



Junos[®] OS

PTX Series Getting Started Guide



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Table of Contents

	About the Documentation	xv
	Documentation and Release Notes	xv
	Supported Platforms	xv
	Using the Examples in This Manual	xv
	Merging a Full Example	xvi
	Merging a Snippet	xvi
	Documentation Conventions	xvii
	Documentation Feedback	xviii
	Requesting Technical Support	xix
	Self-Help Online Tools and Resources	xix
	Opening a Case with JTAC	xx
Part 1	Overview	
Chapter 1	Platform Overview	3
	Chained Composite Next Hops for Transit Devices	3
Chapter 2	Platform Components Overview	5
	Platform Components for PTX Series Packet Transport Routers	5
Part 2	Configuration	
Chapter 3	Overview	9
	Understanding Ethernet Interfaces for PTX Series Packet Transport Routers	9
	Physical Part of an Interface Name	10
	Interface Names for ACX Series Universal Access Routers	10
	J Series Interface Names	11
	Interface Names for M Series and T Series Routers and PTX Series Packet Transport Routers	11
	MX Series Router Interface Names	11
	Logical Part of an Interface Name	12
	PTX Series Packet Transport Router Management Ethernet Interfaces	12
	Overview of Forwarding Classes	13
	Output Queue Assignments Based on Forwarding Class	13
	Devices That Support Up to Four Forwarding Classes	13
	Devices That Support Up to 16 Forwarding Classes	14
	Default and Configurable Packet Loss Priority Values	14
	Configuration Statements Used to Configure and Apply Forwarding Classes	14

Chapter 4	Interfaces	17
	Configuring MAC Filtering on PTX Series Packet Transport Routers	17
	Configuring Flexible VLAN Tagging on PTX Series Packet Transport Routers	18
	Configuring Tag Protocol IDs (TPIDs) on PTX Series Packet Transport Routers	19
	Configuring Interface Encapsulation on PTX Series Packet Transport Routers	19
	Configuring Ethernet 802.3ah OAM on PTX Series Packet Transport Routers	21
	Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers	22
	Configuring Aggregated Ethernet Interfaces on PTX Series Packet Transport Routers	23
	Configuring 10-Gigabit Ethernet Framing	24
Chapter 5	Clocking, Power Management, and Cooling	27
	Clock Sources for PTX Series Packet Transport Routers	27
	Cooling System for PTX Series Packet Transport Routers	29
	Configuring an External Clock Synchronization Interface for PTX Series Packet Transport Routers	30
	Synchronous Ethernet Overview	31
	Configuring the Power-On Sequence for FPCs on PTX Series Packet Transport Routers	34
	Boot Sequence (M Series, MX Series, T Series, TX Matrix, TX Matrix Plus, and PTX Series Routing Engines)	34
Chapter 6	Ethernet DWDM	37
	Ethernet DWDM Interface Wavelength Overview	37
	10-Gigabit Ethernet OTN Options Configuration Overview	37
	100-Gigabit Ethernet OTN Options Configuration Overview	38
	Configuring OTN Optics	39
	Configuring the 10-Gigabit or 100-Gigabit Ethernet DWDM Interface Wavelength	40
Chapter 7	Interoperability between 100-Gigabit Ethernet PICs PD-ICE-CFP-FPC4 and P1-PTX-2-100GE-CFP	43
	Interoperability Between the 100-Gigabit Ethernet PICs PD-ICE-CFP-FPC4 and P1-PTX-2-100GE-CFP	43
	Configuring the Interoperability Between the 100-Gigabit Ethernet PICs P1-PTX-2-100GE-CFP and PD-ICE-CFP-FPC4	44
	Configuring SA Multicast Bit Steering Mode on 100-Gigabit Ethernet PIC P1-PTX-2-100GE-CFP	45
	Configuring Two 50-Gigabit Ethernet Physical Interfaces on the 100-Gigabit Ethernet PIC PD-ICE-CFP-FPC4 as One Aggregated Ethernet Interface	46
Chapter 8	Traffic Black Hole Detection and Recovery	49
	Traffic Black Hole Caused by Fabric Degradation	49
	Disabling FPC Restart	50

Chapter 9	Routing Policy	53
	Example: Overriding the Default BGP Routing Policy on PTX Series Packet Transport Routers	53
	Understanding the Default BGP Routing Policy on Packet Transport Routers	53
	Example: Overriding the Default BGP Routing Policy on PTX Series Packet Transport Routers	55
Chapter 10	Class of Service	59
	Understanding CoS CLI Configuration Statements on PTX Series Packet Transport Routers	59
	Configuring Up to 16 Forwarding Classes	62
	Enabling Eight Queues on Interfaces	65
	Multiple Forwarding Classes and Default Forwarding Classes	66
	PICs Restricted to Four Queues	66
	Examples: Configuring Up to 16 Forwarding Classes	67
	Configuring Drop Profile Maps for Schedulers	69
	Example: Configuring Excess Rate for PTX Series Packet Transport Routers	69
	Configuring Virtual LAN Queuing and Shaping on PTX Series Packet Transport Routers	76
	Example: Configuring Virtual LAN Queuing and Shaping in PTX Series Packet Transport Routers	78
	CoS Features and Limitations on PTX Series Packet Transport Routers	81
Chapter 11	Firewall Filters	83
	Firewall Filter Match Conditions for IPv4 Traffic	83
	Standard Firewall Filter Match Conditions for IPv6 Traffic	92
	Firewall Filter Match Conditions for MPLS Traffic	100
	Firewall Filter Match Conditions for Layer 2 CCC Traffic	101
	Firewall Filter Terminating Actions	104
	Firewall Filter Nonterminating Actions	107
Chapter 12	Flow Monitoring	115
	Configuring Active Flow Monitoring on PTX Series Packet Transport Routers	116
Chapter 13	Real-Time Performance Monitoring	119
	Real-Time Performance Monitoring Services Overview	119
	Configuring BGP Neighbor Discovery Through RPM	121
	Configuring RPM Probes	123
	Configuring RPM Receiver Servers	127
	Limiting the Number of Concurrent RPM Probes	127
	Examples: Configuring BGP Neighbor Discovery Through RPM	128
	Examples: Configuring Real-Time Performance Monitoring	129
Chapter 14	Differences Between PTX Series and T Series Routers	135
	COS Feature Differences Between PTX Series Packet Transport Routers and T Series Routers	135
	Firewall and Policing Differences Between PTX Series Packet Transport Routers and T Series Matrix Routers	137

Chapter 15	Configuration Statements	141
	accept-source-mac	142
	action-fpc-restart-disable	143
	bytes (otn-options)	143
	client-address	144
	data-fill	144
	data-size	145
	degraded	146
	degraded-fabric-detection-enable	146
	degraded-fpc-bad-plane-threshold	147
	dscp-code-point	148
	encapsulation (Logical Interface)	150
	encapsulation (Physical Interface)	154
	fec	159
	flexible-vlan-tagging	160
	forwarding-classes (Class-of-Service)	161
	forwarding-mode (PTX Series Packet Transport Routers)	162
	framing (10-Gigabit Ethernet Interfaces)	163
	fru-poweron-sequence	164
	history-size	165
	hosted-service-identifier	165
	hosted-services	166
	hold-interval (OAM)	166
	inactivity-timeout (Services RPM)	167
	is-ma	167
	laser-enable	168
	level	168
	line-loopback	169
	local-loopback	169
	loss-threshold	170
	maintenance-domain	171
	maximum-links	172
	moving-average-size	173
	mtu	174
	name-format	176
	oam	177
	odu-delay-management	179
	odu-ttim-action-enable	180
	optics-options	181
	otn-options	182
	otu-ttim-action-enable	183
	output (Port Mirroring)	184
	port (RPM)	185
	port-mirroring	186
	per-unit-scheduler	188
	prbs	189
	preemptive-fast-reroute	189
	probe-count	190
	probe-interval	190

	probe-limit	191
	probe-server	192
	probe-type	193
	protocol (Schedulers)	194
	rate	195
	recovered-clock	195
	routing-instance	196
	routing-instances	196
	rpm	197
	sa-multicast (PTX Series Packet Transport Routers)	198
	server-address (Hosted Services)	198
	server-profile	199
	server-profile (Active Flow Monitoring)	199
	services (RPM)	200
	shaping-rate (Applying to an Interface)	201
	short-name-format	203
	signal-degrade	204
	source-address	204
	source-address-filter	205
	source-filtering	206
	synchronization (M Series, T Series, and PTX Series)	207
	target (Services RPM)	209
	tcp	209
	test	210
	test-interval	211
	thresholds	212
	transport-type	213
	traps	214
	trigger	216
	tti	221
	tx-power	222
	udp	222
	vlan-tags (Stacked VLAN Tags)	223
	warning	224
	wavelength	225
Part 3	Administration	
Chapter 16	Managing PTX Series Packet Transport Routers	231
	request chassis ccg	232
	request chassis clock master switch	233
	request chassis fpc	234
	request chassis synchronization switch	238
Chapter 17	Managing the Boot Sequence	241
	Boot Sequence (M Series, MX Series, T Series, TX Matrix, TX Matrix Plus, and PTX Series Routing Engines)	241

Chapter 18	Monitoring Commands for PTX Series Packet Transport Routers	245
	show chassis alarms	246
	show chassis environment	258
	show chassis environment cb	312
	show chassis environment ccg	330
	show chassis environment fpc	332
	show chassis environment fpm	357
	show chassis environment monitored	363
	show chassis environment pdu	376
	show chassis environment routing-engine	378
	show chassis environment sib	383
	show chassis ethernet-switch	409
	show chassis fabric degraded-fabric-reachability	453
	show chassis fabric errors	455
	show chassis fabric fpcs	460
	show chassis fabric plane-location	497
	show chassis fabric summary	501
	show chassis fabric topology	506
	show chassis fan	528
	show chassis fpc	541
	show chassis hardware	572
	show chassis power	698
	show chassis power sequence	710
	show chassis routing-engine	712
	show chassis sibs	733
	show chassis synchronization	744
	show chassis temperature-thresholds	748
	show chassis zones (PTX Series Packet Transport Routers)	766
	show interfaces (PTX Series Packet Transport Routers)	768
	show interfaces extensive	782
	show interfaces filters	799
	show interfaces (M Series and T Series Routers, and PTX Series Packet Transport Routers Management and Internal Ethernet)	801
	show interfaces mac-database (Gigabit Ethernet)	817
	show interfaces media	821
	show interfaces policers	823
	show interfaces routing summary	825
	show interfaces statistics	828
	show interfaces terse	840
	show services rpm active-servers	843
	show services rpm history-results	844
	show services rpm probe-results	847
Part 4	Troubleshooting	
Chapter 19	Troubleshooting Procedures	855
	show chassis alarms	856

Part 5

Index

Index	871
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List of Figures

Part 2	Configuration	
Chapter 3	Overview	9
	Figure 1: PTX5000 in a Juniper Networks Environment	9
Chapter 5	Clocking, Power Management, and Cooling	27
	Figure 2: Clocking Example for PTX Series Packet Transport Routers	28
Chapter 10	Class of Service	59
	Figure 3: Customer-Facing and Core-Facing Forwarding Classes	63

List of Tables

	About the Documentation	xv
	Table 1: Notice Icons	xvii
	Table 2: Text and Syntax Conventions	xvii
Part 1	Overview	
Chapter 2	Platform Components Overview	5
	Table 3: Maximum FRUs supported on the PTX5000 Packet Transport Router	5
Part 2	Configuration	
Chapter 5	Clocking, Power Management, and Cooling	27
	Table 4: Synchronous Ethernet Support on Junos OS	32
Chapter 6	Ethernet DWDM	37
	Table 5: Wavelength-to-Frequency Conversion Matrix	41
Chapter 10	Class of Service	59
	Table 6: Sample Forwarding Class-to-Queue Mapping	63
	Table 7: CoS Features and Limitations on PTX Series Routers	81
Chapter 11	Firewall Filters	83
	Table 8: Firewall Filter Match Conditions for IPv4 Traffic	83
	Table 9: Firewall Filter Match Conditions for IPv6 Traffic	93
	Table 10: Firewall Filter Match Conditions for MPLS Traffic	100
	Table 11: Firewall Filter Match Conditions for Layer 2 CCC Traffic	102
	Table 12: Terminating Actions for Firewall Filters	105
	Table 13: Nonterminating Actions for Firewall Filters	108
Part 3	Administration	
Chapter 18	Monitoring Commands for PTX Series Packet Transport Routers	245
	Table 14: show chassis alarms Output Fields	252
	Table 15: show chassis environment Output Fields	264
	Table 16: show chassis environment cb Output Fields	314
	Table 17: show chassis environment cb Output Fields	330
	Table 18: show chassis environment fpc Output Fields	335
	Table 19: show chassis environment fpm Output Fields	358
	Table 20: show chassis environment monitored Output Fields	363
	Table 21: show chassis environment pdu Output Fields	376
	Table 22: show chassis environment routing-engine Output Fields	380

Table 23: show chassis environment sib Output Fields	385
Table 24: show chassis ethernet-switch Output Fields	412
Table 25: show chassis fabric degraded-fabric-reachability Output Fields	453
Table 26: show chassis fabric errors Output Fields	457
Table 27: show chassis fabric fpcs Output Fields	462
Table 28: show chassis fabric plane-location Output Fields	498
Table 29: show chassis fabric summary Output Fields	501
Table 30: show chassis fabric topology Output Fields	507
Table 31: show chassis fan Output Fields	530
Table 32: show chassis fpc Output Fields	548
Table 33: Routing Engines Displaying DIMM Information	574
Table 34: show chassis hardware Output Fields	578
Table 35: show chassis power Output Fields	700
Table 36: show chassis power sequence Output Fields	710
Table 37: show chassis routing-engine Output Fields	714
Table 38: show chassis sibs Output Fields	734
Table 39: show chassis synchronization Output Fields	745
Table 40: show chassis temperature-thresholds Output Fields	750
Table 41: show chassis zones detail Output Fields	766
Table 42: show interfaces PTX Series Output Fields	769
Table 43: show interfaces filters Output Fields	799
Table 44: M Series and T Series Router Management and Internal Ethernet show interfaces Output Fields	802
Table 45: show interfaces mac-database Output Fields	817
Table 46: show interfaces policers Output Fields	823
Table 47: show interfaces routing summary Output Fields	825
Table 48: show interfaces terse Output Fields	840
Table 49: show services rpm active-servers Output Fields	843
Table 50: show services rpm history-results Output Fields	844
Table 51: show services rpm probe-results Output Fields	847

Part 4

Chapter 19

Troubleshooting

Troubleshooting Procedures 855

Table 52: show chassis alarms Output Fields	862
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About the Documentation

- Documentation and Release Notes on page xv
- Supported Platforms on page xv
- Using the Examples in This Manual on page xv
- Documentation Conventions on page xvii
- Documentation Feedback on page xviii
- Requesting Technical Support on page xix

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.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at <http://www.juniper.net/books>.

Supported Platforms

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

- 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 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.xml;
    }
  }
}
interfaces {
  fxp0 {
    disable;
    unit 0 {
      family inet {
        address 10.0.0.1/24;
      }
    }
  }
}
```

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

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

Merging a Snippet

To merge a snippet, follow these steps:

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

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

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

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


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

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

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

For more information about the **load** command, see the *CLI User Guide*.

Documentation Conventions

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

Table 1: Notice Icons

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

Table 2 on page xvii 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
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces or emphasizes important new terms. Identifies guide names. Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>Junos OS CLI User Guide</i> RFC 1997, <i>BGP Communities Attribute</i>

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

Convention	Description	Examples
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# set system domain-name <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level. The console port is labeled CONSOLE.
< > (angle brackets)	Enclose optional keywords or variables.	stub <default-metric <i>metric</i> >;
(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 <i>(string1 string2 string3)</i>
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	rsvp { # Required for dynamic MPLS only
[] (square brackets)	Enclose a variable for which you can substitute one or more values.	community name members [<i>community-ids</i>]
Indentation and braces ({ })	Identify a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"> 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 send your comments to techpubs-comments@juniper.net, or fill out the documentation feedback form at

<https://www.juniper.net/cgi-bin/docbugreport/> . If you are using e-mail, be sure to include the following information with your comments:

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

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

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

Self-Help Online Tools and Resources

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

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

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

Opening a Case with JTAC

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

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

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

PART 1

Overview

- [Platform Overview on page 3](#)
- [Platform Components Overview on page 5](#)

CHAPTER 1

Platform Overview

- [Chained Composite Next Hops for Transit Devices on page 3](#)

Chained Composite Next Hops for Transit Devices

The Juniper Networks PTX Series Packet Transport Router is principally designed to handle large volumes of transit traffic in the core of large networks. Chained composite next hops help to facilitate this capability by allowing a packet transport router to process much larger volumes of routes. A chained composite next hop allows the packet transport router to direct sets of routes sharing the same destination to a common forwarding next hop, rather than having each route also include the destination. In the event that a network destination is changed, rather than having to update all of the routes sharing that destination with the new information, just the shared forwarding next hop is updated with the new information. The chained composite next hops continue to point to this forwarding next hop which now contains the new destination.

When the next hops for MPLS LSPs are created on packet transport routers, the tag information corresponding to the inner-most MPLS label is extracted into a chained composite next hop. The chained composite next hop is stored in the ingress PFE. The chained composite next hop points to a next hop called the forwarding next hop that resides on the egress PFE. The forwarding next hop contains all of the other information (all of the labels except for the inner-most labels; and the IFA/IP information corresponding to the actual next hop node). Many chained composite next hops can share the same forwarding next hop. Additionally, separating the label from the forwarding next hop and storing it on the ingress PFE (within the chained composite next hop) helps to conserve egress PFE memory by reducing the number of rewrite strings stored on the egress PFE.

On PTX Series Packet Transport Routers, chained composite next hops are enabled by default for the following MPLS and VPN protocols and applications:

- Labeled BGP
- Layer 2 VPNs
- Layer 3 VPNs
- LDP
- MPLS

- Point-to-Multipoint LSPs
- RSVP
- Static LSPs

**Related
Documentation**

- *Accepting Route Updates with Unique Inner VPN Labels in Layer 3 VPNs*

Platform Components Overview

- [Platform Components for PTX Series Packet Transport Routers on page 5](#)

Platform Components for PTX Series Packet Transport Routers

The PTX Series Packet Transport Routers are a portfolio of high-performance platforms designed for the service provider supercore. These switches deliver powerful capabilities based on innovative silicon and a forwarding architecture focused on MPLS and Ethernet. PTX Series Packet Transport Routers deliver several critical core functionalities, including industry-leading density and scalability, cost optimization, high availability, and network simplification.

The Junos OS chassis management software for the PTX Series Packet Transport Routers provides enhanced environmental monitoring and field-replaceable unit (FRU) control. Chassis management delivers: a faster master switchover, enhanced power budgeting with modular power management, reduced power consumption for partially populated systems, granular control over FRU power-on, multizone cooling with better fan speed control for reduced noise, and CPU leveling during monitoring intervals.

System clocking is controlled by centralized clock generators (CCGs) that provide a 19.44-MHz Stratum 3 clock signal. The CCG can derive a master clock from a valid source and synchronize all interfaces on the chassis to this master clock.

The modular power design allows power efficiency on the order of 1 watt per Gbps. Power supply modules (PSMs) regulate zone power and provide power to specific FRUs in the system. Power distribution units (PDUs) distribute zone power. Customers can use only as much power required for their chassis depending on the number of FRUs present.

The chassis has separate cooling chambers. Fans operating in one chamber have no impact on cooling in another chamber, enabling the chassis to run fans at different speeds in different chambers. The chassis can coordinate FRU temperatures in each zone and the fan speeds of the fan trays in these zones.

Table 3: Maximum FRUs supported on the PTX5000 Packet Transport Router

FRU	Maximum Number
Routing Engines	2

Table 3: Maximum FRUs supported on the PTX5000 Packet Transport Router (*continued*)

FRU	Maximum Number
Control Board (CB)	2
Power distribution unit (PDU)	2
Power supply module (PSM)	4 per PDU
Fan	3
FPC	8
PIC	2 per FPC
Switch Interface Board (SIB)	9
Craft Interface (FPD)	1
Centralized clock generator (CCG)	2

**Related
Documentation**

- [PTX5000 Hardware Component Overview](#)
- [PTX5000 Field-Replaceable Units](#)
- [PTX5000 PIC Description](#)
- [PTX5000 Centralized Clock Generator Description](#)
- [Clock Sources for PTX Series Packet Transport Routers on page 27](#)
- [Understanding Ethernet Interfaces for PTX Series Packet Transport Routers on page 9](#)
- [PTX5000 Packet Transport Router Hardware Guide](#)

PART 2

Configuration

- [Overview on page 9](#)
- [Interfaces on page 17](#)
- [Clocking, Power Management, and Cooling on page 27](#)
- [Ethernet DWDM on page 37](#)
- [Interoperability between 100-Gigabit Ethernet PICs PD-1CE-CFP-FPC4 and P1-PTX-2-100GE-CFP on page 43](#)
- [Traffic Black Hole Detection and Recovery on page 49](#)
- [Routing Policy on page 53](#)
- [Class of Service on page 59](#)
- [Firewall Filters on page 83](#)
- [Flow Monitoring on page 115](#)
- [Real-Time Performance Monitoring on page 119](#)
- [Differences Between PTX Series and T Series Routers on page 135](#)
- [Configuration Statements on page 141](#)

CHAPTER 3

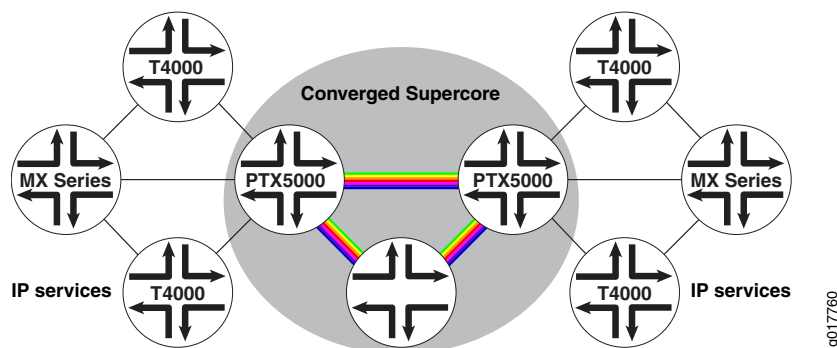
Overview

- [Understanding Ethernet Interfaces for PTX Series Packet Transport Routers on page 9](#)
- [Physical Part of an Interface Name on page 10](#)
- [Logical Part of an Interface Name on page 12](#)
- [PTX Series Packet Transport Router Management Ethernet Interfaces on page 12](#)
- [Overview of Forwarding Classes on page 13](#)

Understanding Ethernet Interfaces for PTX Series Packet Transport Routers

PTX Series Packet Transport Routers are a portfolio of high-performance platforms designed for the service provider supercore. A PTX Series Packet Transport Router working in conjunction with a T Series core router allows a service provider to build a core network that is flexible enough to accommodate cloud-delivered services, mobility for devices and users, and bandwidth-intensive applications such as HD video. Forwarding architecture for PTX Series Packet Transport Routers is focused on MPLS and Ethernet.

Figure 1: PTX5000 in a Juniper Networks Environment



All physical interfaces on a PTX Series Packet Transport Router use *et* for the FPC type. For information about how to specify interfaces, see these topics:

- [Physical Part of an Interface Name on page 10](#)
- [Logical Part of an Interface Name on page 12](#)



NOTE: Physical interfaces on PTX Series Packet Transport Routers do not support:

- VLAN rewrite for CCC encapsulation
- Source MAC learning for accounting
- MAC policing



NOTE: Wide Area Network Physical Layer Device (WAN PHY) mode is supported on the 24-port 10-Gigabit Ethernet LAN/WAN PIC with SFP+ (model number P1-PTX-24-10G-W-SFPP). No other PIC supports WAN PHY on the PTX router.

**Related
Documentation**

- [PTX Series Packet Transport Router PIC Guide.](#)
- [PTX Series Packet Transport Router Management Ethernet Interfaces on page 12](#)
- [Configuring MAC Filtering on PTX Series Packet Transport Routers on page 17](#)
- [Configuring Aggregated Ethernet Interfaces on PTX Series Packet Transport Routers on page 23](#)

Physical Part of an Interface Name

- [Interface Names for ACX Series Universal Access Routers on page 10](#)
- [J Series Interface Names on page 11](#)
- [Interface Names for M Series and T Series Routers and PTX Series Packet Transport Routers on page 11](#)
- [MX Series Router Interface Names on page 11](#)

Interface Names for ACX Series Universal Access Routers

ACX Series routers do not have actual PIC devices. Instead they have built-in network ports on the front panel of the router. These ports are named using the same naming convention used for routers with PIC devices with the understanding that the FPC, PIC and port are pseudo devices. When you display information about one of these ports, you specify the interface type, the slot for the Flexible PIC Concentrator (FPC), the slot on the FPC for the Physical Interface Card (PIC), and the configured port number.

In the physical part of the interface name, a hyphen (-) separates the media type from the FPC number, and a slash (/) separates the FPC, PIC, and port numbers:

type-fpc/pic/port

J Series Interface Names

On J Series routers, when you display information about an interface, you specify the interface type, the slot in which the Physical Interface Module (PIM) is installed, **O**, and the configured port number.

In the physical part of the interface name, a hyphen (-) separates the media type from the PIM number, and a slash (/) separates the PIM, **O**, and port numbers:

type-pim/O/port



NOTE: An exception to the *type-pim/O/port* physical description is the Integrated Services Digital Network (ISDN) dialer interface, which uses the syntax *dlnumber*.

Interface Names for M Series and T Series Routers and PTX Series Packet Transport Routers

On M Series and T Series routers and PTX Series Packet Transport Routers, when you display information about an interface, you specify the interface type, the slot in which the Flexible PIC Concentrator (FPC) is installed, the slot on the FPC in which the Physical Interface Card (PIC) is located, and the configured port number.

In the physical part of the interface name, a hyphen (-) separates the media type from the FPC number, and a slash (/) separates the FPC, PIC, and port numbers:

type-fpc/pic/port



NOTE: Exceptions to the *type-fpc/pic/port* physical description include the aggregated Ethernet and aggregated SONET/SDH interfaces, which use the syntax *aenumber* and *asnumber*, respectively.

MX Series Router Interface Names

On MX Series routers when you display information about an interface, you specify the interface type, the Dense Port Concentrator (DPC), Flexible PIC Concentrator (FPC), or Modular Port Concentrator (MPC) slot, the PIC or MIC slot, and the configured port number.



NOTE: Although the MX Series routers use DPCs, FPCs, MPCs, MICs, and PICs, command syntax in this book is shown as *fpc/pic/port* for simplicity.

In the physical part of the interface name, a hyphen (-) separates the media type from the FPC number, and a slash (/) separates the DPC, FPC or MPC, MIC or PIC, and port numbers:

type-fpc/pic/port

- *fpc*—Slot in which the DPC, FPC, or MPC is installed.
- *pic*—Slot on the FPC in which the PIC is located.

For DPCs, MICs, and the 16-port MPC, the PIC value is a logical grouping of ports and varies on different platforms.

- *port*—Port number on the DPC, PIC, MPC, or MIC.

Logical Part of an Interface Name

The logical unit part of the interface name corresponds to the logical unit number, which can be a number from 0 through 16,384. In the virtual part of the name, a period (.) separates the port and logical unit numbers:

- J Series routers:

type-pim/0/port.logical

- Other platforms:

type-fpc/pic/port.logical

PTX Series Packet Transport Router Management Ethernet Interfaces

For PTX Series Packet Transport Routers, the Junos OS automatically creates the router's management Ethernet interface, **em0**. To use **em0** as an out-of-band management port, you must configure its logical port (for example, **em0.0**) with a valid IP address.

Internal Ethernet interfaces are automatically created to connect the Routing Engines to the Packet Forwarding Engines in the FPCs.

When you enter the **show interfaces** command on a PTX Series Packet Transport Router, the management Ethernet interface and internal Ethernet interfaces (and logical interfaces) are displayed:

```
user@host> show interfaces ?
...
em0
  em0.0
  ixgbe0
  ixgbe0.0
  ixgbe1
  ixgbe1.0
...
```



NOTE: The Routing Engines in the PTX Series Packet Transport Routers do not support the management Ethernet interface **fxp0**, or the internal Ethernet interfaces **fxp1** or **fxp2**.

Related Documentation

- [Understanding Management Ethernet Interfaces](#)
- [Understanding Ethernet Interfaces for PTX Series Packet Transport Routers on page 9](#)

Overview of Forwarding Classes

This topic covers the following information:

- [Output Queue Assignments Based on Forwarding Class on page 13](#)
- [Devices That Support Up to Four Forwarding Classes on page 13](#)
- [Devices That Support Up to 16 Forwarding Classes on page 14](#)
- [Default and Configurable Packet Loss Priority Values on page 14](#)
- [Configuration Statements Used to Configure and Apply Forwarding Classes on page 14](#)

Output Queue Assignments Based on Forwarding Class

It is helpful to think of forwarding classes as output queues. In effect, the end result of classification is the identification of an output queue for a particular packet.

CoS packet classification assigns an incoming packet to an output queue based on the packet's forwarding class. Each packet is associated with one of the following default forwarding classes:

- Expedited forwarding (EF)—Provides a low-loss, low-latency, low-jitter, assured bandwidth, end-to-end service.
- Assured forwarding (AF)—Provides a group of values you can define and includes four subclasses: AF1, AF2, AF3, and AF4, each with three drop probabilities: low, medium, and high.
- Best effort (BE)—Provides no service profile. For the best effort forwarding class, loss priority is typically not carried in a class-of-service (CoS) value and random early detection (RED) drop profiles are more aggressive.
- Network control (NC)—This class is typically high priority because it supports protocol control.

Devices That Support Up to Four Forwarding Classes

Some of the Juniper Networks routing platforms support up to four forwarding classes for classifying customer traffic. On these platforms, you can configure one of each type of default forwarding class. The following Juniper Networks routing platforms support up to four forwarding classes:

- M7i Multiservice Edge Routers with Compact Forwarding Engine Boards (CFEBs)
- M10i Multiservice Edge Routers with CFEBs



NOTE: This list does not reference any Juniper Networks device that has reached its End of Life (EOL) period and its End of Support (EOS) milestone date.

Devices That Support Up to 16 Forwarding Classes

Other Juniper Networks routing platforms support up to 16 forwarding classes, which enables you to classify packets more granularly. For example, you can configure multiple classes of EF traffic: EF, EF1, and EF2. On these platforms, the Junos OS software supports up to eight output queues; therefore, if you configure more than eight forwarding classes, you must map multiple forwarding classes to single output queues. The following Juniper Networks routing and switching platforms support up to 16 forwarding classes and up to 8 output queues:

- EX Series switches
- M7i Multiservices Edge Routers with Enhanced Compact Forwarding Engine Boards (CFEB-Es)
- M10i Multiservices Edge Routers with CFEB-Es
- M120 Multiservices Edge Routers
- M320 Multiservices Edge Routers
- MX Series 3D Universal Edge Routers
- T Series Core Routers
- PTX Packet Transport Routers

Default and Configurable Packet Loss Priority Values

By default, the loss priority is low. On most devices, you can configure high or low loss priority. On the following devices, you can configure high, low, medium-high, or medium-low loss priority:

- J Series Services Router interfaces
- M320 routers and T Series routers with Enhanced II Flexible PIC Concentrators (FPCs)
- T640 routers with Enhanced Scaling FPC4s
- PTX Series Packet Transport Routers

Configuration Statements Used to Configure and Apply Forwarding Classes

To configure CoS forwarding classes, include the **forwarding-classes** statement at the **[edit class-of-service]** hierarchy level:

```
[edit class-of-service]
forwarding-classes {
  class class-name queue-num queue-number priority (high | low);
  queue queue-number class-name priority (high | low);
}
forwarding-class-map forwarding-class-map-name {
  class class-name queue-num queue-number [ restricted-queue queue-number ];
}
interfaces {
  interface-name {
```

```
    unit logical-unit-number {  
        forwarding-class class-name;  
        forwarding-class-map forwarding-class-map-name;  
    }  
}  
restricted-queues {  
    forwarding-class class-name queue queue-number;  
}
```

**Related
Documentation**

- *Default Forwarding Classes*
- *Configuring Forwarding Classes*
- *Applying Forwarding Classes to Interfaces*
- [Configuring Up to 16 Forwarding Classes on page 62](#)
- *Policer Overview*

CHAPTER 4

Interfaces

- [Configuring MAC Filtering on PTX Series Packet Transport Routers on page 17](#)
- [Configuring Flexible VLAN Tagging on PTX Series Packet Transport Routers on page 18](#)
- [Configuring Tag Protocol IDs \(TPIDs\) on PTX Series Packet Transport Routers on page 19](#)
- [Configuring Interface Encapsulation on PTX Series Packet Transport Routers on page 19](#)
- [Configuring Ethernet 802.3ah OAM on PTX Series Packet Transport Routers on page 21](#)
- [Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers on page 22](#)
- [Configuring Aggregated Ethernet Interfaces on PTX Series Packet Transport Routers on page 23](#)
- [Configuring 10-Gigabit Ethernet Framing on page 24](#)

Configuring MAC Filtering on PTX Series Packet Transport Routers

This topic describes how to configure MAC filtering on PTX Series Packet Transport Routers. MAC filtering enables you to specify the MAC addresses from which the Ethernet interface can receive packets.

MAC filtering support on PTX Series Packet Transport Routers includes:

- MAC source and destination address filtering for each port.
- MAC source address filtering for each physical interface.
- MAC source address filtering for each logical interface.

When you filter logical and physical interfaces, you can specify up to 1000 MAC source addresses per port.

To configure MAC source address filtering for a physical interface, include the **source-filtering** and **source-address-filter** statements at the **[edit interfaces et-fpc/pic/port gigether-options]** hierarchy level:

