1501  ??  S       0:00.04 /usr/sbin/alarmd -N
 1502  ??  I       0:00.39 /usr/sbin/craftd -N
 1503  ??  S       0:00.08 /usr/sbin/mgd -N
 1506  ??  I       0:00.05 /usr/sbin/inetd -N
 1507  ??  I       0:00.00 /usr/sbin/tnp.sntpd -N
 1508  ??  I       0:00.00 /usr/sbin/tnp.sntpc -N
 1510  ??  S       0:00.01 /usr/sbin/smartd -N
 1514  ??  I       0:00.07 /usr/sbin/jcsd -N
 1515  ??  S       0:00.17 /usr/sbin/idpd -N
 1516  ??  I       0:00.00 /usr/libexec/getty Pc ttyv0
 2591  ??  DL      0:00.01 [peer proxy]
 2592  ??  DL      0:00.01 [peer proxy]
 2593  ??  DL      0:00.01 [peer proxy]
 2597  ??  DL      0:00.00 [peer proxy]
 3192  ??  S       0:00.01 /usr/sbin/irsd -N
 3193  ??  S       0:00.05 /usr/sbin/snmpd -N
 3194  ??  S       0:00.02 /sbin/dcd -N
 3195  ??  S       0:00.01 /usr/sbin/pfed -N
 3196  ??  S       0:00.01 /usr/sbin/mib2d -N
```


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```
 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]
```

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```
   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/ttyp2 (mgd)
36867  ??  S      0:03.14 /usr/sbin/rpd -N
36874  ??  S      0:00.08 /usr/sbin/lmpd
36876  ??  S      0:00.17 /usr/sbin/lacpd -N
36877  ??  S      0:00.15 /usr/sbin/bfdd -N
36878  ??  S      0:05.05 /usr/sbin/ppmd -N
36907  ??  S      0:26.63 /usr/sbin/chassisd -N
37775  ??  S      0:00.01 /usr/sbin/bdbrepd -N
45727  ??  S      0:00.02 /usr/sbin/xntpd -j -N -g (ntpd)
45729  ??  S      0:00.40 /usr/sbin/l2ald -N
45730  ??  S<     0:00.13 /usr/sbin/apsd -N
45731  ??  SN     0:00.10 /usr/sbin/sampled -N
45732  ??  S      0:00.03 /usr/sbin/ilmid -N
45733  ??  S      0:00.09 /usr/sbin/rmopd -N
45734  ??  S      0:00.31 /usr/sbin/cosd
```


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```
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/ttyp0 (mgd)
56577  ??  Ss     0:00.00 mgd: (mgd) (root) (mgd)
56578  ??  R      0:00.00 /bin/ps -ax
 1142  d0- S      0:00.01 /usr/sbin/usbd -N
 1160  d0- S      0:29.71 /usr/sbin/eventd -N -r -s -A
 6527  d0  Is+    0:00.00 /usr/libexec/getty std.9600 ttyd0
56482  p0  Is     0:00.00 login [pam] (login)
56483  p0  S      0:00.01 -csh (csh)
56547  p0  S+     0:00.02 cli
 2392  p1  Is     0:00.00 login [pam] (login)
 2393  p1  I      0:00.00 -csh (csh)
 2394  p1  I      0:00.00 su -
 2395  p1  I+     0:00.01 -su (csh)
23782  p2  Is     0:00.00 login [pam] (login)
23881  p2  I      0:00.00 -csh (csh)
23925  p2  S+     0:00.03 cli
 7332  p3  Is     0:00.00 login [pam] (login)
 7333  p3  I      0:00.00 -csh (csh)
23780  p3  S+     0:00.02 telnet aj
```

show system processes lcc wide (TX Matrix Plus Routing Matrix)

```
user@host> show system processes lcc 2 wide
lcc2-re0:
--------------------------------------------------------------------------------
  PID  TT  STAT      TIME PROVIDER COMMAND
    0  ??  WLs    0:00.00 (null)   [swapper]
    1  ??  ILs    0:00.19          /packages/mnt/jbase/sbin/init --
    2  ??  DL     0:00.02          [g_event]
    3  ??  DL     0:00.19          [g_up]
    4  ??  DL     0:00.13          [g_down]
    5  ??  DL     0:00.00          [thread taskq]
    6  ??  DL     0:00.00          [kqueue taskq]
    7  ??  DL     0:00.00          [pagedaemon]
    8  ??  DL     0:00.00          [vmdaemon]
    9  ??  DL     0:01.77          [pagezero]
   10  ??  DL     0:00.00          [ktrace]
   11  ??  RL    20:33.81          [idle]
   12  ??  WL     0:00.38          [swi2: net]
   13  ??  WL     0:01.43          [swi7: clock sio]
   14  ??  WL     0:00.00          [swi6: vm]
   15  ??  DL     0:00.14          [yarrow]
```

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```
   16  ??  WL      0:00.00          [swi9: +]
   17  ??  WL      0:00.00          [swi8: +]
   18  ??  WL      0:00.00          [swi5: cambio]
   19  ??  WL      0:00.00          [swi9: task queue]
   20  ??  WL      0:03.18          [irq10: bcm0 uhci1*]
   21  ??  WL      0:00.03          [irq11: cb0 uhci0+*]
   22  ??  DL      0:00.00          [usb0]
   23  ??  DL      0:00.00          [usbtask]
   24  ??  DL      0:00.00          [usb1]
   25  ??  DL      0:00.06          [usb2]
   26  ??  DL      0:00.00          [usb3]
   27  ??  DL      0:00.00          [usb4]
   28  ??  DL      0:00.00          [usb5]
   29  ??  DL      0:00.05          [usb6]
   30  ??  DL      0:00.00          [usb7]
   31  ??  WL      0:00.00          [irq14: ata0]
   32  ??  WL      0:00.00          [irq15: ata1]
   33  ??  WL      0:00.00          [irq1: atkbd0]
   34  ??  WL      0:00.00          [swi0: sio]
   35  ??  WL      0:00.00          [swi3: ip6opt ipopt]
   36  ??  WL      0:00.00          [swi4: ip6mismatch+]
   37  ??  WL      0:00.00          [swi1: ipfwd]
   38  ??  DL      0:00.00          [bufdaemon]
   39  ??  DL      0:00.00          [vnlru]
   40  ??  DL      0:00.02          [syncer]
   41  ??  DL      0:00.01          [softdepflush]
   42  ??  DL      0:00.00          [netdaemon]
   43  ??  DL      0:00.00          [vmuncachedaemon]
   44  ??  DL      0:00.00          [if_pic_listen]
   45  ??  DL      0:00.03          [vmkmemdaemon]
   46  ??  DL      0:00.01          [cb_poll]
   47  ??  DL      0:00.00          [if_pfe_listen]
   48  ??  DL      0:00.00          [scs_housekeeping]
   49  ??  IL      0:00.00          [kern_dump_proc]
   50  ??  IL      0:00.00          [nfsiod 0]
   51  ??  IL      0:00.00          [nfsiod 1]
   52  ??  IL      0:00.00          [nfsiod 2]
   53  ??  IL      0:00.00          [nfsiod 3]
   54  ??  DL      0:00.02          [schedcpu]
   55  ??  DL      0:00.75          [md0]
   77  ??  DL      0:03.84          [md1]
   98  ??  DL      0:00.59          [md2]
  116  ??  DL      0:00.02          [md3]
  137  ??  DL      0:00.72          [md4]
  158  ??  DL      0:00.15          [md5]
  179  ??  DL      0:00.00          [md6]
  215  ??  DL      0:00.03          [md7]
  225  ??  DL      0:00.03          [md8]
 1052  ??  DL      0:00.00          [jsr_kkcm]
 1337  ??  SL      0:00.11          [bcmTX]
 1338  ??  SL      0:00.12          [bcmXGS3AsyncTX]
 1339  ??  SL      0:03.82          [bcmLINK.0]
 1344  ??  Is      0:00.00          /usr/sbin/cron
 1496  ??  I       0:00.00          /sbin/watchdog -t-1
 1497  ??  S       0:00.06          /usr/libexec/bslockd -mp -N
 1498  ??  I       0:00.01          /usr/sbin/tnetd -N
 1500  ??  S       0:09.93          /usr/sbin/chassisd -N
 1501  ??  S       0:00.05          /usr/sbin/alarmd -N
 1502  ??  I       0:00.39          /usr/sbin/craftd -N
 1503  ??  S       0:00.09          /usr/sbin/mgd -N
 1506  ??  I       0:00.05          /usr/sbin/inetd -N
```


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```
 1507  ??  I      0:00.00          /usr/sbin/tnp.sntpd -N
 1508  ??  I      0:00.00          /usr/sbin/tnp.sntpc -N
 1510  ??  S      0:00.01          /usr/sbin/smartd -N
 1514  ??  I      0:00.07          /usr/sbin/jcsd -N
 1515  ??  S      0:00.17          /usr/sbin/idpd -N
 1516  ??  I      0:00.00          /usr/libexec/getty Pc ttyv0
 2591  ??  DL     0:00.01          [peer proxy]
 2592  ??  DL     0:00.01          [peer proxy]
 2593  ??  DL     0:00.01          [peer proxy]
 2597  ??  DL     0:00.01          [peer proxy]
 3192  ??  S      0:00.02          /usr/sbin/irsd -N
 3193  ??  S      0:00.05          /usr/sbin/snmpd -N
 3194  ??  S      0:00.04          /sbin/dcd -N
 3195  ??  I      0:00.01          /usr/sbin/pfed -N
 3196  ??  S      0:00.02          /usr/sbin/mib2d -N
 3197  ??  I      0:00.03          /usr/sbin/dfwd -N
 3198  ??  S      0:00.15          /usr/sbin/ksyncd -N
 3559  ??  Ss     0:00.00          mgd: (mgd) (root) (mgd)
 3560  ??  R      0:00.00          /bin/ps -ax -Jpww
 1138  d0- S      0:00.00          /usr/sbin/usbd -N
 1156  d0- S      0:00.50          /usr/sbin/eventd -N -r -s -A
 1517  d0  Is+    0:00.00          /usr/libexec/getty std.9600 ttyd0
```

show system 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]
```

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```
 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
```


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```
  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.sntpd -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@ttyp0 (sshd)
30897  ??  Ss     0:00.15 mgd: (mgd) (tlewis)/dev/ttyp0 (mgd)
30905  ??  Ss     0:00.64 sshd: tlewis@ttyp1 (sshd)
30909  ??  Ss     0:00.15 mgd: (mgd) (tlewis)/dev/ttyp1 (mgd)
30910  ??  Ss     0:01.26 sshd: tcheng@ttyp2 (sshd)
30914  ??  Ss     0:00.80 mgd: (mgd) (tcheng)/dev/ttyp2 (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)
```

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show system queues

List of Syntax

Syntax on page 540
Syntax (TX Matrix Router) on page 540
Syntax (TX Matrix Plus Router) on page 540
Syntax (MX Series Router) on page 540

Syntax

show system queues

Syntax (TX Matrix Router)

show system queues
<all-chassis| all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system queues
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Syntax (MX Series Router)

show system queues
<all-members>
<local>
<member *member-id*>

Release Information

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

Description

Display queue statistics.

Options

all-chassis—(TX Matrix 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.

all-lcc—(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.

all-members—(MX Series routers only) (Optional) Display system queue statistics for 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 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.

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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 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 542
show system queues scc (TX Matrix Router) on page 542
show system queues sfc (TX Matrix Router) on page 543

Output Fields

Table 15 on page 542 lists the output fields for the **show system queues** command. Output fields are listed in the approximate order in which they appear.

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Table 15: show system queues Output Fields

Field Name	Field Description
Output interface	Interface on the router on which the queue exists: • **fxp0**—Management Ethernet interface • **fxp1**—Internal Ethernet interface • **lsi**—Internally generated interface and not configurable • **dsc**—Discard interface
bytes	Number of bytes in the queue.
max	Maximum number of bytes allowed in the queue.
packets	Number of packets in the queue.
max	Maximum number of packets allowed in the queue.
drops	Number of packets dropped from the queue.

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
```


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```
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
```

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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

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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

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input protocol	bytes	max	packets	max	drops
splfwdq	0	1000000	0	1000	0
splnetq	0	1000000	0	1000	0
arpintrq	0	1000	0	50	0
optionq	0	200000	0	200	0
icmpq	0	50000	0	50	0
frlmiq	0	0	0	0	0
spppintrq	0	25000	0	250	0
atmctlpktq	0	0	0	0	0
atmoamq	0	0	0	0	0
tnpintrq	0	1250000	0	4166	0
tagintrq	0	200000	0	200	0
tagfragq	0	200000	0	200	0

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show system reboot

List of Syntax

Syntax on page 547
Syntax (EX Series Switches) on page 547
Syntax (TX Matrix Router) on page 547
Syntax (TX Matrix Plus Router) on page 547
Syntax (MX Series Router) on page 547
Syntax (QFX Series and OCX Series) on page 547

Syntax

```
show system reboot
<both-routing-engines>
```

Syntax (EX Series Switches)

```
show system reboot
<all-members>
<both-routing-engines>
<local>
<member member-id>
```

Syntax (TX Matrix Router)

```
show system reboot
<all-chassis | all-lcc | lcc number | scc>
<both-routing-engines>
```

Syntax (TX Matrix Plus Router)

```
show system reboot
<all-chassis| all-lcc | lcc number |  sfc number>
<both-routing-engines>
```

Syntax (MX Series Router)

```
show system reboot
<all-members>
<both-routing-engines>
<local>
<member member-id>
```

Syntax (QFX Series and OCX Series)

```
show system reboot
<both-routing-engines>
<infrastructure name>
<interconnect-device name>
<node-device name>
```

Release Information

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

Options

none—Display pending reboots or halts on the active Routing Engine.

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all-chassis—(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 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.

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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 549
show system reboot all-lcc (TX Matrix Router) on page 549
show system reboot sfc (TX Matrix Plus Router) on page 549
show system reboot (QFX3500 Switch) on page 550

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.
```

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show system reboot (QFX3500 Switch)

```
user@switch> show system reboot
No shutdown/reboot scheduled.
```


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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 551

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 {
```

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```
+                     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;
+             }
+         }
+     }
+}
```


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show system snapshot

List of Syntax
Syntax on page 553
Syntax (EX Series Switches) on page 553

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.

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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 210

List of Sample Output
show system snapshot (Router) on page 554
show system snapshot media external (Switch) on page 554
show system snapshot media internal (Switch) on page 555

Output Fields Table 16 on page 554 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/da1s1a) (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
```


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```
  jroute-ex: 12.1I20120111_0048_user
  jswitch-ex: 12.1I20120111_0048_user
  jweb-ex: 12.1I20120111_0048_user
Information for snapshot on       external (/dev/da1s2a) (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
```

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show system software

List of Syntax

Syntax on page 556
Syntax (EX Series Switches) on page 556
Syntax (TX Matrix Router) on page 556
Syntax (TX Matrix Plus Router) on page 556
Syntax (QFX Series) on page 556

Syntax

show system software
<detail>

Syntax (EX Series Switches)

show system software
<all-members>
<detail>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system software
<all-chassis | all-lcc | lcc *number* | scc>
<detail>

Syntax (TX Matrix Plus Router)

show system software
<all-chassis | all-lcc | lcc *number* | sfc *number*>
<detail>

Syntax (QFX Series)

show system software
<detail>
<infrastructure *name*>
<interconnect-device *name*>
<node-group *name*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
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 the Junos OS extensions loaded on your router or switch.

Options

none—Display standard information about all loaded Junos OS extensions.

all-chassis—(TX Matrix 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.

all-lcc—(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

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TX Matrix router. On a TX Matrix Plus router, display system software information for all connected T1600 or T4000 LCCs.

all-members—(EX4200 switches only) (Optional) Display the system software running on all members of the Virtual Chassis configuration.

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

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Related Documentation

- *Routing Matrix with a TX Matrix Plus Router Solutions Page*

List of Sample Output

show system software on page 558
show system software (TX Matrix Plus Router) on page 558
show system software (QFX Series) on page 562

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
```


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```
sfc0-re0:
--------------------------------------------------------------------------
Information for jbase:

Comment:
JUNOS Base OS Software Suite [9.6-20090515.0]



Information for jcrypto:

Comment:
JUNOS Crypto Software Suite [9.6-20090515.0]



Information for jdocs:

Comment:
JUNOS Online Documentation [9.6-20090515.0]
Information for jkernel:

Comment:
JUNOS Kernel Software Suite [9.6-20090515.0]



Information for jpfe:

Comment:
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090515.0]



Information for jpfe-common:

Comment:
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090515.0]



Information for jroute:Comment:
JUNOS Routing Software Suite [9.6-20090515.0]



Information for jservices-aacl:

Comment:
JUNOS Services AACL Container package [9.6-20090515.0]



Information for jservices-appid:

Comment:
JUNOS AppId Services [9.6-20090515.0]



Information for jservices-bgf:
```

```
Comment:
JUNOS Border Gateway Function package [9.6-20090515.0]
Information for jservices-idp:

Comment:
JUNOS IDP Services [9.6-20090515.0]



Information for jservices-llpdf:

Comment:
JUNOS Services LL-PDF Container package [9.6-20090515.0]



Information for jservices-sfw:

Comment:
JUNOS Services Stateful Firewall [9.6-20090515.0]
Information for jservices-voice:

Comment:
JUNOS Voice Services Container package [9.6-20090515.0]



Information for junos:

Comment:
JUNOS Base OS boot [9.6-20090515.0]
...
lcc0-re0:
--------------------------------------------------------------------------
Information for jbase:

Comment:
JUNOS Base OS Software Suite [9.6-20090515.0]



Information for jcrypto:

Comment:
JUNOS Crypto Software Suite [9.6-20090515.0]



Information for jdocs:

Comment:
JUNOS Online Documentation [9.6-20090515.0]



Information for jkernel:

Comment:
JUNOS Kernel Software Suite [9.6-20090515.0]
```


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```
Information for jpfe:

Comment:
JUNOS Packet Forwarding Engine Support (T-Series) [9.6-20090515.0]


Information for jpfe-common:

Comment:
JUNOS Packet Forwarding Engine Support (M/T Common) [9.6-20090515.0]


Information for jroute:

Comment:
JUNOS Routing Software Suite [9.6-20090515.0]


Information for jservices-aacl:

Comment:
JUNOS Services AACL Container package [9.6-20090515.0]


Information for jservices-appid:

Comment:
JUNOS AppId Services [9.6-20090515.0]


Information for jservices-bgf:

Comment:
JUNOS Border Gateway Function package [9.6-20090515.0]


Information for jservices-idp:

Comment:
JUNOS IDP Services [9.6-20090515.0]


Information for jservices-llpdf:

Comment:
JUNOS Services LL-PDF Container package [9.6-20090515.0]


Information for jservices-sfw:

Comment:
```

```
JUNOS Services Stateful Firewall [9.6-20090515.0]


Information for jservices-voice:

Comment:
JUNOS Voice Services Container package [9.6-20090515.0]


Information for junos:

Comment:
JUNOS Base OS boot [9.6-20090515.0]


lcc1-re0:
--------------------------------------------------------------------------
Information for jbase:

Comment:
JUNOS Base OS Software Suite [9.6-20090515.0]


Information for jcrypto:

Comment:
JUNOS Crypto Software Suite [9.6-20090515.0]
...
```

show system 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]
```


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```
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]
```

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show system statistics

List of Syntax

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Syntax (EX Series Switches) on page 564
Syntax (TX Matrix Router) on page 564
Syntax (TX Matrix Plus Router) on page 564
Syntax (MX Series Router) on page 564
Syntax (QFX Series) on page 564

Syntax

show system statistics

Syntax (EX Series Switches)

show system statistics
<all-members>
<local>
<member *member-id*>

Syntax (TX Matrix Router)

show system statistics
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system statistics
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Syntax (MX Series Router)

show system statistics
<all-members>
<local>
<member *member-id*>

Syntax (QFX Series)

show system statistics

Release Information

Command introduced before JUNOS 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.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description

Display system-wide protocol-related statistics.

Options

none—Display system statistics for all the following protocols:

- **arp**—Address Resolution Protocol
- **bridge**—IEEE 802.1 Bridging
- **clns**—Connectionless Network Service
- **esis**—End System-to-Intermediate System
- **ethoamcfm**—Ethernet OAM protocol for connectivity fault management
- **ethoamlfm**—Ethernet OAM protocol for link fault management

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- **icmp**—Internet Control Message Protocol
- **icmp6**—Internet Control Message Protocol version 6
- **igmp**—Internet Group Management Protocol
- **ip**—Internet Protocol version 4
- **ip6**—Internet Protocol version 6
- **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.

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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

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show system statistics (EX Series Switches) on page 576
show system statistics (TX Matrix Router) on page 585
show system statistics (QFX Series) on page 591

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
```


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```
        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
```

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```
                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
```


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```
        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
```

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```
        0 fragments received
        0 fragments dropped (dup or out of space)
        0 fragments dropped after timeout
        0 fragments that exceeded limit
        0 packets reassembled ok
        0 packets for this host
        0 packets forwarded
        0 packets not forwardable
        0 redirects sent
        0 packets sent from this host
        0 packets sent with fabricated ip header
        0 output packets dropped due to no bufs, etc.
        0 output packets discarded due to no route
        0 output datagrams fragmented
        0 fragments created
        0 datagrams that can't be fragmented
        0 packets that violated scope rules
        0 multicast packets which we don't join
        Mbuf statistics:
        0 packets whose headers are not continuous
        0 tunneling packets that can't find gif
        0 packets discarded due to too may headers
        0 failures of source address selection
        0 forward cache hit
        0 forward cache miss
        0 packets destined to dead next hop
        0 option packets dropped due to rate limit
        0 packets dropped (src and int don't match)
        0 packets dropped due to bad protocol
icmp6:
        0 calls to icmp_error
        0 errors not generated because old message was icmp error or so
        0 errors not generated because rate limitation
        0 messages with bad code fields
        0 messages < minimum length
        0 bad checksums
        0 messages with bad length
        Histogram of error messages to be generated:
                0 no route
                0 administratively prohibited
                0 beyond scope
                0 address unreachable
                0 port unreachable
                0 packet too big
                0 time exceed transit
                0 time exceed reassembly
                0 erroneous header field
                0 unrecognized next header
                0 unrecognized option
                0 redirect
                0 unknown
        0 message responses generated
        0 messages with too many ND options
ipsec6:
        0 inbound packets processed successfully
        0 inbound packets violated process security policy
        0 inbound packets with no SA available
        0 invalid inbound packets
        0 inbound packets failed due to insufficient memory
        0 inbound packets failed getting SPI
        0 inbound packets failed on AH replay check
```


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```
        0 inbound packets failed on ESP replay check
        0 inbound AH packets considered authentic
        0 inbound AH packets failed on authentication
        0 inbound ESP packets considered authentic
        0 inbound ESP packets failed on authentication
        0 outbound packets processed successfully
        0 outbound packets violated process security policy
        0 outbound packets with no SA available
        0 invalid outbound packets
        0 outbound packets failed due to insufficient memory
        0 outbound packets with no route
clnl:
        0 total packets received
        0 packets delivered
        0 too small
        0 bad header length
        0 bad checksum
        0 bad version
        0 unknown or unsupported protocol
        0 bogus sdl size
        0 no free memory in socket buffer
        0 send packets discarded
        0 sbappend failure
        0 mcopy failure
        0 address fields were not reasonable
        0 segment information forgotten
        0 forwarded packets
        0 total packets sent
        0 output packets discarded
        0 non-forwarded packets
        0 packets fragmented
        0 fragments sent
        0 fragments discarded
        0 fragments timed out
        0 fragmentation prohibited
        0 packets reconstructed
        0 packets destined to dead nexthop
        0 packets discarded due to no route
        0 Error pdu rate drops
        0 ER pdu generation failure
esis:
        0 total pkts received
        0 total packets consumed by protocol
        0 pdus received with bad checksum
        0 pdus received with bad version number
        0 pdus received with bad type field
        0 short pdus received
        0 bogus sdl size
        0 bad header length
        0 unknown or unsupported protocol
        0 no free memory in socket buffer
        0 send packets discarded
        0 sbappend failure
        0 mcopy failure
        0 ISO family not configured
tnp:
        146776365 unicast packets received
        0 broadcast packets received
        0 fragmented packets received
        0 hello packets dropped
        0 fragments dropped
```

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```
        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
```


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```
        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 subytpe init
         0 IHA messages sent for subtype init
         0 IHA messages rcvd for subytpe init
         0 IHA messages sent for subtype init
         0 IHA messages rcvd for subytpe init
         0 IHA messages sent for subtype init
         0 IHA messages rcvd for subytpe init
         0 IHA messages sent for subtype init
         0 IHA messages rcvd for subytpe 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
```

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```
    0 SDRL ipc send failures
    0 SDRL ipc messages recvd
    0 SDRL ipc messages recvd
    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
```