```
[edit interfaces]
et-x/y/z {
  gigether-options {
    source-filtering;
    source-address-filter {
      mac-address;
```

```
    }  
  }  
}
```

The **source-address-filter** statement configures which MAC source addresses are filtered. The specified physical interface drops all packets from the MAC source addresses you specify. You can specify the MAC address as *nn:nn:nn:nn:nn:nn* where *n* is a decimal digit. To specify more than one address, include multiple **mac-address** options in the **source-address-filter** statement.

To configure MAC source address filtering for a logical interface, include the **accept-source-mac** statement at the **[edit interfaces et-fpc/pic/port unit logical-unit-number]** hierarchy level:

```
[edit interfaces]  
et-x/y/z {  
  gigether-options {  
    source-filtering;  
  }  
  unit logical-unit-number {  
    accept-source-mac {  
      mac-address mac-address;  
    }  
  }  
}
```

The **accept-source-mac** statement configures which MAC source addresses are accepted on the logical interface. You can specify the MAC address as *nn:nn:nn:nn:nn:nn* where *n* is a decimal digit. To specify more than one address, include multiple **mac-address mac-address** options in the **accept-source-mac** statement.

After an interface filter is configured, there is an accounting entry that is associated with the MAC address filter. Counters accumulate if there are packets with matching MAC source addresses. You can use the **show interfaces mac-database** Junos OS CLI command to view the address count.

- Related Documentation**
- [Understanding Ethernet Interfaces for PTX Series Packet Transport Routers on page 9](#)
 - [show interfaces mac-database \(Gigabit Ethernet\) on page 817](#)

Configuring Flexible VLAN Tagging on PTX Series Packet Transport Routers

This topic describes how to configure flexible VLAN tagging on PTX Series Packet Transport Routers. In addition to VLAN tagging and stacked VLAN tagging, you can configure a port for flexible tagging. With flexible VLAN tagging, you can configure two logical interfaces on the same Ethernet port, one with single-tag framing and one with dual-tag framing.

To configure mixed tagging, include the **flexible-vlan-tagging** statement at the **[edit interfaces et-fpc/pic/port]** hierarchy level. You must also include the **vlan-tags** statement with **inner** and **outer** options or the **vlan-id** statement at the **[edit interfaces et-fpc/pic/port unit logical-unit-number]** hierarchy level:

```
[edit interfaces et-fpc/pic/port]
flexible-vlan-tagging;
unit logical-unit-number {
  vlan-id number;
}
unit logical-unit-number {
  vlan-tags inner tpid.vlan-id outer tpid.vlan-id;
}
```

**Related
Documentation**

- [Understanding Ethernet Interfaces for PTX Series Packet Transport Routers on page 9](#)

Configuring Tag Protocol IDs (TPIDs) on PTX Series Packet Transport Routers

This topic describes how to configure the TPIDs expected to be sent or received on a particular VLAN for PTX Series Packet Transport Routers.

For other types of Juniper Networks Ethernet PICs, you could configure 8 TPIDs per port. However, the PTX Series Packet Transport Routers use MTIP and TL to classify a specific TPID and Ethernet type. For MTIP, you can configure a maximum of 8 TPIDs for each MAC chip.

As a consequence, you can specify the **tag-protocol-id** configuration statement only for the first port (0) of a PTX Series Ethernet PIC. If you configure **tag-protocol-id** statements on the other port, the configuration is ignored and a system error is recorded.

For example, the following is a supported configuration:

```
[edit interfaces et-2/0/0]
gigether-options {
  ethernet-switch-profile {
    tag-protocol-id [0x8100 0x9100];
  }
}
```

The **tag-protocol-id** configuration statement supports up to eight TPIDs on port 0 of a given Ethernet PIC. All eight TPIDs are populated to the two MTIPs and TLs associated with the Ethernet PIC.

**Related
Documentation**

- [Understanding Ethernet Interfaces for PTX Series Packet Transport Routers on page 9](#)
- [Configuring Flexible VLAN Tagging on PTX Series Packet Transport Routers on page 18](#)

Configuring Interface Encapsulation on PTX Series Packet Transport Routers

This topic describes how to configure interface encapsulation on PTX Series Packet Transport Routers. Use the **flexible-ethernet-services** configuration statement to configure different encapsulation for different logical interfaces under a physical interface. With flexible Ethernet services encapsulation, you can configure each logical interface encapsulation without range restrictions for VLAN IDs.

Supported encapsulations for physical interfaces include:

- **flexible-ethernet-services**
- **ethernet-ccc**
- **ethernet-tcc**

Supported encapsulations for logical interfaces include:

- **ethernet**
- **vlan-ccc**
- **vlan-tcc**



NOTE: PTX Series Packet Transport Routers do not support **extended-vlan-cc** and **extended-vlan-tcc** encapsulation on logical interfaces. Instead, you can configure a tag protocol ID (TPID) value of 0x9100 to achieve the same results.

To configure flexible Ethernet services encapsulation, include the **encapsulation flexible-ethernet-services** statement at the **[edit interfaces et-fpc/pic/port]** hierarchy level. For example:

```
interfaces {
  et-fpc/pic/port {
    vlan-tagging;
    encapsulation flexible-ethernet-services;
    unit 0 {
      vlan-id 1000;
      family inet {
        address 11.0.0.20/24;
      }
    }
    unit 1 {
      encapsulation vlan-ccc;
      vlan-id 1010;
    }
    unit 2 {
      encapsulation vlan-tcc;
      vlan-id 1020;
      family tcc {
        proxy {
          inet-address 11.0.2.160;
        }
        remote {
          inet-address 11.0.2.10;
        }
      }
    }
  }
}
```


- Related Documentation**
- [Understanding Ethernet Interfaces for PTX Series Packet Transport Routers on page 9](#)

Configuring Ethernet 802.3ah OAM on PTX Series Packet Transport Routers

The IEEE 802.3ah standard for Operation, Administration, and Management (OAM) provides a specification for *Ethernet in the first mile (EFM)* connectivity. EFM defines how Ethernet can be transmitted over new media types using new Ethernet physical layer (PHY) interfaces. You can configure IEEE 802.3ah OAM on Ethernet point-to-point direct links or links across Ethernet repeaters. The IEEE 802.3ah OAM standard meets the requirement for OAM capabilities as Ethernet moves from being solely an enterprise technology to being a WAN and access technology, as well as being backward-compatible with existing Ethernet technology.

For Ethernet interfaces capable of running at 100 Mbps or faster, the IEEE 802.3ah OAM standard is supported on numerous Juniper Networks routers and switches. This topic describes configuration support for IEEE 802.3ah OAM features on PTX Series Packet Transport Routers.

On PTX Series Packet Transport Routers, Junos OS Release 12.1 supports the following IEEE 802.3ah OAM features at the physical interface level:

- Discovery and link monitoring
- Fault signaling and detection
- Periodic packet management (PPM) processing
- Action profile support
- Graceful Routing Engine switchover (GRES)

To configure 802.3ah OAM support for Ethernet interfaces, include the **oam** statement at the **[edit protocols]** hierarchy level:

```
oam {
  ethernet {
    link-fault-management {
      interfaces {
        interface-name {
          pdu-interval interval;
          link-discovery (active | passive);
          pdu-threshold count;
        }
      }
    }
  }
}
```

- Related Documentation**
- [Understanding Ethernet Interfaces for PTX Series Packet Transport Routers on page 9](#)
 - [Configuring IEEE 802.3ah OAM Link-Fault Management](#)
 - [Configuring Link Discovery](#)

- *Detecting Remote Faults*
- *Configuring an OAM Action Profile*

Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers

The IEEE 802.1ag provides a specification for Ethernet connectivity fault management (CFM). The Ethernet network may be comprised of one or more service instances. A service instance could be a VLAN, or a concatenation of VLANs. The goal of CFM is to provide a mechanism to monitor, locate, and isolate faulty links. Ethernet 802.1ag is supported on numerous Juniper Networks routers and switches. This topic describes configuration support for Ethernet OAM 802.1ag features on the PTX Series Packet Transport Routers.

Supported features include:

- Maintenance domain (**maintenance-domain *domain-name***) and maintenance levels (**level *number***).
- Maintenance association (**maintenance-association *ma-name***), including name formats (**name-format** and **short-name-format** for **vlan** and **2octet**), loss threshold (**loss-threshold *number***), and hold interval (**hold-interval *minutes***).
- maintenance association endpoint (MEP) functions, including Maintenance Endpoint ID (**mep *mep-id***), direction down (**direction down**), and autodiscovery (**auto-discovery**).
- Link trace for down MEPs (**link-down**).
- action profile (**action-profile *profile-name***)
- Loopback message generation and reply for down MEPs.

Features that are not supported include:

- Up MEP configuration.
- maintenance association intermediate point (MIP) configuration.

To configure flexible Ethernet services encapsulation on PTX Series Packet Transport Routers, include the **oam** statement at the **[edit protocols]** hierarchy level. For example:

```
[edit protocols]
oam {
  ethernet {
    connectivity-fault-management {
      maintenance-domain md1 {
        level 0;
        maintenance-association ma1 {
          continuity-check {
            interval 100ms;
          }
          mep 1 {
            interface et-0/1/1;
            direction down;
            auto-discovery;
          }
        }
      }
    }
  }
}
```

```

    }
  }
}

```

- Related Documentation**
- [Understanding Ethernet Interfaces for PTX Series Packet Transport Routers on page 9](#)
 - [IEEE 802.1ag OAM Connectivity Fault Management Overview](#)

Configuring Aggregated Ethernet Interfaces on PTX Series Packet Transport Routers

IEEE 802.3ad link aggregation enables you to group Ethernet interfaces to form a single link layer interface, also known as a link aggregation group (LAG) or bundle. Link aggregation can be used for point-to-point connections. It balances traffic across the member links within an aggregated Ethernet bundle and effectively increases the uplink bandwidth. Another advantage of link aggregation is increased availability because the LAG is composed of multiple member links. If one member link fails, the LAG continues to carry traffic over the remaining links.

This topic describes how to configure aggregated Ethernet interfaces on PTX Series Packet Transport Routers.

On PTX Series Packet Transport Routers, aggregated Ethernet support includes the following features:

- A consistent interface type (**et fpc/pic/port**) across all Ethernet interfaces.
- Ability to bundle multiple Ethernet interfaces
- Fault tolerance
- Load balancing between child links
- Advanced features including flexible VLAN tagging and Ethernet services encapsulation

Aggregated Ethernet interfaces can use interfaces from different FPCs or PICs. The following configuration is sufficient to get an aggregated Gigabit Ethernet interface up and running.

```

[edit chassis]
  aggregated-devices {
    ethernet {
      device-count 2;
    }
  }

[edit interfaces]
  et-0/0/0 {
    together-options {
      802.3ad ae0;
    }
  }
  et-0/0/1 {

```

```
    gigether-options {
        802.3ad ae0;
    }
}
ae0 {
    vlan-tagging;
    unit 0 {
        vlan-id 100;
        family inet {
            address 200.200.1.2/24;
        }
    }
    unit 1 {
        vlan-id 101;
        family inet {
            address 200.200.2.2/24;
        }
    }
}
```

- Related Documentation**
- [Understanding Ethernet Interfaces for PTX Series Packet Transport Routers on page 9](#)
 - [Configuring Junos OS for Supporting Aggregated Devices](#)

Configuring 10-Gigabit Ethernet Framing

The 10-Gigabit Ethernet interfaces uses the interface type **xe-fpc/pic/port**. On single port devices, the port number is always zero.

The **xe-fpc/pic/port** interface inherits all the configuration commands that are used for gigabit Ethernet (**ge-fpc/pic/port**) interfaces.

To configure LAN PHY or WAN PHY operating mode, include the **framing** statement with the **lan-phy** or **wan-phy** option at the **[edit interfaces xe-fpc /pic/0]** hierarchy level.

```
[edit interfaces xe-fpc/pic/0 framing]
framing (lan-phy | wan-phy);
```



NOTE:

- The T4000 Core Router supports only LAN PHY mode in Junos OS Release 12.1R1. Starting with Junos OS Release 12.1R2, WAN PHY mode is supported on the T4000 routers with the 12-port 10-Gigabit Ethernet LAN/WAN PIC with SFP+ (PF-12XGE-SFPP). Starting with Junos OS Release 12.2, WAN PHY mode is supported on the T4000 routers with the 24-port 10-Gigabit Ethernet LAN/WAN PIC with SFP+ (PF-24XGE-SFPP).
 - On PTX Series Transport Routers, WAN PHY mode is supported only on the 24-port 10-Gigabit Ethernet LAN/WAN PIC with SFP+
 - When the PHY mode changes, interface traffic is disrupted because of port reinitialization.
-

To display interface information, use the operational mode command **show interfaces xe-fpc/pic/port extensive**.



NOTE:

- SONET or SDH framing mode configuration framing (sdh | sonet) is not applicable on the 10-Gigabit Ethernet ports. Configuring the wan-phy framing mode on the 10-Gigabit Ethernet ports allows the interface to accept SONET or SDH frames without further configuration.
- If you configure the WAN PHY mode on an aggregated Ethernet interface, you must set the aggregated Ethernet link speed to OC192.

Related
Documentation

- [framing on page 163](#)
- *10-Gigabit Ethernet Framing Overview*
- *Understanding WAN Framing for 10-Gigabit Ethernet Trio Interfaces*
- *Ethernet Interfaces*

CHAPTER 5

Clocking, Power Management, and Cooling

- [Clock Sources for PTX Series Packet Transport Routers on page 27](#)
- [Cooling System for PTX Series Packet Transport Routers on page 29](#)
- [Configuring an External Clock Synchronization Interface for PTX Series Packet Transport Routers on page 30](#)
- [Synchronous Ethernet Overview on page 31](#)
- [Configuring the Power-On Sequence for FPCs on PTX Series Packet Transport Routers on page 34](#)
- [Boot Sequence \(M Series, MX Series, T Series, TX Matrix, TX Matrix Plus, and PTX Series Routing Engines \) on page 34](#)

Clock Sources for PTX Series Packet Transport Routers

System clocking on PTX Series Packet Transport Routers is controlled by a Centralized Clock Generator (CCG). The CCG is capable of deriving a master clock from a valid source and synchronizing all interfaces on the chassis to this master clock. The CCG plugs into the rear of the chassis. A pair of CCGs installed in the chassis provide a redundant fallback option.

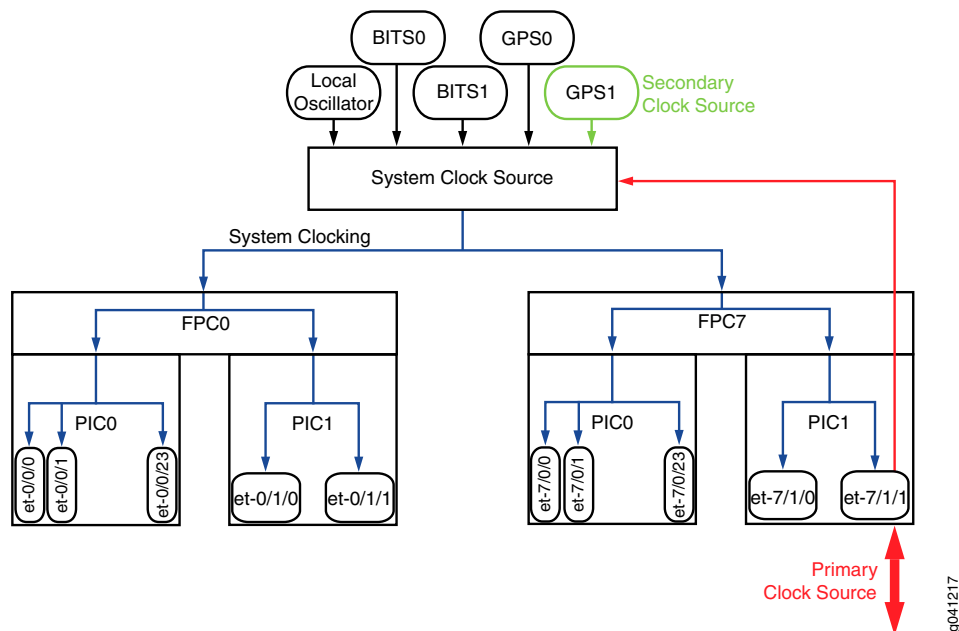
PTX Series Packet Transport Routers can use an internal clock source or it can extract clocking from an external source.

Clock sources and specifications include:

- The PTX Series Packet Transport Router clock is a Stratum 3E-compliant clock with Free Run +/- 4.6 ppm/20 years, Holdover +/- 0.01 ppm/24 hours, and Drift +/- 0.001 ppm/24 hours.
- The internal clock is based on Freerun OCXO with +/- 10 ppb accuracy.
- External clocking includes a choice of GPS-based clock recovery (5 MHz and 10 MHz) or BITS-T1/E1 Line synchronization (1.544 MHz and 2.048 MHz)
- Synchronous Ethernet is supported based on the ITU G.8261 and G.8262 specifications with line timing from the 10-Gigabit Ethernet, 40-Gigabit Ethernet, or 100-Gigabit Ethernet interface.

Synchronous Ethernet is a key requirement for circuit (emulation) services and mobile radio access technologies. Synchronous Ethernet supports sourcing and transfer of frequency for synchronization purposes for both wireless and wireline services and is primarily used for mobile backhaul and converged transport.

Figure 2: Clocking Example for PTX Series Packet Transport Routers



In this example, the primary clock source is configured as interface **et-7/1/1** and the secondary clock source is configured as **gps1**.

Related Documentation

- [Configuring an External Clock Synchronization Interface for PTX Series Packet Transport Routers on page 30](#)
- [recovered-clock on page 195](#)
- [synchronization on page 207](#)

Cooling System for PTX Series Packet Transport Routers

The cooling system components work together to keep all components within the acceptable temperature range. The host subsystem monitors the temperature of the components. When the PTX Series Packet Transport Router is operating normally, the fans function at lower than full speed. If a fan fails or the ambient temperature rises above a threshold, the speed of the remaining fans is automatically adjusted to keep the temperature within the acceptable range. If the ambient maximum temperature specification is exceeded and the system cannot be adequately cooled, the Routing Engine shuts down some or all of the hardware components.

The PTX5000 Packet Transport Router has a cooling system that contains different zones that are monitored and cooled independently.

The cooling system consists of:

- Fans
- Different cooling zones
- Individual monitors and controls for each fan
- Temperature sensors

Fans are monitored by using CLI commands such as **show chassis fan**, **show chassis environment**, and **show chassis zones**. The command displays the cooling zones, number of fans running, and the temperature of the chassis components. Each horizontal fan tray has 6 fans. The fans run at 30% capacity, instead of 70%, which saves 845 W.

Temperature sensors drive fan speeds. PTX5000 has variable fan speed control for each fan. Fan trays have a wide range of 30-100% of maximum RPM. A wide RPM range allows fans to run at minimum speed, while still enabling an increase in RPM to protect hot components.

Fan trays fail if:

- Any fan falls below the set RPM
- Any fan rises above the set RPM
- Any fan loses power

Cooling Protections

- Vertical fan tray 0 ramps to 70
- Horizontal Fan trays 1,2 ramp to 50%
- After 10 minutes, all fan trays ramp to 100%
- If the fans cooling the Routing Engine and Control Board are below 50% of the maximum RPM, the Routing Engine and Control Board will shutdown in 15 minutes
- If a fan fails, all other fans in that cooling zone will ramp to 100%.

- Related Documentation**
- [show chassis fan on page 528](#)
 - [show chassis environment on page 258](#)
 - [show chassis zones](#)

Configuring an External Clock Synchronization Interface for PTX Series Packet Transport Routers

The PTX Series Packet Transport Routers support an external synchronization interface that can be configured to synchronize the internal Stratum 3 clock to an external source, and then synchronize the chassis interface clock to that source.

This feature can be configured for external primary and secondary interfaces that use building-integrated timing system (BITS), SDH Equipment Timing Source (SETS) timing sources, or an equivalent quality timing source. On the Physical Interface Cards (PICs), the transmit clock of the interface is synchronized to BITS/SETS timing and is traceable to timing within the network.

The PTX Series Packet Transport Routers include a Centralized Clock Generator (CCG) that is used to generate systemwide interface timing signals. The CCG:

- Provides a synchronous Ethernet clock source to the chassis.
- Accepts a BITS clock from CCG bulkhead to use as the basis for the Stratum clock source.
- Accepts an RX recovered clock from an FPC to use as input for the Stratum clock source.

The sources can be BITS, GPS, freerunning, or RX recovered line timing.

To configure a recovered clock for an FPC, include the **recovered-clock** statement at the **[edit chassis fpc slot-number pic pic-number]** hierarchy level:

```
[edit chassis fpc slot-number pic pic-number]
recovered-clock {
  port port-number;
}
```

To configure external synchronization on the router, include the **synchronization** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
synchronization {
  signal-type (t1 | e1);
  switching--mode (revertive | non-revertive);
  transmitter-enable;
  primary (external-a | external-b | fpc-slot-number | gps-0-10mhz | gps-0-5mhz |
    gps-1-10mhz | gps-1-5mhz | bits-a | bits-b);
  secondary (external-a | external-b | fpc-slot-number | gps-0-10mhz | gps-0-5mhz |
    gps-1-10mhz | gps-1-5mhz | bits-a | bits-b);
}
```

Use the **synchronization** statement options to specify a primary and secondary timing source. To do this, configure the following options:

- For the PTX Series Packet Transport Routers, specify a signal type mode for interfaces, either **t1** or **e1**.
- Specify the switching mode as **revertive** if a lower-priority synchronization can be switched to a valid, higher-priority synchronization.
- Specify the primary external timing source by using the **primary (fpc-slot-number | gps-0-10mhz | gps-0-5mhz | gps-1-10mhz | gps-1-5mhz | bits-a | bits-b)** statement.
- Specify the secondary external timing source by using the **secondary (fpc-slot-number | gps-0-10mhz | gps-0-5mhz | gps-1-10mhz | gps-1-5mhz | bits-a | bits-b)** statement.

For the PTX 5000 Packet Transport Router, the supported clock sources are:

- **fpc-0**, **fpc-1**, **fpc-2**, **fpc-3**, **fpc-4**, **fpc-5**, **fpc-6**, or **fpc-7**.
- **gps-0-10mhz**, **gps-0-5mhz**, **gps-1-10mhz**, or **gps-1-5mhz**.
- **bits-a** or **bits-b**

Related Documentation

- [Clock Sources for PTX Series Packet Transport Routers on page 27](#)
- [recovered-clock on page 195](#)
- [synchronization on page 207](#)

Synchronous Ethernet Overview

Synchronization is a key requirement for circuit (emulation) services and mobile radio access technologies. Traditionally, mobile networks used SONET/SDH technologies to backhaul voice and data traffic, and the native support for frequency of SONET/SDH to synchronize their radio network. With the need for greater-capacity backhaul networks, packet-based technologies such as Carrier Ethernet (which do not support the transfer of frequency), and wireless technologies such as frequency division duplex and time-division duplex require not only frequency synchronization but also proper time and phase alignment. This requirement is fulfilled by Synchronous Ethernet, which is used for physical layer frequency synchronization of connected access devices (such as base stations, access nodes, and so on). Synchronous Ethernet supports sourcing and transfer of frequency for synchronization purposes for both wireless and wireline services and is primarily used for mobile backhaul and converged transport.

Synchronous Ethernet (ITU-T G.8261 and ITU-T G.8264) is a physical layer technology that functions regardless of the network load and supports hop-by-hop frequency transfer, where all interfaces on the trail must support Synchronous Ethernet. It enables you to deliver synchronization services that meet the requirements of the present-day mobile network, as well as future Long Term Evolution (LTE)–based infrastructures.

[Table 4 on page 32](#) summarizes the first Junos OS release that supports Synchronous Ethernet on the various Juniper Networks routers and their components:

Table 4: Synchronous Ethernet Support on Junos OS

Routers and Components	Junos OS Release
10-Gigabit Ethernet MPC with SFP+ transceivers	11.2R4
MX5, MX10, MX40, and MX80 3D Universal Edge Routers with model numbers MX5-T, MX10-T, MX40-T, and MX80-T	11.2R4
On MX240, MX480, and MX960 3D Universal Edge Routers, only the following Enhanced MPCs (MPCEs) support Synchronous Ethernet: <ul style="list-style-type: none"> • MPC1E (MX-MPC1E-3D) • MPC1E Q (MX-MPC1E-3D-Q) • MPC2E (MX-MPC2E-3D) • MPC2E Q (MX-MPC2E-3D-Q) • MPC2E EQ (MX-MPC2E-3D-EQ) 	11.2R4
On MX240, MX480, and MX960 3D Universal Edge routers, the following Enhanced MPCs (MPCEs) support Synchronous Ethernet: <p>MPC3E (MX-MPC3E-3D)</p>	13.2
10-Gigabit Ethernet MIC with XFP in WAN-PHY framing mode	11.2R4
10-Gigabit Ethernet MIC with XFP in LAN-PHY framing mode	11.4
Juniper Networks PTX Series Packet Transport Switches with their 10-Gigabit Ethernet, 40-Gigabit Ethernet, and 100-Gigabit Ethernet interfaces	12.1
Juniper Networks ACX2000 Series Universal Access routers with Gigabit Ethernet and 10-Gigabit Ethernet SFP and SFP+ transceivers.	12.2

The ingress clock monitoring feature is supported on all MX Series routers including the 16-port 10-Gigabit Ethernet MPC. On these routers, the incoming Synchronous Ethernet signals cannot be monitored on the 16-port 10-Gigabit Ethernet MPC but are monitored by other Modular Port Concentrators (MPCs) in the chassis. Therefore, you can use the 16-port 10-Gigabit Ethernet MPC for incoming Synchronous Ethernet signals if at least one other MPC with an Ethernet Equipment Clock (EEC) is present in the chassis. This behavior is referred to as *ingress clock monitoring*. Note that the 16-port 10-Gigabit Ethernet MPC does not have a built-in EEC or internal clock; therefore, it can only input (accept) a clock signal but cannot act as a clock source.

When an MX Series router is configured for Synchronous Ethernet on the 16-port 10-Gigabit Ethernet MPC and no other MPC with an EEC is present in the chassis, the Synchronous Ethernet feature cannot be supported by the system. The system notifies the user through log messages and CLI output and justifies its inability to support Synchronous Ethernet.

For information about Synchronous Ethernet support on the 10-Gigabit Ethernet MIC, see *Synchronous Ethernet on 10-Gigabit Ethernet MIC Overview*.

Starting with Junos OS Release 12.1, Synchronous Ethernet is supported on Juniper Networks PTX Series Packet Transport Routers. On the packet transport routers, Synchronous Ethernet is supported on 10-Gigabit Ethernet, 40-Gigabit Ethernet, and 100-Gigabit Ethernet interfaces and is compliant with ITU-T G.8261 and ITU-T G.8262 standards.

Starting with Junos OS Release 12.2, Synchronous Ethernet is supported on Juniper Networks ACX Series Universal Access routers with Gigabit Ethernet and 10-Gigabit Ethernet SFP and SFP+ transceivers and is compliant with the ITU-T G.8261 and G.8264 standards.

Synchronous Ethernet is not supported in the following instances:

- Slot 10 on the MX Series router with Switch Control Board (SCB).
- RJ45 ports
- MPC3E with C form-factor pluggable transceiver (CFP)



NOTE: Note that Synchronous Ethernet is supported on slot 10 on an MX Series router with Enhanced MX Switch Control Board (MX SCBE) and on RJ45 ports on an ACX router.



NOTE: Unified in-service software upgrade (unified ISSU) is currently not supported when clock synchronization is configured for Synchronous Ethernet on MX80 3D Universal Edge routers and on the MICs and MPCEs on MX240, MX480, and MX960 routers.

Related Documentation

- [Clock Sources for PTX Series Packet Transport Routers on page 27](#)
- [Configuring Clock Synchronization Interface for MX Series Routers](#)
- [Configuring External Clock Synchronization for ACX Series Routers](#)
- [Ethernet Synchronization Message Channel Overview](#)
- [Example: Configuring Synchronous Ethernet on MX Series Routers](#)
- [Example: Configuring Framing Mode for Synchronous Ethernet on MX Series Routers with 10-Gigabit Ethernet MIC](#)
- [request chassis synchronization mode](#)
- [show chassis synchronization \(MX Series Routers\)](#)
- [Synchronous Ethernet on 10-Gigabit Ethernet MIC Overview](#)
- [synchronization](#)

Configuring the Power-On Sequence for FPCs on PTX Series Packet Transport Routers

The PTX Series Packet Transport Router chassis supplies redundant power to all FPCs. The Power Supply Modules—PSM2 and PSM3—can power up to four FPCs without redundancy. In cases where all PSMs are not present, or some Power Supply Modules (PSMs) fail or are removed during operation, service interruption is minimized by keeping as many affected FPCs online without supplying redundant power to these FPCs. For example, If there is only one PSM in the PSM2 and PSM3 slots on both Power Distribution Units (PDUs) and more than four FPCs in the chassis, then the first four FPCs as configured by the **fru-poweron-sequence** configuration are kept online, whereas the other FPCs are offline because of no power.

By default, Junos OS uses the ascending order of the slot numbers of the FPCs as the sequence to power on the FPCs. To configure the power-on sequence, include the **fru-poweron-sequence** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
fru-poweron-sequence;
```

Issue the **show chassis power** command to view power limits and usage details for the FPCs. Issue the **show chassis power sequence** command to view details about the power-on sequence for the FPCs. .

If the power-on sequence is not configured by including the **fru-poweron-sequence** statement, Junos OS uses the ascending order of the slot numbers of the FPCs as the sequence to power-on the FPCs.

Related Documentation

- [fru-poweron-sequence on page 164](#)

Boot Sequence (M Series, MX Series, T Series, TX Matrix, TX Matrix Plus, and PTX Series Routing Engines)



NOTE: For information about which Routing Engines are supported by each device, see http://www.juniper.net/techpubs/en_US/release-independent/junos/topics/reference/general/routing-engine-m-mx-t-series-support-by-chassis.html.

The M Series, MX Series (except for the MX80 routers and the MX104 routers), T Series, and TX Matrix routers with a Routing Engine that has a hard disk attempt to boot from the storage media in the following order:

1. Removable media emergency boot device, such as a PC Card (if present)
2. CompactFlash card (if present)
3. Hard disk

The M Series and MX Series with a Routing Engine that has a solid-state drive (SSD) attempt to boot from the storage media in the following order:

1. USB media emergency boot device (if present)
2. CompactFlash card
3. Solid-state drive (SSD) in the SSD slot 1 or SSD slot 2 (if present)

MX80 routers attempt to boot from the storage media in the following order:

1. USB media emergency boot device
2. Dual, internal NAND flash device (first *da0*, then *da1*)

MX104 routers attempt to boot from the storage media in the following order:

1. USB storage media device
2. Internal NAND flash device (**da0**)

The T series routers with a Routing Engine that has a solid-state drive (SSD), and TX Matrix Plus routers attempt to boot from the storage media in the following order:

1. USB media emergency boot device
2. CompactFlash card (if present)
3. Solid-state drive (SSD) in the Disk 1 slot (if present)



NOTE: The Disk 2 slot is not currently supported.

4. Storage media available on the LAN

The PTX Series Packet Transport Routers attempt to boot from the storage media in the following order:

1. USB media emergency boot device
2. CompactFlash card
3. Solid-state drive (SSD) in the Disk 1 slot (if present)
4. Storage media available on the LAN



NOTE: Do not insert an emergency boot device during normal operations. The router does not operate normally when it is booted from an emergency boot device.

If the router boots from an alternate boot device, Junos OS displays a message indicating this when you log in to the router. For example, the following message shows that the software booted from the hard disk (**/dev/ad1s1a**):

```
login: username  
Password: password  
Last login: date on terminal
```

```
--- Junos 8.0 R1 built date
```

```
---
```

```
--- NOTICE: System is running on alternate media device (/dev/ad2s1a).
```

This situation results when the router detects a problem with the primary boot device—usually the CompactFlash card—that prevents it from booting, and consequently boots from the alternate boot device (the hard disk drive). When this happens, the primary boot device is removed from the list of candidate boot devices. The problem is usually a serious hardware error. We recommend you contact the Juniper Networks Technical Assistance Center (JTAC).



NOTE: On MX104 routers, if the router boots from an alternate boot device, Junos OS does not display any message indicating this when you log in to the router.

When the router boots from the alternate boot device, the software and configuration are only as current as the most recent **request system snapshot** command. However, if the **mirror-flash-on-disk** command was enabled, then the hard disk drive contains a synchronized, mirror image of the compact flash drive and therefore the current software and configuration.

Related Documentation

- *Routing Engine Specifications*

CHAPTER 6

Ethernet DWDM

- [Ethernet DWDM Interface Wavelength Overview on page 37](#)
- [10-Gigabit Ethernet OTN Options Configuration Overview on page 37](#)
- [100-Gigabit Ethernet OTN Options Configuration Overview on page 38](#)
- [Configuring OTN Optics on page 39](#)
- [Configuring the 10-Gigabit or 100-Gigabit Ethernet DWDM Interface Wavelength on page 40](#)

Ethernet DWDM Interface Wavelength Overview

MX960, M320, M120, T320, and T640 routers using a 10-Gigabit Ethernet DWDM PIC and PTX Series routers using a 100-Gigabit Ethernet DWDM OTN PIC support DWDM interfaces. You can configure DWDM interfaces with full C-band International Telecommunication Union (ITU)-Grid tunable optics, as defined in the following specifications:

- *Intel TXN13600 Optical Transceiver I2C Interface and Customer EEPROM Preliminary Specification*, July 2004.
- *I2C Reference Document for 300-Pin MSA 10G and 40G Transponder*, Edition 4, August 04, 2003.

By default, the wavelength is 1550.12 nanometers (nm), which corresponds to 193.40 terahertz (THz).

Related Documentation

- [Configuring the 10-Gigabit or 100-Gigabit Ethernet DWDM Interface Wavelength on page 40](#)
- *Ethernet Interfaces*

10-Gigabit Ethernet OTN Options Configuration Overview

M120, T320, T640, and T1600 routers support Optical Transport Network (OTN) interfaces, including the 10-Gigabit Ethernet DWDM OTN PIC, and provide ITU-T G.709 support. Use the **set otn-options** statement at the **[edit interfaces if-fpc/pic/port]** hierarchy level to configure the OTN options.

- Related Documentation
- [otn-options on page 182](#)
 - [Ethernet Interfaces](#)

100-Gigabit Ethernet OTN Options Configuration Overview

PTX Series routers support Optical Transport Network (OTN) interfaces, including the 100-Gigabit Ethernet DWDM OTN PIC, and support:

- Transparent transport of two 100-Gigabit Ethernet signals with Optical Channel Transport Unit 4 (OTU4) framing
- International Telecommunications Union (ITU)-standard OTN performance monitoring (PM) and alarm management
- Dual polarization quadrature phase shift keying (DP-QPSK) modulation and soft-decision forward error correction (SD-FEC) for long haul and metro applications
- Pre-forward error correction (pre-FEC)-based bit error rate (BER) fast reroute (FRR) to use the pre-FEC BER as an indication of the condition of an OTN link

Use the **set optics-options** statement at the **[edit interfaces interfaceType-fpc/pic/port]** hierarchy level to configure the optics options.

Use the **set otn-options** statement at the **[edit interfaces interfaceType-fpc/pic/port]** hierarchy level to configure the OTN options.

You can optionally configure pre-FEC BER FRR signal degrade monitoring. With signal degrade monitoring enabled, when the pre-FEC BER threshold is reached, the interface stops forwarding packets to this interface and raises an interface alarm, ingress packets continue to be processed. Traffic is rerouted to a different interface, and the link is shown as down, but the laser is on and OTN frames are still being exchanged. The BER threshold and duration for calculating the BER can be configured by the user. Use the **set signal-degrade** statement at the **[edit interfaces interfaceType-fpc/pic/port otn-options]** hierarchy level to configure the BER threshold. Use the **set signal-degrade-monitor-enable** statement at the **[edit interfaces interfaceType-fpc/pic/port otn-options preemptive-fast-reroute]** hierarchy level to enable signal degrade monitoring.

You can optionally enable backward FRR to inject local pre-FEC status into transmitted OTN frames, notifying the remote interface of errors. If backward FRR is also configured on the remote interface, the remote interface reroutes traffic to a different interface. When backward FRR is enabled, notification of signal degradation occurs in less time than through a Layer 3 protocol. Use the **set backward-frr-enable** statement at the **[edit interfaces interfaceType-fpc/pic/port otn-options preemptive-fast-reroute]** hierarchy level.



NOTE: The backward FRR feature works only between two Juniper Networks 100-Gbps DWDM OTN PICs.

You use the [show interfaces extensive](#), *show interfaces diagnostics optics (Gigabit Ethernet, 10-Gigabit Ethernet, 40-Gigabit Ethernet, and 100-Gigabit Ethernet)*, and *show interfaces interval* commands to view optics and OTN PM information.

Related Documentation

- [Configuring OTN Optics on page 39](#)
- *Ethernet Interfaces*
- *show interfaces diagnostics optics (Gigabit Ethernet, 10-Gigabit Ethernet, 40-Gigabit Ethernet, and 100-Gigabit Ethernet)*
- [optics-options on page 181](#)
- [otn-options on page 182](#)

Configuring OTN Optics

PTX Series routers support Optical Transport Network (OTN) interfaces, including the 100-Gigabit Ethernet DWDM OTN PIC.

To configure an OTN interface:

1. Configure the interface wavelength. See [“Configuring the 10-Gigabit or 100-Gigabit Ethernet DWDM Interface Wavelength” on page 40](#).
2. Set the trace identifiers:


```
[edit interfaces et-0/0/0 otn-options]
user@host# set tti tti-identifier tti-identifier-name
```
3. Set the payload type:


```
[edit interfaces et-0/0/0 otn-options]
user@host# set bytes transmit-payload-type number
```
4. Set the triggers:


```
[edit interfaces et-0/0/0 otn-options]
user@host# set trigger trigger-identifier
```
5. (Optional) Enable VLAN tagging. See *Enabling VLAN Tagging*.
6. Set the media MTU. See *Configuring the Media MTU*.
7. Set the unit VLAN ID, family inet, and IP address:


```
[edit interfaces et-0/0/0 ]
user@host# set vlan-id number
user@host# set family inet
user@host# set address address
```

8. (Optional) Configure pre-forward error correction (pre-FEC)-based fast reroute (FRR) to enable monitoring of the pre-FEC status of the OTN link:

- a. Set the BER signal-degrade threshold:

```
[edit interfaces et-0/0/0 otn-options signal-degrade]
user@host# set ber-threshold-signal-degrade value
```

- b. Set the BER threshold to clear signal-degrade alarms:

```
[edit interfaces et-0/0/0 otn-options signal-degrade]
user@host# set ber-threshold-clear value
```

- c. Set the time interval for signal-degrade collection. After the BER threshold for signal-degrade is crossed for ten consecutive intervals, an alarm is raised. If the BER threshold for signal-degrade clear is crossed for ten consecutive intervals, the alarm is cleared.

```
[edit interfaces et-0/0/0 otn-options signal-degrade]
user@host# set interval value
```



NOTE: Configuring a high BER threshold for signal-degrade and a long interval might cause the internal counter register to be saturated. An invalid configuration will be discarded by the PIC driver, and the default values will be used instead. A system log message will be logged for this error.

- d. Enable signal degrade monitoring:

```
[edit interfaces et-0/0/0 otn-options preemptive-fast-reroute]
user@host# set signal-degrade-monitor-enable
```

9. (Optional) Enable backward FRR to insert the local pre-FEC status into transmitted OTN frames and monitor received OTN frames for the pre-FEC status:

```
[edit interfaces et-0/0/0 otn-options preemptive-fast-reroute]
user@host# set backward-frr-enable
```

**Related
Documentation**

- [100-Gigabit Ethernet OTN Options Configuration Overview on page 38](#)
- [optics-options on page 181](#)
- [otn-options on page 182](#)
- [signal-degrade on page 204](#)
- [preemptive-fast-reroute on page 189](#)

Configuring the 10-Gigabit or 100-Gigabit Ethernet DWDM Interface Wavelength

To configure the wavelength on a 10-Gigabit Ethernet or 100-Gigabit Ethernet dense wavelength-division multiplexing (DWDM) interface, include the **wavelength** statement at the `[edit interfaces media-type-fpc/pic/port optics-options]` hierarchy level:

```
[edit interfaces ge-0/0/0 optics-options]
wavelength nm;
```

For interface diagnostics, you can issue the **show interfaces diagnostics optics media-type-fpc/pic /port** operational mode command.

Table 5 on page 41 shows configurable wavelengths and the corresponding frequency for each configurable wavelength.

Table 5: Wavelength-to-Frequency Conversion Matrix

Wavelength (nm)	Frequency (THz)	Wavelength (nm)	Frequency (THz)	Wavelength (nm)	Frequency (THz)
1528.77	196.10	1540.56	194.60	1552.52	193.10
1529.55	196.00	1541.35	194.50	1553.33	193.00
1530.33	195.90	1542.14	194.40	1554.13	192.90
1531.12	195.80	1542.94	194.30	1554.94	192.80
1531.90	195.70	1543.73	194.20	1555.75	192.70
1532.68	195.60	1544.53	194.10	1556.56	192.60
1533.47	195.50	1545.32	194.00	1557.36	192.50
1534.25	195.40	1546.12	193.90	1558.17	192.40
1535.04	195.30	1546.92	193.80	1558.98	192.30
1535.82	195.20	1547.72	193.70	1559.79	192.20
1536.61	195.10	1548.52	193.60	1560.61	192.10
1537.40	195.00	1549.32	193.50	1561.42	192.00
1538.19	194.90	1550.12	193.40	1562.23	191.90
1538.98	194.80	1550.92	193.30	1563.05	191.80
1539.77	194.70	1551.72	193.20	1563.86	191.70

- Related Documentation**
- [Ethernet DWDM Interface Wavelength Overview on page 37](#)
 - [Ethernet Interfaces](#)

CHAPTER 7

Interoperability between 100-Gigabit Ethernet PICs PD-1CE-CFP-FPC4 and P1-PTX-2-100GE-CFP

- [Interoperability Between the 100-Gigabit Ethernet PICs PD-1CE-CFP-FPC4 and P1-PTX-2-100GE-CFP on page 43](#)
- [Configuring the Interoperability Between the 100-Gigabit Ethernet PICs P1-PTX-2-100GE-CFP and PD-1CE-CFP-FPC4 on page 44](#)

Interoperability Between the 100-Gigabit Ethernet PICs PD-1CE-CFP-FPC4 and P1-PTX-2-100GE-CFP

You can enable interoperability between the 100-Gigabit Ethernet PIC PD-1CE-CFP-FPC4 and the 100-Gigabit Ethernet PIC P1-PTX-2-100GE-CFP by:

- Configuring the two 50-Gigabit Ethernet physical interfaces on the 100-Gigabit Ethernet PIC PD-1CE-CFP-FPC4 as one aggregated Ethernet physical interface.
- Configuring source address (SA) multicast bit steering mode on the 100-Gigabit Ethernet PIC P1-PTX-2-100GE-CFP.

SA multicast bit steering mode uses the multicast bit in the source MAC address for packet steering.



NOTE: When SA multicast bit steering mode is configured on a PTX Series Packet Transport Router 100-Gigabit Ethernet port, VLANs are not supported for that port.

The 100-Gigabit Ethernet PIC PD-1CE-CFP-FPC4 uses two 50-Gbps Packet Forwarding Engines to achieve 100-Gbps throughput. The 50-Gigabit Ethernet physical interfaces are created when the 100-Gigabit Ethernet PIC is plugged in. The two physical interfaces are visible and configuration is allowed on both the physical interfaces. You must configure the physical interfaces on the 100-Gigabit Ethernet PIC PD-1CE-CFP-FPC4 in static link aggregation group (LAG) mode without enabling Link Aggregation Control Protocol (LACP). This ensures that a single 100-Gigabit aggregated interface is visible on the link connecting to the 100-Gigabit Ethernet PIC P1-PTX-2-100GE-CFP.

On the 100-Gigabit Ethernet PIC PD-1CE-CFP-FPC4, ingress packets are forwarded to either Packet Forwarding Engine number 0 or 1 based on the SA multicast bit in the received packet. The SA multicast bit of egress packets is set based on whether the packet is forwarded from Packet Forwarding Engine number 0 or 1. As the default packet steering mode is SA multicast bit steering mode, no configuration is necessary to enable this mode.

On the 100-Gigabit Ethernet PIC P1-PTX-2-100GE-CFP, the SA multicast bit is ignored in ingress packets. When SA multicast bit steering mode is enabled, the SA multicast bit in the egress packets is set to 0 or 1 based on the flow hash value that is computed internally by the Packet Forwarding Engine complex for each packet. No CLI configuration is required to generate the flow hash value as this computation is done automatically. The flow hash algorithm uses fields in the packet header to compute the flow hash value. By default, the SA multicast bit is set to 0 in egress packets. You must configure SA multicast bit steering mode to enable interoperability with the 100-Gigabit Ethernet PIC PD-1CE-CFP-FPC4.



NOTE: If you try to enable the interoperability between the 100-Gigabit Ethernet PICs PD-1CE-CFP-FPC4 and P1-PTX-2-100GE-CFP without configuring PD-1CE-CFP-FPC4 (with two 50-Gigabit Ethernet interfaces) in static LAG mode, then there are issues in forwarding or routing protocols. For example, if you create two untagged logical interfaces—one each on the two 50-Gigabit Ethernet interfaces—on the PD-1CE-CFP-FPC4 and one untagged logical interface on the P1-PTX-2-100GE-CFP, then P1-PTX-2-100GE-CFP does not learn about one of the 50-Gigabit Ethernet interfaces on PD-1CE-CFP-FPC4.

**Related
Documentation**

- [Configuring the Interoperability Between the 100-Gigabit Ethernet PICs P1-PTX-2-100GE-CFP and PD-1CE-CFP-FPC4 on page 44](#)
- [sa-multicast on page 198](#)
- *Interoperability Between the 100-Gigabit Ethernet PICs PD-1CE-CFP-FPC4 and PF-1CGE-CFP*

Configuring the Interoperability Between the 100-Gigabit Ethernet PICs P1-PTX-2-100GE-CFP and PD-1CE-CFP-FPC4

You can enable interoperability between the 100-Gigabit Ethernet PICs PD-1CE-CFP-FPC4 and P1-PTX-2-100GE-CFP by performing the following tasks:

- [Configuring SA Multicast Bit Steering Mode on 100-Gigabit Ethernet PIC P1-PTX-2-100GE-CFP on page 45](#)
- [Configuring Two 50-Gigabit Ethernet Physical Interfaces on the 100-Gigabit Ethernet PIC PD-1CE-CFP-FPC4 as One Aggregated Ethernet Interface on page 46](#)

Configuring SA Multicast Bit Steering Mode on 100-Gigabit Ethernet PIC P1-PTX-2-100GE-CFP

To enable the interoperability between the 100-Gigabit Ethernet PICs PD-1CE-CFP-FPC4 and P1-PTX-2-100GE-CFP, you must enable source address (SA) multicast bit steering mode on P1-PTX-2-100GE-CFP.



NOTE: When you configure the SA multicast bit steering mode on the PTX Series PIC P1-PTX-2-100GE-CFP, we recommend that you do not configure the PIC ports as member links of an aggregated Ethernet interface because this prevents load balancing on the peering T Series PIC PD-1CE-CFP-FPC4. This T Series PIC must be in aggregated Ethernet mode to share bandwidth between its two 50-Gigabit Ethernet interfaces.

To configure SA multicast bit steering mode on the 100-Gigabit Ethernet PIC P1-PTX-2-100GE-CFP:

1. Specify the FPC, PIC, and port information on the chassis.

```
[edit ]
user@host# edit chassis fpc slot pic slot port port-number
```

For example:

```
[edit ]
user@host# edit chassis fpc 1 pic 0 port 0
```

2. Configure the interoperation mode (SA multicast bit steering mode).

```
[edit chassis fpc 1 pic 0]
user@host# set forwarding-mode sa-multicast
```

3. Verify the configuration.

```
[edit ]
user@host# show chassis
fpc 1 {
  pic 0 {
    port 0 {
      forwarding-mode {
        sa-multicast;
      }
    }
  }
}
```



NOTE: As the default packet steering mode for the 100-Gigabit Ethernet PIC PD-1CE-CFP-FPC4 is SA multicast bit steering mode, no configuration is necessary to enable this mode.

Configuring Two 50-Gigabit Ethernet Physical Interfaces on the 100-Gigabit Ethernet PIC PD-1CE-CFP-FPC4 as One Aggregated Ethernet Interface

To enable the interoperability between the 100-Gigabit Ethernet PICs PD-1CE-CFP-FPC4 and PF-1CGE-CFP or P1-PTX-2-100GE-CFP, you need to configure the two 50-Gigabit Ethernet physical interfaces on PD-1CE-CFP-FPC4 as one aggregated Ethernet physical interface. This ensures that a single 100-Gigabit aggregated interface is visible on the link connecting to PF-1CGE-CFP or P1-PTX-2-100GE-CFP instead of two independent 50-Gigabit Ethernet interfaces.

When the PIC is in aggregated Ethernet mode, the two physical interfaces on the same PIC are aggregated into one aggregated Ethernet physical interface. When the PIC is configured with two physical interfaces, it creates the physical interfaces `et-fpc/pic/0:0` and `et-fpc/pic/0:1`, where *fpc* is the FPC slot number and *pic* is the PIC slot number. For example, to configure two physical interfaces for PIC slot 0 in FPC slot 5:

1. Specify the number of aggregated Ethernet interfaces to be created.

```
[edit chassis]
user@host# set aggregated devices ethernet device-count count
```

For example:

```
[edit chassis]
user@host# set aggregated devices ethernet device-count 1
```

2. Specify the members to be included within the aggregated Ethernet bundle.

```
[edit interfaces ]
user@host# set interface-name gigether-options 802.3ad bundle
```

The following example shows how to configure two physical interfaces for PIC 0 on a T1600 router.

```
[edit interfaces ]
user@host# set et-5/0/0:0 gigether-options 802.3ad ae0
user@host# set et-5/0/0:1 gigether-options 802.3ad ae0
```

3. Verify the configuration at the chassis.

```
[edit ]
user@host# show chassis
  aggregated-devices {
    ethernet {
      device-count 1;
    }
  }
```

4. Verify the configuration at the interface.

```
[edit ]
user@host# show interfaces
  et-5/0/0:0 {
    gigether-options {
      802.3ad ae0;
    }
  }
```

```
et-5/0/0:1 {  
    gletcher-options {  
        802.3ad ae0;  
    }  
}
```

**Related
Documentation**

- [Interoperability Between the 100-Gigabit Ethernet PICs PD-1CE-CFP-FPC4 and P1-PTX-2-100GE-CFP on page 43](#)
- [sa-multicast on page 198](#)
- *Interoperability Between the 100-Gigabit Ethernet PICs PD-1CE-CFP-FPC4 and PF-1CGE-CFP*

CHAPTER 8

Traffic Black Hole Detection and Recovery

- [Traffic Black Hole Caused by Fabric Degradation on page 49](#)
- [Disabling FPC Restart on page 50](#)

Traffic Black Hole Caused by Fabric Degradation

A traffic black hole occurs when packets are dropped by a device without notification. Other connected devices continue to forward traffic to the affected device, impacting the network performance. A severely degraded fabric plane can be one of the reasons for a traffic black hole.

Devices can limit the black-hole time by detecting unreachable destination Packet Forwarding Engines and signaling connected devices when they cannot carry traffic because of a severely degraded fabric.

Packet Forwarding Engine destinations can become unreachable for the following reasons:

- The fabric Switch Interface Boards (SIBs) go offline as a result of a CLI command or a pressed physical button.
- The fabric SIBs are turned offline by the Switch Processor Mezzanine Board (SPMB) because of high temperature.
- Voltage or polled I/O errors in the SIBs detected by the SPMB.
- On T640 and T1600 routers:
 - All Packet Forwarding Engines receive destination errors on all planes from remote Packet Forwarding Engines, even when the SIBs are online
 - Complete fabric loss caused by destination timeouts, even when the SIBs are online.
- On PTX Series routers:
 - Link errors on all connected planes
 - Two Packet Forwarding Engines can reach the fabric but not each other
 - Link errors where two Packet Forwarding Engines have connectivity with the fabric but not through a common plane

When the system detects any unreachable Packet Forwarding Engine destinations, healing from a traffic black hole is attempted. If the healing fails, the system turns off the interfaces, thereby stopping the traffic black hole.

The recovery process consists of the following phases:

1. On T640 and T1600 routers: Fabric plane restart phase: Healing is attempted by restarting the fabric planes one by one. This phase does not start if the fabric plane is functioning properly and a single Flexible PIC Concentrator (FPC) is bad.

On PTX Series routers: SIB restart phase: Healing is attempted by restarting the SIBs one by one. This phase does not start if the SIBs are functioning properly and a single Flexible PIC Concentrator (FPC) is bad.

2. On T640 and T1600 routers: Fabric plane and FPC restart phase: Healing is attempted by restarting both the fabric planes and the FPCs. If there are bad FPCs that are unable to initiate high-speed links to the fabric after reboot, creation of traffic black hole is limited because no interfaces are created for these FPCs.

On PTX Series routers: SIB and FPC restart phase: Healing is attempted by restarting both the SIBs and the FPCs. If there are bad FPCs that are unable to initiate high-speed links to the fabric after reboot, creation of traffic black hole is limited because no interfaces are created for these FPCs.

3. FPC offline phase: Traffic black hole is limited by turning the FPCs offline and by turning off interfaces because previous attempts at recovery have failed.

By default, the system limits black-hole time by detecting severely degraded fabric. No user interaction is necessary.

- Related Documentation**
- [Disabling FPC Restart on page 50](#)
 - *Router Chassis Configuration Statements*
 - [degraded on page 146](#)

Disabling FPC Restart

You can disable FPC restart to limit recovery actions from a degraded fabric condition. On T640 and T1600 routers, only the fabric plane is restarted. On PTX Series routers, only the Switch Interface Boards (SIBs) are restarted. To disable the restarting of FPCs, use the **action-fpc-restart-disable** statement at the **[edit chassis fabric degraded]** hierarchy level:

```
[edit chassis fabric]
degraded {
  action-fpc-restart-disable;
}
```

Whenever FPC restart is disabled, an alarm is raised when there are unreachable destinations present in the router, and you must restart the FPCs manually.

To ensure that both the fabric planes (T640 and T1600 routers) or the SIBs (PTX Series routers) and the FPCs are restarted during the recovery process, do not configure the **action-fpc-restart-disable** statement at the **[edit chassis fabric degraded]** hierarchy level.

**Related
Documentation**

- [Traffic Black Hole Caused by Fabric Degradation on page 49](#)
- *Router Chassis Configuration Statements*

CHAPTER 9

Routing Policy

- [Example: Overriding the Default BGP Routing Policy on PTX Series Packet Transport Routers on page 53](#)

Example: Overriding the Default BGP Routing Policy on PTX Series Packet Transport Routers

- [Understanding the Default BGP Routing Policy on Packet Transport Routers on page 53](#)
- [Example: Overriding the Default BGP Routing Policy on PTX Series Packet Transport Routers on page 55](#)

Understanding the Default BGP Routing Policy on Packet Transport Routers

On PTX Series Packet Transport Routers, the default BGP routing policy differs from that of other Junos OS routing devices.

The PTX Series routers are MPLS transit platforms that do IP forwarding, typically using interior gateway protocol (IGP) routes. The PTX Series Packet Forwarding Engine (PFE) can accommodate a relatively small number of variable-length prefixes.



NOTE: A PTX Series router can support full BGP routes in the control plane so that it can be used as a route reflector (RR). It can do exact-length lookup multicast forwarding and can build the multicast forwarding plane for use by the unicast control plane (for example, to perform a reverse-path forwarding lookup for multicast).

Given the PFE limitation, the default routing policy for PTX Series routers is for BGP routes not to be installed in the forwarding table. You can override the default routing policy and select certain BGP routes to install in the forwarding table.

The default behavior for load balancing and BGP routes on PTX Series routers is as follows. It has the following desirable characteristics:

- Allows you to override the default behavior without needing to alter the default policy directly
- Reduces the chance of accidental changes that nullify the defaults
- Sets no flow-control actions, such as accept and reject

The default routing policy on the PTX Series routers is as follows:

```
user@host# show policy-options | display inheritance defaults no-comments
policy-options {
  policy-statement junos-ptx-series-default {
    term t1 {
      from {
        protocol bgp;
        rib inet.0;
      }
      then no-install-to-fib;
    }
    term t2 {
      from {
        protocol bgp;
        rib inet6.0;
      }
      then no-install-to-fib;
    }
    term t3 {
      then load-balance per-packet;
    }
  }
}
routing-options {
  forwarding-table {
    default-export junos-ptx-series-default;
  }
}
user@host# show routing-options forwarding-table default-export | display inheritance
defaults no-comments
default-export junos-ptx-series-default;
```

As shown here, the **junos-ptx-series-default** policy is defined in **[edit policy-options]**. The policy is applied in **[edit routing-options forwarding-table]**, using the **default-export** statement. You can view these default configurations by using the **| display inheritance** flag.

Also, you can use the **show policy** command to view the default policy.

```
user@host> show policy junos-ptx-series-default
Policy junos-ptx-series-default:
  Term t1:
    from proto BGP
    inet.0
    then install-to-fib no
  Term t2:
    from proto BGP
    inet6.0
    then install-to-fib no
  Term t3:
    then load-balance per-packet
```



CAUTION: We strongly recommend that you do not alter the **junos-ptx-series-default** routing policy directly.

Junos OS chains the **junos-ptx-series-default** policy and any user-configured export policy. Because the **junos-ptx-series-default** policy does not use flow-control actions, any export policy that you configure is executed (by way of the implicit next-policy action) for every route. Thus you can override any actions set by the **junos-ptx-series-default** policy. If you do not configure an export policy, the actions set by **junos-ptx-series-default** policy are the only actions.

You can use the policy action **install-to-fib** to override the **no-install-to-fib** action.

Similarly, you can set the **load-balance per-prefix** action to override the **load-balance per-packet** action.

Example: Overriding the Default BGP Routing Policy on PTX Series Packet Transport Routers

This example shows how to override the default routing policy on packet transport routers, such as the PTX Series Packet Transport Routers.

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

Requirements

This example requires Junos OS Release 12.1 or later.

Overview

By default, the PTX Series routers do not install BGP routes in the forwarding table.

For PTX Series routers, the configuration of the **from protocols bgp** condition with the **then accept** action does not have the usual result that it has on other Junos OS routing devices. With the following routing policy on PTX Series routers, BGP routes do not get installed in the forwarding table.

```

user@host# show policy-options
policy-statement accept-no-install {
  term 1 {
    from protocol bgp;
    then accept;
  }
}
user@host# show routing-options
forwarding-table {
  export accept-no-install;
}

user@host> show route forwarding-table
Routing table: default.inet
Internet:
Destination          Type RtRef Next hop          Type Index NhRef Netif
default              perm    0
rjct                 36      2

```

No BGP routes are installed in the forwarding table. This is the expected behavior.

This example shows how to use the **then install-to-fib** action to effectively override the default BGP routing policy.

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.

```
set policy-options prefix-list install-bgp 66.0.0.1/32
set policy-options policy-statement override-ptx-series-default term 1 from prefix-list
install-bgp
set policy-options policy-statement override-ptx-series-default term 1 then load-balance
per-prefix
set policy-options policy-statement override-ptx-series-default term 1 then install-to-fib
set routing-options forwarding-table export override-ptx-series-default
```

Installing Selected BGP Routes in the Forwarding Table

Step-by-Step Procedure

The following example requires you to navigate various levels in the configuration hierarchy. For information about navigating the CLI, see *Using the CLI Editor in Configuration Mode* in the *CLI User Guide*.

To install selected BGP routes in the forwarding table:

1. Configure a list of prefixes to install in the forwarding table.

```
[edit policy-options prefix-list install-bgp]
user@host# set 66.0.0.1/32
```
2. Configure the routing policy, applying the prefix list as a condition.

```
[edit policy-options policy-statement override-ptx-series-default term 1]
user@host# set from prefix-list install-bgp
user@host# set then install-to-fib
user@host# set then load-balance per-prefix
```
3. Apply the routing policy to the forwarding table.

```
[edit routing-options forwarding-table]
user@host# set export override-ptx-series-default
```

Results

From configuration mode, confirm your configuration by entering the **show policy-options** and **show routing-options** commands. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```
user@host# show policy-options
prefix-list install-bgp {
  66.0.0.1/32;
}
policy-statement override-ptx-series-default {
  term 1 {
    from {
      prefix-list install-bgp;
    }
    then {
```

```

        load-balance per-prefix;
        install-to-fib;
    }
}

user@host# show routing-options
forwarding-table {
    export override-ptx-series-default;
}

```

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

Verification

Confirm that the configuration is working properly.

Verifying That the Selected Route Is Installed in the Forwarding Table

Purpose Make sure that the configured policy overrides the default policy.

Action From operational mode, enter the **show route forwarding-table** command.

```

user@host> show route forwarding-table destination 66.0.0.1
Internet:
Destination      Type RtRef Next hop          Type Index NhRef Netif
66.0.0.1/32      user   0           5.1.0.2          ucst   574   1 et-6/0/0.1
                  5.2.0.2          ucst   575   1 et-6/0/0.2

```

Meaning This output shows that the route to 66.0.0.1/32 is installed in the forwarding table.

Related Documentation

- *Default Routing Policies*
- *Examples: Configuring BGP Multipath*

CHAPTER 10

Class of Service

- [Understanding CoS CLI Configuration Statements on PTX Series Packet Transport Routers on page 59](#)
- [Configuring Up to 16 Forwarding Classes on page 62](#)
- [Configuring Drop Profile Maps for Schedulers on page 69](#)
- [Example: Configuring Excess Rate for PTX Series Packet Transport Routers on page 69](#)
- [Configuring Virtual LAN Queuing and Shaping on PTX Series Packet Transport Routers on page 76](#)
- [Example: Configuring Virtual LAN Queuing and Shaping in PTX Series Packet Transport Routers on page 78](#)
- [CoS Features and Limitations on PTX Series Packet Transport Routers on page 81](#)

Understanding CoS CLI Configuration Statements on PTX Series Packet Transport Routers

PTX Series Packet Transport Routers have no new Junos OS CLI configuration statements. However, some statements or statement options supported on other platforms are not supported or may not have effect on PTX Series devices. These exceptions are summarized here.

[edit chassis] Hierarchy Level

The following statement is not applicable to PTX Series Packet Transport Routers. There are always eight queues available. However, if there is a requirement to use only four of eight queues, you can do this by configuring the forwarding class to queue mapping, as appropriate.

```
[edit chassis fpc slot-number pic pic-number],  
  max-queues-per-interface (4 | 8);
```

The following CLI is not applicable to PICs supported on PTX Series Packet Transport Routers:

```
[edit chassis fpc slot-number pic pic-number],  
  q-pic-large-buffer {  
    [large-scale | small-scale]  
  }
```

On PTX Series Packet Transport Routers, buffer occupancy is computed as weighted average. However, configuration of weight at the PIC level is not supported. The default weights are applied.

```
[edit chassis fpc slot-number pic pic-number],
red-buffer-occupancy {
  weighted-averaged [ instant-usage-weight-exponent ] weight-value;
}
```

The following CLI is not applicable to PICs supported on PTX Series Packet Transport Routers:

```
[edit chassis fpc slot-number pic pic-number],
traffic-manager {
  egress-shaping-overhead number;
  ingress-shaping-overhead number;
  mode session-shaping;
}
```

[edit class-of-service] Hierarchy Level

The following CLI is not applicable to PTX Series Packet Transport Routers because there are no separate fabric queues and egress queues:

```
fabric {
  scheduler-map {
    priority (high | low) scheduler scheduler-name;
  }
}
```

The following CLI does not support the **priority** and **policing-priority** options.

```
forwarding-classes {
  class queue-num queue-number priority (high | low);
  queue queue-number class-name priority (high | low) [ policing-priority (premium |
normal) ];
}
```

The following statements are not supported on PTX Series Packet Transport Routers:

- **inet-precedence** rewrite
- Rewrite of both exp and inet-precedence fields for VPN and non-VPN traffic that use the **mpls-inet-both** and **mpls-inet-both-non-vpn** protocol types.
- **exp-push-push-push** and **exp-swap-push-push** rules
- **input-scheduler-map** and **input-shaping-rate**
- The physical interface scheduler is applied on the Packet Forwarding Engine, hence the **scheduler-map-chassis** statement is not applicable.

```
interfaces {
  interface-name {
    input-scheduler-map map-name;
    input-shaping-rate rate;
    scheduler-map-chassis map-name;
    unit logical-unit-number {
```



```

rewrite-rules{
    inet-precedence (rewrite-name | default) protocol
    protocol-types;
    exp (write-name | default) protocol protocol-types;
    exp-push-push-push default;
    exp-swap-push-push default;
}
}
}
}

```

In the following CLI, only the **inet-precedence** statement is not supported.

```

rewrite-rules {
    (dscp | dscp-ipv6 | exp | ieee-802.1 | ieee-802.1ad | inet-precedence) rewrite-name {
        import (rewrite-name | default);
        forwarding-class class-name {
            loss-priority level code-point (alias | bits);
        }
    }
}

```

Classifiers on routing instances are not supported on PTX Series Packet Transport Routers because L3VPN is not supported. Hence, the following CLI is not applicable.

```

[edit class-of-service]
routing-instances routing-instance-name {
    classifiers {
        exp (classifier-name | default);
        dscp (classifier-name | default);
        dscp-ipv6 (classifier-name | default);
    }
}

```

The following limitations apply to statements under **schedulers** on PTX Series Packet Transport Routers:

- **protocol** (non-tcp | tcp) is not supported for **drop-profile-map**. The **any** option is supported.
- **excess-priority** is not supported.
- **rate-limit** is supported for **transmit-rate**. It is applied only when schedulers are configured as **strict-high**.

```

schedulers (Class of Service) {
    scheduler-name {
        buffer-size (percent percentage | remainder | temporal microseconds);
        drop-profile-map loss-priority (any | low | medium-low | medium-high
        high) protocol (any ) drop-profile profile-name;
        priority priority-level;
        transmit-rate (rate | percent percentage | remainder) <exact | rate-limit>;
    }
}

```



NOTE: Configurations that are supported only on Gigabit Ethernet IQ PICs, channelized IQ PICs, and so forth are not applicable to PTX Series Packet Transport Routers. These PICs are not supported on this platform. Those CLIs are not listed here.