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```
            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 recv counters
            0 PSRM tcp timestamp msg recv 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
```

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```
        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
```


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```
                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
```

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```
        0 fragments created
        0 datagrams that can't be fragmented
        0 packets with bad options
        0 packets with options handled without error
        0 strict source and record route options
        0 loose source and record route options
        0 record route options
        0 timestamp options
        0 timestamp and address options
        0 timestamp and prespecified address options
        0 option packets dropped due to rate limit
        0 router alert options
        0 multicast packets dropped (no iflist)
        0 packets dropped (src and int don't match)
        0 transit re packets dropped on mgmt i/f
        0 packets used first nexthop in ecmp unilist
        0 incoming ttpoip packets received
        0 incoming ttpoip packets dropped
         0 outgoing TTPoIP packets sent
        0 outgoing TTPoIP packets dropped
icmp:
        0 drops due to rate limit
        9 calls to icmp_error
        0 errors not generated because old message was icmp
        Output histogram:
                295 echo reply
                9 destination unreachable
        0 messages with bad code fields
        0 messages less than the minimum length
        0 messages with bad checksum
        0 messages with bad source address
        0 messages with bad length
        0 echo drops with broadcast or multicast destinaton address
        0 timestamp drops with broadcast or multicast destination address
        Input histogram:
                295 echo
        295 message responses generated
igmp:
        0 messages received
        0 messages received with too few bytes
        0 messages received with bad checksum
        0 membership queries received
        0 membership queries received with invalid fields
        0 membership reports received
        0 membership reports received with invalid fields
        0 membership reports received for groups to which we belong
        0 Membership reports sent
raw_if:
        0 RAW packets transmitted
        0 PPPOE packets transmitted
        0 ISDN packets transmitted
        0 DIALER packets transmitted
        0 PPP packets transmitted to pppd
        0 PPP packets transmitted to jppd
        0 IGMPL2 packets transmitted
        13 output drops due to tx error
        0 MPU packets transmitted
        0 PPPOE packets received
        0 ISDN packets received
        0 DIALER packets received
        0 PPP packets received from pppd
```


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```
        0 MPU packets received
        0 PPP packets received from jppd
        0 IGMPL2 packets received
        0 Input drops due to bogus protocol
        0 input drops due to no mbufs available
        0 input drops due to no space in socket
        0 input drops due to no socket
arp:
        186413 datagrams received
        88 ARP requests received
        88 ARP replies received
        0 resolution request  received
        0 unrestricted proxy requests
        0 restricted proxy requests
        0 received proxy requests
        0 proxy requests not proxied
        0 restricted proxy requests not proxied
        0 datagrams with bogus interface
        0 datagrams with incorrect length
        0 datagrams for non-IP protocol
        0 datagrams with unsupported op code
        0 datagrams with bad protocol address length
         0 datagrams with bad hardware address length
        0 datagrams with multicast source address
        0 datagrams with multicast source address
        0 datagrams with my own hardware address
        164 datagrams for an address not on the interface
        0 datagrams with a broadcast source address
        0 datagrams with source address duplicate to mine
        186065 datagrams which were not for me
        0 packets discarded waiting for resolution
        0 packets sent after waiting for resolution
        50 ARP requests sent
        88 ARP replies sent
        0 requests for memory denied
        0 requests dropped on entry
        0 requests dropped during retry
        0 requests dropped due to interface deletion
        0 requests on unnumbered interfaces
        0 new requests on unnumbered interfaces
        0 replies for from unnumbered interfaces
        0 requests on unnumbered interface with non-subnetted donor
        0 replies from unnumbered interface with non-subnetted donor
ip6:
        0 total packets received
        0 packets with size smaller than minimum
        0 packets with data size < data length
        0 packets with bad options
        0 packets with incorrect version number
        0 fragments received
        0 fragments dropped (dup or out of space)
        0 fragments dropped after timeout
        0 fragments that exceeded limit
        0 packets reassembled ok
        0 packets for this host
        0 packets forwarded
        0 packets not forwardable
        0 redirects sent
        0 packets sent from this host
        0 packets sent with fabricated ip header
        0 output packets dropped due to no bufs, etc.
```

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```
        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
```


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```
        0 Messages toward registered sockets
        0 Messages with memory allocation failure
clnl:
        0 Total packets received
        0 Packets delivered
        0 Too small packets
        0 Packets with bad header length
        0 Packets with bad checksum
        0 Bad version packets
        0 Unknown or unsupported protocol packets
        0 Packets with bogus sdl size
        0 No free memory in socket buffer
        0 Send packets discarded
        0 Sbappend failure
        0 Mcopy failure
        0 Address fields were not reasonable
        0 Segment information forgotten
        0 Forwarded packets
        0 Total packets sent
        0 Output packets discarded
        0 Non-forwarded packets
        0 Packets fragmented
        0 Fragments sent
        0 Fragments discarded
        0 Fragments timed out
        0 Fragmentation prohibited
        0 Packets reconstructed
        0 Packets destined to dead nexthop
        0 Packets discarded due to no route
        0 Error pdu rate drops
         0 ER pdu generation failure
esis:
        0 Total pkts received
        0 Total packets consumed by protocol
        0 Pdus received with bad checksum
        0 Pdus received with bad version number
        0 Pdus received with bad type field
        0 Short pdus received
        0 Pdus withbogus sdl size
        0 Pdus with bad header length
        0 Pdus with unknown or unsupport protocol
        0 No free memory in socket buffer
        0 Send packets discarded
        0 Sbappend failure
        0 Mcopy failure
        0 ISO family not configured
tnp:
        0 Unicast packets received
        0 Broadcast packets received
        0 Fragmented packets received
        0 Hello packets dropped
        0 Fragments dropped
        0 Fragment reassembly queue flushes
        0 Packets with tnp src address collision received
        0 Hello packets received
        0 Control packets received
        0 Rdp packets received
        0 Udp packets received
        0 Tunnel packets received
        0 Input packets discarded with no protocol
        0 Packets of version unspecified received
```

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```
                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
```


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```
            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:
```

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```
0 packets received
0 packets forwarded
0 packets failed to forward
0 packets dropped
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with stp state lookup failures
0 packets dropped due to stp blocked/listening
0 packets dropped due to stp learning
0 packets with src MAC learning failures
0 packets with input control processing failures
Forward:
0 packets sent successfully
0 packets with send failures
0 packets forwarded to l3 interface
0 packets with l3 send failures
0 packets discarded
0 packets with l2ifl store failures
0 packets with ifl mismatch failures
0 packets with packet duplication failures
0 packets with tag lookup failures
0 packets with no route for DMAC
0 packets with no route table
0 packets with no nexthop
0 packets with dead nexthop
0 packets with eof reached error
Learning:
0 MACs learned
0 packets sent to l3 interface
0 packets with l3 send failures
0 packets hit holdq while learning
0 MAC moves
0 packets discarded
0 packets with no route for SMAC
0 packets with no nexthop
0 packets with dead nexthop
0 packets dropped due to no resolve route
0 packets with l3 ifd lookup failures
0 packets with l3 ifl lookup failures
0 packets with l3 invalid rnh
0 packets with no route for SMAC in clone learning
0 packets with no nexhop in clone learning
0 packets with dead nexthop in clone learning
0 packets dropped due to no resolve nh in clone learning
Output:
0 packets forwarded
0 packets failed to forward
0 packets with vmember lookup failures
 0 packets with vlan lookup failures
0 packets with input control processing failures
Send:
0 packets sent successfully
0 packets with send failures
0 packets dropped due to interface down
0 packets with dev output failures
0 blocked ifl discards
0 packets with tag lookup failures
0 packets with stp state lookup failures
0 packets with tag insertion failures
0 packets with tag removal failures
Flood:
```


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```
0 packets flooded
0 flood failures
IGMP:
0 packets sent successfully
0 packets with send failures
0 packets forwarded
0 packets failed to forward
0 packets with mpull failures
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with ifl lookup failures
0 packets with tag lookup failures
Misc:
0 packets with size smaller than minimum
0 packets with double tags
0 packets with no ifl
0 packets with no family
0 packets with no route table
```

show system statistics (TX Matrix Router)

```
user@host> show system statistics
sfc0-re0:
------------------------------------------------------------------------------
Tcp:
        361694 packets sent
                326507 data packets (103237236 bytes)
                2343 data packets retransmitted (2673324 bytes)
                0 resends initiated by MTU discovery
                33857 ack only packets (31613 packets delayed)
                0 URG only packets
                14 window probe packets
                387 window update packets
                1108 control packets
        345879 packets received
                298207 acks(for 103141728 bytes)
                438 duplicate acks
                0 acks for unsent data
                204578  packets received in-sequence(13820995 bytes)
                6 completely duplicate packets(18 bytes)
                0 old duplicate packets
                0 packets with some duplicate data(0 bytes duped)
                0 out-of-order packets(0 bytes)
                0 packets of data after window(0 bytes)
                0 window probes
                899 window update packets
                166 packets received after close
                0 discarded for bad checksums
                0 discarded for bad header offset fields
                0 discarded because packet too short
        406 connection requests
        233 connection accepts
        0 bad connection attempts
        0 listen queue overflows
        616 connections established (including accepts)
        911 connections closed (including 41 drops)
                346 connections updated cached RTT on close
                346 connections updated cached RTT variance on close
                200 connections updated cached ssthresh on close
        23 embryonic connections dropped
        298155 segments updated rtt(of 287216 attempts)
```

```
                1163 retransmit timeouts
                        27 connections dropped by retransmit timeout
                0 persist timeouts
                        0 connections dropped by persist timeout
                5 keepalive timeouts
                        5 keepalive probes sent
                        0 connections dropped by keepalive
                69922 correct ACK header predictions
                34993 correct data packet header predictions
                233 syncache entries added
                        0 retransmitted
                        0 dupsyn
                        0 dropped
                        233 completed
                        0 bucket overflow
                        0 cache overflow
                        0 reset
                        0 stale
                        0 aborted
                        0 badack
                        0 unreach
                        0 zone failures
                0 cookies sent
                0 cookies received
                23 SACK recovery episodes
                68 segment retransmits in SACK recovery episodes
                71542 byte retransmits in SACK recovery episodes
                158 SACK options (SACK blocks) received
                0 SACK options (SACK blocks) sent
                0 SACK scoreboard overflow
                0 ACKs sent in response to in-window but not exact RSTs
                0 ACKs sent in response to in-window SYNs on established connections
                0 rcv packets dropped by TCP due to bad address
                0 out-of-sequence segment drops due to insufficient memory
                259 RST packets
                0 ICMP packets ignored by TCP
                0 send packets dropped by TCP due to auth errors
                0 rcv packets dropped by TCP due to auth errors
                0 outgoing segments dropped due to policing

lcc0-re0:
--------------------------------------------------------------------------
Tcp:
                346 packets sent
                        222 data packets (22894 bytes)
                        0 data packets retransmitted (0 bytes)
                        0 resends initiated by MTU discovery
                        80 ack only packets (12 packets delayed)
                        0 URG only packets
                        0 window probe packets
                        5 window update packets
                        42 control packets
                358 packets received
                        268 acks(for 22939 bytes)
                        9 duplicate acks
                        0 acks for unsent data
                        203  packets received in-sequence(33820 bytes)
                        0 completely duplicate packets(0 bytes)
                        0 old duplicate packets
                        0 packets with some duplicate data(0 bytes duped)
                        0 out-of-order packets(0 bytes)
```


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```
                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
```


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```
        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
```

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```
        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
```


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```
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
```


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```
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
```

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```
0 incoming ttpoip packets dropped
0 outgoing TTPoIP packets sent
0 outgoing TTPoIP packets dropped
icmp:
0 drops due to rate limit
9 calls to icmp_error
0 errors not generated because old message was icmp
Output histogram:
295 echo reply
9 destination unreachable
0 messages with bad code fields
0 messages less than the minimum length
0 messages with bad checksum
0 messages with bad source address
0 messages with bad length
0 echo drops with broadcast or multicast destinaton address
0 timestamp drops with broadcast or multicast destination address
Input histogram:
295 echo
295 message responses generated
igmp:
0 messages received
0 messages received with too few bytes
0 messages received with bad checksum
0 membership queries received
0 membership queries received with invalid fields
0 membership reports received
0 membership reports received with invalid fields
0 membership reports received for groups to which we belong
0 Membership reports sent
raw_if:
0 RAW packets transmitted
0 PPPOE packets transmitted
0 ISDN packets transmitted
0 DIALER packets transmitted
0 PPP packets transmitted to pppd
0 PPP packets transmitted to jppd
0 IGMPL2 packets transmitted
13 output drops due to tx error
0 MPU packets transmitted
0 PPPOE packets received
0 ISDN packets received
0 DIALER packets received
0 PPP packets received from pppd
0 MPU packets received
0 PPP packets received from jppd
0 IGMPL2 packets received
0 Input drops due to bogus protocol
0 input drops due to no mbufs available
0 input drops due to no space in socket
0 input drops due to no socket
arp:
186413 datagrams received
88 ARP requests received
88 ARP replies received
0 resolution request received
0 unrestricted proxy requests
0 restricted proxy requests
0 received proxy requests
0 proxy requests not proxied
0 restricted proxy requests not proxied
```


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```
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:
```