[edit firewall] Hierarchy Level

In the following CLI, the **dscp** clause is not supported.

```
family family-name {
  filter filter-name {
    term term-name {
      from {
        match-conditions;
      }
      then {
        dscp 0;
        forwarding-class class-name;
        loss-priority (high | low);
        three-color-policer {
          (single-rate | two-rate) policer-name;
        }
      }
    }
  }
}
```

Configuring Up to 16 Forwarding Classes

By default on all routers, four output queues are mapped to four forwarding classes, as shown in the topic *Default Forwarding Classes*. On Juniper Networks J Series Services Routers, M120 and M320 Multiservice Edge Routers, and T Series Core Routers, you can configure more than four forwarding classes and queues. For information about configuring J Series routers, see the J Series router documentation.



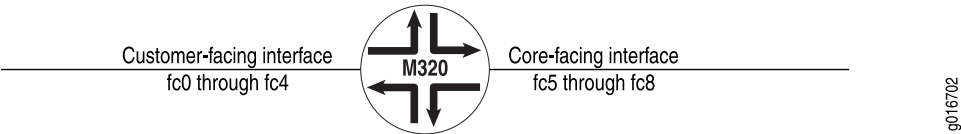
NOTE: You cannot use CoS-based forwarding features if you configure more than eight forwarding classes on the device.

On M120, M320, MX Series, T Series routers, and PTX Series Packet Transport Routers, you can configure up to 16 forwarding classes and eight queues, with multiple forwarding classes assigned to single queues. The concept of assigning multiple forwarding classes to a queue is sometimes referred to as creating *forwarding-class aliases*. This section explains how to configure M320 and T Series routers.

Mapping multiple forwarding classes to single queues is useful. Suppose, for example, that forwarding classes are set based on multifield packet classification, and the multifield classifiers are different for core-facing interfaces and customer-facing interfaces. Suppose you need four queues for a core-facing interface and five queues for a customer-facing interface, where **fc0** through **fc4** correspond to the classifiers for the customer-facing

interface, and **fc5** through **fc8** correspond to classifiers for the core-facing interface, as shown in [Figure 3 on page 63](#).

Figure 3: Customer-Facing and Core-Facing Forwarding Classes



In this example, there are nine classifiers and, therefore, nine forwarding classes. The forwarding class-to-queue mapping is shown in [Table 6 on page 63](#).

Table 6: Sample Forwarding Class-to-Queue Mapping

Forwarding Class Names	Queue Number
fc0	0
fc5	
fc1	1
fc6	
fc2	2
fc7	
fc3	3
fc8	
fc4	4

To configure up to 16 forwarding classes, include the **class** and **queue-num** statements at the **[edit class-of-service forwarding-classes]** hierarchy level:

```
[edit class-of-service forwarding-classes]
class class-name queue-num queue-number;
```

You can configure up to 16 different forwarding-class names. The corresponding output queue number can be from 0 through 7. Therefore, you can map multiple forwarding classes to a single queue. If you map multiple forwarding classes to a queue, the multiple forwarding classes must refer to the same scheduler (at the **[edit class-of-service scheduler-maps map-name forwarding-class class-name scheduler scheduler-name]** hierarchy level).

When you configure up to 16 forwarding classes, you can use them as you can any other forwarding class—in classifiers, schedulers, firewall filters (multifield classifiers), policers, and rewrite rules.

When you configure up to 16 forwarding classes, the following limitations apply:

- The **class** and **queue** statements at the **[edit class-of-service forwarding-classes]** hierarchy level are mutually exclusive. In other words, you can include one or the other of the following configurations, but not both:

```
[edit class-of-service forwarding-classes]
queue queue-number class-name;
```

```
[edit class-of-service forwarding-classes]
class class-name queue-num queue-number;
```

- On T Series routers only, when you configure IEEE 802.1p rewrite marking on Gigabit Ethernet IQ, Gigabit Ethernet IQ2, Gigabit Ethernet Enhanced IQ (IQE), and Gigabit Ethernet Enhanced IQ2 (IQ2E) PICs, you cannot configure more than eight forwarding classes. This limitation does not apply to M Series routers. On M Series routers, you can configure up to 16 forwarding classes when you configure IEEE 802.1p rewrite marking on any of these PICs.
- For GRE and IP-IP tunnels, IP precedence and DSCP rewrite marking of the inner header do not work with more than eight forwarding classes.
- When you use CoS-based forwarding features, you cannot configure more than eight forwarding classes with a forwarding policy. However, if you try to configure CoS-based forwarding with more than eight forwarding classes configured, commit fails with a message. Therefore, you can configure CBF on a router with eight or less than eight forwarding classes only. Under this condition, the forwarding class to queue mapping can be either one-to-one or one-to-many.
- A scheduler map that maps eight different forwarding classes to eight different schedulers can only be applied to interfaces that support eight queues. If you apply this type of scheduler map to an interface that only supports four queues, then the commit will fail.
- We recommend that you configure the statements changing PICs to support eight queues and then applying an eight queue scheduler map in two separate steps. Otherwise, the commit might succeed but the PIC might not have eight queues when the scheduler map is applied, generating an error.

You can determine the ID number assigned to a forwarding class by issuing the **show class-of-service forwarding-class** command. You can determine whether the classification is fixed by issuing the **show class-of-service forwarding-table classifier mapping** command. In the command output, if the **Table Type** field appears as **Fixed**, the classification is fixed. For more information about fixed classification, see *Applying Forwarding Classes to Interfaces*.

For information about configuring eight forwarding classes on ATM2 IQ interfaces, see *Enabling Eight Queues on ATM Interfaces*.

This section discusses the following topics:

- [Enabling Eight Queues on Interfaces on page 65](#)
- [Multiple Forwarding Classes and Default Forwarding Classes on page 66](#)

- [PICs Restricted to Four Queues on page 66](#)
- [Examples: Configuring Up to 16 Forwarding Classes on page 67](#)

Enabling Eight Queues on Interfaces

By default, Intelligent Queuing (IQ), Intelligent Queuing 2 (IQ2), Intelligent Queuing Enhanced (IQE), and Intelligent Queuing 2 Enhanced (IQ2E) PICs on M320 and T Series routers are restricted to a maximum of four egress queues per interface. To configure a maximum of eight egress queues on these interfaces, include the **max-queues-per-interface** statement at the **[edit chassis fpc slot-number pic pic-number]** hierarchy level:

```
[edit chassis fpc slot-number pic pic-number]
max-queues-per-interface (4 | 8);
```

On a TX Matrix or TX Matrix Plus router, include the **max-queues-per-interface** statement at the **[edit chassis lcc number fpc slot-number pic pic-number]** hierarchy level:

```
[edit chassis lcc number fpc slot-number pic pic-number]
max-queues-per-interface (4 | 8);
```

The numerical value can be 4 or 8.

For Juniper Networks J Series routers, this statement is not supported. J Series routers always have eight queues available.



NOTE: In addition to configuring eight queues at the **[edit chassis]** hierarchy level, the configuration at the **[edit class-of-service]** hierarchy level must support eight queues per interface.

The maximum number of queues per IQ PIC can be 4 or 8. If you include the **max-queues-per-interface** statement, all ports on the IQ PIC use configured mode and all interfaces on the IQ PIC have the same maximum number of queues.

To determine how many queues an interface supports, you can check the **CoS queues** output field of the **show interfaces interface-name extensive** command:

```
user@host> show interfaces so-1/0/0 extensive
CoS queues: 8 supported
```

If you include the **max-queues-per-interface 4** statement, you can configure all four ports and configure up to four queues per port.

For 4-port OC3c/STM1 Type I and Type II PICs on M320 and T Series routers, when you include the **max-queues-per-interface 8** statement, you can configure up to eight queues on ports 0 and 2. After you commit the configuration, the PIC goes offline and comes back online with only ports 0 and 2 operational. No interfaces can be configured on ports 1 and 3.

For Quad T3 and Quad E3 PICs, when you include the **max-queues-per-interface 8** statement, you can configure up to eight queues on ports 0 and 2. After you commit the

configuration, the PIC goes offline and comes back online with only ports 0 and 2 operational. No interfaces can be configured on ports 1 and 3.

When you include the **max-queues-per-interface** statement and commit the configuration, all physical interfaces on the IQ PIC are deleted and readded. Also, the PIC is taken offline and then brought back online immediately. You do not need to take the PIC offline and online manually. You should change modes between four queues and eight queues only when there is no active traffic going to the IQ PIC.

Multiple Forwarding Classes and Default Forwarding Classes

For queues 0 through 3, if you assign multiple forwarding classes to a single queue, default forwarding class assignment works as follows:

- The first forwarding class that you assign to queue 0 acquires the default BE classification and scheduling.
- The first forwarding class that you assign to queue 1 acquires the default EF classification and scheduling.
- The first forwarding class that you assign to queue 2 acquires the default AF classification and scheduling.
- The first forwarding class that you assign to queue 3 acquires the default NC classification and scheduling.

Of course you can override the default classification and scheduling by configuring custom classifiers and schedulers.

If you do not explicitly map forwarding classes to queues 0 through 3, then the respective default classes are automatically assigned to those queues. When you are counting the 16 forwarding classes, you must include in the total any default forwarding classes automatically assigned to queues 0 through 3. As a result, you can map up to 13 forwarding classes to a single queue when the single queue is queue 0, 1, 2, or 3. You can map up to 12 forwarding classes to a single queue when the single queue is queue 4, 5, 6, or 7. In summary, there must be at least one forwarding class each (default or otherwise) assigned to queue 0 through 3, and you can assign the remaining 12 forwarding classes (16–4) to any queue.

For example, suppose you assign two forwarding classes to queue 0 and you assign no forwarding classes to queues 1 through 3. The software automatically assigns one default forwarding class each to queues 1 through 3. This means 11 forwarding classes (16–5) are available for you to assign to queues 4 through 7.

For more information about forwarding class defaults, see *Default Forwarding Classes*.

PICs Restricted to Four Queues

Some Juniper Networks T Series Core Router PICs support up to 16 forwarding classes and are restricted to 4 queues. Contact Juniper Networks customer support for a current list of T Series router PICs that are restricted to four queues. To determine how many

queues an interface supports, you can check the **CoS queues** output field of the **show interfaces *interface-name* extensive** command:

```
user@host> show interfaces so-1/0/0 extensive
CoS queues: 8 supported
```

By default, for T Series router PICs that are restricted to four queues, the router overrides the global configuration based on the following formula:

$$Q_r = Q_d \text{ mod } R_{\text{max}}$$

Q_r is the queue number assigned if the PIC is restricted to four queues.

Q_d is the queue number that would have been mapped if this PIC were not restricted.

R_{max} is the maximum number of restricted queues available. Currently, this is four.

For example, assume you map the forwarding class **ef** to queue 6. For a PIC restricted to four queues, the queue number for forwarding class **ef** is **Q_r = 6 mod 4 = 2**.

To determine which queue is assigned to a forwarding class, use the **show class-of-service forwarding-class** command from the top level of the CLI. The output shows queue assignments for both global queue mappings and restricted queue mappings:

```
user@host> show class-of-service forwarding-class
Forwarding class      Queue    Restricted Queue  Fabric priority
be                    0        2                low
ef                    1        2                low
assured-forwarding   2        2                low
network-control      3        3                low
```

For T Series router PICs restricted to four queues, you can override the formula-derived queue assignment by including the **restricted-queues** statement at the **[edit class-of-service]** hierarchy level:

```
[edit class-of-service]
restricted-queues {
  forwarding-class class-name queue queue-number;
}
```

You can configure up to 16 forwarding classes. The output queue number can be from 0 through 3. Therefore, for PICs restricted to four queues, you can map multiple forwarding classes to single queues. If you map multiple forwarding classes to a queue, the multiple forwarding classes must refer to the same scheduler. This requirement applies to all PICs. The class name you configure at the **[edit class-of-service restricted-queues]** hierarchy level must be either a default forwarding class name or a forwarding class you configure at the **[edit class-of-service forwarding-classes]** hierarchy level.

Examples: Configuring Up to 16 Forwarding Classes

Configure 16 forwarding classes:

Configuring 16 Forwarding Classes

```
[edit class-of-service]
forwarding-classes {
  class fc0 queue-num 0;
  class fc1 queue-num 0;
  class fc2 queue-num 1;
```

```
class fc3 queue-num 1;
class fc4 queue-num 2;
class fc5 queue-num 2;
class fc6 queue-num 3;
class fc7 queue-num 3;
class fc8 queue-num 4;
class fc9 queue-num 4;
class fc10 queue-num 5;
class fc11 queue-num 5;
class fc12 queue-num 6;
class fc13 queue-num 6;
class fc14 queue-num 7;
class fc15 queue-num 7;
}
```

For PICs restricted to four queues, map four forwarding classes to each queue:

**Restricted Queues:
Mapping Two
Forwarding Classes to
Each Queue**

```
[edit class-of-service]
restricted-queues {
  forwarding-class fc0 queue 0;
  forwarding-class fc1 queue 0;
  forwarding-class fc2 queue 0;
  forwarding-class fc3 queue 0;
  forwarding-class fc4 queue 1;
  forwarding-class fc5 queue 1;
  forwarding-class fc6 queue 1;
  forwarding-class fc7 queue 1;
  forwarding-class fc8 queue 2;
  forwarding-class fc9 queue 2;
  forwarding-class fc10 queue 2;
  forwarding-class fc11 queue 2;
  forwarding-class fc12 queue 3;
  forwarding-class fc13 queue 3;
  forwarding-class fc14 queue 3;
  forwarding-class fc15 queue 3;
}
```

If you map multiple forwarding classes to a queue, the multiple forwarding classes must refer to the same scheduler:

**Configuring a
Scheduler Map
Applicable to an
Interface Restricted to
Four Queues**

```
[edit class-of-service]
scheduler-maps {
  interface-restricted {
    forwarding-class be scheduler Q0;
    forwarding-class ef scheduler Q1;
    forwarding-class ef1 scheduler Q1;
    forwarding-class ef2 scheduler Q1;
    forwarding-class af1 scheduler Q2;
    forwarding-class af scheduler Q2;
    forwarding-class nc scheduler Q3;
    forwarding-class nc1 scheduler Q3;
  }
}
[edit class-of-service]
restricted-queues {
  forwarding-class be queue 0;
  forwarding-class ef queue 1;
```



```

forwarding-class ef1 queue 1;
forwarding-class ef2 queue 1;
forwarding-class af queue 2;
forwarding-class af1 queue 2;
forwarding-class nc queue 3;
forwarding-class nc1 queue 3;
}

```

Configuring Drop Profile Maps for Schedulers

Drop-profile maps associate drop profiles with a scheduler. The map examines the current loss priority setting of the packet (high, low, or any) and assigns a drop profile according to these values. For example, you can specify that all TCP packets with low loss priority are assigned a drop profile that you name **low-drop**. You can associate multiple drop-profile maps with a single queue.

The scheduler drop profile defines the drop probabilities across the range of delay-buffer occupancy, thereby supporting the RED process. Depending on the drop probabilities, RED might drop packets aggressively long before the buffer becomes full, or it might drop only a few packets even if the buffer is almost full. For information on how to configure drop profiles, see *RED Drop Profiles Overview*.

By default, the drop profile is mapped to packets with low PLP and any protocol type. To configure how packet types are mapped to a specified drop profile, include the **drop-profile-map** statement at the **[edit class-of-service schedulers *scheduler-name*]** hierarchy level:

```

[edit class-of-service schedulers scheduler-name ]
drop-profile-map loss-priority (any | low | medium-low | medium-high | high) protocol (any
| non-tcp | tcp) drop-profile profile-name;

```

The map sets the drop profile for a specific PLP and protocol type. The inputs for the map are the PLP and the protocol type. The output is the drop profile. For more information about how CoS maps work, see *CoS Inputs and Outputs Overview*.



NOTE: On Juniper Network MX Series 3D Universal Edge Routers, T4000 Core Routers, EX Series switches, and PTX Series Packet Transport Routers, you can configure only the **any** option for the **protocol** statement.

For each scheduler, you can configure separate drop profile maps for each loss priority.

You can configure a maximum of 32 different drop profiles.

Related Documentation

- *Configuring RED Drop Profiles*

Example: Configuring Excess Rate for PTX Series Packet Transport Routers

You can configure excess rate to customize the distribution of available excess bandwidth among the queues for PTX Series Packet Transport Routers. When excess rate is not

configured, the excess bandwidth available is distributed in proportion to the transmit rates allocated to the queues.

- [Requirements on page 70](#)
- [Overview on page 70](#)
- [Configuration on page 70](#)
- [Verification on page 75](#)

Requirements

This example uses the following hardware and software components:

- One PTX Series Packet Transport Router
- Junos OS Release 12.1X48R2 or later

Overview

This set of examples illustrates how you configure schedulers for the PTX Series Packet Transport Router to distribute the remaining bandwidth (excess rate) among the configured queues.

When you configure excess rate, use the following guidelines:

- The **transmit-rate** statements of the configured schedulers can add up to at most 100%.
- All queues on the PTX Series Packet Transport Router have the same excess priority. Excess priority configuration is not supported.
- If a strict-high priority queue is configured and is rate-limited, this queue gets the rate-limited bandwidth first. Then the configured **transmit-rate** value of other queues is met (regardless of queue priority), and finally the excess bandwidth is distributed in proportion to the configured **excess-rate** values.



NOTE: We recommend that you configure rate limit on strict-high queues because the other queues may not meet their guaranteed bandwidths. See *transmit-rate*.

Configuration

To configure excess rate, perform one or more of these tasks:

- [Configuring Schedulers Without Specifying Excess Rate on page 71](#)
- [Configuring Schedulers by Specifying Excess Rate on page 72](#)
- [Configuring Schedulers to Control Excess Rate for Non-High Priority Queues on page 74](#)

Configuring Schedulers Without Specifying Excess Rate

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.

```
set class-of-schedule schedulers sched_queue_0 transmit-rate percent 20
set class-of-schedule schedulers sched_queue_1 transmit-rate percent 40
set class-of-schedule schedulers sched_queue_2 transmit-rate percent 10
set class-of-schedule schedulers sched_queue_3 transmit-rate percent 10
```

Step-by-Step Procedure In this example, four queues are configured and each associated scheduler is assigned the indicated transmit rate. Across the four queues, the transmit rate totals to 80%. No excess rate is configured. Assuming that each queue has loads greater than or equal to the configured transmit rate, the remaining 20% of the bandwidth is distributed in proportion to the configured transmit rates (20:40:10:10):

- sched_queue_0—5% (20% of the guaranteed rate plus 5% of the remaining bandwidth is 25%)
- sched_queue_1—10% (40% of the guaranteed rate plus 10% of the remaining bandwidth is 50%)
- sched_queue_2—2.5% (10% of the guaranteed rate plus 2.5% of the remaining bandwidth is 12.5%)
- sched_queue_3—2.5% (10% of the guaranteed rate plus 2.5% of the remaining bandwidth is 12.5%)

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the *CLI User Guide*.

To configure the schedulers:

1. Create the scheduler for queue 0:

```
[edit class-of-schedule]
user@host# set schedulers sched_queue_0 transmit-rate percent 20
```
2. Create the scheduler for queue 1:

```
[edit class-of-schedule]
user@host# set schedulers sched_queue_1 transmit-rate percent 40
```
3. Create the scheduler for queue 2:

```
[edit class-of-schedule]
user@host# set schedulers sched_queue_2 transmit-rate percent 10
```
4. Create the scheduler for queue 3:

```
[edit class-of-schedule]
user@host# set schedulers sched_queue_3 transmit-rate percent 10
```

Results From configuration mode, confirm your configuration by entering the **show class-of-service schedulers** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
    sched_queue_0 {  
        transmit-rate percent 20;  
    }  
    sched_queue_1 {  
        transmit-rate percent 40;  
    }  
    sched_queue_2 {  
        transmit-rate percent 10;  
    }  
    sched_queue_3 {  
        transmit-rate percent 10;  
    }
```

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

Configuring Schedulers by Specifying Excess Rate

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.

```
set class-of-schedule schedulers sched_queue_0 transmit-rate percent 25  
set class-of-schedule schedulers sched_queue_0 excess-rate percent 25  
set class-of-schedule schedulers sched_queue_1 transmit-rate percent 25  
set class-of-schedule schedulers sched_queue_1 excess-rate percent 50  
set class-of-schedule schedulers sched_queue_2 transmit-rate percent 25  
set class-of-schedule schedulers sched_queue_3 transmit-rate percent 25
```

Step-by-Step Procedure

In this example, four schedulers are configured and each is assigned a transmit rate of 25%. Queue 0 is configured with 40% and queue 1 with 60% of the excess rate. If the offered load through queue 2 is only 10%, the remaining bandwidth is distributed as: queue excess rate / total excess rate * remaining bandwidth percentage. If a queue has transmit rate configured but not excess rate, the excess rate for that queue is 1. In this example, the excess rate ratio is 25:50:1:1, which yields the following distribution of the 15% remaining bandwidth from queue 2:

- sched_queue_0—4.93% ($25 / 76 * 15\%$)
- sched_queue_1—9.87% ($50 / 76 * 15\%$)
- sched_queue_3—0.197% ($1 / 76 * 15\%$)

When the offered load on queue 2 increases to 25% or greater, the other queues get only their configured transmit rates.

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the *CLI User Guide*.

To configure the schedulers:

1. Create the scheduler for queue 0:

```
[edit class-of-schedule]
user@host# set schedulers sched_queue_0 transmit-rate percent 25
user@host# set schedulers sched_queue_0 excess-rate percent 25
```

2. Create the scheduler for queue 1:

```
[edit class-of-schedule]
user@host# set schedulers sched_queue_1 transmit-rate percent 25
user@host# set schedulers sched_queue_1 excess-rate percent 50
```

3. Create the scheduler for queue 2:

```
[edit class-of-schedule]
user@host# set schedulers sched_queue_2 transmit-rate percent 25
```

4. Create the scheduler for queue 3:

```
[edit class-of-schedule]
user@host# set schedulers sched_queue_3 transmit-rate percent 25
```

Results

From configuration mode, confirm your configuration by entering the **show class-of-service schedulers** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
sched_queue_0 {
  transmit-rate percent 25;
  excess-rate percent 25;
}
sched_queue_1 {
  transmit-rate percent 25;
  excess-rate percent 50;
}
```

```
    sched_queue_2 {  
        transmit-rate percent 25;  
    }  
    sched_queue_3 {  
        transmit-rate percent 25;  
    }  
}
```

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

Configuring Schedulers to Control Excess Rate for Non-High Priority Queues

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.

```
set class-of-schedule schedulers sched_queue_0 transmit-rate percent 90  
set class-of-schedule schedulers sched_queue_0 priority high  
set class-of-schedule schedulers sched_queue_1 transmit-rate percent 10  
set class-of-schedule schedulers sched_queue_1 priority low  
set class-of-schedule schedulers sched_queue_2 excess-rate percent 10  
set class-of-schedule schedulers sched_queue_3 excess-rate percent 30
```

Step-by-Step Procedure

In this example, the scheduler for queue 0 is configured to transmit up to 90% of traffic if there is enough offered load. When the traffic to queue 0 is less than 90%, excess rate is configured to distribute the remaining bandwidth in the ratio 1:10:30 (when the offered load on queue 1 is greater than 10%), which yields the following distribution of the remaining bandwidth from queue 0:

- sched_queue_1— $0.0244 * x\%$ ($1 / 41 * \text{remaining bandwidth} (x)\%$)
- sched_queue_2— $0.244 * x\%$ ($10 / 41 * \text{remaining bandwidth} (x)\%$)
- sched_queue_3— $0.732 * x\%$ ($30 / 41 * \text{remaining bandwidth} (x)\%$)



NOTE: Although the **transmit-rate** values on queues can add up to at most 100%, the **excess-rate** value does not have this restriction because it is a ratio.

The following example requires you to navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the *CLI User Guide*.

To configure the schedulers:

1. Create the scheduler for queue 0:

```
[edit class-of-schedule]  
user@host# set schedulers sched_queue_0 transmit-rate percent 90  
user@host# set schedulers sched_queue_0 priority high
```

2. Create the scheduler for queue 1:

```
[edit class-of-schedule]
```

```
user@host# set schedulers sched_queue_1 transmit-rate percent 10
user@host# set schedulers sched_queue_1 priority low
```

3. Create the scheduler for queue 2:

```
[edit class-of-schedule]
user@host# set schedulers sched_queue_2 excess-rate percent 10
```

4. Create the scheduler for queue 3:

```
[edit class-of-schedule]
user@host# set schedulers sched_queue_3 excess-rate percent 30
```

Results From configuration mode, confirm your configuration by entering the **show class-of-service schedulers** command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
sched_queue_0 {
  transmit-rate percent 90;
  priority high;
}
sched_queue_1 {
  transmit-rate percent 10;
  priority low;
}
sched_queue_2 {
  excess-rate percent 10;
}
sched_queue_3 {
  excess-rate percent 30;
}
```

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

Verification

Verifying the Excess Rate Configuration

Purpose Verify that the excess rate configuration is producing the results you expect.

Action From operational mode, enter the **show interfaces queue *interface*** command for the physical interface to verify.

Meaning The show command output lists the traffic by queue and forwarding class names. Verify that the Bytes field for active queues on the specified physical interface match the proportions you expect from the excess rate configuration.

Related Documentation

- [Schedulers Overview](#)
- [Configuring a Scheduler](#)
- [excess-rate](#)
- [CoS Features and Limitations on PTX Series Packet Transport Routers on page 81](#)

Configuring Virtual LAN Queuing and Shaping on PTX Series Packet Transport Routers

You can enable virtual LAN (VLAN) queuing on 100-Gigabit Ethernet interfaces on PTX Series Packet Transport Routers and specify a traffic-shaping rate for each VLAN. In conjunction, you can also configure other class-of-service (CoS) features, including classifiers, schedulers, and rewrite rules.

- Only 100-Gigabit Ethernet interfaces are supported.
- You can configure a maximum of 10 VLANs on each interface.
- The maximum shaping rate cannot exceed 100 Gbps for all VLANs configured on an interface.
- Aggregated Ethernet interfaces are not supported.

To configure per-VLAN queuing and traffic shaping on PTX Series routers:

1. Enable the reception and transmission of 8021.q VLAN-tagged frames on the interface:

```
[edit interfaces et-fpc/pic/port]
user@host# set vlan-tagging
```

2. Configure logical interface properties.

- a. Specify a VLAN identifier for each logical interface:

```
[edit interfaces et-fpc/pic/port unit logical-unit-number]
user@host# set vlan-id number
```



NOTE: You can specify a maximum of 10 VLAN identifiers for each physical interface.

- b. Specify a protocol family and IP address for each logical interface:

```
[edit interfaces et-fpc/pic/port unit logical-unit-number]
user@host# set family (inet | inet6 | mpls) address ip-address
```

3. Enable per-VLAN queuing on the interface:

```
[edit interfaces et-fpc/pic/port]
user@host# set per-unit-scheduler
```

4. Configure per-VLAN traffic shaping by specifying the amount of bandwidth to be allocated to each logical interface:

```
[edit class-of-service interfaces et-fpc/pic/port unit logical-unit-number]
user@host# set shaping-rate rate
```



NOTE: The shaping rate for all VLANs cannot exceed 100 percent of the bandwidth available on the interface (100 Gbps).

5. (Optional) Configure one or more classifiers and apply to the logical interface.

- a. Define one or more behavior aggregate (BA) classifiers:

```
[edit class-of-service classifiers]
user@host# set classifier-type classifier-name
```

- b. Define one or more forwarding classes for each classifier:

```
[edit class-of-service classifiers classifier-type classifier-name]
user@host set forwarding-class forwarding-class-name loss-priority level
code-points [ aliases ] [ bit-patterns ]
```

- c. Apply one or more classifiers to the logical interface:

```
[edit class-of-service interfaces interface-name unit logical-unit-number]
user@host# set classifiers classifier-type classifier-name
```

6. (Optional) Configure one or more rewrite rules to set CoS bits on outgoing packets.

- a. Define one or more rewrite rules:

```
[edit class-of-service rewrite-rules]
user@host# set traffic-type rewrite-rule-name
```

- b. Define one or more forwarding classes for each rewrite rule:

```
[edit class-of-service rewrite-rules traffic-type rewrite-rule-name]
user@host# set forwarding-class forwarding-class-name loss-priority level
code-points [ aliases ] [ bit-patterns ]
```

- c. Apply one or more rewrite rules to the logical interface for outgoing traffic:

```
[edit class-of-service interfaces interface-name unit logical-unit-number]
user@host# set rewrite-rules traffic-type rewrite-rule-name
```

7. (Optional) Configure one or more scheduler maps and apply to the logical interface, that is, VLAN. A scheduler map lets you associate the properties of output queues you define in schedulers with forwarding classes.

- a. Specify the name of a scheduler map:

```
[edit class-of-service]
user@host# set scheduler-maps scheduler-map-name
```

- b. Specify the name of a forwarding class to associate with the scheduler map:

```
[edit class-of-service scheduler-maps scheduler-map-name]
user@host set forwarding-class forwarding-class-name
```

- c. Specify the name of a scheduler configured at the **[edit class-of-service schedulers scheduler-name]** hierarchy level to associate with the scheduler map:

```
[edit class-of-service scheduler-maps scheduler-map-name]
user@host# set schedulers scheduler-name
```

- d. Apply the scheduler map to the logical interface, or VLAN:

```
[edit class-of-service]
user@host# set interfaces et-fpc/pic/port unit logical-unit-number scheduler-map
```

scheduler-map-name

- Related Documentation**
- [Junos CoS Components](#)
 - [Example: Configuring Virtual LAN Queuing and Shaping in PTX Series Packet Transport Routers on page 78](#)
 - [per-unit-scheduler on page 188](#)
 - [shaping-rate on page 201](#)

Example: Configuring Virtual LAN Queuing and Shaping in PTX Series Packet Transport Routers

You can enable virtual LAN (VLAN) queuing on 100-Gigabit Ethernet interfaces on PTX Series Packet Transport Routers and specify a traffic-shaping rate for each VLAN.

- [Requirements on page 78](#)
- [Overview on page 78](#)
- [Configuration on page 78](#)

Requirements

This example uses the following hardware and software components:

- Junos OS Release 13.2 or later.
- One PTX5000 router.

Overview

This example shows how to configure 10 VLANs, enable class-of-service (CoS) queuing, and specify a traffic-shaping rate for each VLAN. The total traffic-shaping rate for all VLANs cannot exceed 100 Gbps.

Configuration

- CLI Quick Configuration** To configure VLAN queuing and traffic shaping on the PTX5000 router, copy the following commands and paste them into the terminal window of the router:

```
[edit]
set interfaces et-5/0/0 vlan-tagging
set interfaces et-5/0/0 per-unit-scheduler
set interfaces et-5/0/0 unit 0 vlan-id 0
set interfaces et-5/0/0 unit 1 vlan-id 1
set interfaces et-5/0/0 unit 2 vlan-id 2
set interfaces et-5/0/0 unit 3 vlan-id 3
set interfaces et-5/0/0 unit 4 vlan-id 4
set interfaces et-5/0/0 unit 5 vlan-id 5
set interfaces et-5/0/0 unit 6 vlan-id 6
set interfaces et-5/0/0 unit 7 vlan-id 7
set interfaces et-5/0/0 unit 8 vlan-id 8
set interfaces et-5/0/0 unit 9 vlan-id 9
```

```

set class-of-service interfaces et-5/0/0 unit 0 shaping-rate 5g
set class-of-service interfaces et-5/0/0 unit 1 shaping-rate 10g
set class-of-service interfaces et-5/0/0 unit 2 shaping-rate 20g
set class-of-service interfaces et-5/0/0 unit 3 shaping-rate 5g
set class-of-service interfaces et-5/0/0 unit 4 shaping-rate 10g
set class-of-service interfaces et-5/0/0 unit 5 shaping-rate 10g
set class-of-service interfaces et-5/0/0 unit 6 shaping-rate 5g
set class-of-service interfaces et-5/0/0 unit 7 shaping-rate 5g
set class-of-service interfaces et-5/0/0 unit 8 shaping-rate 10g
set class-of-service interfaces et-5/0/0 unit 9 shaping-rate 20g

```

Step-by-Step Procedure

To configure the PTX5000 router:

1. Enable the reception and transmission of 802.1q VLAN-tagged frames on the interface:


```

[edit interfaces]
user@host# set et-5/0/0 vlan-tagging

```
2. Specify a VLAN identifier for each logical interface:


```

[edit interfaces]
user@host# set et-5/0/0 unit 0 vlan-id 0
user@host# set et-5/0/0 unit 1 vlan-id 1
user@host# set et-5/0/0 unit 2 vlan-id 2
user@host# set et-5/0/0 unit 3 vlan-id 3
user@host# set et-5/0/0 unit 4 vlan-id 4
user@host# set et-5/0/0 unit 5 vlan-id 5
user@host# set et-5/0/0 unit 6 vlan-id 6
user@host# set et-5/0/0 unit 7 vlan-id 7
user@host# set et-5/0/0 unit 8 vlan-id 8
user@host# set et-5/0/0 unit 9 vlan-id 9

```
3. Configure per-VLAN traffic shaping by specifying the amount of bandwidth to be allocated to each logical interface:


```

[edit class-of-service interfaces]
user@host# set et-5/0/0 unit 0 shaping-rate 5g
user@host# set et-5/0/0 unit 1 shaping-rate 10g
user@host# set et-5/0/0 unit 2 shaping-rate 20g
user@host# set et-5/0/0 unit 3 shaping-rate 5g
user@host# set et-5/0/0 unit 4 shaping-rate 10g
user@host# set et-5/0/0 unit 5 shaping-rate 10g
user@host# set et-5/0/0 unit 6 shaping-rate 5g
user@host# set et-5/0/0 unit 7 shaping-rate 5g
user@host# set et-5/0/0 unit 8 shaping-rate 10g
user@host# set et-5/0/0 unit 9 shaping-rate 20g

```

Results

Confirm your results by entering the **show interfaces** and **show class-of-service** commands:

```

user@host# show interfaces
et-5/0/0 {
  vlan-tagging;
  unit 0 {
    vlan-id 0;

```

```
}
unit 1 {
    vlan-id 1;
}
unit 2 {
    vlan-id 2;
}
unit 3 {
    vlan-id 3;
}
unit 4 {
    vlan-id 4;
}
unit 5 {
    vlan-id 5;
}
unit 6 {
    vlan-id 6;
}
unit 7 {
    vlan-id 7;
}
unit 8 {
    vlan-id 8;
}
unit 9 {
    vlan-id 9;
}
}
```

user@host# show class-of-service

```
interfaces {
    et-5/0/3 {
        unit 0 {
            shaping-rate 5g;
        }
        unit 1 {
            shaping-rate 10g;
        }
        unit 2 {
            shaping-rate 20g;
        }
        unit 3 {
            shaping-rate 5g;
        }
        unit 4 {
            shaping-rate 10g;
        }
        unit 5 {
            shaping-rate 10g;
        }
        unit 6 {
            shaping-rate 5g;
        }
        unit 7 {
            shaping-rate 5g;
        }
    }
}
```