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```
0 Calls to icmp_error
0 Errors not generated because old message was icmp error
0 Errors not generated because rate limitation
0 Messages with bad code fields
0 Messages < minimum length
0 Bad checksums
0 Messages with bad length
0 No route
0 Administratively prohibited
0 Beyond scope
0 Address unreachable
0 Port unreachable
0 packet too big
0 Time exceed transit
0 Time exceed reassembly
0 Erroneous header field
0 Unrecognized next header
0 Unrecognized option
0 redirect
0 Unknown
0 Message responses generated
0 Messages with too many ND options
pfkey:
0 Requests sent from userland
0 Bytes sent from userland
histogram by message type:
0 reserved
0 dump
0 Messages with invalid length field
0 Messages with invalid version field
0 Messages with invalid message type field
0 Messages too short
0 Messages with memory allocation failure
0 Messages with duplicate extension
0 Messages with invalid extension type
0 Messages with invalid sa type
0 Messages with invalid address extension
0 Requests sent to userland
0 Bytes sent to userland
histogram by message type:
0 reserved
0 dump
0 Messages toward single socket
0 Messages toward all sockets
0 Messages toward registered sockets
0 Messages with memory allocation failure
clnl:
0 Total packets received
0 Packets delivered
0 Too small packets
0 Packets with bad header length
0 Packets with bad checksum
0 Bad version packets
0 Unknown or unsupported protocol packets
0 Packets with bogus sdl size
0 No free memory in socket buffer
0 Send packets discarded
0 Sbappend failure
0 Mcopy failure
0 Address fields were not reasonable
0 Segment information forgotten
```


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```
0 Forwarded packets
0 Total packets sent
0 Output packets discarded
0 Non-forwarded packets
0 Packets fragmented
0 Fragments sent
0 Fragments discarded
0 Fragments timed out
0 Fragmentation prohibited
0 Packets reconstructed
0 Packets destined to dead nexthop
0 Packets discarded due to no route
0 Error pdu rate drops
0 ER pdu generation failure
esis:
0 Total pkts received
0 Total packets consumed by protocol
0 Pdus received with bad checksum
0 Pdus received with bad version number
0 Pdus received with bad type field
0 Short pdus received
0 Pdus withbogus sdl size
0 Pdus with bad header length
0 Pdus with unknown or unsupport protocol
0 No free memory in socket buffer
0 Send packets discarded
0 Sbappend failure
0 Mcopy failure
0 ISO family not configured
tnp:
0 Unicast packets received
0 Broadcast packets received
0 Fragmented packets received
0 Hello packets dropped
0 Fragments dropped
0 Fragment reassembly queue flushes
0 Packets with tnp src address collision received
0 Hello packets received
0 Control packets received
0 Rdp packets received
0 Udp packets received
0 Tunnel packets received
0 Input packets discarded with no protocol
0 Packets of version unspecified received
0 Packets of version 1 received
0 Packets of version 2 received
0 Packets of version 3 received
0 Unicast packets sent
0 Broadcast packets sent
0 Fragmented packets sent
0 Hello packets dropped
0 Fragments dropped
0 Hello packets sent
0 Control packets sent
0 Rdp packets sent
0 Udp packets sent
0 Tunnel packets sent
0 Packets sent with unknown protocol
0 Packets of version unspecified sent
0 Packets of version 1 sent
0 Packets of version 2 sent
```

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```
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
```


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```
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 nexhop in clone learning
0 packets with dead nexthop in clone learning
0 packets dropped due to no resolve nh in clone learning
Output:
0 packets forwarded
0 packets failed to forward
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with input control processing failures
Send:
0 packets sent successfully
0 packets with send failures
0 packets dropped due to interface down
0 packets with dev output failures
0 blocked ifl discards
0 packets with tag lookup failures
0 packets with stp state lookup failures
0 packets with tag insertion failures
0 packets with tag removal failures
Flood:
0 packets flooded
0 flood failures
IGMP:
0 packets sent successfully
0 packets with send failures
0 packets forwarded
0 packets failed to forward
0 packets with mpull failures
0 packets with vmember lookup failures
0 packets with vlan lookup failures
0 packets with ifl lookup failures
0 packets with tag lookup failures
Misc:
0 packets with size smaller than minimum
0 packets with double tags
0 packets with no ifl
```


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```
0 packets with no family
0 packets with no route table
```

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show system storage

List of Syntax

Syntax on page 602
Syntax (EX Series Switches) on page 602
Syntax (MX Series Router) on page 602
Syntax (QFX Series) on page 602
Syntax (SRX Series) on page 602
Syntax (TX Matrix Router) on page 602
Syntax (TX Matrix Plus Router and TX Matrix Plus Router with 3D SIBs) on page 602

Syntax

```
show system storage
<detail>
<invoke-on (all-routing-engines | other-routing-engine)>
```

Syntax (EX Series Switches)

```
show system storage
<detail>
<all-members>
<local>
<member member-id>
<invoke-on (all-routing-engines | other-routing-engine)>
```

Syntax (MX Series Router)

```
show system storage
<detail>
<all-members>
<local>
<member member-id>
<invoke-on (all-routing-engines | other-routing-engine)>
```

Syntax (QFX Series)

```
show system storage
<detail>
<infrastructure name>
<interconnect-device name>
<node-group name>
<invoke-on (all-routing-engines | other-routing-engine)>
```

Syntax (SRX Series)

```
show system storage
<detail>
<partitions>
<invoke-on (all-routing-engines | other-routing-engine)>
```

Syntax (TX Matrix Router)

```
show system storage
<detail>
<all-chassis | all-lcc | lcc number | scc>
<invoke-on (all-routing-engines | other-routing-engine)>
```

Syntax (TX Matrix Plus Router and TX Matrix Plus Router with 3D SIBs)

```
show system storage
<detail>
<all-chassis | all-lcc | lcc number | sfc number>
<invoke-on (all-routing-engines | other-routing-engine)>
```


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

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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 605
show system storage (TX Matrix Plus Router) on page 605
show system storage (QFX3500 Switch) on page 607
show system storage invoke-on all-routing-engines on page 608
show system storage invoke-on other-routing-engine on page 609

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Output Fields Table 17 on page 605 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
Filesystem	Name of the filesystem.
Size	Size of the filesystem.
Used	Amount of space used in the filesystem.
Avail	Amount of space available in the filesystem.
Capacity	Percentage of the filesystem space that is being used.
Mounted on	Directory in which the filesystem is mounted.

Sample Output

show system storage

```
user@host> show system storage
Filesystem             Size       Used      Avail  Capacity   Mounted on
/dev/ad0s1a             77M        37M        34M       52%  /
devfs                   16K        16K         0B      100%  /dev/
/dev/vn0                12M        12M         0B      100%  /packages/mnt/jbase
/dev/vn1                39M        39M         0B      100%
/packages/mnt/jkernel-7.2R1.7
/dev/vn2                12M        12M         0B      100%
/packages/mnt/jpfe-M40-7.2R1.7
/dev/vn3               2.3M       2.3M         0B      100%
/packages/mnt/jdocs-7.2R1.7
/dev/vn4                14M        14M         0B      100%
/packages/mnt/jroute-7.2R1.7
/dev/vn5               4.5M       4.5M         0B      100%
/packages/mnt/jcrypto-7.2R1.7
mfs:172                1.5G       4.0K       1.3G        0%  /tmp
/dev/ad0s1e             12M        20K        11M        0%  /config
procfs                 4.0K       4.0K         0B      100%  /proc
/dev/ad1s1f            9.4G       4.9G       3.7G       57%  /var
```

show system storage (TX Matrix Plus Router)

```
user@host> show system storage
sfc0-re0:
--------------------------------------------------------------------------
Filesystem             Size       Used      Avail  Capacity   Mounted on
/dev/ad0s1a            3.4G       178M       2.9G        6%  /
devfs                  1.0K       1.0K         0B      100%  /dev
devfs                  1.0K       1.0K         0B      100%  /dev/
/dev/md0                33M        33M         0B      100%  /packages/mnt/jbase
/dev/md1               216M       216M         0B      100%
/packages/mnt/jkernel-9.6-20090519.0
/dev/md2                66M        66M         0B      100%
```

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```
/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
```


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```
/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
```


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```
/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
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
```

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show system switchover

List of Syntax

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Syntax (TX Matrix Plus Router) on page 610
Syntax (MX Series Router) on page 610

Syntax

show system switchover

Syntax (TX Matrix Router)

show system switchover
<all-chassis | all-lcc | lcc *number* | scc>

Syntax (TX Matrix Plus Router)

show system switchover
<all-chassis | all-lcc | lcc *number* | sfc *number*>

Syntax (MX Series Router)

show system switchover
<all-members>
<local>
<member *member-id*>

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
Command introduced in Junos OS Release 13.2X51-D20 for QFX Series switches.

Description

Display whether graceful Routing Engine switchover is configured, the state of the kernel replication (ready or synchronizing), any replication errors, and whether the primary and standby Routing Engines are using compatible versions of the kernel database.

NOTE: Issue the **show system switchover** command *only* on the backup Routing Engine. This command is *not* supported on the master Routing Engine because the **kernel-replication** process daemon does not run on the master Routing Engine. This process runs only on the backup Routing Engine.

Beginning Junos OS Release 9.6, the **show system switchover** command has been deprecated on the master Routing Engine on all routers other than a TX Matrix (switch-card chassis) or a TX Matrix Plus (switch-fabric chassis) router.

However, in a routing matrix, if you issue the **show system switchover** command on the master Routing Engine of the TX Matrix router (or switch-card chassis), the CLI displays graceful switchover information for the master Routing Engine of the T640 routers (or line-card chassis) in the routing matrix. Likewise, if you issue the **show system switchover** command on the master Routing Engine of a TX Matrix Plus router (or switch-fabric chassis), the CLI displays output for the master Routing Engine of T1600 or T4000 routers in the routing matrix.

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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.

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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

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show system switchover (Backup Routing Engine - Not Ready) on page 613
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show system switchover (MX Virtual Chasiss) on page 614
show system switchover (Routing Matrix and Routing Matrix Plus) - Master Ready on page 614
show system switchover (Routing Matrix and Routing Matrix Plus) - Master Not Ready on page 615
show system switchover (Routing Matrix and Routing Matrix Plus) - Backup Ready on page 615
show system switchover (Routing Matrix and Routing Matrix Plus) - Backup Not Ready on page 615
show system switchover all-lcc (Routing Matrix and Routing Matrix Plus) on page 616

Output Fields

Table 18 on page 612 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: • **On**—Indicates **graceful-switchover** is specified for the **routing-options** configuration command. • **Off**—Indicates **graceful-switchover** is not specified for the **routing-options** configuration command.
Configuration database	State of the configuration database: • **Ready**—Configuration database has synchronized. • **Synchronizing**—Configuration database is synchronizing. Displayed when there are updates within the last 5 seconds. • **Synchronize failed**—Configuration database synchronize process failed.

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Table 18: show system switchover Output Fields *(continued)*

Field Name	Field Description
Kernel database	State of the kernel database: • **Ready**—Kernel database has synchronized. This message implies that the system is ready for GRES. • **Synchronizing**—Kernel database is synchronizing. Displayed when there are updates within the last 5 seconds. • **Version incompatible**—The primary and standby Routing Engines are running incompatible kernel database versions. • **Replication error**—An error occurred when the state was replicated from the primary Routing Engine. Inspect **Steady State** for possible causes, or notify Juniper Networks customer support.
Peer state	Routing Engine peer state: This field is displayed only when ksyncd is running in multichassis mode (LCC master). • **Steady State**—Peer completed switchover transition. • **Peer Connected**—Peer in switchover transition.
Switchover Status	Switchover Status: • **Ready**—Message for system being switchover ready. • **Not Ready**—Message for system not being ready for switchover.

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
```

Switchover Status: Ready is the way the last line of the output reads if you are running Junos OS Release 16.1R1 or later. If you are running Junos OS Release 15.x, the last line of the output reads as Switchover Ready, for example:

```
user@host> show system switchover
Graceful switchover: On
Configuration database: Ready
Kernel database: Ready
Switchover 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 State
Switchover Status: Not Ready
```

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Switchover Status: Not Ready is the way the last line of the output reads if you are running Junos OS Release 16.1R1 or later. If you are running Junos OS Release 15.x, the last line of the output reads as Not ready for mastership switch, try after xxx secs, for example:

```
user@host> show system switchover
Graceful switchover: On
Configuration database: Ready
Kernel database: Ready
Not ready for mastership switch, try after xxx secs.
```

show system switchover (MX Virtual Chasiss)

```
{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 Chasiss)

```
{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
```


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```
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
```

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```
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
```


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show system uptime

List of Syntax

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Syntax (QFX Series) on page 617
Syntax (TX Matrix Router) on page 617
Syntax (TX Matrix Plus Router) on page 617
Syntax (MX Series Router) on page 617

Syntax

```
show system uptime
```

Syntax (EX Series Switches)

```
show system uptime
<all-members>
<local>
<member member-id>
```

Syntax (QFX Series)

```
show system uptime
<director-group name>
<infrastructure name>
<interconnect-device name>
<node-group name>
```

Syntax (TX Matrix Router)

```
show system uptime
<all-chassis | all-lcc | lcc number | scc>
```

Syntax (TX Matrix Plus Router)

```
show system uptime
<detail>
<all-chassis | all-lcc | lcc number | sfc number>
```

Syntax (MX Series Router)

```
show system uptime
<all-members>
<invoke-on>
<local>
<member member-id>
```

Release Information

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

Description

Display the current time and information about how long the router or switch, router or switch software, and routing protocols have been running.

NOTE: Time values computed from differences in timestamps can vary due to the insertion or deletion of leap-seconds between them.

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Options

none—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

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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 620
show system uptime all-lcc (TX Matrix Router) on page 620
show system uptime all-lcc (TX Matrix Plus Router) on page 620
show system uptime (EX Series) on page 621
show system uptime (QFX Series) on page 621

Output Fields

Table 19 on page 619 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
Current time	Current system time in UTC.
Time Source	Reference time source that the system is locked to.
System booted	Date and time when the Routing Engine on the router or switch was last booted and how long it has been running.
Protocols started	Date and time when the routing protocols were last started and how long they have been running.

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Table 19: show system uptime Output Fields *(continued)*

Field Name	Field Description
Last configured	Date and time when a configuration was last committed. Also shows the name of the user who issued the last **commit** command.
***time* and up**	Current time, in the local time zone, and how long the router or switch has been operational.
users	Number of users logged in to the router or switch.
load averages	Load averages for the last 1 minute, 5 minutes, and 15 minutes.

Sample Output

show system uptime

```
user@host> show system uptime
Current time:      1998-10-13 19:45:47 UTC
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:
--------------------------------------------------------------------------
```


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```
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
```

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show system virtual-memory

List of Syntax

Syntax on page 622
Syntax (EX Series) on page 622
Syntax (TX Matrix Router) on page 622
Syntax (TX Matrix Plus Router) on page 622
Syntax (MX Series Router) on page 622
Syntax (QFX Series) on page 622

Syntax

```
show system virtual-memory
```

Syntax (EX Series)

```
show system virtual-memory
<all-members>
<local>
<member member-id>
```

Syntax (TX Matrix Router)

```
show system virtual-memory
<all-chassis | all-lcc | lcc number | scc>
```

Syntax (TX Matrix Plus Router)

```
show system virtual-memory
<all-chassis | all-lcc | lcc number | sfc number>
```

Syntax (MX Series Router)

```
show system virtual-memory
<all-members>
<local>
<member member-id>
```

Syntax (QFX Series)

```
show system virtual-memory
<infrastructure name>
<interconnect-device name>
<node-group name>
```

Release Information

Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 9.0 for EX Series switches.
sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.
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 the usage of Junos OS kernel memory listed first by size of allocation and then by type of usage. Use the **show system virtual-memory** command for troubleshooting with Juniper Networks Customer Support.

Options

none—Display kernel dynamic memory usage information.

all-chassis—(TX Matrix routers and TX Matrix Plus routers only) (Optional) Display kernel dynamic memory usage information for all chassis.

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all-lcc—(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.

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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

- *Routing Matrix with a TX Matrix Plus Router Solutions Page*

List of Sample Output

show system virtual-memory on page 626
show system virtual-memory scc (TX Matrix Router) on page 630
show system virtual-memory sfc (TX Matrix Plus Router) on page 631
show system virtual-memory | display xml on page 634
show system virtual-memory (QFX Series) on page 657

Output Fields

Table 20 on page 625 lists the output fields for the **show system virtual-memory** command. Output fields are listed in the approximate order in which they appear.

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Table 20: show system virtual-memory Output Fields

Field Name	Field Description
Memory statistics by bucket size	
Size	Memory block size (bytes). The kernel memory allocator appropriates blocks of memory whose size is exactly a power of 2.
In Use	Number of memory blocks of this size that are in use (bytes).
Free	Number of memory blocks of this size that are free (bytes).
Requests	Number of memory allocation requests made.
HighWater	Maximum value the free list can have. Once the system starts reclaiming physical memory, it continues until the free list is increased to this value.
Couldfree	Total number of times that the free elements for a bucket size exceed the high-water mark for that bucket size.
Memory usage type by bucket size	
Size	Memory block size (bytes).
Type(s)	Kernel modules that are using these memory blocks. For a definition of each type, refer to a FreeBSD book.
Memory statistics by type	
Type	Kernel module that is using dynamic memory.
InUse	Number of memory blocks used by this type. The number is rounded up.
MemUse	Amount of memory in use, in kilobytes (KB).
HighUse	Maximum memory ever used by this type.
Limit	Maximum memory that can be allocated to this type.
Requests	Total number of dynamic memory allocation requests this type has made.
Type Limit	Number of times requests were blocked for reaching the maximum limit.
Kern Limit	Number of times requests were blocked for the kernel map.
Size(s)	Memory block sizes this type is using.
Memory Totals	
In Use	Total kernel dynamic memory in use (bytes, rounded up).
Free	Total kernel dynamic memory free (bytes, rounded up).

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Table 20: show system virtual-memory Output Fields *(continued)*

Field Name	Field Description
Requests	Total number of memory allocation requests.
ITEM	Kernel module that is using memory.
Size	Memory block size (bytes).
LImit	Maximum memory that can be allocated to this type.
Used	Number of memory blocks used by this type. The number is rounded up.
Free	Number of memory blocks available to this type.
Requests	Total number of memory allocation requests this type has made.
interrupt	Timer events and scheduling interruptions.
total	Total number of interruptions for each type.
rate	Interruption rate.
Total	Total for all interruptions.

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,
```


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```
         pfe_ipc, mkey, rtable, ifmaddr, ipfw, rnode
  32  atkbddev, dirrem, mkdir, diradd, freefile, freefrag, indirdep,
         bmsafemap, newblk, temp, devbuf, COS, vnodes, cluster_save buffer,
         pcb, soname, proc-args, sigio, kld, Gzip trees, taskqueue, SWAP,
         eventhandler, bus, sysctl, uidinfo, subproc, pgrp, pfestat, itable32,
         ifstate, pfe_ipc, mkey, rtable, ifmaddr, ipfw, rnode, rtnexthop
  64  isadev, iftable, MFS node, allocindir, allocdirect, pagedep, temp,
         devbuf, lockf, COS, NULLFS hash, DEVFS name, vnodes,
         cluster_save buffer, vfscache, pcb, soname, proc-args, file,
         AR driver, AD driver, Gzip trees, rman, eventhandler, bus, sysctl,
         subproc, pfestat, pic, ifstate, pfe_ipc, mkey, ifaddr, rtable, ipfw
 128  ZONE, freeblks, inodedep, temp, devbuf, zombie, COS, DEVFS node,
         vnodes, mount, vfscache, pcb, soname, proc-args, ttys, dev_t,
         timecounter, kld, Gzip trees, ISOFS node, bus, uidinfo, cred,
         session, pic, itable16, ifstate, pfe_ipc, rtable, ifstat, metrics,
         rtnexthop, iffamily
 256  iflogical, iftable, MFS node, FFS node, newblk, temp, devbuf,
         NFS daemon, vnodes, proc-args, kqueue, file desc, Gzip trees, bus,
         subproc, itable16, ifstate, pfe_ipc, sysctl, rtnexthop
 512  UFS mount, temp, devbuf, mount, BIO buffer, ptys, ttys, AR driver,
         Gzip trees, ISOFS mount, msg, ioctlops, ATA generic, bus, proc,
         pfestat, lr, ifstate, pfe_ipc, rtable, ipfw, ifstat, rtnexthop
  1K  iftable, temp, devbuf, NQNFS Lease, kqueue, kld, AD driver,
         Gzip trees, sem, MD disk, bus, ifstate, pfe_ipc, ipfw
  2K  uc_devlist, UFS mount, temp, devbuf, BIO buffer, pcb, AR driver,
         Gzip trees, ioctlops, bus, ipfw, ifstat, rcache
  4K  memdesc, iftable, UFS mount, temp, devbuf, kld, Gzip trees, sem, msg
  8K  temp, devbuf, syncache, Gzip trees
 16K  indirdep, temp, devbuf, shm, msg
 32K  pagedep, kld, Gzip trees
 64K  VM pgdata, devbuf, MSDOSFS mount
128K  UFS ihash, inodedep, NFS hash, kld, ISOFS mount
256K  mbuf, vfscache
512K  SWAP

Memory statistics by type                          Type  Kern
        Type  InUse MemUse HighUse  Limit Requests Limit Limit Size(s)
       isadev    13     1K       1K127753K       13     0     0  64
     atkbddev     2     1K       1K127753K        2     0     0  32
   uc_devlist    24     3K       3K127753K       24     0     0  16,2K
     nexusdev     3     1K       1K127753K        3     0     0  16
      memdesc     1     4K       4K127753K        1     0     0  4K
         mbuf     1   152K    152K127753K        1     0     0  256K
    iflogical     6     2K       2K127753K        6     0     0  256
      iftable    17     9K       9K127753K       18     0     0  16,64,256,1K,4K
         ZONE    15     2K       2K127753K       15     0     0  128
    VM pgdata     1    64K      64K127753K        1     0     0  64K
    UFS mount    12    26K      26K127753K       12     0     0  512,2K,4K
    UFS ihash     1   128K     128K127753K        1     0     0  128K
     MFS node     6     2K       3K127753K       35     0     0  64,256
     FFS node   906   227K     227K127753K     1352     0     0  256
       dirrem     0     0K       4K127753K      500     0     0  32
        mkdir     0     0K       1K127753K       38     0     0  32
       diradd     0     0K       6K127753K      521     0     0  32
     freefile     0     0K       4K127753K      374     0     0  32
     freeblks     0     0K       8K127753K      219     0     0  128
     freefrag     0     0K       1K127753K      193     0     0  32
   allocindir     0     0K      25K127753K     1518     0     0  64
      indirdep     0     0K      17K127753K       76     0     0  32,16K
  allocdirect     0     0K      10K127753K      760     0     0  64
     bmsafemap     0     0K       1K127753K       72     0     0  32
```

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```
          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
```


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```
          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
```

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```
     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,
```


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```
...

Memory statistics by type                          Type  Kern
       Type  InUse MemUse HighUse  Limit Requests Limit Limit Size(s)
      isadev    12     1K      1K166400K       12    0     0  64
    atkbddev     2     1K      1K166400K        2    0     0  32
   uc_devlist    24     3K      3K166400K       24    0     0  16,2K
....