```

    }
    unit 8 {
        shaping-rate 10g;
    }
    unit 9 {
        shaping-rate 20g;
    }
}
}

```

Related Documentation

- [Configuring Virtual LAN Queuing and Shaping on PTX Series Packet Transport Routers on page 76](#)
- [per-unit-scheduler on page 188](#)
- [shaping-rate on page 201](#)

CoS Features and Limitations on PTX Series Packet Transport Routers

[Table 7 on page 81](#) summarizes CoS features and limitations on PTX Series Packet Transport Routers.

Table 7: CoS Features and Limitations on PTX Series Routers

CoS Feature	Capacity	Comments
Classifiers		
Maximum number per PFE	64	L2 classifiers (sum of ieee-802.1 + ieee-802.1ad cannot exceed 32) DSCP and inet-precedence classifiers (sum of dscp + inet-precedence classifiers cannot exceed 32) dscp-ipv6 classifiers exp classifiers
dscp	Yes	DSCP and IP precedence classifiers cannot be configured on the same logical interface.
dscp-ipv6	Yes	Separate classifiers can be applied for IPv4 and IPv6 packets per logical interface.
ieee-802.1p	Yes	You can associate ieee-802.1p with any other type of classifier on the same logical interface. For L3 packets, an L3 classifier takes precedence over an IEEE classifier.
inet-precedence	Yes	
mpls-exp	Yes	
Loss priorities based on the Frame Relay discard eligible (DE) bit	No	

Table 7: CoS Features and Limitations on PTX Series Routers (*continued*)

CoS Feature	Capacity	Comments
Drop Profiles		
Maximum number	32	You can configure up to 32 drop profiles in the PTX chassis.
Per queue	Yes	
Per loss priority	Yes	
Per Transmission Control Protocol (TCP) bit	No	
Policing		
Traffic policing	Yes	
Two-rate tricolor marking (TCM)	Yes	
Queuing		
Priority	Yes (4)	
Per-queue output statistics	Yes	Red-dropped counters are not maintained per drop precedence. Also tail drop counters always show zero because packets are always dropped by the RED algorithm.
Rewrite Markers		
Maximum number per PFE	64	The sum of L2 and L3 rewrite rules cannot exceed 64.
dscp	Yes	
dscp-ipv6	Yes	
ieee-802.1	Yes	L2 and L3 rewrites can be applied to the same packet simultaneously.
inet-precedence	No	
mpls-exp	Yes	

Firewall Filters

- [Firewall Filter Match Conditions for IPv4 Traffic on page 83](#)
- [Standard Firewall Filter Match Conditions for IPv6 Traffic on page 92](#)
- [Firewall Filter Match Conditions for MPLS Traffic on page 100](#)
- [Firewall Filter Match Conditions for Layer 2 CCC Traffic on page 101](#)
- [Firewall Filter Terminating Actions on page 104](#)
- [Firewall Filter Nonterminating Actions on page 107](#)

Firewall Filter Match Conditions for IPv4 Traffic

You can configure a firewall filter with match conditions for Internet Protocol version 4 (IPv4) traffic (**family inet**). [Table 8 on page 83](#) describes the *match-conditions* you can configure at the `[edit firewall family inet filter filter-name term term-name from]` hierarchy level.

Table 8: Firewall Filter Match Conditions for IPv4 Traffic

Match Condition	Description
address <i>address</i> [except]	Match the IPv4 source or destination address field unless the except option is included. If the option is included, do not match the IPv4 source or destination address field.
ah-spi <i>spi-value</i>	(M Series routers, except M120 and M320) Match the IPsec authentication header (AH) security parameter index (SPI) value. NOTE: This match condition is not supported on PTX series packet transport routers.
ah-spi-except <i>spi-value</i>	(M Series routers, except M120 and M320) Do not match the IPsec AH SPI value. NOTE: This match condition is not supported on PTX series packet transport routers.
apply-groups	Specify which groups to inherit configuration data from. You can specify more than one group name. You must list them in order of inheritance priority. The configuration data in the first group takes priority over the data in subsequent groups.
apply-groups-except	Specify which groups not to inherit configuration data from. You can specify more than one group name.

Table 8: Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
destination-address <i>address</i> [except]	<p>Match the IPv4 destination address field unless the except option is included. If the option is included, do not match the IPv4 destination address field..</p> <p>You cannot specify both the address and destination-address match conditions in the same term.</p>
destination-class <i>class-names</i>	<p>Match one or more specified destination class names (sets of destination prefixes grouped together and given a class name). For more information, see <i>Firewall Filter Match Conditions Based on Address Classes</i>.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
destination-class-except <i>class-names</i>	<p>Do not match one or more specified destination class names. For details, see the destination-class match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
destination-port <i>number</i>	<p>Match the UDP or TCP destination port field.</p> <p>You cannot specify both the port and destination-port match conditions in the same term.</p> <p>If you configure this match condition, we recommend that you also configure the protocol udp or protocol tcp match statement in the same term to specify which protocol is being used on the port.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the port numbers are also listed): afs (1483), bgp (179), biff (512), bootpc (68), bootps (67), cmd (514), cvspserver (2401), dhcp (67), domain (53), eklogin (2105), ekshell (2106), exec (512), finger (79), ftp (21), ftp-data (20), http (80), https (443), ident (113), imap (143), kerberos-sec (88), klogin (543), kpasswd (761), krb-prop (754), krbupdate (760), kshell (544), ldap (389), ldp (646), login (513), mobileip-agent (434), mobileip-mn (435), msdp (639), netbios-dgm (138), netbios-ns (137), netbios-ssn (139), nfsd (2049), nntp (119), ntalk (518), ntp (123), pop3 (110), pptp (1723), printer (515), radacct (1813), radius (1812), rip (520), rkinit (2108), smtp (25), snmp (161), snmptrap (162), snpp (444), socks (1080), ssh (22), sunrpc (111), syslog (514), tacacs (49), tacacs-ds (65), talk (517), telnet (23), tftp (69), timed (525), who (513), or xdmcp (177).</p>
destination-port-except <i>number</i>	<p>Do not match the UDP or TCP destination port field. For details, see the destination-port match condition.</p>
destination-prefix-list <i>name</i> [except]	<p>Match destination prefixes in the specified list unless the except option is included. If the option is included, do not match the destination prefixes in the specified list.</p> <p>Specify the name of a prefix list defined at the [edit policy-options prefix-list <i>prefix-list-name</i>] hierarchy level.</p>

Table 8: Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
dscp number	<p>Match the Differentiated Services code point (DSCP). The DiffServ protocol uses the type-of-service (ToS) byte in the IP header. The most significant 6 bits of this byte form the DSCP. For more information, see <i>BA Classifier Overview</i>.</p> <p>You can specify a numeric value from 0 through 63. To specify the value in hexadecimal form, include 0x as a prefix. To specify the value in binary form, include b as a prefix.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed):</p> <ul style="list-style-type: none"> • RFC 3246, <i>An Expedited Forwarding PHB (Per-Hop Behavior)</i>, defines one code point: ef (46). • RFC 2597, <i>Assured Forwarding PHB Group</i>, defines 4 classes, with 3 drop precedences in each class, for a total of 12 code points: <ul style="list-style-type: none"> • af11 (10), af12 (12), af13 (14) • af21 (18), af22 (20), af23 (22) • af31 (26), af32 (28), af33 (30) • af41 (34), af42 (36), af43 (38)
dscp-except number	Do not match on the DSCP number. For more information, see the dscp match condition.
esp-spi spi-value	<p>Match the IPsec encapsulating security payload (ESP) SPI value. Match on this specific SPI value. You can specify the ESP SPI value in hexadecimal, binary, or decimal form.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
esp-spi-except spi-value	<p>Match the IPsec ESP SPI value. Do not match on this specific SPI value.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
first-fragment	<p>Match if the packet is the first fragment of a fragmented packet. Do not match if the packet is a trailing fragment of a fragmented packet. The first fragment of a fragmented packet has a fragment offset value of 0.</p> <p>This match condition is an alias for the bit-field match condition fragment-offset 0 match condition.</p> <p>To match both first and trailing fragments, you can use two terms that specify different match conditions: first-fragment and is-fragment.</p>
forwarding-class class	<p>Match the forwarding class of the packet.</p> <p>Specify assured-forwarding, best-effort, expedited-forwarding, or network-control.</p> <p>For information about forwarding classes and router-internal output queues, see “Overview of Forwarding Classes” on page 13.</p>
forwarding-class-except class	Do not match the forwarding class of the packet. For details, see the forwarding-class match condition.
fragment-flags number	<p>(Ingress only) Match the three-bit IP fragmentation flags field in the IP header.</p> <p>In place of the numeric field value, you can specify one of the following keywords (the field values are also listed): dont-fragment (0x4), more-fragments (0x2), or reserved (0x8).</p>

Table 8: Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
fragment-offset value	<p>Match the 13-bit fragment offset field in the IP header. The value is the offset, in 8-byte units, in the overall datagram message to the data fragment. Specify a numeric value, a range of values, or a set of values. An offset value of 0 indicates the first fragment of a fragmented packet.</p> <p>The first-fragment match condition is an alias for the fragment-offset 0 match condition.</p> <p>To match both first and trailing fragments, you can use two terms that specify different match conditions (first-fragment and is-fragment).</p>
fragment-offset-except number	Do not match the 13-bit fragment offset field.
icmp-code number	<p>Match the ICMP message code field.</p> <p>If you configure this match condition, we recommend that you also configure the protocol icmp match condition in the same term.</p> <p>If you configure this match condition, you must also configure the icmp-type message-type match condition in the same term. An ICMP message code provides more specific information than an ICMP message type, but the meaning of an ICMP message code is dependent on the associated ICMP message type.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed). The keywords are grouped by the ICMP type with which they are associated:</p> <ul style="list-style-type: none"> parameter-problem: ip-header-bad (0), required-option-missing (1) redirect: redirect-for-host (1), redirect-for-network (0), redirect-for-tos-and-host (3), redirect-for-tos-and-net (2) time-exceeded: ttl-eq-zero-during-reassembly (1), ttl-eq-zero-during-transit (0) unreachable: communication-prohibited-by-filtering (13), destination-host-prohibited (10), destination-host-unknown (7), destination-network-prohibited (9), destination-network-unknown (6), fragmentation-needed (4), host-precedence-violation (14), host-unreachable (1), host-unreachable-for-TOS (12), network-unreachable (0), network-unreachable-for-TOS (11), port-unreachable (3), precedence-cutoff-in-effect (15), protocol-unreachable (2), source-host-isolated (8), source-route-failed (5)
icmp-code-except message-code	Do not match the ICMP message code field. For details, see the icmp-code match condition.
icmp-type number	<p>Match the ICMP message type field.</p> <p>If you configure this match condition, we recommend that you also configure the protocol icmp match condition in the same term.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed): echo-reply (0), echo-request (8), info-reply (16), info-request (15), mask-request (17), mask-reply (18), parameter-problem (12), redirect (5), router-advertisement (9), router-solicit (10), source-quench (4), time-exceeded (11), timestamp (13), timestamp-reply (14), or unreachable (3).</p>
icmp-type-except message-type	Do not match the ICMP message type field. For details, see the icmp-type match condition.

Table 8: Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
interface <i>interface-name</i>	<p>Match the interface on which the packet was received.</p> <p>NOTE: If you configure this match condition with an interface that does not exist, the term does not match any packet.</p>
interface-group <i>group-number</i>	<p>Match the logical interface on which the packet was received to the specified interface group or set of interface groups. For <i>group-number</i>, specify a single value or a range of values from 0 through 255.</p> <p>To assign a logical interface to an interface group <i>group-number</i>, specify the <i>group-number</i> at the [interfaces <i>interface-name</i> unit <i>number</i> family <i>family</i> filter group] hierarchy level.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p> <p>For more information, see <i>Filtering Packets Received on a Set of Interface Groups Overview</i>.</p>
interface-group-except <i>group-number</i>	<p>Do not match the logical interface on which the packet was received to the specified interface group or set of interface groups. For details, see the interface-group match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
interface-set <i>interface-set-name</i>	<p>Match the interface on which the packet was received to the specified interface set.</p> <p>To define an interface set, include the interface-set statement at the [edit firewall] hierarchy level.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p> <p>For more information, see <i>Filtering Packets Received on an Interface Set Overview</i>.</p>

Table 8: Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
ip-options values	<p>Match the 8-bit IP option field, if present, to the specified value or list of values.</p> <p>In place of a numeric value, you can specify one of the following text synonyms (the option values are also listed): loose-source-route (131), record-route (7), router-alert (148), security (130), stream-id (136), strict-source-route (137), or timestamp (68).</p> <p>To match <i>any</i> value for the IP option, use the text synonym any. To match on <i>multiple</i> values, specify the list of values within square brackets ('[' and ']'). To match a <i>range</i> of values, use the value specification [<i>value1-value2</i>].</p> <p>For example, the match condition ip-options [0-147] matches on an IP options field that contains the loose-source-route, record-route, or security values, or any other value from 0 through 147. However, this match condition does not match on an IP options field that contains only the router-alert value (148).</p> <p>For most interfaces, a filter term that specifies an ip-option match on one or more <i>specific</i> IP option values (a value other than any) causes packets to be sent to the Routing Engine so that the kernel can parse the IP option field in the packet header.</p> <ul style="list-style-type: none"> For a firewall filter term that specifies an ip-option match on one or more specific IP option values, you cannot specify the count, log, or syslog nonterminating actions <i>unless</i> you also specify the discard terminating action in the same term. This behavior prevents double-counting of packets for a filter applied to a transit interface on the router. Packets processed on the kernel might be dropped in case of a system bottleneck. To ensure that matched packets are instead sent to the Packet Forwarding Engine (where packet processing is implemented in hardware), use the ip-options any match condition. <p>The 10-Gigabit Ethernet Modular Port Concentrator (MPC), 100-Gigabit Ethernet MPC, 60-Gigabit Ethernet MPC, 60-Gigabit Queuing Ethernet MPC, and 60-Gigabit Ethernet Enhanced Queuing MPC on MX Series routers are capable of parsing the IP option field of the IPv4 packet header. For interfaces configured on those MPCs, <i>all</i> packets that are matched using the ip-options match condition are sent to the Packet Forwarding Engine for processing.</p> <p>NOTE: On M and T series routers, firewall filters cannot count ip-options packets on a per option type and per interface basis. A limited work around is to use the show pfe statistics ip options command to see ip-options statistics on a per PFE basis. See <i>show pfe statistics ip</i> for sample output.</p>
ip-options-except values	<p>Do not match the IP option field to the specified value or list of values. For details about specifying the values, see the ip-options match condition.</p>
is-fragment	<p>Match if the packet is a trailing fragment of a fragmented packet. Do not match the first fragment of a fragmented packet.</p> <p>NOTE: To match both first and trailing fragments, you can use two terms that specify different match conditions (first-fragment and is-fragment).</p>

Table 8: Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
loss-priority level	<p>Match the packet loss priority (PLP) level.</p> <p>Specify a single level or multiple levels: low, medium-low, medium-high, or high.</p> <p>Supported on M120 and M320 routers; M7i and M10i routers with the Enhanced CFEB (CFEB-E); and MX Series routers.</p> <p>For IP traffic on M320, MX Series, and T Series routers with Enhanced II Flexible PIC Concentrators (FPCs), you must include the tri-color statement at the [edit class-of-service] hierarchy level to commit a PLP configuration with any of the four levels specified. If the tri-color statement is not enabled, you can only configure the high and low levels. This applies to all protocol families.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p> <p>For information about the tri-color statement, see <i>Configuring Tricolor Marking</i>. For information about using behavior aggregate (BA) classifiers to set the PLP level of incoming packets, see <i>BA Classifier Overview</i>.</p>
loss-priority-except level	<p>Do not match the PLP level. For details, see the loss-priority match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
packet-length bytes	<p>Match the length of the received packet, in bytes. The length refers only to the IP packet, including the packet header, and does not include any Layer 2 encapsulation overhead.</p>
packet-length-except bytes	<p>Do not match the length of the received packet, in bytes. For details, see the packet-length match type.</p>
port number	<p>Match the UDP or TCP source or destination port field.</p> <p>If you configure this match condition, you cannot configure the destination-port match condition or the source-port match condition in the same term.</p> <p>If you configure this match condition, we recommend that you also configure the protocol udp or protocol tcp match statement in the same term to specify which protocol is being used on the port.</p> <p>In place of the numeric value, you can specify one of the text synonyms listed under destination-port.</p>
port-except number	<p>Do not match the UDP or TCP source or destination port field. For details, see the port match condition.</p>
precedence ip-precedence-value	<p>Match the IP precedence field.</p> <p>In place of the numeric field value, you can specify one of the following text synonyms (the field values are also listed): critical-ecp (0xa0), flash (0x60), flash-override (0x80), immediate (0x40), internet-control (0xc0), net-control (0xe0), priority (0x20), or routine (0x00). You can specify precedence in hexadecimal, binary, or decimal form.</p>

Table 8: Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
precedence-except ip-precedence-value	<p>Do not match the IP precedence field.</p> <p>In place of the numeric field value, you can specify one of the following text synonyms (the field values are also listed): critical-ecp (0xa0), flash (0x60), flash-override (0x80), immediate (0x40), internet-control (0xc0), net-control (0xe0), priority (0x20), or routine (0x00). You can specify precedence in hexadecimal, binary, or decimal form.</p>
prefix-list name [except]	<p>Match the prefixes of the source or destination address fields to the prefixes in the specified list unless the except option is included. If the option is included, do not match the prefixes of the source or destination address fields to the prefixes in the specified list.</p> <p>The prefix list is defined at the [edit policy-options prefix-list prefix-list-name] hierarchy level.</p>
protocol number	<p>Match the IP protocol type field. In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed): ah (51), dstopts (60), egp (8), esp (50), fragment (44), gre (47), hop-by-hop (0), icmp (1), icmp6 (58), icmpv6 (58), igmp (2), ipip (4), ipv6 (41), ospf (89), pim (103), rsvp (46), sctp (132), tcp (6), udp (17), or vrrp (112).</p>
protocol-except number	<p>Do not match the IP protocol type field. In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed): ah (51), dstopts (60), egp (8), esp (50), fragment (44), gre (47), hop-by-hop (0), icmp (1), icmp6 (58), icmpv6 (58), igmp (2), ipip (4), ipv6 (41), ospf (89), pim (103), rsvp (46), sctp (132), tcp (6), udp (17), or vrrp (112).</p>
rat-type tech-type-value	<p>Match the radio-access technology (RAT) type specified in the 8-bit Tech-Type field of Proxy Mobile IPv4 (PMIPv4) access technology type extension. The technology type specifies the access technology through which the mobile device is connected to the access network.</p> <p>Specify a single value, a range of values, or a set of values. You can specify a technology type as a numeric value from 0 through 255 or as a system keyword.</p> <ul style="list-style-type: none"> The following numeric values are examples of well-known technology types: <ul style="list-style-type: none"> Numeric value 1 matches IEEE 802.3. Numeric value 2 matches IEEE 802.11a/b/g. Numeric value 3 matches IEEE 802.16e Numeric value 4 matches IEEE 802.16m. Text string eutran matches 4G. Text string geran matches 2G. Text string utran matches 3G.
rat-type-except tech-type-value	<p>Do not match the RAT Type.</p>
service-filter-hit	<p>Match a packet received from a filter where a service-filter-hit action was applied.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
source-address address [except]	<p>Match the IPv4 address of the source node sending the packet unless the except option is included. If the option is included, do not match the IPv4 address of the source node sending the packet.</p> <p>You cannot specify both the address and source-address match conditions in the same term.</p>

Table 8: Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
source-class <i>class-names</i>	<p>Match one or more specified source class names (sets of source prefixes grouped together and given a class name). For more information, see <i>Firewall Filter Match Conditions Based on Address Classes</i>.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
source-class-except <i>class-names</i>	<p>Do not match one or more specified source class names. For details, see the source-class match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
source-port <i>number</i>	<p>Match the UDP or TCP source port field.</p> <p>You cannot specify the port and source-port match conditions in the same term.</p> <p>If you configure this match condition for IPv4 traffic, we recommend that you also configure the protocol udp or protocol tcp match statement in the same term to specify which protocol is being used on the port.</p> <p>In place of the numeric value, you can specify one of the text synonyms listed with the destination-port <i>number</i> match condition.</p>
source-port-except <i>number</i>	<p>Do not match the UDP or TCP source port field. For details, see the source-port match condition.</p>
source-prefix-list <i>name</i> [except]	<p>Match source prefixes in the specified list unless the except option is included. If the option is included, do not match the source prefixes in the specified list.</p> <p>Specify the name of a prefix list defined at the [edit policy-options prefix-list <i>prefix-list-name</i>] hierarchy level.</p>
tcp-established	<p>Match TCP packets of an established TCP session (packets other than the first packet of a connection). This is an alias for tcp-flags "(ack rst)".</p> <p>This match condition does not implicitly check that the protocol is TCP. To check this, specify the protocol tcp match condition.</p>

Table 8: Firewall Filter Match Conditions for IPv4 Traffic (*continued*)

Match Condition	Description
tcp-flags value	<p>Match one or more of the low-order 6 bits in the 8-bit TCP flags field in the TCP header.</p> <p>To specify individual bit fields, you can specify the following text synonyms or hexadecimal values:</p> <ul style="list-style-type: none"> • fin (0x01) • syn (0x02) • rst (0x04) • push (0x08) • ack (0x10) • urgent (0x20) <p>In a TCP session, the SYN flag is set only in the initial packet sent, while the ACK flag is set in all packets sent after the initial packet.</p> <p>You can string together multiple flags using the bit-field logical operators.</p> <p>For combined bit-field match conditions, see the tcp-established and tcp-initial match conditions.</p> <p>If you configure this match condition, we recommend that you also configure the protocol tcp match statement in the same term to specify that the TCP protocol is being used on the port.</p> <p>For IPv4 traffic only, this match condition does not implicitly check whether the datagram contains the first fragment of a fragmented packet. To check for this condition for IPv4 traffic only, use the first-fragment match condition.</p>
tcp-initial	<p>Match the initial packet of a TCP connection. This is an alias for tcp-flags "(lack & syn)".</p> <p>This condition does not implicitly check that the protocol is TCP. If you configure this match condition, we recommend that you also configure the protocol tcp match condition in the same term.</p>
ttl number	<p>Match the IPv4 time-to-live number. Specify a TTL value or a range of TTL values. For number, you can specify one or more values from 0 through 255. This match condition is supported only on M120, M320, MX Series, and T Series routers.</p>
ttl-except number	<p>Do not match on the IPv4 TTL number. For details, see the ttl match condition.</p>

Related Documentation

- [Guidelines for Configuring Firewall Filters](#)
- [Firewall Filter Terminating Actions on page 104](#)
- [Firewall Filter Nonterminating Actions on page 107](#)

Standard Firewall Filter Match Conditions for IPv6 Traffic

You can configure a firewall filter with match conditions for Internet Protocol version 6 (IPv6) traffic (**family inet6**). [Table 9 on page 93](#) describes the **match-conditions** you can configure at the `[edit firewall family inet6 filter filter-name term term-name from]` hierarchy level.

Table 9: Firewall Filter Match Conditions for IPv6 Traffic

Match Condition	Description
address <i>address</i> [except]	Match the IPv6 source or destination address field unless the except option is included. If the option is included, do not match the IPv6 source or destination address field.
apply-groups	Specify which groups to inherit configuration data from. You can specify more than one group name. You must list them in order of inheritance priority. The configuration data in the first group takes priority over the data in subsequent groups.
apply-groups-except	Specify which groups not to inherit configuration data from. You can specify more than one group name.
destination-address <i>address</i> [except]	Match the IPv6 destination address field unless the except option is included. If the option is included, do not match the IPv6 destination address field. You cannot specify both the address and destination-address match conditions in the same term.
destination-class <i>class-names</i>	Match one or more specified destination class names (sets of destination prefixes grouped together and given a class name). NOTE: This match condition is not supported on PTX series packet transport routers. For more information, see <i>Firewall Filter Match Conditions Based on Address Classes</i> .
destination-class-except <i>class-names</i>	Do not match one or more specified destination class names. For details, see the destination-class match condition. NOTE: This match condition is not supported on PTX series packet transport routers.
destination-port <i>number</i>	Match the UDP or TCP destination port field. You cannot specify both the port and destination-port match conditions in the same term. If you configure this match condition, we recommend that you also configure the next-header udp or next-header tcp match condition in the same term to specify which protocol is being used on the port. In place of the numeric value, you can specify one of the following text synonyms (the port numbers are also listed): afs (1483), bgp (179), biff (512), bootpc (68), bootps (67), cmd (514), cvspserver (2401), dhcp (67), domain (53), eklogin (2105), ekshell (2106), exec (512), finger (79), ftp (21), ftp-data (20), http (80), https (443), ident (113), imap (143), kerberos-sec (88), klogin (543), kpasswd (761), krb-prop (754), krbupdate (760), kshell (544), ldap (389), ldp (646), login (513), mobileip-agent (434), mobileip-mn (435), msdp (639), netbios-dgm (138), netbios-ns (137), netbios-ssn (139), nfsd (2049), nntp (119), ntalk (518), ntp (123), pop3 (110), pptp (1723), printer (515), radacct (1813), radius (1812), rip (520), rkinit (2108), smtp (25), snmp (161), snmptrap (162), snpp (444), socks (1080), ssh (22), sunrpc (111), syslog (514), tacacs (49), tacacs-ds (65), talk (517), telnet (23), tftp (69), timed (525), who (513), or xdmcp (177).
destination-port-except <i>number</i>	Do not match the UDP or TCP destination port field. For details, see the destination-port match condition.
destination-prefix-list <i>prefix-list-name</i> [except]	Match the IPv6 destination prefix to the specified list unless the except option is included. If the option is included, do not match the IPv6 destination prefix to the specified list. The prefix list is defined at the [edit policy-options prefix-list <i>prefix-list-name</i>] hierarchy level.

Table 9: Firewall Filter Match Conditions for IPv6 Traffic (*continued*)

Match Condition	Description
forwarding-class class	<p>Match the forwarding class of the packet.</p> <p>Specify assured-forwarding, best-effort, expedited-forwarding, or network-control.</p> <p>For information about forwarding classes and router-internal output queues, see “Overview of Forwarding Classes” on page 13.</p>
forwarding-class-except class	<p>Do not match the forwarding class of the packet. For details, see the forwarding-class match condition.</p>
hop-limit hop-limit	<p>Match the hop limit to the specified hop limit or set of hop limits. For hop-limit, specify a single value or a range of values from 0 through 255..</p> <p>Supported on interfaces hosted on MICs or MPCs in MX Series routers only.</p>
hop-limit-except hop-limit	<p>Do not match the hop limit to the specified hop limit or set of hop limits. For details, see the hop-limit match condition.</p> <p>Supported on interfaces hosted on MICs or MPCs in MX Series routers only.</p>
icmp-code message-code	<p>Match the ICMP message code field.</p> <p>If you configure this match condition, we recommend that you also configure the next-header icmp or next-header icmp6 match condition in the same term.</p> <p>If you configure this match condition, you must also configure the icmp-type message-type match condition in the same term. An ICMP message code provides more specific information than an ICMP message type, but the meaning of an ICMP message code is dependent on the associated ICMP message type.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed). The keywords are grouped by the ICMP type with which they are associated:</p> <ul style="list-style-type: none"> parameter-problem: ip6-header-bad (0), unrecognized-next-header (1), unrecognized-option (2) time-exceeded: ttl-eq-zero-during-reassembly (1), ttl-eq-zero-during-transit (0) destination-unreachable: administratively-prohibited (1), address-unreachable (3), no-route-to-destination (0), port-unreachable (4)
icmp-code-except message-code	<p>Do not match the ICMP message code field. For details, see the icmp-code match condition.</p>
icmp-type message-type	<p>Match the ICMP message type field.</p> <p>If you configure this match condition, we recommend that you also configure the next-header icmp or next-header icmp6 match condition in the same term.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed): destination-unreachable (1), echo-reply (129), echo-request (128), membership-query (130), membership-report (131), membership-termination (132), neighbor-advertisement (136), neighbor-solicit (135), node-information-reply (140), node-information-request (139), packet-too-big (2), parameter-problem (4), redirect (137), router-advertisement (134), router-renumbering (138), router-solicit (133), or time-exceeded (3).</p>

Table 9: Firewall Filter Match Conditions for IPv6 Traffic (*continued*)

Match Condition	Description
icmp-type-except <i>message-type</i>	Do not match the ICMP message type field. For details, see the icmp-type match condition.
interface <i>interface-name</i>	<p>Match the interface on which the packet was received.</p> <p>NOTE: If you configure this match condition with an interface that does not exist, the term does not match any packet.</p>
interface-group <i>group-number</i>	<p>Match the logical interface on which the packet was received to the specified interface group or set of interface groups. For <i>group-number</i>, specify a single value or a range of values from 0 through 255.</p> <p>To assign a logical interface to an interface group <i>group-number</i>, specify the <i>group-number</i> at the [interfaces interface-name unit number family family filter group] hierarchy level.</p> <p>For more information, see <i>Filtering Packets Received on a Set of Interface Groups Overview</i>.</p>
interface-group-except <i>group-number</i>	<p>Do not match the logical interface on which the packet was received to the specified interface group or set of interface groups. For details, see the interface-group match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
interface-set <i>interface-set-name</i>	<p>Match the interface on which the packet was received to the specified interface set.</p> <p>To define an interface set, include the interface-set statement at the [edit firewall] hierarchy level.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p> <p>For more information, see <i>Filtering Packets Received on an Interface Set Overview</i>.</p>

Table 9: Firewall Filter Match Conditions for IPv6 Traffic (*continued*)

Match Condition	Description
ip-options values	<p>Match the 8-bit IP option field, if present, to the specified value or list of values.</p> <p>In place of a numeric value, you can specify one of the following text synonyms (the option values are also listed): loose-source-route (131), record-route (7), router-alert (148), security (130), stream-id (136), strict-source-route (137), or timestamp (68).</p> <p>To match <i>any</i> value for the IP option, use the text synonym any. To match on <i>multiple</i> values, specify the list of values within square brackets ('[' and ']'). To match a <i>range</i> of values, use the value specification [<i>value1-value2</i>].</p> <p>For example, the match condition ip-options [0-147] matches on an IP options field that contains the loose-source-route, record-route, or security values, or any other value from 0 through 147. However, this match condition does not match on an IP options field that contains only the router-alert value (148).</p> <p>For most interfaces, a filter term that specifies an ip-option match on one or more <i>specific</i> IP option values (a value other than any) causes packets to be sent to the Routing Engine so that the kernel can parse the IP option field in the packet header.</p> <ul style="list-style-type: none"> For a firewall filter term that specifies an ip-option match on one or more specific IP option values, you cannot specify the count, log, or syslog nonterminating actions <i>unless</i> you also specify the discard terminating action in the same term. This behavior prevents double-counting of packets for a filter applied to a transit interface on the router. Packets processed on the kernel might be dropped in case of a system bottleneck. To ensure that matched packets are instead sent to the Packet Forwarding Engine (where packet processing is implemented in hardware), use the ip-options any match condition. <p>The 10-Gigabit Ethernet Modular Port Concentrator (MPC), 100-Gigabit Ethernet MPC, 60-Gigabit Ethernet MPC, 60-Gigabit Queuing Ethernet MPC, and 60-Gigabit Ethernet Enhanced Queuing MPC on MX Series routers are capable of parsing the IP option field of the IPv4 packet header. For interfaces configured on those MPCs, <i>all</i> packets that are matched using the ip-options match condition are sent to the Packet Forwarding Engine for processing.</p>
ip-options-except values	<p>Do not match the IP option field to the specified value or list of values. For details about specifying the values, see the ip-options match condition.</p>
loss-priority level	<p>Match the packet loss priority (PLP) level.</p> <p>Specify a single level or multiple levels: low, medium-low, medium-high, or high.</p> <p>Supported on M120 and M320 routers; M7i and M10i routers with the Enhanced CFEB (CFEB-E); and MX Series routers and EX Series switches.</p> <p>For IP traffic on M320, MX Series, T Series routers and EX Series switches with Enhanced II Flexible PIC Concentrators (FPCs), you must include the tri-color statement at the [edit class-of-service] hierarchy level to commit a PLP configuration with any of the four levels specified. If the tri-color statement is not enabled, you can only configure the high and low levels. This applies to all protocol families.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p> <p>For information about the tri-color statement, see <i>Configuring Tricolor Marking</i>. For information about using behavior aggregate (BA) classifiers to set the PLP level of incoming packets, see “Overview of Forwarding Classes” on page 13.</p>

Table 9: Firewall Filter Match Conditions for IPv6 Traffic (*continued*)

Match Condition	Description
loss-priority-except level	<p>Do not match the PLP level. For details, see the loss-priority match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
next-header header-type	<p>Match the 8-bit Next Header field that identifies the type of header between the IPv6 header and payload.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed): ah (51), dstopts (60), egp (8), esp (50), fragment (44), gre (47), hop-by-hop (0), icmp (1), icmp6 (58), icmpv6 (58), igmp (2), ipip (4), ipv6 (41), no-next-header (59), ospf (89), pim (103), routing (43), rsvp (46), sctp (132), tcp (6), udp (17), or vrp (112).</p> <p>NOTE: next-header icmp6 and next-header icmpv6 match conditions perform the same function. next-header icmp6 is the preferred option. next-header icmpv6 is hidden in the Junos OS CLI.</p>
next-header-except header-type	Do not match the 8-bit Next Header field that identifies the type of header between the IPv6 header and payload. For details, see the next-header match type.
packet-length bytes	Match the length of the received packet, in bytes. The length refers only to the IP packet, including the packet header, and does not include any Layer 2 encapsulation overhead.
packet-length-except bytes	Do not match the length of the received packet, in bytes. For details, see the packet-length match type.
payload-protocol protocol-type	<p>Match the payload protocol type.</p> <p>In place of the protocol-type numeric value, you can specify one of the following text synonyms (the field values are also listed): specify one or a set of of the following: ah (51), dstopts (60), egp (8), esp (50), fragment (44), gre (47), hop-by-hop (0), icmp (1), icmp6 (58), igmp (2), ipip (4), ipv6 (41), no-next-header, ospf (89), pim (103), routing, rsvp (46), sctp (132), tcp (6), udp (17), or vrp (112).</p>
payload-protocol-except protocol-type	Do not match the payload protocol type. For details, see the payload-protocol match type.
port number	<p>Match the UDP or TCP source or destination port field.</p> <p>If you configure this match condition, you cannot configure the destination-port match condition or the source-port match condition in the same term.</p> <p>If you configure this match condition, we recommend that you also configure the next-header udp or next-header tcp match condition in the same term to specify which protocol is being used on the port.</p> <p>In place of the numeric value, you can specify one of the text synonyms listed under destination-port.</p>
port-except number	Do not match the UDP or TCP source or destination port field. For details, see the port match condition.

Table 9: Firewall Filter Match Conditions for IPv6 Traffic (*continued*)

Match Condition	Description
prefix-list <i>prefix-list-name</i> [except]	<p>Match the prefixes of the source or destination address fields to the prefixes in the specified list unless the except option is included. If the option is included, do not match the prefixes of the source or destination address fields to the prefixes in the specified list.</p> <p>The prefix list is defined at the [edit policy-options prefix-list <i>prefix-list-name</i>] hierarchy level.</p>
service-filter-hit	<p>Match a packet received from a filter where a service-filter-hit action was applied.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
source-address <i>address</i> [except]	<p>Match the IPv6 address of the source node sending the packet unless the except option is included. If the option is included, do not match the IPv6 address of the source node sending the packet.</p> <p>You cannot specify both the address and source-address match conditions in the same term.</p>
source-class <i>class-names</i>	<p>Match one or more specified source class names (sets of source prefixes grouped together and given a class name).</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p> <p>For more information, see <i>Firewall Filter Match Conditions Based on Address Classes</i>.</p>
source-class-except <i>class-names</i>	<p>Do not match one or more specified source class names. For details, see the source-class match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
source-port <i>number</i>	<p>Match the UDP or TCP source port field.</p> <p>You cannot specify the port and source-port match conditions in the same term.</p> <p>If you configure this match condition, we recommend that you also configure the next-header udp or next-header tcp match condition in the same term to specify which protocol is being used on the port.</p> <p>In place of the numeric value, you can specify one of the text synonyms listed with the destination-port number match condition.</p>
source-port-except <i>number</i>	<p>Do not match the UDP or TCP source port field. For details, see the source-port match condition.</p>
source-prefix-list <i>name</i> [except]	<p>Match the IPv6 address prefix of the packet source field unless the except option is included. If the option is included, do not match the IPv6 address prefix of the packet source field.</p> <p>Specify a prefix list name defined at the [edit policy-options prefix-list <i>prefix-list-name</i>] hierarchy level.</p>
tcp-established	<p>Match TCP packets other than the first packet of a connection. This is a text synonym for tcp-flags "(ack rst)" (0x14).</p> <p>NOTE: This condition does not implicitly check that the protocol is TCP. To check this, specify the protocol tcp match condition.</p> <p>If you configure this match condition, we recommend that you also configure the next-header tcp match condition in the same term.</p>

Table 9: Firewall Filter Match Conditions for IPv6 Traffic (*continued*)

Match Condition	Description
tcp-flags <i>flags</i>	<p>Match one or more of the low-order 6 bits in the 8-bit TCP flags field in the TCP header.</p> <p>To specify individual bit fields, you can specify the following text synonyms or hexadecimal values:</p> <ul style="list-style-type: none"> • fin (0x01) • syn (0x02) • rst (0x04) • push (0x08) • ack (0x10) • urgent (0x20) <p>In a TCP session, the SYN flag is set only in the initial packet sent, while the ACK flag is set in all packets sent after the initial packet.</p> <p>You can string together multiple flags using the bit-field logical operators.</p> <p>For combined bit-field match conditions, see the tcp-established and tcp-initial match conditions.</p> <p>If you configure this match condition, we recommend that you also configure the next-header tcp match condition in the same term to specify that the TCP protocol is being used on the port.</p>
tcp-initial	<p>Match the initial packet of a TCP connection. This is a text synonym for tcp-flags "(!ack & syn)".</p> <p>This condition does not implicitly check that the protocol is TCP. If you configure this match condition, we recommend that you also configure the next-header tcp match condition in the same term.</p>
traffic-class <i>number</i>	<p>Match the 8-bit field that specifies the class-of-service (CoS) priority of the packet.</p> <p>This field was previously used as the type-of-service (ToS) field in IPv4.</p> <p>You can specify a numeric value from 0 through 63. To specify the value in hexadecimal form, include 0x as a prefix. To specify the value in binary form, include b as a prefix.</p> <p>In place of the numeric value, you can specify one of the following text synonyms (the field values are also listed):</p> <ul style="list-style-type: none"> • RFC 3246, <i>An Expedited Forwarding PHB (Per-Hop Behavior)</i>, defines one code point: ef (46). • RFC 2597, <i>Assured Forwarding PHB Group</i>, defines 4 classes, with 3 drop precedences in each class, for a total of 12 code points: <ul style="list-style-type: none"> • af11 (10), af12 (12), af13 (14) • af21 (18), af22 (20), af23 (22) • af31 (26), af32 (28), af33 (30) • af41 (34), af42 (36), af43 (38)
traffic-class-except <i>number</i>	<p>Do not match the 8-bit field that specifies the CoS priority of the packet. For details, see the traffic-class match description.</p>



NOTE: If you specify an IPv6 address in a match condition (the address, destination-address, or source-address match conditions), use the syntax for text representations described in RFC 2373, *IP Version 6 Addressing Architecture*. For more information about IPv6 addresses, see *IPv6 Overview* and *Supported IPv6 Standards*.

Related Documentation

- [Guidelines for Configuring Firewall Filters](#)
- [Firewall Filter Terminating Actions on page 104](#)
- [Firewall Filter Nonterminating Actions on page 107](#)

Firewall Filter Match Conditions for MPLS Traffic

You can configure a firewall filter with match conditions for MPLS traffic (**family mpls**).



NOTE: The input-list *filter-names* and output-list *filter-names* statements for firewall filters for the mpls protocol family are supported on all interfaces with the exception of management interfaces and internal Ethernet interfaces (fxp or em0), loopback interfaces (lo0), and USB modem interfaces (umd).

Table 10 on page 100 describes the *match-conditions* you can configure at the [edit firewall family mpls filter *filter-name* term *term-name* from] hierarchy level.

Table 10: Firewall Filter Match Conditions for MPLS Traffic

Match Condition	Description
apply-groups	Specify which groups to inherit configuration data from. You can specify more than one group name. You must list them in order of inheritance priority. The configuration data in the first group takes priority over the data in subsequent groups.
apply-groups-except	Specify which groups not to inherit configuration data from. You can specify more than one group name.
exp number	Experimental (EXP) bit number or range of bit numbers in the MPLS header. For <i>number</i> , you can specify one or more values from 0 through 7 in decimal, binary, or hexadecimal format. NOTE: This match condition is not supported on PTX series packet transport routers.
exp-except number	Do not match on the EXP bit number or range of bit numbers in the MPLS header. For <i>number</i> , you can specify one or more values from 0 through 7. NOTE: This match condition is not supported on PTX series packet transport routers.
forwarding-class class	Forwarding class. Specify assured-forwarding , best-effort , expedited-forwarding , or network-control .
forwarding-class-except class	Do not match on the forwarding class. Specify assured-forwarding , best-effort , expedited-forwarding , or network-control .

Table 10: Firewall Filter Match Conditions for MPLS Traffic (*continued*)

Match Condition	Description
interface <i>interface-name</i>	<p>Interface on which the packet was received. You can configure a match condition that matches packets based on the interface on which they were received.</p> <p>NOTE: If you configure this match condition with an interface that does not exist, the term does not match any packet.</p>
interface-set <i>interface-set-name</i>	<p>Match the interface on which the packet was received to the specified interface set.</p> <p>To define an interface set, include the interface-set statement at the [edit firewall] hierarchy level.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p> <p>For more information, see <i>Filtering Packets Received on an Interface Set Overview</i>.</p>
ip-version <i>number</i>	<p>(Interfaces on Enhanced Scaling flexible PIC concentrators [FPCs] on supported T Series routers only) Inner IP version. To match MPLS-tagged IPv4 packets, match on the text synonym ipv4.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
loss-priority <i>level</i>	<p>Match the packet loss priority (PLP) level.</p> <p>Specify a single level or multiple levels: low, medium-low, medium-high, or high.</p> <p>Supported on M120 and M320 routers; M7i and M10i routers with the Enhanced CFEB (CFEB-E); and MX Series routers and EX Series switches.</p> <p>For IP traffic on M320, MX Series, and T Series routers with Enhanced II Flexible PIC Concentrators (FPCs), and EX Series switches, you must include the tri-color statement at the [edit class-of-service] hierarchy level to commit a PLP configuration with any of the four levels specified. If the tri-color statement is not enabled, you can only configure the high and low levels. This applies to all protocol families.</p> <p>For information about the tri-color statement, see <i>Configuring Tricolor Marking</i>. For information about using behavior aggregate (BA) classifiers to set the PLP level of incoming packets, see <i>"Overview of Forwarding Classes" on page 13</i>.</p>
loss-priority-except <i>level</i>	<p>Do not match the PLP level. For details, see the loss-priority match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>

Related Documentation

- [Guidelines for Configuring Firewall Filters](#)
- [Firewall Filter Terminating Actions on page 104](#)
- [Firewall Filter Nonterminating Actions on page 107](#)

Firewall Filter Match Conditions for Layer 2 CCC Traffic

You can configure a firewall filter with match conditions for Layer 2 circuit cross-connect (CCC) traffic (**family ccc**).

The following restrictions apply to firewall filters for Layer 2 CCC traffic:

- The **input-list *filter-names*** and **output-list *filter-names*** statements for firewall filters for the **ccc** protocol family are supported on all interfaces with the exception of management interfaces and internal Ethernet interfaces (**fxp** or **em0**), loopback interfaces (**lo0**), and USB modem interfaces (**umd**).
- Only on MX Series routers and EX Series switches, you cannot apply a Layer 2 CCC stateless firewall filter (a firewall filter configured at the **[edit firewall filter family ccc]** hierarchy level) as an output filter. On MX Series routers and EX Series switches, firewall filters configured for the **family ccc** statement can be applied only as input filters.

[Table 11 on page 102](#) describes the **match-conditions** you can configure at the **[edit firewall family ccc filter *filter-name* term *term-name* from]** hierarchy level.

Table 11: Firewall Filter Match Conditions for Layer 2 CCC Traffic

Match Condition	Description
apply-groups	Specify which groups to inherit configuration data from. You can specify more than one group name. You must list them in order of inheritance priority. The configuration data in the first group takes priority over the data in subsequent groups.
apply-groups-except	Specify which groups not to inherit configuration data from. You can specify more than one group name.
destination-mac-address address	<p>(MX Series routers and EX Series switches only) Match the destination media access control (MAC) address of a virtual private LAN service (VPLS) packet.</p> <p>To have packets correctly evaluated by this match condition when applied to egress traffic flowing over a CCC circuit from a logical interface on an I-chip DPC in a Layer 2 virtual private network (VPN) routing instance, you must make a configuration change to the Layer 2 VPN routing instance. You must explicitly disable the use of a control word for traffic flowing out over a Layer 2 circuit. The use of a control word is enabled by default for Layer 2 VPN routing instances to support the emulated virtual circuit (VC) encapsulation for Layer 2 circuits.</p> <p>To explicitly disable the use of a control word for Layer 2 VPNs, include the no-control-word statement at either of the following hierarchy levels:</p> <ul style="list-style-type: none"> • [edit routing-instances <i>routing-instance-name</i> protocols l2vpn] • [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols l2vpn] <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p> <p>For more information, see <i>Disabling the Control Word for Layer 2 VPNs</i>.</p>
forwarding-class class	Forwarding class. Specify assured-forwarding , best-effort , expedited-forwarding , or network-control .
forwarding-class-except class	Do not match on the forwarding class. Specify assured-forwarding , best-effort , expedited-forwarding , or network-control .

Table 11: Firewall Filter Match Conditions for Layer 2 CCC Traffic (*continued*)

Match Condition	Description
interface-group group-number	<p>Match the logical interface on which the packet was received to the specified interface group or set of interface groups. For group-number, specify a single value or a range of values from 0 through 255.</p> <p>To assign a logical interface to an interface group group-number, specify the group-number at the [interfaces interface-name unit number family family filter group] hierarchy level.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p> <p>For more information, see <i>Filtering Packets Received on a Set of Interface Groups Overview</i>.</p>
interface-group-except number	<p>Do not match the logical interface on which the packet was received to the specified interface group or set of interface groups. For details, see the interface-group match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
learn-vlan-1p-priority number	<p>(MX Series routers and EX Series switches only) Match on the IEEE 802.1p learned VLAN priority bits in the provider VLAN tag (the only tag in a single-tag frame with 802.1Q VLAN tags or the outer tag in a dual-tag frame with 802.1Q VLAN tags). Specify a single value or multiple values from 0 through 7.</p> <p>Compare with the user-vlan-1p-priority match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
learn-vlan-1p-priority-except number	<p>(MX Series routers and EX Series switches only) Do not match on the IEEE 802.1p learned VLAN priority bits. For details, see the learn-vlan-1p-priority match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
loss-priority level	<p>Packet loss priority (PLP) level. Specify a single level or multiple levels: low, medium-low, medium-high, or high.</p> <p>Supported on M120 and M320 routers; M7i and M10i routers with the Enhanced CFEB (CFEB-E); and MX Series routers and EX Series switches.</p> <p>For IP traffic on M320, MX Series, and T Series routers with Enhanced II Flexible PIC Concentrators (FPCs), and EX Series switches, you must include the tri-color statement at the [edit class-of-service] hierarchy level to commit a PLP configuration with any of the four levels specified. If the tri-color statement is not enabled, you can only configure the high and low levels. This applies to all protocol families.</p> <p>For information about the tri-color statement, see <i>Configuring Tricolor Marking</i>. For information about using behavior aggregate (BA) classifiers to set the PLP level of incoming packets, see <i>“Overview of Forwarding Classes” on page 13</i>.</p>
loss-priority-except level	<p>Do not match on the packet loss priority level. Specify a single level or multiple levels: low, medium-low, medium-high, or high.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p> <p>For information about using behavior aggregate (BA) classifiers to set the PLP level of incoming packets, see <i>BA Classifier Overview</i>.</p>

Table 11: Firewall Filter Match Conditions for Layer 2 CCC Traffic (*continued*)

Match Condition	Description
user-vlan-1p-priority <i>number</i>	<p>(MX Series routers and EX Series switches only) Match on the IEEE 802.1p user priority bits in the customer VLAN tag (the inner tag in a dual-tag frame with 802.1Q VLAN tags). Specify a single value or multiple values from 0 through 7.</p> <p>Compare with the learn-vlan-1p-priority match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>
user-vlan-1p-priority-except <i>number</i>	<p>(MX Series routers and EX Series switches only) Do not match on the IEEE 802.1p user priority bits. For details, see the user-vlan-1p-priority match condition.</p> <p>NOTE: This match condition is not supported on PTX series packet transport routers.</p>

- Related Documentation**
- [Guidelines for Configuring Firewall Filters](#)
 - [Firewall Filter Terminating Actions on page 104](#)
 - [Firewall Filter Nonterminating Actions on page 107](#)

Firewall Filter Terminating Actions

Firewall filters support a set of terminating actions for each protocol family. A filter-terminating action halts all evaluation of a firewall filter for a specific packet. The router performs the specified action, and no additional terms are examined.



NOTE: You cannot configure the **next term** action with a *terminating* action in the same filter term. However, you can configure the **next term** action with another *nonterminating* action in the same filter term.

Table 12 on page 105 describes the terminating actions you can specify in a firewall filter term.

Table 12: Terminating Actions for Firewall Filters

Terminating Action	Description	Protocols
accept	Accept the packet.	<ul style="list-style-type: none"> • family any • family inet • family inet6 • family mpls • family vpls • family ccc • family bridge • family ethernet-switching (for EX Series switches only)
decapsulate gre [routing-instance instance-name]	<p>At a customer-facing interface on an MX Series router installed at the provider edge (PE) of an IPv4 transport network, enable decapsulation of generic routing encapsulation (GRE) packets transported through a filter-based GRE tunnel.</p> <p>You can configure a filter term that pairs this action with a match condition that includes a packet header match for the GRE protocol. For an IPv4 filter, include the protocol gre (or protocol 47) match condition. Attach the filter to the input of an Ethernet logical interface or aggregated Ethernet interface on a Modular Interface Card (MIC) or Modular Port Concentrator (MPC) in the router. If you commit a configuration that attaches a de-encapsulating filter to an interface that does not support filter-based GRE tunneling, the system writes a syslog warning message that the interface does not support the filter.</p> <p>When the interface receives a matched packet, processes that run on the Packet Forwarding Engine perform the following operations:</p> <ul style="list-style-type: none"> • Remove the outer GRE header. • Forward the inner payload packet to its original destination by performing destination lookup. <p>By default, the Packet Forwarding Engine uses the default routing instance to forward payload packets to the destination network. If the payload is MPLS, the Packet Forwarding Engine performs route lookup on the MPLS path routing table using the route label in the MPLS header.</p> <p>If you specify the decapsulate action with an optional routing instance name, the Packet Forwarding Engine performs route lookup on the routing-instance, and the instance must be configured.</p> <p>For more information, see <i>Understanding Filter-Based Tunneling Across IPv4 Networks</i> and <i>Components of Filter-Based Tunneling Across IPv4 Networks</i>.</p>	<ul style="list-style-type: none"> • family inet

Table 12: Terminating Actions for Firewall Filters (*continued*)

Terminating Action	Description	Protocols
discard	Discard a packet silently, without sending an Internet Control Message Protocol (ICMP) message. Discarded packets are available for logging and sampling.	<ul style="list-style-type: none"> • family any • family inet • family inet6 • family mpls • family vpls • family ccc • family bridge • family ethernet-switching (for EX Series switches only)
encapsulate <i>template-name</i>	<p>At a customer-facing interface on an MX Series router installed at the provider edge (PE) of an IPv4 transport network, enable filter-based generic routing encapsulation (GRE) tunneling using the specified tunnel template.</p> <p>You can configure a filter term that pairs this action with the appropriate match conditions, and then attach the filter to the input of an Ethernet logical interface or aggregated Ethernet interface on a Modular Interface Card (MIC) or Modular Port Concentrator (MPC) in the router. If you commit a configuration that attaches an encapsulating filter to an interface that does not support filter-based GRE tunneling, the system writes a syslog warning message that the interface does not support the filter.</p> <p>When the interface receives a matched packet, processes that run on the Packet Forwarding Engine use information in the specified tunnel template to perform the following operations:</p> <ol style="list-style-type: none"> 1. Attach a GRE header (with or without a tunnel key value, as specified in the tunnel template). 2. Attach a header for the IPv4 transport protocol. 3. Forward the resulting GRE packet from the tunnel source interface to the tunnel destination (the remote PE router). <p>The specified tunnel template must be configured using the <i>tunnel-end-point</i> statement under the [edit firewall] or [edit logical-systems <i>logical-system-name</i> firewall] statement hierarchy. For more information, see <i>Understanding Filter-Based Tunneling Across IPv4 Networks</i>.</p>	<ul style="list-style-type: none"> • family inet • family inet6 • family any • family mpls
logical-system <i>logical-system-name</i>	<p>Direct the packet to the specified logical system.</p> <p>NOTE: This action is not supported on PTX Series Packet Transport Routers.</p>	<ul style="list-style-type: none"> • family inet • family inet6

Table 12: Terminating Actions for Firewall Filters (*continued*)

Terminating Action	Description	Protocols
reject <i>message-type</i>	<p>Reject the packet and return an ICMPv4 or ICMPv6 message:</p> <ul style="list-style-type: none"> If no <i>message-type</i> is specified, a destination unreachable message is returned by default. If tcp-reset is specified as the <i>message-type</i>, tcp-reset is returned only if the packet is a TCP packet. Otherwise, the administratively-prohibited message, which has a value of 13, is returned. If any other <i>message-type</i> is specified, that message is returned. <p>NOTE: Rejected packets can be sampled or logged if you configure the sample or syslog action.</p> <p>The <i>message-type</i> can be one of the following values: address-unreachable, administratively-prohibited, bad-host-tos, bad-network-tos, beyond-scope, fragmentation-needed, host-prohibited, host-unknown, host-unreachable, network-prohibited, network-unknown, network-unreachable, no-route, port-unreachable, precedence-cutoff, precedence-violation, protocol-unreachable, source-host-isolated, source-route-failed, or tcp-reset.</p>	<ul style="list-style-type: none"> family inet family inet6
routing-instance <i>instance-name</i>	<p>Direct the packet to the specified routing instance.</p> <p>NOTE: This action is not supported on PTX Series Packet Transport Routers.</p>	<ul style="list-style-type: none"> family inet family inet6
topology <i>topology-name</i>	<p>Direct the packet to the specified topology.</p> <p>NOTE: This action is not supported on PTX Series Packet Transport Routers.</p> <p>Each routing instance (master or virtual-router) supports one default topology to which all forwarding classes are forwarded. For multitopology routing, you can configure a firewall filter on the ingress interface to match a specific forwarding class, such as expedited forwarding, with a specific topology. The traffic that matches the specified forwarding class is then added to the routing table for that topology.</p>	<ul style="list-style-type: none"> family inet family inet6

Related Documentation

- [Guidelines for Configuring Firewall Filters](#)
- [Firewall Filter Nonterminating Actions on page 107](#)

Firewall Filter Nonterminating Actions

Firewall filters support different sets of nonterminating actions for each protocol family.



NOTE: You cannot configure the next term action with a *terminating* action in the same filter term. However, you can configure the next term action with another *nonterminating* action in the same filter term.

[Table 13 on page 108](#) describes the nonterminating actions you can configure for a firewall filter term.

Table 13: Nonterminating Actions for Firewall Filters

Nonterminating Action	Description	Protocol Families
<code>count</code> <i>counter-name</i>	Count the packet in the named counter.	<ul style="list-style-type: none">• family any• family inet• family inet6• family mpls• family vpls• family ccc• family bridge• family ethernet-switching (for EX Series switches only)

Table 13: Nonterminating Actions for Firewall Filters (*continued*)

Nonterminating Action	Description	Protocol Families
dscp value	<p>Set the IPv4 Differentiated Services code point (DSCP) bit. You can specify a numerical value from 0 through 63. To specify the value in hexadecimal form, include 0x as a prefix. To specify the value in binary form, include b as a prefix.</p> <p>The default DSCP value is best effort, that is, be or 0.</p> <p>You can also specify one of the following text synonyms:</p> <ul style="list-style-type: none"> • af11—Assured forwarding class 1, low drop precedence • af12—Assured forwarding class 1, medium drop precedence • af13—Assured forwarding class 1, high drop precedence • af21—Assured forwarding class 2, low drop precedence • af22—Assured forwarding class 2, medium drop precedence • af23—Assured forwarding class 2, high drop precedence • af31—Assured forwarding class 3, low drop precedence • af32—Assured forwarding class 3, medium drop precedence • af33—Assured forwarding class 3, high drop precedence • af41—Assured forwarding class 4, low drop precedence • af42—Assured forwarding class 4, medium drop precedence • af43—Assured forwarding class 4, high drop precedence • be—Best effort • cs0—Class selector 0 • cs1—Class selector 1 • cs2—Class selector 2 • cs3—Class selector 3 • cs4—Class selector 4 • cs5—Class selector 5 • cs6—Class selector 6 • cs7—Class selector 7 • ef—Expedited forwarding <p>NOTE: This action is not supported on PTX Series Packet Transport Routers.</p> <p>NOTE: The actions dscp 0 and dscp be are supported only on T320, T640, T1600, TX Matrix, TX Matrix Plus, and M320 routers and on the 10-Gigabit Ethernet Modular Port Concentrators (MPC), 60-Gigabit Ethernet MPC, 60-Gigabit Ethernet Queuing MPC, and 60-Gigabit Ethernet Enhanced Queuing MPC on MX Series routers (and EX Series switches). However, these actions are not supported on Enhanced III Flexible PIC Concentrators (FPCs) on M320 routers.</p> <p>NOTE: On T4000 routers, the dscp 0 action is not supported during the interoperation between a T1600 Enhanced Scaling Type 4 FPC and a T4000 Type 5 FPC.</p>	family inet

Table 13: Nonterminating Actions for Firewall Filters (*continued*)

Nonterminating Action	Description	Protocol Families
forwarding-class <i>class-name</i>	Classify the packet to the named forwarding class: <ul style="list-style-type: none"> <i>forwarding-class-name</i> assured-forwarding best-effort expedited-forwarding network-control 	<ul style="list-style-type: none"> family any family inet family inet6 family mpls family vpls family ccc family bridge family ethernet-switching (for EX Series switches only)
ipsec-sa <i>ipsec-sa</i>	Use the specified IPsec security association. NOTE: This action is not supported on MX Series routers and EX Series switches, Type 5 FPCs on T4000 routers, and PTX Series Packet Transport Routers.	family inet
load-balance <i>group-name</i>	Use the specified load-balancing group. NOTE: This action is not supported on MX Series routers, EX Series switches, or PTX Series Packet Transport Routers.	family inet
log	Log the packet header information in a buffer within the Packet Forwarding Engine. You can access this information by issuing the show firewall log command at the command-line interface (CLI).	<ul style="list-style-type: none"> family inet family inet6
logical-system <i>logical-system-name</i>	Direct packets to a specific logical system.	<ul style="list-style-type: none"> family inet family inet6
loss-priority (high medium-high medium-low low)	<p>Set the packet loss priority (PLP) level.</p> <p>You cannot also configure the three-color-policer nonterminating action for the same firewall filter term. These two nonterminating actions are mutually exclusive.</p> <p>Supported on M120 and M320 routers; M7i and M10i routers with the Enhanced CFEB (CFEB-E); and MX Series routers.</p> <p>For IP traffic on M320, MX Series, and T Series routers with Enhanced II Flexible PIC Concentrators (FPCs), and EX Series switches, you must include the tri-color statement at the [edit class-of-service] hierarchy level to commit a PLP configuration with any of the four levels specified. If the tri-color statement is not enabled, you can only configure the high and low levels. This applies to all protocol families.</p> <p>For information about the tri-color statement and using behavior aggregate (BA) classifiers to set the PLP level of incoming packets, see <i>BA Classifier Overview</i>.</p>	<ul style="list-style-type: none"> family any family inet family inet6 family mpls family vpls family ccc family bridge family ethernet-switching (for EX Series switches only)
next-hop-group <i>group-name</i>	Use the specified next-hop group.	<ul style="list-style-type: none"> family any family inet

Table 13: Nonterminating Actions for Firewall Filters (*continued*)

Nonterminating Action	Description	Protocol Families
next-interface <i>interface-name</i>	(MX Series routers and EX Series switches) Direct packets to the specified outgoing interface.	<ul style="list-style-type: none"> family inet family inet6
next-ip <i>ip-address</i>	(MX Series routers and EX Series switches) Direct packets to the specified destination IPv4 address.	family inet
next-ip6 <i>ipv6-address</i>	(MX Series routers and EX Series switches) Direct packets to the specified destination IPv6 address.	family inet6
packet-mode	Updates a bit field in the packet key buffer, which specifies traffic that will bypass flow-based forwarding. Packets with the packet-mode action modifier follow the packet-based forwarding path and bypass flow-based forwarding completely. For more information about selective stateless packet-based services, see the <i>Junos OS Security Configuration Guide</i> .	family any
policer <i>policer-name</i>	Name of policer to use to rate-limit traffic.	<ul style="list-style-type: none"> family any family inet family inet6 family mpls family vpls family ccc family bridge family ethernetswitching (for EX Series switches only)
port-mirror <i>instance-name</i>	Port-mirror the packet based on the specified family. Supported on M120 routers, M320 routers configured with Enhanced III FPCs, MX Series routers, and PTX Series Packet Transport Routers only.	<ul style="list-style-type: none"> family any family inet family inet6 family vpls family ccc family bridge family ethernetswitching (for EX Series switches only)
port-mirror-instance <i>instance-name</i>	Port mirror a packet for an instance. This action is only supported on the MX series routers.	<ul style="list-style-type: none"> family any family inet family inet6 family vpls family ccc family bridge

Table 13: Nonterminating Actions for Firewall Filters (*continued*)

Nonterminating Action	Description	Protocol Families
prefix-action <i>action-name</i>	Count or police packets based on the specified action name. NOTE: This action is not supported on PTX Series Packet Transport Routers.	family inet
routing-instance <i>routing-instance-name</i>	Direct packets to the specified routing instance.	<ul style="list-style-type: none"> family inet family inet6
sample	Sample the packet. NOTE: The Junos OS does not sample packets originating from the router or switch. If you configure a filter and apply it to the output side of an interface, then only the transit packets going through that interface are sampled. Packets that are sent from the Routing Engine to the Packet Forwarding Engine are not sampled.	<ul style="list-style-type: none"> family inet family inet6 family mpls
service-accounting	Count the packet for service accounting. The count is applied to a specific named counter (_junos-dyn-service-counter) that RADIUS can obtain. NOTE: This action is not supported on T4000 Type 5 FPCs and PTX Series Packet Transport Routers.	<ul style="list-style-type: none"> family inet family inet6
service-filter-hit	(Only if the service-filter-hit flag is marked by a previous filter in the current type of chained filters) Direct the packet to the next type of filters. Indicate to subsequent filters in the chain that the packet was already processed. This action, coupled with the service-filter-hit match condition in receiving filters, helps to streamline filter processing. NOTE: This action is not supported on T4000 Type 5 FPCs and PTX Series Packet Transport Routers.	<ul style="list-style-type: none"> family inet family inet6
syslog	Log the packet to the system log file.	<ul style="list-style-type: none"> family inet family inet6
three-color-policer (single-rate two-rate) <i>policer-name</i>	Police the packet using the specified single-rate or two-rate three-color-policer. You cannot also configure the loss-priority action for the same firewall filter term. These two actions are mutually exclusive.	<ul style="list-style-type: none"> family inet family inet6 family mpls family vpls family ccc family bridge family ethernet-switching (for EX Series switches only)

Table 13: Nonterminating Actions for Firewall Filters (*continued*)

Nonterminating Action	Description	Protocol Families
traffic-class value	<p>Specify the traffic-class code point. You can specify a numerical value from 0 through 63. To specify the value in hexadecimal form, include 0x as a prefix. To specify the value in binary form, include b as a prefix.</p> <p>The default traffic-class value is best effort, that is, be or 0.</p> <p>In place of the numeric value, you can specify one of the following text synonyms:</p> <ul style="list-style-type: none"> • af11—Assured forwarding class 1, low drop precedence • af12—Assured forwarding class 1, medium drop precedence • af13—Assured forwarding class 1, high drop precedence • af21—Assured forwarding class 2, low drop precedence • af22—Assured forwarding class 2, medium drop precedence • af23—Assured forwarding class 2, high drop precedence • af31—Assured forwarding class 3, low drop precedence • af32—Assured forwarding class 3, medium drop precedence • af33—Assured forwarding class 3, high drop precedence • af41—Assured forwarding class 4, low drop precedence • af42—Assured forwarding class 4, medium drop precedence • af43—Assured forwarding class 4, high drop precedence • be—Best effort • cs0—Class selector 0 • cs1—Class selector 1 • cs2—Class selector 2 • cs3—Class selector 3 • cs4—Class selector 4 • cs5—Class selector 5 • cs6—Class selector 6 • cs7—Class selector 7 • ef—Expedited forwarding <p>NOTE: The actions traffic-class 0 and traffic-class be are supported only on T Series and M320 routers and on the 10-Gigabit Ethernet Modular Port Concentrator (MPC), 60-Gigabit Ethernet MPC, 60-Gigabit Ethernet Queuing MPC, and 60-Gigabit Ethernet Enhanced Queuing MPC on MX Series routers (and EX Series switches). However, these actions are not supported on Enhanced III Flexible PIC Concentrators (FPCs) on M320 routers.</p>	family inet6

Related Documentation

- [Guidelines for Configuring Firewall Filters](#)
- [Firewall Filter Terminating Actions on page 104](#)

CHAPTER 12

Flow Monitoring

- [Configuring Active Flow Monitoring on PTX Series Packet Transport Routers on page 116](#)

Configuring Active Flow Monitoring on PTX Series Packet Transport Routers

You can use flow monitoring to help with network administration. Active flow monitoring on PTX Series routers allows you to collect sampled packets, then the router does GRE encapsulation of the packets and sends them to a remote server for flow processing. The GRE encapsulation includes an interface index and GRE key field. The GRE encapsulation removes MPLS tags. You configure one or more port-mirroring instances to define which traffic to sample and configure a server to receive the GRE encapsulated packets. You configure a firewall filter on interfaces where you want to capture flows. You can configure as many as 48 port-mirroring instances.

To configure the router to do GRE encapsulation of sampled packets and send them to a remote server for flow processing:

1. Configure one or more server profiles that specify a host where GRE encapsulated sampled packets are sent, and optionally, a source address to include in the header of each sampled packet.

- a. Specify a name for each server profile and an IP address of the host where sampled packets are sent:

```
[edit services hosted-services]
user@host# set server-profile server-profile-name server-address ipv4-address
```

- b. (Optional) For each server profile, specify a source address to include in the header of each sampled packet:

```
[edit services hosted-services server-profile server-profile-name]
user@host# set client-address ipv4-address
```



NOTE: The default client address is 0.0.0.0. You must specify an IPv4 address as the client address. You can also specify the loopback address or management interface address as the client address.

2. Configure one or more port-mirroring instances.

- a. Specify a name for each port-mirroring instance:

```
[edit forwarding-options port-mirroring]
user@host# set instance instance-name
```



NOTE: You can configure a maximum of 48 port-mirroring instances.

- b. Specify a protocol family for each port-mirroring instance:

```
[edit forwarding-options port-mirroring instance instance-name]
user@host# set family (inet | inet6 )
```

3. To set the ratio of the number of packets to sample, specify a value from 1 through 65,535 for each port-mirroring instance:


```
[edit forwarding-options port-mirroring instance instance-name input]
user@host# set rate number
```



NOTE: You must specify a value for the `rate` statement. The default value is zero, which effectively disables sampling. If, for example, you specify a rate value of 4, every fourth packet (1 packet out of 4) is sampled.

4. (Optional) Specify the number of samples to collect after the initial trigger event for each port-mirroring instance:

```
[edit forwarding-options port-mirroring instance instance-name input]
user@host# set run-length number
```



NOTE: The default value is zero. You can specify a number up to 20.

5. To designate a host where sampled traffic is sent, specify the name of server profile configured at the `[edit services hosted-services]` hierarchy level for each port-mirroring instance:

```
[edit forwarding-options port-mirroring instance instance-name family ( inet | inet6 )
output]
user@host# set server-profile server-profile-name
```

6. Configure one or more firewall filters.
 - a. For each firewall filter, specify a protocol family, filter name, and match conditions:

```
[edit firewall]
user@host# set filter family (inet | inet6) filter filter-name term term-name from
match-conditions
```

- b. For each firewall filter you configure, specify the name of a port-mirroring instance you configured at the `[edit forwarding-options]` hierarchy level as a nonterminating action so that the traffic that matches that instance is sampled:

```
[edit firewall family (inet | inet6) filter filter-name term term-name]
user@host# set then port-mirroring instance instance-name
```

7. Apply each firewall filter to an interface to evaluate incoming traffic:

```
[edit interfaces interface-name unit logical-unit-number]
user@host# set family (inet | inet6) filter input firewall-filter-name
```



NOTE: Active flow monitoring is supported only on incoming traffic. You cannot apply firewall filters to evaluate outgoing traffic.

8. Configure the remote server, where GRE encapsulated packets are sent, to perform flow processing.

Related Documentation

- [Configuring Port Mirroring](#)

- [hosted-services on page 166](#)
- [port-mirroring on page 186](#)
- [server-profile \(Active Flow Monitoring\) on page 199](#)
- [Firewall Filter Nonterminating Actions on page 107](#)

Real-Time Performance Monitoring

- [Real-Time Performance Monitoring Services Overview on page 119](#)
- [Configuring BGP Neighbor Discovery Through RPM on page 121](#)
- [Configuring RPM Probes on page 123](#)
- [Configuring RPM Receiver Servers on page 127](#)
- [Limiting the Number of Concurrent RPM Probes on page 127](#)
- [Examples: Configuring BGP Neighbor Discovery Through RPM on page 128](#)
- [Examples: Configuring Real-Time Performance Monitoring on page 129](#)

Real-Time Performance Monitoring Services Overview

Real-Time Performance Monitoring (RPM) enables you to configure active probes to track and monitor traffic. Probes collect packets per destination and per application, including PING Internet Control Message Protocol (ICMP) packets, User Datagram Protocol and Transmission Control Protocol (UDP/TCP) packets with user-configured ports, user-configured Differentiated Services code point (DSCP) type-of-service (ToS) packets, and Hypertext Transfer Protocol (HTTP) packets. RPM provides Management Information Base (MIB) support with extensions for RFC 2925, *Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations*.

You can also configure RPM services to determine automatically whether a path exists between a host router and its configured BGP neighbors. You can view the results of the discovery using an SNMP client. Results are stored in **pingResultsTable**, **jnxPingResultsTable**, **jnxPingProbeHistoryTable**, and **pingProbeHistoryTable**.

Probe configuration and probe results are supported by the command-line interface (CLI) and SNMP.

The following probe types are supported with DSCP marking:

- ICMP echo
- ICMP timestamp
- HTTP get (not available for BGP RPM services)
- UDP echo

- TCP connection
- UDP timestamp

With probes, you can monitor the following:

- Minimum round-trip time
- Maximum round-trip time
- Average round-trip time
- Standard deviation of the round-trip time
- Jitter of the round-trip time—The difference between the minimum and maximum round-trip time

One-way measurements for ICMP timestamp probes include the following:

- Minimum, maximum, standard deviation, and jitter measurements for egress and ingress times
- Number of probes sent
- Number of probe responses received
- Percentage of lost probes



NOTE: Timestamping is not supported on PTX Series Packet Transport Routers.

You can configure the following RPM thresholds:

- Round-trip time
- Ingress/egress delay
- Standard deviation
- Jitter
- Successive lost probes
- Total lost probes (per test)

Support is also implemented for user-configured CoS classifiers and for prioritization of RPM packets over regular data packets received on an input interface.

**Related
Documentation**

- [Configuring BGP Neighbor Discovery Through RPM on page 121](#)
- [\[edit services rpm\] Hierarchy Level](#)
- [Examples: Configuring BGP Neighbor Discovery Through RPM on page 128](#)

Configuring BGP Neighbor Discovery Through RPM

BGP neighbors can be configured at the following hierarchy levels:

- **[edit protocols bgp group *group-name*]**—Default logical system and default routing instance.
- **[edit routing-instances *instance-name* protocols bgp group *group-name*]**—Default logical system with a specified routing instance.
- **[edit logical-systems *logical-system-name* protocols bgp group *group-name*]**—Configured logical system and default routing instance.
- **[edit logical-systems *logical-system-name* routing-instances *instance-name* protocols bgp group *group-name*]**—Configured logical system with a specified routing instance.

When you configure BGP neighbor discovery through RPM, if you do not specify a logical system, the RPM probe applies to configured BGP neighbors for all logical systems. If you do not specify a routing instance, the RPM probe applies to configured BGP neighbors in all routing instances. You can explicitly configure RPM probes to apply only to the default logical system, the default routing instance, or to a particular logical system or routing instance.

To configure BGP neighbor discovery through RPM, configure the probe properties at the **[edit services rpm bgp]** hierarchy:

```
data-fill data;
data-size size;
destination-port port;
history-size size;
logical-system logical-system-name [routing-instances routing-instance-name];
moving-average-size number;
probe-count count;
probe-interval seconds;
probe-type type;
routing-instances instance-name;
test-interval interval;
```

- To specify the contents of the data portion of Internet Control Message Protocol (ICMP) probes, include the **data-fill** statement at the **[edit services rpm bgp]** hierarchy level. The value can be a hexadecimal value.
- To specify the size of the data portion of ICMP probes, include the **data-size** statement at the **[edit services rpm bgp]** hierarchy level. The size can be from 0 through 65507 and the default size is 0.
- To specify the User Datagram Protocol (UDP) port or Transmission Control Protocol (TCP) port to which the probe is sent, include the **destination-port** statement at the **[edit services rpm bgp]** hierarchy level. The **destination-port** statement is used only for the UDP and TCP probe types. The value can be 7 or from 49160 through 65535.
- To specify the number of stored history entries, include the **history-size** statement at the **[edit services rpm bgp]** hierarchy level. Specify a value from 0 to 255. The default is 50.

- To specify the logical system used by ICMP probes, include the **logical-system** *logical-system-name* statement at the **[edit services rpm bgp]** hierarchy level. If you do not specify a logical system, the RPM probe applies to configured BGP neighbors for all logical systems. To apply the probe to only the default logical system, you must set the value of *logical-system-name* to **null**.
- To specify a number of samples for making statistical calculations, include the **moving-average-size** statement at the **[edit services rpm bgp]** hierarchy level. Specify a value from 0 through 255.
- To specify the number of probes within a test, include the **probe-count** statement at the **[edit services rpm bgp]** hierarchy level. Specify a value from 1 through 15.
- To specify the time to wait between sending packets, include the **probe-interval** statement at the **[edit services rpm bgp]** hierarchy level. Specify a value from 1 through 255 seconds.
- To specify the packet and protocol contents of the probe, include the **probe-type** statement at the **[edit services rpm bgp]** hierarchy level. The following probe types are supported:
 - **icmp-ping**—Sends ICMP echo requests to a target address.
 - **icmp-ping-timestamp**—Sends ICMP timestamp requests to a target address.
 - **tcp-ping**—Sends TCP packets to a target.
 - **udp-ping**—Sends UDP packets to a target.
 - **udp-ping-timestamp**—Sends UDP timestamp requests to a target address.



NOTE: Some probe types require additional parameters to be configured. For example, when you specify the **tcp-ping** or **udp-ping** option, you must configure the destination port using the **destination-port** *port* statement. The **udp-ping-timestamp** option requires a minimum data size of 12; any smaller data size results in a commit error. The minimum data size for TCP probe packets is 1.

- To specify the routing instance used by ICMP probes, include the **routing-instances** statement at the **[edit services rpm bgp]** hierarchy level. The default routing instance is Internet routing table **inet.0**. If you do not specify a routing instance, the RPM probe applies to configured BGP neighbors in all routing instances. To apply the RPM probe to only the default routing instance, you must explicitly set the value of *instance-name* to **default**.
- To specify the time to wait between tests, include the **test-interval** statement at the **[edit services bgp probe]** hierarchy level. Specify a value from 0 through 86400 seconds.

**Related
Documentation**

- [Real-Time Performance Monitoring Services Overview on page 119](#)
- [\[edit services rpm\] Hierarchy Level](#)
- [Examples: Configuring BGP Neighbor Discovery Through RPM on page 128](#)

Configuring RPM Probes

The owner name and test name identifiers of an RPM probe together represent a single RPM configuration instance. When you specify the test name, you also can configure the test parameters.

To configure the probe owner, test name, and test parameters, include the **probe** statement at the **[edit services rpm]** hierarchy level:

```
probe owner {
  test test-name {
    data-fill data;
    data-size size;
    destination-interface interface-name;
    destination-port port;
    dscp-code-point dscp-bits;
    hardware-timestamp;
    history-size size;
    moving-average-size number;
    one-way-hardware-timestamp;
    probe-count count;
    probe-interval seconds;
    probe-type type;
    routing-instance instance-name;
    source-address address;
    target (url url | address address);
    test-interval interval;
    thresholds thresholds;
    traps traps;
  }
}
```

- To specify a probe owner, include the **probe** statement at the **[edit services rpm]** hierarchy level. The probe owner identifier can be up to 32 characters in length.
- To specify a test name, include the **test** statement at the **[edit services rpm probe owner]** hierarchy level. The test name identifier can be up to 32 characters in length. A test represents the range of probes over which the standard deviation, average, and jitter are calculated.
- To specify the contents of the data portion of Internet Control Message Protocol (ICMP) probes, include the **data-fill** statement at the **[edit services rpm probe owner]** hierarchy level. The value can be a hexadecimal value. The **data-fill** statement is not valid with the **http-get** or **http-metadata-get** probe types.
- To specify the size of the data portion of ICMP probes, include the **data-size** statement at the **[edit services rpm probe owner]** hierarchy level. The size can be from 0 through 65507 and the default size is 0. The **data-size** statement is not valid with the **http-get** or **http-metadata-get** probe types.



NOTE: If you configure the hardware timestamp feature (see *Configuring RPM Timestamping*), the **data-size** default value is 32 bytes and 32 is the minimum value for explicit configuration. The UDP timestamp probe type is an exception; it requires a minimum data size of 44 bytes.

- On M Series and T Series routers, you configure the **destination-interface** statement to enable hardware timestamping of RPM probe packets. You specify an **sp-** interface to have the AS or Multiservices PIC add the hardware timestamps; for more information, see *Configuring RPM Timestamping*. You can also include the **one-way-hardware-timestamp** statement to enable one-way delay and jitter measurements.

- To specify the User Datagram Protocol (UDP) port or Transmission Control Protocol (TCP) port to which the probe is sent, include the **destination-port** statement at the **[edit services rpm probe owner test test-name]** hierarchy level. The **destination-port** statement is used only for the UDP and TCP probe types. The value can be 7 or from 49160 through 65535.

When you configure either **probe-type udp-ping** or **probe-type udp-ping-timestamp** along with hardware timestamping, the value for the **destination-port** can be only 7. A constraint check prevents you from configuring any other value for the destination port in this case. This constraint does not apply when you are using one-way hardware timestamping.

- To specify the value of the Differentiated Services (DiffServ) field within the IP header, include the **dscp-code-point** statement at the **[edit services rpm probe owner test test-name]** hierarchy level. The DiffServ code point (DSCP) bits value can be set to a valid 6-bit pattern; for example, 001111. It also can be set using an alias configured at the **[edit class-of-service code-point-aliases dscp]** hierarchy level. The default is 000000.
- To specify the number of stored history entries, include the **history-size** statement at the **[edit services rpm probe owner test test-name]** hierarchy level. Specify a value from 0 to 255. The default is 50.
- To specify a number of samples for making statistical calculations, include the **moving-average-size** statement at the **[edit services rpm probe owner test test-name]** hierarchy level. Specify a value from 0 through 255.
- To specify the number of probes within a test, include the **probe-count** statement at the **[edit services rpm probe owner test test-name]** hierarchy level. Specify a value from 1 through 15.
- To specify the time to wait between sending packets, include the **probe-interval** statement at the **[edit services rpm probe owner test test-name]** hierarchy level. Specify a value from 1 through 255 seconds.
- To specify the packet and protocol contents of the probe, include the **probe-type** statement at the **[edit services rpm probe owner test test-name]** hierarchy level. The following probe types are supported:

- **http-get**—Sends a Hypertext Transfer Protocol (HTTP) get request to a target URL.
- **http-metadata-get**—Sends an HTTP get request for metadata to a target URL.
- **icmp-ping**—Sends ICMP echo requests to a target address.
- **icmp-ping-timestamp**—Sends ICMP timestamp requests to a target address.
- **tcp-ping**—Sends TCP packets to a target.
- **udp-ping**—Sends UDP packets to a target.
- **udp-ping-timestamp**—Sends UDP timestamp requests to a target address.

The following probe types support hardware timestamping of probe packets: **icmp-ping**, **icmp-ping-timestamp**, **udp-ping**, **udp-ping-timestamp**.



NOTE: Some probe types require additional parameters to be configured. For example, when you specify the **tcp-ping** or **udp-ping** option, you must configure the destination port using the **destination-port** statement. The **udp-ping-timestamp** option requires a minimum data size of 12; any smaller data size results in a commit error. The minimum data size for TCP probe packets is 1.

When you configure either probe-type **udp-ping** or probe-type **udp-ping-timestamp** along with the **one-way-hardware-timestamp** command, the value for the **destination-port** can be only 7. A constraint check prevents you for configuring any other value for the destination port in this case.

- To specify the routing instance used by ICMP probes, include the **routing-instance** statement at the **[edit services rpm probe owner test test-name]** hierarchy level. The default routing instance is Internet routing table **inet.0**.
- To specify the source IP address used for ICMP probes, include the **source-address** statement at the **[edit services rpm probe owner test test-name]** hierarchy level. If the source IP address is not one of the router's assigned addresses, the packet will use the outgoing interface's address as its source.
- To specify the destination address used for the probes, include the **target** statement at the **[edit services rpm probe owner test test-name]** hierarchy level.
 - For HTTP probe types, specify a fully formed URL that includes **http://** in the URL address.
 - For all other probe types, specify an IP version 4 (IPv4) address for the target host.
- To specify the time to wait between tests, include the **test-interval** statement at the **[edit services rpm probe owner test test-name]** hierarchy level. Specify a value from 0 through 86400 seconds.
- To specify thresholds used for the probes, include the **thresholds** statement at the **[edit services rpm probe owner test test-name]** hierarchy level. A system log message is generated when the configured threshold is exceeded. Likewise, an SNMP trap (if

configured) is generated when a threshold is exceeded. The following options are supported:

- **egress-time**—Measures maximum source-to-destination time per probe.
 - **ingress-time**—Measures maximum destination-to-source time per probe.
 - **jitter-egress**—Measures maximum source-to-destination jitter per test.
 - **jitter-ingress**—Measures maximum destination-to-source jitter per test.
 - **jitter-rtt**—Measures maximum jitter per test, from 0 through 60000000 microseconds.
 - **rtt**—Measures maximum round-trip time per probe, in microseconds.
 - **std-dev-egress**—Measures maximum source-to-destination standard deviation per test.
 - **std-dev-ingress**—Measures maximum destination-to-source standard deviation per test.
 - **std-dev-rtt**—Measures maximum standard deviation per test, in microseconds.
 - **successive-loss**—Measures successive probe loss count, indicating probe failure.
 - **total-loss**—Measures total probe loss count indicating test failure, from 0 through 15.
- Traps are sent if the configured threshold is met or exceeded. To set the trap bit to generate traps, include the **traps** statement at the **[edit services rpm probe owner test test-name]** hierarchy level. The following options are supported:
 - **egress-jitter-exceeded**—Generates traps when the jitter in egress time threshold is met or exceeded.
 - **egress-std-dev-exceeded**—Generates traps when the egress time standard deviation threshold is met or exceeded.
 - **egress-time-exceeded**—Generates traps when the maximum egress time threshold is met or exceeded.
 - **ingress-jitter-exceeded**—Generates traps when the jitter in ingress time threshold is met or exceeded.
 - **ingress-std-dev-exceeded**—Generates traps when the ingress time standard deviation threshold is met or exceeded.
 - **ingress-time-exceeded**—Generates traps when the maximum ingress time threshold is met or exceeded.
 - **jitter-exceeded**—Generates traps when the jitter in round-trip time threshold is met or exceeded.
 - **probe-failure**—Generates traps for successive probe loss thresholds crossed.
 - **rtt-exceeded**—Generates traps when the maximum round-trip time threshold is met or exceeded.

- **std-dev-exceeded**—Generates traps when the round-trip time standard deviation threshold is met or exceeded.
- **test-completion**—Generates traps when a test is completed.
- **test-failure**—Generates traps when the total probe loss threshold is met or exceeded.

**Related
Documentation**

- [Real-Time Performance Monitoring Services Overview on page 119](#)
- [Examples: Configuring Real-Time Performance Monitoring on page 129](#)
- [\[edit services rpm\] Hierarchy Level](#)

Configuring RPM Receiver Servers

The RPM TCP and UDP probes are proprietary to Juniper Networks and require a receiver to receive the probes. To configure a server to receive the probes, include the **probe-server** statement at the **[edit services rpm]** hierarchy level:

```
[edit services rpm]
probe-server {
  tcp {
    destination-interface interface-name;
    port number;
  }
  udp {
    port number;
  }
}
```

The port number specified for the UDP and TCP server can be 7 or from 49160 through 65535.



NOTE: The **destination-interface** statement is not supported on PTX Series Packet Transport Routers.

When you configure either **probe-type udp-ping** or **probe-type udp-ping-timestamp** along with the **one-way-hardware-timestamp** command, the value for the **destination-port** can be only 7. A constraint check prevents you from configuring any other value for the destination port in this case.

**Related
Documentation**

- [Real-Time Performance Monitoring Services Overview on page 119](#)
- [\[edit services rpm\] Hierarchy Level](#)
- [Examples: Configuring Real-Time Performance Monitoring on page 129](#)

Limiting the Number of Concurrent RPM Probes

To configure the maximum number of concurrent probes allowed, include the **probe-limit** statement at the **[edit services rpm]** hierarchy level:

`probe-limit limit;`

Specify a limit from 1 through 500. The default maximum number is 100.

**Related
Documentation**

- [Real-Time Performance Monitoring Services Overview on page 119](#)
- [\[edit services rpm\] Hierarchy Level](#)
- [Examples: Configuring Real-Time Performance Monitoring on page 129](#)

Examples: Configuring BGP Neighbor Discovery Through RPM

Configure BGP neighbor discovery through RPM for all logical systems and all routing instances:

```
[edit services rpm]
bgp {
  probe-type icmp-ping;
  probe-count 5;
  probe-interval 1;
  test-interval 60;
  history-size 10;
  data-size 255;
  data-fill 0123456789;
}
```

Configure BGP neighbor discovery through RPM for only the following logical systems and routing instances: **LS1/RI1**, **LS1/RI2**, **LS2**, and **RI3**:

```
[edit services rpm]
bgp {
  probe-type icmp-ping;
  probe-count 5;
  probe-interval 1;
  test-interval 60;
  history-size 10;
  data-size 255;
  data-fill 0123456789;
  logical-system {
    LS1 {
      routing-instances {
        RI1;
        RI2;
      }
    }
    LS2;
  }
  routing-instance {
    RI3;
  }
}
```



NOTE: The `logical-system` statement is not supported on PTX Series Packet Transport Routers.

Configure BGP neighbor discovery through RPM for only the default logical system and default routing instance:

```
[edit services rpm]
bgp {
  probe-type icmp-ping;
  probe-count 5;
  probe-interval 1;
  test-interval 60;
  history-size 10;
  data-size 255;
  data-fill 0123456789;
  logical-system {
    null {
      routing-instances {
        default;
      }
    }
  }
}
```

**Related
Documentation**

- [Real-Time Performance Monitoring Services Overview on page 119](#)
- [Configuring BGP Neighbor Discovery Through RPM on page 121](#)
- [\[edit services rpm\] Hierarchy Level](#)

Examples: Configuring Real-Time Performance Monitoring

Configure an RPM instance identified by the probe name **probe1** and the test name **test1**:

```
[edit services rpm]
probe probe1 {
  test test1 {
    dscp-code-points 001111;
    probe-interval 1;
    probe-type icmp-ping;
    target address 172.17.20.182;
    test-interval 20;
    thresholds rtt 10;
    traps rtt-exceeded;
  }
}
probe-server {
  tcp {
    destination-interface lt-0/0/0.0
    port 50000;
  }
  udp {
    destination-interface lt-0/0/0.0
    port 50001;
  }
}
probe-limit 200;
```

Configure packet classification, using **lt-** interfaces to send the probe packets to a logical tunnel input interface. By sending the packet to the logical tunnel interface, you can configure regular and multifield classifiers, firewall filters, and header rewriting for the probe packets. To use the existing tunnel framework, the **dlci** and **encapsulation** statements must be configured.

```
[edit services rpm]
probe p1 {
  test t1 {
    probe-type icmp-ping;
    target address 10.8.4.1;
    probe-count 10;
    probe-interval 10;
    test-interval 10;
    source-address 10.8.4.2;
    dscp-code-points ef;
    data-size 100;
    destination-interface lt-0/0/0.0;
  }
}
[edit interfaces]
lt-0/0/0 {
  unit 0 {
    encapsulation frame-relay;
    dlci 10;
    peer-unit 1;
    family inet;
  }
  unit 1 {
    encapsulation frame-relay;
    dlci 10;
    peer-unit 0;
    family inet;
  }
}
[edit class-of-service]
interfaces {
  lt-0/0/0 {
    unit 1 {
      classifiers {
        dscp default;
      }
    }
  }
}
```

Configure an input filter on the interface on which the RPM probes are received. This filter enables prioritization of the received RPM packets, separating them from the regular data packets received on the same interface.

```
[edit firewall]
filter recos {
  term recos {
    from {
      source-address {
        10.8.4.1/32;
      }
    }
  }
}
```

```

    }
    destination-address {
        10.8.4.2/32;
    }
}
then {
    loss-priority high;
    forwarding-class network-control;
}
}
}
[edit interfaces]
fe-5/0/0 {
    unit 0 {
        family inet {
            filter {
                input recos;
            }
            address 10.8.4.2/24;
        }
    }
}
}

```

Configure an RPM instance and enable RPM for the extension-provider packages on the adaptive services interface:

```

[edit services rpm]
probe probe1{
    test test1 {
        data-size 1024;
        data-fill 0;
        destination-interface ms-1/2/0.10;
        dscp-code-points 001111;
        probe-count 10;
        probe-interval 1;
        probe-type icmp-ping;
        target address 172.17.20.182;
        test-interval 20;
        thresholds rtt 10;
        traps rtt-exceeded;
    }
}
[edit interfaces]
ms-1/2/0 {
    unit 0 {
        family inet;
    }
    unit 10 {
        rpm client;
        family inet {
            address 1.1.1.1/32;
        }
    }
}
[edit chassis]
fpc 1 {
    pic 2 {

```

```
adaptive-services {
  service-package {
    extension-provider {
      control-cores 1;
      data-cores 1;
      object-cache-size 512;
      policy-db-size 64;
      package jservices-rpm;
      syslog {
        daemon any;
      }
    }
  }
}
```



NOTE: TWAMP is not supported on PTX Series Packet Transport Routers.

Configure the minimum statements necessary to enable TWAMP:

```
[edit services]
rpm {
  twamp {
    server {
      authentication-mode none;
      port 10000; # Twamp server's listening port
      client-list LIST-1 { # LIST-1 is the name of the client-list. Multiple lists can be
        configured.
        address {
          20.0.0.2/30; # IP address of the control client.
        }
      }
    }
  }
}
[edit interfaces sp-5/0/0]
unit 0 {
  family inet;
}
unit 10 {
  rpm {
    twamp-server; # You must configure a separate logical interface on the service PIC
    interface for the TWAMP server.
  }
  family inet {
    address 50.50.50.50/32; # This address must be a host address with a 32-bit mask.
  }
}
[edit chassis]
fpc 5 {
  pic 0 {
    adaptive-services {
      service-package layer-2; # Configure the service PIC to run in Layer 2 mode.
    }
  }
}
```



```

    }
  }

```

Configure additional TWAMP settings:

```

[edit services]
rpm {
  twamp {
    server {
      maximum-sessions 5;
      maximum-sessions-per-connection 2;
      maximum-connections 3;
      maximum-connections-per-client 1;
      port 10000;
      server-inactivity-timeout ;
      client-list LIST-1 {
        address {
          20.0.0.2/30;
        }
      }
    }
  }
}

```

**Related
Documentation**

- [Real-Time Performance Monitoring Services Overview on page 119](#)
- [\[edit services rpm\] Hierarchy Level](#)
- [Examples: Configuring BGP Neighbor Discovery Through RPM on page 128](#)

Differences Between PTX Series and T Series Routers

- [COS Feature Differences Between PTX Series Packet Transport Routers and T Series Routers on page 135](#)
- [Firewall and Policing Differences Between PTX Series Packet Transport Routers and T Series Matrix Routers on page 137](#)

COS Feature Differences Between PTX Series Packet Transport Routers and T Series Routers

This topic provides a list of Class of Service features available on PTX Series routers and compares them with Class of Service features on T Series routers.

Classifiers

- T Series routers support VRF table labels for Layer 3 VPNs. On PTX Series routers, this feature is not supported.
- On T Series routers, IEEE 802.1 classifiers cannot co-exist with Layer 3 classifiers. On PTX Series routers, these classifiers can co-exist.
- On T Series routers, IEEE classifiers are supported on Ethernet IQ, IQ2 and IQ2-E interfaces. These interfaces have the flexibility of classifying traffic based on inner or outer VLAN tags. On PTX Series routers, IEEE classification is always based on outer VLAN tags.

Rewrite

- PTX Series routers do not support rewrite of both **exp** and **inet-precedence** fields using:
 - exp protocol mpls-any
 - exp protocol mpls-inet-both
 - exp protocol mpls-inet-both-non-vpn
- On T Series routers, the DSCP and DSCP IPv6 rewrite for protocol MPLS is not supported. PTX Series routers support rewrite of both DSCP and DSCP IPv6 for protocol MPLS.

- PTX Series routers support layer 2 rewrite of 802.1p and 802.1ad, to either the outer vlan tag, or both outer and inner vlan tags.

Forwarding Class

- On T Series routers, you can override the default fabric priority queuing of egress traffic by including the **priority** statement at the following hierarchy level: .