Memory Totals:  In Use    Free    Requests
                 6091K   1554K     2897122
```

show system virtual-memory sfc (TX Matrix Plus Router)

```
user@host> show system virtual-memory sfc 0
sfc0-re0:
------------------------------------------------------------------------------
         Type InUse MemUse HighUse Requests  Size(s)
CAM dev queue     1     1K       -        1  64
      entropy  1024    64K       -     1024  64
       linker   487  6272K       -     1163  16,32,64,4096,32768,131072
          USB   127    10K       -      127  16,32,64,128,256,1024,2048
        lockf    46     3K       -    98418  64
       USBdev    10     2K       -       34  16,128,2048,16384
ifstateSLLNode     0     0K       -     1096 16
       devbuf 21243 15683K       -    21810
16,32,64,128,256,512,1024,2048,4096,8192,16384,32768,65536,131072
         temp  1283   151K       -  2483472
16,32,64,128,256,512,2048,4096,8192,16384,32768,65536,131072
       ip6ndp     0     0K       -        4  64
   in6ifmulti     1     1K       -        1  64
   in6grentry     1     1K       -        1  64
    iflogical    20     5K       -       29  2048
     iffamily    45     6K       -       69  32,1024,2048
    rtnexthop   266    46K       -   608013  32,256,512,1024,2048,4096
      metrics    31     4K       -       54  256
        rnode   212     4K       -   607848  16,32
       rcache     4     8K       -        4  65536
       iflist     0     0K       -        6  16,64
     ifdevice    11     8K       -       17  16,32768
       ifstat   424   472K       -      427  512,16384,65536
         ipfw    42    23K       -      145
16,32,64,128,256,512,1024,16384,32768,65536,131072
      ifmaddr   415    11K       -      415  16,32
       rtable   329    28K       -   608066  16,32,64,128,1024,16384
       sysctl     0     0K       -   887976  16,32,64,4096,16384,32768
       ifaddr    64     5K       -       70  32,64,128
         mkey   331     6K       -    12528  16,128
      pfe_ipc     0     0K       -  7299115
16,32,64,128,256,512,1024,2048,4096,8192,16384,32768,65536,131072
      ifstate 1245054 70088K       -  3040437
16,32,64,128,256,512,1024,2048,4096,8192,16384,32768
    idxbucket     1     1K       -        1  16
     itable16  5069  1250K       -     5103  1024,4096
     itable32   157    10K       -      157  64
     itable64     2     1K       -        2  128
           lr     1     1K       -        4  16384
          pic    37     6K       -       37  64,16384
      pfestat     0     0K       -     6220  32,64,128,256,131072
       gencfg  1486   424K       -     2614  16,32,64,256,512,16384,32768,65536
```

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```
          jsr     2     1K        -       22  16
          idl     1     4K        -      165
32,64,128,256,512,1024,2048,8192,16384,32768,65536,131072
       rtsmsg     0     0K        -       16  131072
       module   250    16K        -      250  64,128
     mtx_pool     1     8K        -        1  64,128
       DEVFS3   113    13K        -      114  256
       DEVFS1   106    24K        -      106  2048
         pgrp    15     1K        -     8600  64
      session    11     2K        -     2829  512
         proc     2     1K        -        2  16384
      subproc   296   572K        -    24689  2048,131072
         cred    38     5K        -   619244  256
       plimit    18     4K        -    21311  2048
      uidinfo     3     1K        -       10  32,512
    sysctloid  2701    82K        -     2701  16,32,64
    sysctltmp     0     0K        -    15572  16,32,64,1024
         umtx   171    11K        -      171  64
         SWAP     2   277K        -        2  64
          bus   779   125K        -     3072  16,32,64,128,32768
       bus-sc    67    62K        -     1477
16,32,64,512,1024,2048,8192,16384,65536,131072
      devstat     8    17K        -        8  16,131072
 eventhandler    46     2K        -       47  32,128
         kobj    93   186K        -      111  65536
        DEVFS     8     1K        -        9  16,64
         rman   106     7K        -      490  16,32,64
         sbuf     0     0K        -    28234  16,32,32768,131072
...
lcc0-re0:
------------------------------------------------------------------------------
         Type InUse MemUse HighUse Requests  Size(s)
CAM dev queue     1     1K        -        1  64
      entropy  1024    64K        -     1024  64
       linker   487  6272K        -     1163  16,32,64,4096,32768,131072
          USB   127    10K        -      127  16,32,64,128,256,1024,2048
       lockf    23     2K        -   169585  64
       USBdev    10     2K        -       34  16,128,2048,16384
       devbuf  5128 10760K        -     5310
16,32,64,128,256,512,1024,2048,4096,8192,16384,32768,65536,131072
         temp  1285   151K        -    10770
16,32,64,128,256,512,2048,4096,8192,16384,32768,65536,131072
       ip6ndp     0     0K        -        4  64
    iflogical    20     5K        -       29  2048
     iffamily    45     6K        -       69  32,1024,2048
    rtnexthop   189    29K        -  1211988  32,256,512,1024,2048,4096
      metrics    11     2K        -       16  256
        rnode   135     3K        -   606391  16,32
       rcache     4     8K        -        4  65536
       iflist     0     0K        -        6  16,64
     ifdevice    11     8K        -       17  16,32768
       ifstat   412   471K        -      415  512,16384,65536
         ipfw    42    23K        -       91
16,32,64,128,256,512,1024,16384,32768,65536,131072
      ifmaddr   415    11K        -      415  16,32
       rtable   225    20K        -   606584  16,32,64,128,1024,16384
       sysctl     0     0K        -  2302479  16,32,64
       ifaddr    53     4K        -       69  32,64,128
         mkey   133     3K        -     8974  16,128
      pfe_ipc     0     0K        - 19035108
16,32,64,128,512,1024,2048,8192,16384,32768,65536,131072
```


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```
      ifstate 710270 42176K       -  9583703
16,32,64,128,256,512,1024,2048,8192,16384,32768
    idxbucket      1     1K       -        1  16
     itable16   5045  1245K       -  1825178  1024,4096
     itable32    157    10K       -      157  64
     itable64      2     1K       -        2  128
           lr      1     1K       -        4  16384
          pic     37     6K       -       37  64,16384
      pfestat      0     0K       -     1682  32,64,128,256,131072
       gencfg   1486   424K       -     2812  16,32,64,256,512,16384,32768,65536
          jsr      0     0K       -       22  16
          idl      0     0K       -        4  32768,131072
       rtsmsg      0     0K       -        3  131072
       module    250    16K       -      250  64,128
     mtx_pool      1     8K       -        1  64,128
       DEVFS3    108    12K       -      109  256
       DEVFS1    101    23K       -      101  2048
         pgrp      5     1K       -      917  64
      session      5     1K       -      917  512
         proc      2     1K       -        2  16384
      subproc    217   441K       -     4867  2048,131072
         cred     21     3K       -    48719  256
       plimit      9     2K       -     5255  2048
      uidinfo      2     1K       -        2  32,512
    sysctloid   2786    85K       -     2786  16,32,64
    sysctltmp      0     0K       -     1833  16,32,64,1024
         umtx    126     8K       -      126  64
         SWAP      2   277K       -        2  64
          bus    780   125K       -     2734  16,32,64,128,32768
       bus-sc     69    69K       -     1194
16,32,64,512,1024,2048,8192,16384,65536,131072
      devstat      8    17K       -        8  16,131072
 eventhandler     45     2K       -       46  32,128
         kobj     93   186K       -      111  65536
        DEVFS      8     1K       -        9  16,64
         rman     94     6K       -      477  16,32,64
         sbuf      0     0K       -      532  16,32,32768,131072
  NULLFS hash      1     1K       -        1  64
    taskqueue      5     1K       -        5  64
   turnstiles    127     8K       -      127  64
        Unitno      6     1K       -       44  16,64
     ioctlops      0     0K       -  1771718  16,32,64,128,8192,16384,65536,131072

          iov      0     0K       -    79425  16,64,128,256,512,1024,2048,131072
          msg      4    25K       -        4  32768,131072
          sem      4     7K       -        4  16384,32768,131072
          shm      2    13K       -        4  32768
         ttys     93    16K       -      195  512,32768
       soname     31     3K       -   389284  16,32,64,256
          pcb    101    16K       -     4374
16,32,64,128,1024,2048,4096,16384,65536
   BIO buffer     40    80K       -      750  65536
     vfscache      1   512K       -        1  65536
cluster_save buffer      0     0K       -       55 32,64
     VFS hash      1   256K       -        1  32,64
       vnodes      1     1K       -        1  512
        mount    266    21K       -      481  16,32,64,128,256,4096,32768
  vnodemarker      0     0K       -     2497  16384
    pfs_nodes     25     3K       -       25  128
  pfs_vncache    144     5K       -      386  32
          STP      1     1K       -        1  64
```

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```
         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>
```


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```
                    <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>
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 <memuse>12</memuse>
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                    <memstat-name>rman</memstat-name>
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                    <memstat-name>cluster_save buffer</memstat-name>
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<memuse>1</memuse>
```


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<memstat-name>bmsafemap</memstat-name>
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<memstat-size>32</memstat-size>
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<memstat-name>ata_dma</memstat-name>
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<memstat-name>VM pgdata</memstat-name>
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<memstat-name>isadev</memstat-name>
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            <memstat-name>kbdmux</memstat-name>
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            <memuse>9</memuse>
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                    <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-deamon>0</pages-freed-by-deamon>
                <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>
            <kernel-direct-mm-size-information>
                <vm-directmm-size-used>4644</vm-directmm-size-used>
                <vm-directmm-size-max>4057334</vm-directmm-size-max>
            </kernel-direct-mm-size-information>
        </system-virtual-memory-information>
        <cli>
            <banner></banner>
        </cli>
    </rpc-reply>
```

Note: <kernel-direct-mm-size-information> only displays for 64 bit platform.

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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>
        <vmstat-memstat-malloc>
            <memstat-name>CAM dev queue</memstat-name>
            <inuse>1</inuse>
            <memuse>1</memuse>
            <high-use>-</high-use>
            <memstat-req>1</memstat-req>
            <memstat-size>64</memstat-size>
            <memstat-name>entropy</memstat-name>
            <inuse>1024</inuse>
            <memuse>64</memuse>
            <high-use>-</high-use>
            <memstat-req>1024</memstat-req>
            <memstat-size>64</memstat-size>
            <memstat-name>linker</memstat-name>
            <inuse>481</inuse>
            <memuse>1871</memuse>
            <high-use>-</high-use>
            <memstat-req>1145</memstat-req>
            <memstat-size>16,32,64,4096,32768,131072</memstat-size>
            <memstat-name>lockf</memstat-name>
            <inuse>56</inuse>
            <memuse>4</memuse>
            <high-use>-</high-use>
            <memstat-req>5998</memstat-req>
            <memstat-size>64</memstat-size>
            <memstat-name>devbuf</memstat-name>
            <inuse>2094</inuse>
            <memuse>3877</memuse>
            <high-use>-</high-use>
            <memstat-req>2099</memstat-req>

<memstat-size>16,32,64,128,512,1024,4096,8192,16384,32768,65536,131072</memstat-size>

            <memstat-name>temp</memstat-name>
            <inuse>21</inuse>
            <memuse>66</memuse>
            <high-use>-</high-use>
            <memstat-req>3127</memstat-req>

<memstat-size>16,32,64,128,256,512,2048,4096,8192,16384,32768,65536,131072</memstat-size>

            <memstat-name>ip6ndp</memstat-name>
            <inuse>0</inuse>
            <memuse>0</memuse>
            <high-use>-</high-use>
            <memstat-req>4</memstat-req>
            <memstat-size>64</memstat-size>
            <memstat-name>in6ifmulti</memstat-name>
            <inuse>1</inuse>
            <memuse>1</memuse>
            <high-use>-</high-use>
            <memstat-req>1</memstat-req>
            <memstat-size>64</memstat-size>
            <memstat-name>in6grentry</memstat-name>
            <inuse>1</inuse>
            <memuse>1</memuse>
```

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```
<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>
```


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```
                <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>
```


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```
<inuse>160</inuse>
<memuse>10</memuse>
<high-use>-</high-use>
<memstat-req>160</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>itable64</memstat-name>
<inuse>2</inuse>
<memuse>1</memuse>
<high-use>-</high-use>
<memstat-req>2</memstat-req>
<memstat-size>128</memstat-size>
<memstat-name>lr</memstat-name>
<inuse>1</inuse>
<memuse>1</memuse>
<high-use>-</high-use>
<memstat-req>1</memstat-req>
<memstat-size>16384</memstat-size>
<memstat-name>pic</memstat-name>
<inuse>5</inuse>
<memuse>1</memuse>
<high-use>-</high-use>
<memstat-req>5</memstat-req>
<memstat-size>64,512</memstat-size>
<memstat-name>pfestat</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>-</high-use>
<memstat-req>162</memstat-req>
<memstat-size>16,32,128,256,16384</memstat-size>
<memstat-name>gencfg</memstat-name>
<inuse>224</inuse>
<memuse>56</memuse>
<high-use>-</high-use>
<memstat-req>540</memstat-req>
<memstat-size>16,32,64,256,512,32768,65536</memstat-size>
<memstat-name>jsr</memstat-name>
<inuse>2</inuse>
<memuse>1</memuse>
<high-use>-</high-use>
<memstat-req>4</memstat-req>
<memstat-size>16</memstat-size>
<memstat-name>idl</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>-</high-use>
<memstat-req>13</memstat-req>
<memstat-size>16,32,64,128,256,4096,16384,32768,131072</memstat-size>

<memstat-name>rtsmsg</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>-</high-use>
<memstat-req>2</memstat-req>
<memstat-size>131072</memstat-size>
<memstat-name>module</memstat-name>
<inuse>249</inuse>
<memuse>16</memuse>
<high-use>-</high-use>
<memstat-req>249</memstat-req>
<memstat-size>64,128</memstat-size>
<memstat-name>mtx_pool</memstat-name>
```


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```
<inuse>1</inuse>
<memuse>8</memuse>
<high-use>-</high-use>
<memstat-req>1</memstat-req>
<memstat-size>64,128</memstat-size>
<memstat-name>DEVFS3</memstat-name>
<inuse>109</inuse>
<memuse>12</memuse>
<high-use>-</high-use>
<memstat-req>117</memstat-req>
<memstat-size>256</memstat-size>
<memstat-name>DEVFS1</memstat-name>
<inuse>102</inuse>
<memuse>23</memuse>
<high-use>-</high-use>
<memstat-req>109</memstat-req>
<memstat-size>2048</memstat-size>
<memstat-name>pgrp</memstat-name>
<inuse>12</inuse>
<memuse>1</memuse>
<high-use>-</high-use>
<memstat-req>21</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>session</memstat-name>
<inuse>8</inuse>
<memuse>1</memuse>
<high-use>-</high-use>
<memstat-req>15</memstat-req>
<memstat-size>512</memstat-size>
<memstat-name>proc</memstat-name>
<inuse>2</inuse>
<memuse>1</memuse>
<high-use>-</high-use>
<memstat-req>2</memstat-req>
<memstat-size>16384</memstat-size>
<memstat-name>subproc</memstat-name>
<inuse>244</inuse>
<memuse>496</memuse>
<high-use>-</high-use>
<memstat-req>1522</memstat-req>
<memstat-size>2048,131072</memstat-size>
<memstat-name>cred</memstat-name>
<inuse>30</inuse>
<memuse>4</memuse>
<high-use>-</high-use>
<memstat-req>11409</memstat-req>
<memstat-size>256</memstat-size>
<memstat-name>plimit</memstat-name>
<inuse>17</inuse>
<memuse>4</memuse>
<high-use>-</high-use>
<memstat-req>133</memstat-req>
<memstat-size>2048</memstat-size>
<memstat-name>uidinfo</memstat-name>
<inuse>3</inuse>
<memuse>1</memuse>
<high-use>-</high-use>
<memstat-req>6</memstat-req>
<memstat-size>32,512</memstat-size>
<memstat-name>sysctloid</memstat-name>
<inuse>1117</inuse>
```

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```
                    <memuse>34</memuse>
                    <high-use>-</high-use>
                    <memstat-req>1117</memstat-req>
                    <memstat-size>16,32,64</memstat-size>
                    <memstat-name>sysctltmp</memstat-name>
                    <inuse>0</inuse>
                    <memuse>0</memuse>
                    <high-use>-</high-use>
                    <memstat-req>743</memstat-req>
                    <memstat-size>16,32,64,1024</memstat-size>
                    <memstat-name>umtx</memstat-name>
                    <inuse>144</inuse>
                    <memuse>9</memuse>
                    <high-use>-</high-use>
                    <memstat-req>144</memstat-req>
                    <memstat-size>64</memstat-size>
                    <memstat-name>SWAP</memstat-name>
                    <inuse>2</inuse>
                    <memuse>209</memuse>
                    <high-use>-</high-use>
                    <memstat-req>2</memstat-req>
                    <memstat-size>64</memstat-size>
                    <memstat-name>bus</memstat-name>
                    <inuse>496</inuse>
                    <memuse>55</memuse>
                    <high-use>-</high-use>
                    <memstat-req>1196</memstat-req>
                    <memstat-size>16,32,64,128,32768</memstat-size>
                    <memstat-name>bus-sc</memstat-name>
                    <inuse>23</inuse>
                    <memuse>33</memuse>
                    <high-use>-</high-use>
                    <memstat-req>335</memstat-req>

<memstat-size>16,32,64,512,1024,2048,8192,16384,65536,131072</memstat-size>
                    <memstat-name>devstat</memstat-name>
                    <inuse>10</inuse>
                    <memuse>21</memuse>
                    <high-use>-</high-use>
                    <memstat-req>10</memstat-req>
                    <memstat-size>16,131072</memstat-size>
                    <memstat-name>eventhandler</memstat-name>
                    <inuse>35</inuse>
                    <memuse>2</memuse>
                    <high-use>-</high-use>
                    <memstat-req>36</memstat-req>
                    <memstat-size>32,128</memstat-size>
                    <memstat-name>kobj</memstat-name>
                    <inuse>93</inuse>
                    <memuse>186</memuse>
                    <high-use>-</high-use>
                    <memstat-req>111</memstat-req>
                    <memstat-size>65536</memstat-size>
                    <memstat-name>DEVFS</memstat-name>
                    <inuse>8</inuse>
                    <memuse>1</memuse>
                    <high-use>-</high-use>
                    <memstat-req>9</memstat-req>
                    <memstat-size>16,64</memstat-size>
                    <memstat-name>rman</memstat-name>
                    <inuse>71</inuse>
```


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```
<memuse>5</memuse>
<high-use>-</high-use>
<memstat-req>433</memstat-req>
<memstat-size>16,32,64</memstat-size>
<memstat-name>sbuf</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>-</high-use>
<memstat-req>522</memstat-req>
<memstat-size>16,32,32768,131072</memstat-size>
<memstat-name>NULLFS hash</memstat-name>
<inuse>1</inuse>
<memuse>1</memuse>
<high-use>-</high-use>
<memstat-req>1</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>taskqueue</memstat-name>
<inuse>5</inuse>
<memuse>1</memuse>
<high-use>-</high-use>
<memstat-req>5</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>turnstiles</memstat-name>
<inuse>145</inuse>
<memuse>10</memuse>
<high-use>-</high-use>
<memstat-req>145</memstat-req>
<memstat-size>64</memstat-size>
<memstat-name>Unitno</memstat-name>
<inuse>8</inuse>
<memuse>1</memuse>
<high-use>-</high-use>
<memstat-req>44</memstat-req>
<memstat-size>16,64</memstat-size>
<memstat-name>ioctlops</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>-</high-use>
<memstat-req>27622</memstat-req>
<memstat-size>16,64,8192,16384,131072</memstat-size>
<memstat-name>iov</memstat-name>
<inuse>0</inuse>
<memuse>0</memuse>
<high-use>-</high-use>
<memstat-req>18578</memstat-req>
<memstat-size>16,64,128,256,512,1024,2048,131072</memstat-size>
<memstat-name>msg</memstat-name>
<inuse>4</inuse>
<memuse>25</memuse>
<high-use>-</high-use>
<memstat-req>4</memstat-req>
<memstat-size>32768,131072</memstat-size>
<memstat-name>sem</memstat-name>
<inuse>4</inuse>
<memuse>7</memuse>
<high-use>-</high-use>
<memstat-req>4</memstat-req>
<memstat-size>16384,32768,131072</memstat-size>
<memstat-name>shm</memstat-name>
<inuse>9</inuse>
<memuse>20</memuse>
```


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```
                    <high-use>-</high-use>
                    <memstat-req>14</memstat-req>
                    <memstat-size>32768</memstat-size>
                    <memstat-name>ttys</memstat-name>
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<zone-size>416</zone-size>
<count-limit>0</count-limit>
<used>127</used>
<free>17</free>
<zone-req>131</zone-req>
<zone-name>KSEGRP:</zone-name>
<zone-size>88</zone-size>
<count-limit>0</count-limit>
<used>127</used>
<free>73</free>
<zone-req>131</zone-req>
<zone-name>UPCALL:</zone-name>
<zone-size>44</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
```

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```
<zone-name>SLEEPQUEUE:</zone-name>
<zone-size>32</zone-size>
<count-limit>0</count-limit>
<used>145</used>
<free>194</free>
<zone-req>145</zone-req>
<zone-name>VMSPACE:</zone-name>
<zone-size>268</zone-size>
<count-limit>0</count-limit>
<used>57</used>
<free>13</free>
<zone-req>1335</zone-req>
<zone-name>mbuf_packet:</zone-name>
<zone-size>256</zone-size>
<count-limit>180000</count-limit>
<used>256</used>
<free>128</free>
<zone-req>49791</zone-req>
<zone-name>mbuf:</zone-name>
<zone-size>256</zone-size>
<count-limit>180000</count-limit>
<used>50</used>
<free>466</free>
<zone-req>105183</zone-req>
<zone-name>mbuf_cluster:</zone-name>
<zone-size>2048</zone-size>
<count-limit>25190</count-limit>
<used>387</used>
<free>165</free>
<zone-req>5976</zone-req>
<zone-name>mbuf_jumbo_pagesize:</zone-name>
<zone-size>4096</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>mbuf_jumbo_9k:</zone-name>
<zone-size>9216</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>mbuf_jumbo_16k:</zone-name>
<zone-size>16384</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>ACL UMA zone:</zone-name>
<zone-size>388</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>g_bio:</zone-name>
<zone-size>132</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>174</free>
<zone-req>69750</zone-req>
<zone-name>ata_request:</zone-name>
```


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```
<zone-size>200</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>57</free>
<zone-req>5030</zone-req>
<zone-name>ata_composite:</zone-name>
<zone-size>192</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>GENCFG:</zone-name>
<zone-size>72</zone-size>
<count-limit>1000004</count-limit>
<used>57</used>
<free>102</free>
<zone-req>57</zone-req>
<zone-name>VNODE:</zone-name>
<zone-size>292</zone-size>
<count-limit>0</count-limit>
<used>2718</used>
<free>25</free>
<zone-req>2922</zone-req>
<zone-name>VNODEPOLL:</zone-name>
<zone-size>72</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>S VFS Cache:</zone-name>
<zone-size>68</zone-size>
<count-limit>0</count-limit>
<used>2500</used>
<free>76</free>
<zone-req>3824</zone-req>
<zone-name>L VFS Cache:</zone-name>
<zone-size>291</zone-size>
<count-limit>0</count-limit>
<used>51</used>
<free>14</free>
<zone-req>63</zone-req>
<zone-name>NAMEI:</zone-name>
<zone-size>1024</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>8</free>
<zone-req>53330</zone-req>
<zone-name>NFSMOUNT:</zone-name>
<zone-size>480</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>NFSNODE:</zone-name>
<zone-size>460</zone-size>
<count-limit>0</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>PIPE:</zone-name>
<zone-size>404</zone-size>
```

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```
<count-limit>0</count-limit>
<used>27</used>
<free>9</free>
<zone-req>717</zone-req>
<zone-name>KNOTE:</zone-name>
<zone-size>72</zone-size>
<count-limit>0</count-limit>
<used>42</used>
<free>64</free>
<zone-req>3311</zone-req>
<zone-name>socket:</zone-name>
<zone-size>412</zone-size>
<count-limit>25191</count-limit>
<used>343</used>
<free>8</free>
<zone-req>2524</zone-req>
<zone-name>unpcb:</zone-name>
<zone-size>140</zone-size>
<count-limit>25200</count-limit>
<used>170</used>
<free>26</free>
<zone-req>2157</zone-req>
<zone-name>ipq:</zone-name>
<zone-size>52</zone-size>
<count-limit>216</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>udpcb:</zone-name>
<zone-size>232</zone-size>
<count-limit>25194</count-limit>
<used>19</used>
<free>32</free>
<zone-req>31</zone-req>
<zone-name>inpcb:</zone-name>
<zone-size>232</zone-size>
<count-limit>25194</count-limit>
<used>40</used>
<free>28</free>
<zone-req>105</zone-req>
<zone-name>tcpcb:</zone-name>
<zone-size>520</zone-size>
<count-limit>25193</count-limit>
<used>40</used>
<free>16</free>
<zone-req>105</zone-req>
<zone-name>tcptw:</zone-name>
<zone-size>56</zone-size>
<count-limit>5092</count-limit>
<used>0</used>
<free>0</free>
<zone-req>0</zone-req>
<zone-name>syncache:</zone-name>
<zone-size>128</zone-size>
<count-limit>15360</count-limit>
<used>0</used>
<free>60</free>
<zone-req>55</zone-req>
<zone-name>tcpreass:</zone-name>
<zone-size>20</zone-size>
<count-limit>1690</count-limit>
```


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```
        <used>0</used>
        <free>0</free>
        <zone-req>0</zone-req>
        <zone-name>sackhole:</zone-name>
        <zone-size>20</zone-size>
        <count-limit>0</count-limit>
        <used>0</used>
        <free>0</free>
        <zone-req>0</zone-req>
        <zone-name>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-deamon>0</pages-freed-by-deamon>
                <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>
```


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show task

Syntax

show task
<logical-system (all | *logical-system-name*)>
<task-name>
io
logical-system-mux
memory
replication
snooping
summary

Release Information

Command introduced before Junos OS Release 7.4.

Description

Display routing protocol tasks on the Routing Engine.

Options

none—Display all routing protocol tasks on the Routing Engine.

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

logical-system-mux— Display the logical router multiplexer process (lrmuxd) per-task information.

task-name—(Optional) Display information about running tasks for all tasks whose name begins with this string (for example, **BGP_Group_69_153** and **BGP_Group_70_153** are both displayed when you run the **show task BGP_Group** command).

io— Show i/o statistics for all tasks displayed.

memory— Show memory statistics for all tasks displayed.

replication— Show only replication tasks.

snooping— Show only snooping tasks.

summary— (Optional) Display summary information about running tasks.

Required Privilege Level

view

Related Documentation

- show task io on page 683
- show task logical-system-mux on page 685
- show task memory on page 687

List of Sample Output

show task on page 681

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Output Fields Table 21 on page 681 describes the output fields for the **show task** command. Output fields are listed in the approximate order in which they appear.

Table 21: show task Output Fields

Field Name	Field Description
Pri	Current priority of the process. A lower number indicates a higher priority.
Task Name	Name of the task.
Pro	IP protocol number associated with the process.
Port	TCP or UDP port number associated with the task.
So	Socket number of the task.
Flags	Flags for the task: • **Accept**—Task is waiting for incoming connections. • **Connect**—Task is waiting for a connection to be completed. • **Delete**—Task has been deleted and is being cleaned up. • **LowPrio**— Task will be dispatched to read its socket after other higher-priority tasks.

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>
 40 KRT IO task                                                    {krtio-th}
 40 krtio-th                                                       {krtio-th}
 60 krt solic client                      255       85 <ReadDisableWriteDisable>
  {krtio-th}
```

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```
13 rsvp-iobagent./var/run/sub_rpd.sock           46 <WriteDisable> {rsvp-io}
80 jtrace_jthr_task                   255       85                {TraceThread}
```


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show task io

List of Syntax
Syntax on page 683
Syntax (EX Series Switches) on page 683

Syntax
show task io
<logical-system (all | *logical-system-name*)>

Syntax (EX Series Switches)
show task io

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

Description
Display I/O statistics for routing protocol tasks on the Routing Engine.

Options
none—Display I/O statistics for routing protocol tasks on the Routing Engine.

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

Required Privilege Level
view

List of Sample Output
show task io on page 684

Output Fields
Table 22 on page 683 describes the output fields for the **show task io** command. Output fields are listed in the approximate order in which they appear.

Table 22: show task io Output Fields

Field Name	Field Description
Task Name	Name of the task.
Reads	Number of input ready notifications.
Writes	Number of output ready notifications.
Rcvd	Number of requests to the kernel for input.
Sent	Number of requests to the kernel for output.
Dropped	Number of sent requests that failed.

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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
 KRT IO task                           0       0       0       0       0
   {krtio-th}
 krtio-th                              0       0       0       0       0
   {krtio-th}
 krt solic client                      0       1       0       0       0
   {krtio-th}
 rsvp-io                           83826       0  117827  139682       0
   {rsvp-io}
 jtrace_jthr_task                      0       0       0       0       0
   {TraceThread}

...
```


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show task logical-system-mux

Syntax

show task logical-system-mux
<task-name>
io
memory
replication
summary

Release Information

Command introduced in Junos OS Release 13.3.

Description

Display the logical router multiplexer process (lrmuxd) per-task information.

Options

none— Display all the logical router multiplexer process (lrmuxd) per-task information.

task-name— (Optional) Display information about running tasks for all tasks whose name begins with this string (for example, **lsys_session_task:lr2** and **lsys_session_task:lr1** are both displayed when you run the **show task logical-system-mux lsys** command).

io— Show I/O statistics for all tasks displayed.

memory— Show memory statistics for all lrmuxd processes displayed.

replication— Show only replication tasks.

summary— Display summary information about running tasks.

Required Privilege Level

view

Related Documentation

- show task on page 680
- show task io on page 683
- show task memory on page 687

List of Sample Output

show task logical-system-mux on page 686
show task logical-system-mux io on page 686
show task logical-system-mux memory on page 686

Output Fields

Table 23 on page 685 describes the output fields for the **show task logical-system-mux** 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
Pri	Current priority of the process. A lower number indicates a higher priority.
Task Name	Name of the task.

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Table 23: show task logical-system-mux Output Fields *(continued)*

Field Name	Field Description
Pro	IP number associated with the process.
Port	TCP or UDP port number associated with the task.
So	Socket number of the task.
Flags	Flags for the task: • **Accept**—Task is waiting for incoming connections. • **Connect**—Task is waiting for a connection to be completed. • **Delete**—Task has been deleted and is being cleaned up. • **LowPrio**— Task will be dispatched to read its socket after other higher-priority tasks.

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                                0       0       0       0       0
 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_mg       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
```


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show task memory

List of Syntax
Syntax on page 687
Syntax (EX Series Switches) on page 687

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 689
show task memory detail on page 689

Output Fields
Table 24 on page 687 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 **DATA** segment memory in kilobytes.	All levels

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Table 24: show task memory Output Fields *(continued)*

Field Name	Field Description	Level of Output
Memory Maximum Ever Used	Maximum memory ever used.	none specified, **brief**, **history**
Memory Available	Memory currently available. NOTE: 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, **brief**
Size (kB)	Memory capacity in 1000-byte kilobytes.	none specified, **brief**, **history**, **summary**
Percentage	Percentage of memory currently available.	none specified, **brief**
When	Timestamp.	none specified, **brief**, **history**
Overall Memory Report	Memory utilization by memory size: • **Size**—Block size, in bytes. • **TXP**—**T** indicates transient memory, **X** indicates exclusive memory, and **P** indicates full page. • **Allocs**—Number of blocks allocated for named objects. • **Mallocs**—Number of blocks allocated for anonymous objects. • **Alloc Bytes**—Number of blocks allocated times block size. • **MaxAllocs**—Maximum value of**Allocs**. • **MaxBytes**—Maximum value of **Alloc Bytes**. • ***FreeBytes***—Total number of bytes unused on memory pages for this block size.	**detail**
Allocator Memory Report	Memory utilization by named objects: • **Size**—Size of the named object in bytes. • **Alloc Size**—Actual memory used by that object in bytes. • **DTXP**—D indicates debug, **T** indicates transient memory, **X** indicates exclusive memory, and **P** indicates full page. • **Alloc Blocks**—Number of named objects allocated. • **AllocBytes**—Number of blocks allocated times block size. • **MaxAlloc Blocks**—Maximum value of **Alloc Blocks**. • **Max Alloc Bytes**—Maximum value of **AllocBytes**.	**detail**

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Table 24: show task memory Output Fields *(continued)*

Field Name	Field Description	Level of Output
Malloc Usage Report	Memory utilization for miscellaneous use: • **Allocs**—Number of allocations. • **Bytes**—Total bytes consumed. • **MaxAllocs**—Maximum value of **Allocs**. • **MaxBytes**—Maximum value of **Bytes**. • **FuncCalls**—Cumulative number of **Allocs**.	**detail**
Dynamically allocated memory	Memory allocated dynamically by the system.	**detail**
Program data+BSS memory	Program and base station subsystem (BSS) memory.	**detail**
Page data overhead	Internal memory overhead.	**detail**
Page directory size	Internal memory overhead.	**detail**
Total bytes in use	Total memory, in bytes, that is currently in use and percentage of available memory (in parentheses).	**detail**

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           92       149        2892        247        2964       1204
    12 T          -         -           -          5          60          -
    16            7        11         288         23         368       3808
    20          100        33        2660        164        3280       1436
    20 T          -         -           -         40         800          -
    24          162        15        4248        177        4248       3944
    24 T          -         -           -          4          96          -
    28          371         -       10388        372       10416       1900
    32            6        23         928         30         960       3168
...
-------------------------------------------------------------------------
                                   606182                715302     118810

  ------------------------ Allocator Memory Report ------------------------
```

```
  Name                Size Alloc DTP    Alloc      Alloc MaxAlloc  MaxAlloc
                           Size       Blocks      Bytes   Blocks     Bytes
  patroot                8    12           84       1008       87      1044
  sockaddr_un.i802       8    12            2         24        2        24
  cos_nhm_nh             8    12            1         12        1        12
  sockaddr_un.tag        8    12            3         36        4        48
  gw_entry_list          8    12            1         12        1        12
  bgp_riblist_01         8    12            1         12        2        24
  ospf_intf_ev           8    12            -          -        6        72
  krt_remnant_rt         8    12  T         -          -        5        60
...
  ------------------------------------------------------------------------
                                                  164108             221552

  -------------------------- Malloc Usage Report --------------------------
  Name                      Allocs     Bytes MaxAllocs  MaxBytes  FuncCalls
  MGMT.local                     1         8         1         8          1
  BGP.0.0.0.0+179                -         -         1         8          2
  BGP RT Background              4     74748         4     74748          4
  SNMP Subagent./var/run/        -        52         1      9172         56
  OSPFv2 I/O./var/run/ppm        1     66536         2     66552       4551
  OSPF                           6     67655         7     67703         68
  KRT                            -         -         1      3784         18
  ASPaths                        3        80         3        80          3
  -- sockaddr --              183      2100       184      2108       1645
  BFD I/O./var/run/bfdd_c        1     65535         2     65551       4555
  RT                            48       872        48       872         48
  Scheduler                     42       628        43       628         88
  --Anonymous--                 56      1100        58      1140        112
  --System--                    82     58364       114     60044       4654
  ------------------------------------------------------------------------
                                      337678              352398

    Dynamically allocated memory:     765952      Maximum:    765952
         Program data+BSS memory:    1568768      Maximum:   1568768
              Page data overhead:      53248      Maximum:     53248
             Page directory size:       4096      Maximum:      4096
                                    ----------
              Total bytes in use:    2392064 (0% of available memory)
```


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show task replication

Syntax **show task replication**

Release Information Command introduced in Junos OS Release 8.5.
Command introduced in Junos OS Release 9.0 for EX Series switches.
Command introduced in Junos OS Release 13.2X51-D20 for QFX Series switches.
Support for logical systems introduced in Junos OS Release 13.3

Description 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.

CAUTION: If BGP is configured, before attempting nonstop active routing switchover, check the output of **show bgp replication** to confirm that BGP routing table synchronization has completed on the backup Routing Engine. The **complete** status in the output of **show task replication** only indicates that the socket replication has completed and the BGP synchronization is in progress.

To determine whether BGP synchronization is complete, you must check the **Protocol state** and **Synchronization state** fields in the output of **show bgp replication** on the master Routing Engine. The **Protocol state** must be **idle** and the **Synchronization state** must be **complete**. If you perform NSR switchover before the BGP synchronization has completed, the BGP session might flap.

Options This command has no options.

Required Privilege Level view

List of Sample Output show task replication (Issued on the Master Routing Engine) on page 692
show task replication (Issued on the Backup Routing Engine) on page 692

Output Fields Table 25 on page 691 lists the output fields for the **show task replication** command. Output fields are listed in the approximate order in which they appear.

Table 25: show task replication Output Fields

Field Name	Field Description
Stateful replication	Displays whether or not graceful Routing Engine switchover is configured. The status can be **Enabled** or **Disabled**.

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Table 25: show task replication Output Fields *(continued)*

Field Name	Field Description
RE mode	Displays the Routing Engine on which the command is issued: **Master**, **Backup**, or **Not applicable** (when the router has only one Routing Engine).
Protocol	Protocols that are supported by nonstop active routing.
Synchronization Status	Nonstop active routing synchronization status for the supported protocols. States are **NotStarted**, **InProgress**, and **Complete**.

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
```


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test configuration

Syntax
test configuration *filename*
syntax-only

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.
syntax-only option introduced in Junos OS Release 12.1.
Command introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.

Description
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.

Options
filename—Name of the configuration file.

syntax-only—(Optional) Check the syntax of a partial configuration file, without checking for commit errors.

Required Privilege Level
view

List of Sample Output
test configuration on page 693

Output Fields
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
```

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