```
[class-of-service forwarding-classes queue queue-number class-name]  
priority (high |low);
```

On PTX Series routers, fabric priority queuing is not supported; therefore, the **priority** statement for **forwarding-classes** is not supported.

Tri-color Marking

- On T Series routers, the **copy-plp-all** statement needs to be configured to support tricolor marking. On PTX Series routers, tricolor marking is enabled by default.

Schedulers

- T Series routers, which use egress queuing architecture, support chassis and fabric schedulers. Alternatively, PTX Series routers support a Virtual Output Queuing (VOQ) architecture that does not require fabric schedulers. With the VOQ architecture, packets are queued and dropped on ingress during congestion.
- On T Series routers, high priority queues have precedence to acquire excess bandwidth and may consume all excess bandwidth. On PTX Series routers, excess bandwidth is shared based on the ratio of the configured transfer rate. Therefore, all priority queues get a share of excess bandwidth.
- On T Series routers, strict-high priority queues and high priority queues are assigned the same hardware priority. On PTX Series routers, strict-high priority queues and high priority queues are assigned different hardware priorities.
- On T Series routers, if a strict-high priority queue is oversubscribed, it can block all other queues except high priority queues. On PTX Series routers, if a strict-high priority queue is oversubscribed, it can block all other queues including high priority queues.

To restrict the bandwidth of strict-high priority queues, the **transmit-rate rate-limit** configuration statement has been implemented for PTX Series routers.

- On both T Series routers and PTX Series routers, if a strict-high priority queue is oversubscribed and results in oversubscription of the guaranteed bandwidth, the distribution of bandwidth that is not taken up by strict-high priority queues is undetermined. T Series routers and PTX Series routers distribute this unused bandwidth differently.

Buffer Size and Latency

- On T Series routers, memory allocation dynamic (MAD) is enabled by default and can be disabled. On PTX Series routers, MAD cannot be disabled.
- On T Series routers, the maximum delay bandwidth buffering configured per queue is 50 ms. On PTX Series routers, the maximum delay bandwidth buffering configured per queue is 100 ms.
- On T Series routers, the maximum latency associated with a packet is fairly consistent and independent of the number of sources sending the traffic to an interface. On PTX Series routers, over-provisioning is possible. When traffic is sent from multiple Packet Forwarding Engines, the latency is about 10% to 15% higher than when traffic is sent from one Packet Forwarding Engine.
- On T Series routers, a high priority queue has lower latency than a low priority queue with the same configured transfer rate and same offered load. On PTX Series routers, there is no latency difference.

Drop Profile

- On PTX Series routers, the Queuing and Memory Interfaces ASIC does not support drop-profile assignments for a queue based on the protocol. As a consequence, the **protocol (any-non-tcp-tcp)** option is not supported for the **drop-profile-map** configuration statement on PTX Series routers.

Interface Queue Statistics

- On T Series routers, transmitted byte counters are computed using Layer 3 packet length. On PTX Series routers, transmitted byte counters are computed using Layer 2 packet length (excluding CRC).
- On T Series routers, the tail-dropped counters and the RED-dropped counters are displayed separately in the **show interfaces queue** output. On the PTX Series routers, tail-dropped counters are always zero. All the packet drops will be shown as RED-dropped in the **show interfaces queue** output.

- Related Documentation**
- [Understanding CoS CLI Configuration Statements on PTX Series Packet Transport Routers on page 59](#)

Firewall and Policing Differences Between PTX Series Packet Transport Routers and T Series Matrix Routers

This topic provides a list of firewall and policier features available on PTX Packet Transport Routers and compares them with firewall and policing features on T Series routers.

Firewall Filters

Junos OS firewall and policing software on PTX Series Packet Transport Routers supports IPv4 filters, IPv6 filters, MPLS filters, CCC filters, interface policing, LSP policing, MAC filtering, ARP policing, L2 policing, and other features. Exceptions are noted below.

- PTX Series Packet Transport Routers do not support:
 - Filter Based Forwarding
 - Egress Forwarding Table Filters
 - Forwarding Table Filters for MPLS/CCC
 - Family VPLS
- PTX Series Packet Transport Routers do not support nested firewall filters. The **filter** statement at the **[edit firewall family family-name filter filter-name term term-name]** hierarchy level is disabled.
- Because no service PICs are present in PTX Series Packet Transport Routers, service filters are not supported for both IPv4 and IPv6 traffic. The **service-filter** statement at **[edit firewall family (inet | inet6)]** hierarchy level is disabled.
- The PTX Series Packet Transport Routers exclude simple filters. These filters are supported on Gigabit Ethernet intelligent queuing (IQ2) and Enhanced Queuing Dense Port Concentrator (EQ DPC) interfaces only. The **simple-filter** statement at the **[edit firewall family inet]** hierarchy level is disabled.
- Physical interface filtering is not supported. The **physical-interface-filter** statement at the **[edit firewall family family-name filter filter-name]** hierarchy level is disabled.
- The prefix action feature is not supported on PTX Series Packet Transport Routers. The **prefix-action** statement at **[edit firewall family inet]** hierarchy level is disabled.
- On T Series routers, you can collect a variety of information about traffic passing through the device by setting up one or more accounting profiles that specify some common characteristics of the data. The PTX Series Packet Transport Routers do not support accounting configurations for firewall filters. The **accounting-profile** statement at the **[edit firewall family family-name filter filter-name]** hierarchy level is disabled.
- The **reject** action is not supported on the loopback (**lo0**) interface. If you apply a filter to the **lo0** interface and the filter includes a **reject** action, an error message appears.
- PTX Series Packet Transport Routers do not support aggregated ethernet logical interface match conditions. However, child link interface matching is supported.
- PTX Series Packet Transport Routers displays both counts if two different terms in a filter have the same match condition but they have different counts. T Series routers display one count only.
- PTX Series Packet Transport Routers do not have separate policer instances when a filter is bound to multiple interfaces. Use the **interface-specific** configuration statement to create the configuration.

- On PTX Series Packet Transport Routers, when an ingress interface has CCC encapsulation, packets coming in through the ingress CCC interface will not be processed by the egress filters.
- For CCC encapsulation, the PTX Series Packet Transport Routers append an extra 8 bytes for egress Layer 2 filtering. The T Series routers do not. Therefore, egress counters on PTX Series Packet Transport Routers show an extra eight bytes for each packet which impacts policer accuracy.
- On PTX Series Packet Transport Routers, output for the **show pfe statistics traffic** CLI command includes the packets discarded by DMAC and SMAC filtering. On T Series routers, the command output does not include these discarded packets because MAC filters are implemented in the PIC and not in the FPC.
- The last-fragment packet that goes through a PTX firewall cannot be matched by the **is-fragment** matching condition. This feature is supported on T Series routers.

A possible workaround on PTX Series Packet Transport Routers is to configure two separate terms with same the actions: one term contains a match to **is-fragment** and the other term contains a match to **fragment-offset -except 0**.

- On PTX Series Packet Transport Routers, MAC pause frames are generated when packet discards exceed 100 Mbps. This occurs only for frame sizes that are less than 105 bytes.

Traffic Policiers

Junos OS firewall and policing software on PTX Series Packet Transport Routers supports IPv4 filters, IPv6 filters, MPLS filters, CCC filters, interface policing, LSP policing, MAC filtering, ARP policing, L2 policing, and other features. Exceptions are noted below.

- PTX Series Packet Transport Routers support ARP policing. T Series routers do not.
- PTX Series Packet Transport Routers do not support LSP policing.
- PTX Series Packet Transport Routers do not support the **hierarchical-policer** configuration statement. .
- PTX Series Packet Transport Routers do not support the **interface-set** configuration statement. This statement groups a number of interfaces into a single, named interface set.
- PTX Series Packet Transport Routers do not support the following policer types for both normal policers and three-color policers:
 - **logical-bandwidth-policer** — Policer uses logical interface bandwidth.
 - **physical-interface-policer** — Policer is a physical interface policer.
 - **shared-bandwidth-policer** — Share policer bandwidth among bundle links.
- When a policer action and forwarding-class, loss-priority actions are configured within the same rule (a *Multifield Classification*), the PTX Series Packet Transport Routers work differently than T Series routers. As shown below, you can configure two rules in the filter to make the PTX filter behave the same as the T Series filter:

PTX Series configuration:

```
rule-1 {  
  match: {x, y, z}  
  action: {forwarding-class, loss-prio, next}  
}  
rule-2 {  
  match: {x, y, z}  
  action: {policer}  
}
```

T Series configuration:

```
rule-1 {  
  match: {x, y, z}  
  action: {forwarding-class, loss-prio, policer}  
}
```


Related Documentation

- *Junos OS Firewall Filters and Traffic Policers Library for Routing Devices*

CHAPTER 15

Configuration Statements

accept-source-mac

Syntax	<pre>accept-source-mac { mac-address <i>mac-address</i> { policer { input <i>cos-policer-name</i>; output <i>cos-policer-name</i>; } } }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1X48 for PTX Packet Transport Routers. Statement introduced in Junos OS Release 13.2 for the QFX Series.
Description	<p>For Gigabit Ethernet intelligent queuing (IQ) interfaces only, accept traffic from and to the specified remote media access control (MAC) address.</p> <p>The accept-source-mac statement is equivalent to the source-address-filter statement, which is valid for aggregated Ethernet, Fast Ethernet, and Gigabit Ethernet interfaces only.</p> <p>On untagged Gigabit Ethernet interfaces, you should not configure the source-address-filter statement and the accept-source-mac statement simultaneously. On tagged Gigabit Ethernet interfaces, you should not configure the source-address-filter statement and the accept-source-mac statement with an identical MAC address specified in both filters.</p> <p>The statements are explained separately.</p>
	<div><p>NOTE: The policer statement is not supported on PTX Series Packet Transport Routers.</p></div>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring MAC Address Filtering• Configuring MAC Filtering on PTX Series Packet Transport Routers on page 17• source-filtering on page 206

action-fpc-restart-disable

Syntax	action-fpc-restart-disable;
Hierarchy Level	[edit chassis fabric degraded]
Release Information	Statement added in Junos OS Release 11.4. Statement introduced in Junos OS Release 12.1X48R4 for PTX Series Packet Transport Routers.
Description	Allow the user to disable restarting of the FPCs during healing from a degraded fabric condition. The device can automatically recover from degraded fabric conditions by restarting both the fabric planes and the FPCs. If the action-fpc-restart-disable statement is configured, the healing attempt is limited to restarting the fabric planes only.
Default	The system will detect a blackholing condition and try to heal the system.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Disabling FPC Restart on page 50 • Traffic Black Hole Caused by Fabric Degradation on page 49

bytes (otn-options)

Syntax	bytes transmit-payload-type <i>value</i> ;
Hierarchy Level	[edit interfaces <i>interface-name</i> otn-options]
Release Information	Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specify the transmit payload type on OTN header bytes.
Options	<i>value</i> —Transmit payload type. Range: 0 through 255 bytes Default: 100 bytes
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • 100-Gigabit Ethernet OTN Options Configuration Overview on page 38 • Configuring OTN Optics on page 39

client-address

Syntax	<code>client-address <i>ipv4-address</i>;</code>
Hierarchy Level	[edit services hosted-services server-profile <i>server-profile-name</i>]
Release Information	Statement introduced in Junos OS Release 13.2.
Description	Configure the source address to include in the header of each sampled packet. You must specify an IPv4 address. You can also specify the loopback address or the management interface address as the client address.
Options	<i>ipv4-address</i> —IPv4 address of the client. Default: 0.0.0.0
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Active Flow Monitoring on PTX Series Packet Transport Routers on page 116

data-fill

Syntax	<code>data-fill <i>data</i>;</code>
Hierarchy Level	[edit services rpm bgp], [edit services rpm probe <i>owner</i> test <i>test-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 93. for PTX Series Packet Transport Routers.
Description	Specify the contents of the data portion of Internet Control Message Protocol (ICMP) probes. The data-fill statement is not valid with the http-get or http-metadata-get probe types.
Options	<i>data</i> —A hexadecimal value; for example, 0-9, A-F .
Required Privilege Level	system—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring BGP Neighbor Discovery Through RPM on page 121• Configuring RPM Probes on page 123

data-size

Syntax	<code>data-size size;</code>
Hierarchy Level	[edit services rpm bgp], [edit services rpm probe owner test test-name]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Specify the size of the data portion of ICMP probes. The data-size statement is not valid with the http-get or http-metadata-get probe type.
Options	data —The size can be from 0 through 65507 Default: 0



NOTE: If you configure the hardware timestamp feature (see *Configuring RPM Timestamping*), the **data-size** default value is 32 bytes and 32 is the minimum value for explicit configuration. The UDP timestamp probe type is an exception; it requires a minimum data size of 52 bytes.

Required Privilege Level	system—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Configuring BGP Neighbor Discovery Through RPM on page 121

degraded

Syntax	<pre>degraded { action-fpc-restart-disable; degraded-fabric-detection-enable; degraded-fpc-bad-plane-threshold <i>number-bad-planes</i>; }</pre>
Hierarchy Level	[edit chassis fabric degraded]
Release Information	Statement introduced in Junos OS Release 11.4. Statement introduced in Junos OS Release 12.1X48R4 for PTX Series Packet Transport Routers.
Description	Configure options that apply to degraded chassis fabric conditions.
Options	The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Traffic Black Hole Caused by Fabric Degradation on page 49• Disabling FPC Restart on page 50

degraded-fabric-detection-enable

Syntax	<pre>degraded-fabric-detection-enable;</pre>
Hierarchy Level	[edit chassis fabric degraded]
Release Information	Statement introduced in Junos OS Release 12.1X48R4 for PTX Series Packet Transport Routers.
Description	Enable detection of an FPC with degraded fabric.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Traffic Black Hole Caused by Fabric Degradation on page 49• Disabling FPC Restart on page 50

degraded-fpc-bad-plane-threshold

Syntax	degraded-fpc-bad-plane-threshold <i>number-bad-planes</i> ;
Hierarchy Level	[edit chassis fabric degraded]
Release Information	Statement introduced in Junos OS Release 12.1X48R4 for PTX Series Packet Transport Routers.
Description	Configure the number of bad planes that indicate an FPC is degraded.
Options	number-bad-planes —Number of bad planes. Range: 4 through 18 Default: 4
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Traffic Black Hole Caused by Fabric Degradation on page 49• Disabling FPC Restart on page 50

dscp-code-point

Syntax	<code>dscp-code-point <i>dscp-bits</i>;</code>
Hierarchy Level	[edit services rpm probe owner test <i>test-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release for PTX Series Packet Transport Routers.
Description	Specify the value of the Differentiated Services (DiffServ) field within the IP header. The DiffServ code point (DSCP) bits value must be set to a valid 6-bit pattern.
Options	<p><i>dscp-bits</i>—A valid 6-bit pattern; for example, 001111, or one of the following configured DSCP aliases:</p> <ul style="list-style-type: none">• af11—Default: 001010• af12—Default: 001100• af13—Default: 001110• af21—Default: 010010• af22—Default: 010100• af23 —Default: 010110• af31 —Default: 011010• af32 —Default: 011100• af33 —Default: 011110• af41 —Default: 100010• af42 —Default:100100• af43 —Default:100110• be—Default: 000000• cs1—Default: 001000• cs2—Default: 010000• cs3—Default: 011000• cs4—Default: 100000• cs5—Default: 101000• cs6—Default: 110000• cs7—Default: 111000• ef—Default: 101110• nc1—Default: 110000

- **nc2**—Default: 111000

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

Related Documentation

- [Configuring RPM Probes on page 123](#)

encapsulation (Logical Interface)

Syntax	encapsulation (atm-ccc-cell-relay atm-ccc-vc-mux atm-cisco-nlpid atm-mlppp-llc atm-nlpid atm-ppp-llc atm-ppp-vc-mux atm-snap atm-tcc-snap atm-tcc-vc-mux atm-vc-mux ether-over-atm-llc ether-vpls-over-atm-llc ether-vpls-over-fr ether-vpls-over-ppp ethernet ethernet-ccc ethernet-vpls ethernet-vpls-fr frame-relay-ccc frame-relay-ether-type frame-relay-ether-type-tcc frame-relay-ppp frame-relay-tcc gre-fragmentation multilink-frame-relay-end-to-end multilink-ppp ppp-over-ether ppp-over-ether-over-atm-llc vlan-bridge vlan-ccc vlan-vci-ccc vlan-tcc vlan-vpls);
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit interfaces <i>rlsq number</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers (ethernet , vlan-ccc , and vlan-tcc options only). Statement introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers. Only the atm-ccc-cell-relay and atm-ccc-vc-mux options are supported on ACX Series routers.
Description	Configure a logical link-layer encapsulation type.
Options	<p>atm-ccc-cell-relay—Use ATM cell-relay encapsulation.</p> <p>atm-ccc-vc-mux—Use ATM virtual circuit (VC) multiplex encapsulation on CCC circuits. When you use this encapsulation type, you can configure the ccc family only.</p> <p>atm-cisco-nlpid—Use Cisco ATM network layer protocol identifier (NLPID) encapsulation. When you use this encapsulation type, you can configure the inet family only.</p> <p>atm-mlppp-llc—For ATM2 IQ interfaces only, use Multilink Point-to-Point (MLPPP) over AAL5 LLC. For this encapsulation type, your router must be equipped with a Link Services or Voice Services PIC. MLPPP over ATM encapsulation is not supported on ATM2 IQ OC48 interfaces.</p> <p>atm-nlpid—Use ATM NLPID encapsulation. When you use this encapsulation type, you can configure the inet family only.</p> <p>atm-ppp-llc—(ATM2 IQ interfaces and MX Series routers with MPC/MIC interfaces using the ATM MIC with SFP only) Use PPP over AAL5 LLC encapsulation.</p> <p>atm-ppp-vc-mux—(ATM2 IQ interfaces and MX Series routers with MPC/MIC interfaces using the ATM MIC with SFP only) Use PPP over ATM AAL5 multiplex encapsulation.</p> <p>atm-snap—(All interfaces including MX Series routers with MPC/MIC interfaces using the ATM MIC with SFP) Use ATM subnetwork attachment point (SNAP) encapsulation.</p> <p>atm-tcc-snap—Use ATM SNAP encapsulation on translational cross-connect (TCC) circuits.</p>

atm-tcc-vc-mux—Use ATM VC multiplex encapsulation on TCC circuits. When you use this encapsulation type, you can configure the **tcc** family only.

atm-vc-mux—(All interfaces including MX Series routers with MPC/MIC interfaces using the ATM MIC with SFP) Use ATM VC multiplex encapsulation. When you use this encapsulation type, you can configure the **inet** family only.

ether-over-atm-llc—(All IP interfaces including MX Series routers with MPC/MIC interfaces using the ATM MIC with SFP) For interfaces that carry IP traffic, use Ethernet over ATM LLC encapsulation. When you use this encapsulation type, you cannot configure multipoint interfaces.

ether-vpls-over-atm-llc—For ATM2 IQ interfaces only, use the Ethernet virtual private LAN service (VPLS) over ATM LLC encapsulation to bridge Ethernet interfaces and ATM interfaces over a VPLS routing instance (as described in RFC 2684, *Multiprotocol Encapsulation over ATM Adaptation Layer 5*). Packets from the ATM interfaces are converted to standard ENET2/802.3 encapsulated Ethernet frames with the frame check sequence (FCS) field removed.

ether-vpls-over-fr—For E1, T1, E3, T3, and SONET interfaces only, use the Ethernet virtual private LAN service (VPLS) over Frame Relay encapsulation to support Bridged Ethernet over Frame Relay encapsulated TDM interfaces for VPLS applications, per RFC 2427, *Multiprotocol Interconnect over Frame Relay*.



NOTE: The SONET/SDH OC3/STM1 (Multi-Rate) MIC with SFP, the Channelized SONET/SDH OC3/STM1 (Multi-Rate) MIC with SFP, and the DS3/E3 MIC do not support Ethernet over Frame Relay encapsulation.

ether-vpls-over-ppp—For E1, T1, E3, T3, and SONET interfaces only, use the Ethernet virtual private LAN service (VPLS) over Point-to-Point Protocol (PPP) encapsulation to support Bridged Ethernet over PPP-encapsulated TDM interfaces for VPLS applications.

ethernet—Use Ethernet II encapsulation (as described in RFC 894, *A Standard for the Transmission of IP Datagrams over Ethernet Networks*).

ethernet-ccc—Use Ethernet CCC encapsulation on Ethernet interfaces.

ethernet-vpls—Use Ethernet VPLS encapsulation on Ethernet interfaces that have VPLS enabled and that must accept packets carrying standard Tag Protocol ID (TPID) values.



NOTE: The built-in Gigabit Ethernet PIC on an M7i router does not support extended VLAN VPLS encapsulation.

ethernet-vpls-fr—Use in a VPLS setup when a CE device is connected to a PE device over a time-division multiplexing (TDM) link. This encapsulation type enables the PE device to terminate the outer layer 2 Frame Relay connection, use the 802.1p bits inside the inner Ethernet header to classify the packets, look at the MAC address from the Ethernet header, and use the MAC address to forward the packet into a given VPLS instance.

frame-relay-ccc—Use Frame Relay encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only.

frame-relay-ether-type—Use Frame Relay ether type encapsulation for compatibility with Cisco Frame Relay. The physical interface must be configured with flexible-frame-relay encapsulation.

frame-relay-ether-type-tcc—Use Frame Relay ether type TCC for Cisco-compatible Frame Relay on TCC circuits to connect different media. The physical interface must be configured with flexible-frame-relay encapsulation.

frame-relay-ppp—Use PPP over Frame Relay circuits. When you use this encapsulation type, you can configure the **ppp** family only. J Series routers do not support frame-relay-ppp encapsulation.

frame-relay-tcc—Use Frame Relay encapsulation on TCC circuits for connecting different media. When you use this encapsulation type, you can configure the **tcc** family only.

gre-fragmentation—For adaptive services interfaces only, use GRE fragmentation encapsulation to enable fragmentation of IPv4 packets in GRE tunnels. This encapsulation clears the do not fragment (DF) bit in the packet header. If the packet's size exceeds the tunnel's maximum transmission unit (MTU) value, the packet is fragmented before encapsulation.

multilink-frame-relay-end-to-end—Use MLFR FRF.15 encapsulation. This encapsulation is used only on multilink, link services, and voice services interfaces and their constituent T1 or E1 interfaces, and is supported on LSQ and redundant LSQ interfaces.

multilink-ppp—Use MLPPP encapsulation. This encapsulation is used only on multilink, link services, and voice services interfaces and their constituent T1 or E1 interfaces.

ppp-over-ether—For underlying Ethernet interfaces on J Series routers, use PPP over Ethernet encapsulation. When you use this encapsulation type, you cannot configure the interface address. Instead, configure the interface address on the PPP interface. You also use PPP over Ethernet encapsulation to configure an underlying Ethernet interface for a dynamic PPPoE logical interface on M120 and M320 routers with Intelligent Queuing 2 (IQ2) PICs, and on MX Series routers with MPCs.

ppp-over-ether-over-atm-llc—(J Series routers and MX Series routers with MPCs using the ATM MIC with SFP only) For underlying ATM interfaces, use PPP over Ethernet over ATM LLC encapsulation. When you use this encapsulation type, you cannot configure the interface address. Instead, configure the interface address on the PPP interface.

vlan-bridge—Use Ethernet VLAN bridge encapsulation on Ethernet interfaces that have IEEE 802.1Q tagging, flexible-ethernet-services, and bridging enabled and that must accept packets carrying TPID 0x8100 or a user-defined TPID.

vlan-ccc—Use Ethernet virtual LAN (VLAN) encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only.

vlan-vci-ccc—Use ATM-to-Ethernet interworking encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only.

vlan-tcc—Use Ethernet VLAN encapsulation on TCC circuits. When you use this encapsulation type, you can configure the **tcc** family only.

vlan-vpls—Use Ethernet VLAN encapsulation on VPLS circuits.

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

Related Documentation

- *Configuring Layer 2 Switching Cross-Connects Using CCC*
- *Configuring the Encapsulation for Layer 2 Switching TCCs*
- *Configuring Interface Encapsulation on Logical Interfaces*
- *Configuring MPLS LSP Tunnel Cross-Connects Using CCC*
- *Circuit and Translational Cross-Connects Overview*
- *Identifying the Access Concentrator*
- *Configuring ATM Interface Encapsulation*
- *Configuring VLAN Encapsulation*
- *Configuring Extended VLAN Encapsulation*
- *Configuring ISDN Logical Interface Properties*
- *Configuring ATM-to-Ethernet Interworking*
- [Configuring Interface Encapsulation on PTX Series Packet Transport Routers on page 19](#)
- *Configuring CCC Encapsulation for Layer 2 VPNs*
- *Configuring TCC Encapsulation for Layer 2 VPNs and Layer 2 Circuits*
- *Configuring ATM for Subscriber Access*
- *Junos OS Services Interfaces Library for Routing Devices*
- *CoS on ATM IMA Pseudowire Interfaces Overview*
- *Configuring Policing on an ATM IMA Pseudowire*

encapsulation (Physical Interface)

Syntax	encapsulation (atm-ccc-cell-relay atm-pvc cisco-hdlc cisco-hdlc-ccc cisco-hdlc-tcc ethernet-bridge ethernet-ccc ethernet-over-atm ethernet-tcc ethernet-vpls ethernet-vpls-fr ether-vpls-over-atm-llc ethernet-vpls-ppp extended-frame-relay-ccc extended-frame-relay-ether-type-tcc extended-frame-relay-tcc extended-vlan-bridge extended-vlan-ccc extended-vlan-tcc extended-vlan-vpls flexible-ethernet-services flexible-frame-relay frame-relay frame-relay-ccc frame-relay-ether-type frame-relay-ether-type-tcc frame-relay-port-ccc frame-relay-tcc generic-services multilink-frame-relay-uni-nni ppp ppp-ccc ppp-tcc vlan-ccc vlan-vci-ccc vlan-vpls);
Hierarchy Level	[edit interfaces <i>interface-name</i>], [edit interfaces rlsq <i>number:number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 11.1 for EX Series switches. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers (flexible-ethernet-services , ethernet-ccc , and ethernet-tcc options only). Statement introduced in Junos OS Release 13.2 for the QFX series.
Description	Specify the physical link-layer encapsulation type. Not all encapsulation types are supported on the switches. See the switch CLI.
Default	ppp—Use serial PPP encapsulation.
Options	<p>atm-ccc-cell-relay—Use ATM cell-relay encapsulation.</p> <p>atm-pvc—Use ATM PVC encapsulation.</p> <p>cisco-hdlc—Use Cisco-compatible High-Level Data Link Control (HDLC) framing.</p> <p>cisco-hdlc-ccc—Use Cisco-compatible HDLC framing on CCC circuits.</p> <p>cisco-hdlc-tcc—Use Cisco-compatible HDLC framing on TCC circuits for connecting different media.</p> <p>ethernet-bridge—Use Ethernet bridge encapsulation on Ethernet interfaces that have bridging enabled and that must accept all packets.</p> <p>ethernet-ccc—Use Ethernet CCC encapsulation on Ethernet interfaces that must accept packets carrying standard Tag Protocol ID (TPID) values. For 8-port, 12-port, and 48-port Fast Ethernet PICs, CCC is not supported.</p> <p>ethernet-over-atm—For interfaces that carry IPv4 traffic, use Ethernet over ATM encapsulation. When you use this encapsulation type, you cannot configure multipoint interfaces. As defined in RFC 2684, <i>Multiprotocol Encapsulation over ATM Adaptation Layer 5</i>, this encapsulation type allows ATM interfaces to connect to devices that support only bridge protocol data units (BPDUs). Junos OS does not completely support bridging, but accepts BPDU packets as a default gateway. If you use the router as an edge device, then the router acts as a default gateway. It accepts Ethernet LLC/SNAP frames with IP or ARP in the payload, and drops the rest. For</p>

packets destined to the Ethernet LAN, a route lookup is done using the destination IP address. If the route lookup yields a full address match, the packet is encapsulated with an LLC/SNAP and MAC header, and the packet is forwarded to the ATM interface.

ethernet-tcc—For interfaces that carry IPv4 traffic, use Ethernet TCC encapsulation on interfaces that must accept packets carrying standard TPID values. For 8-port, 12-port, and 48-port Fast Ethernet PICs, TCC is not supported.

ethernet-vpls—Use Ethernet VPLS encapsulation on Ethernet interfaces that have VPLS enabled and that must accept packets carrying standard TPID values. On M Series routers, except the M320 router, the 4-port Fast Ethernet TX PIC and the 1-port, 2-port, and 4-port, 4-slot Gigabit Ethernet PICs can use the Ethernet VPLS encapsulation type.

ethernet-vpls-fr—Use in a VPLS setup when a CE device is connected to a PE device over a time division multiplexing (TDM) link. This encapsulation type enables the PE device to terminate the outer layer 2 Frame Relay connection, use the 802.1p bits inside the inner Ethernet header to classify the packets, look at the MAC address from the Ethernet header, and use the MAC address to forward the packet into a given VPLS instance.

ethernet-vpls-ppp—Use in a VPLS setup when a CE device is connected to a PE device over a time division multiplexing (TDM) link. This encapsulation type enables the PE device to terminate the outer layer 2 PPP connection, use the 802.1p bits inside the inner Ethernet header to classify the packets, look at the MAC address from the Ethernet header, and use it to forward the packet into a given VPLS instance.

ether-vpls-over-atm-llc—For ATM intelligent queuing (IQ) interfaces only, use the Ethernet virtual private LAN service (VPLS) over ATM LLC encapsulation to bridge Ethernet interfaces and ATM interfaces over a VPLS routing instance (as described in RFC 2684, *Multiprotocol Encapsulation over ATM Adaptation Layer 5*). Packets from the ATM interfaces are converted to standard ENET2/802.3 encapsulated Ethernet frames with the frame check sequence (FCS) field removed.

extended-frame-relay-ccc—Use Frame Relay encapsulation on CCC circuits. This encapsulation type allows you to dedicate DLCIs 1 through 1022 to CCC.

extended-frame-relay-ether-type-tcc—Use extended Frame Relay ether type TCC for Cisco-compatible Frame Relay for DLCIs 1 through 1022. This encapsulation type is used for circuits with different media on either side of the connection.

extended-frame-relay-tcc—Use Frame Relay encapsulation on TCC circuits to connect different media. This encapsulation type allows you to dedicate DLCIs 1 through 1022 to TCC.

extended-vlan-bridge—Use extended VLAN bridge encapsulation on Ethernet interfaces that have IEEE 802.1Q VLAN tagging and bridging enabled and that must accept packets carrying TPID 0x8100 or a user-defined TPID.

extended-vlan-ccc—Use extended VLAN encapsulation on CCC circuits with Gigabit Ethernet and 4-port Fast Ethernet interfaces that must accept packets carrying 802.1Q values. For 8-port, 12-port, and 48-port Fast Ethernet PICs, extended VLAN CCC is not supported. For 4-port Gigabit Ethernet PICs, extended VLAN CCC is not supported.

extended-vlan-tcc—For interfaces that carry IPv4 traffic, use extended VLAN encapsulation on TCC circuits with Gigabit Ethernet interfaces on which you want to use 802.1Q tagging. For 4-port Gigabit Ethernet PICs, extended VLAN TCC is not supported.

extended-vlan-vpls—Use extended VLAN VPLS encapsulation on Ethernet interfaces that have VLAN 802.1Q tagging and VPLS enabled and that must accept packets carrying TPIDs 0x8100, 0x9100, and 0x9901. On M Series routers, except the M320 router, the 4-port Fast Ethernet TX PIC and the 1-port, 2-port, and 4-port, 4-slot Gigabit Ethernet PICs can use the Ethernet VPLS encapsulation type.



NOTE: The built-in Gigabit Ethernet PIC on an M7i router does not support extended VLAN VPLS encapsulation.

flexible-ethernet-services—For Gigabit Ethernet IQ interfaces and Gigabit Ethernet PICs with small form-factor pluggable transceivers (SFPs) (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router), use flexible Ethernet services encapsulation when you want to configure multiple per-unit Ethernet encapsulations. Aggregated Ethernet bundles can use this encapsulation type. This encapsulation type allows you to configure any combination of route, TCC, CCC, Layer 2 virtual private networks (VPNs), and VPLS encapsulations on a single physical port. If you configure flexible Ethernet services encapsulation on the physical interface, VLAN IDs from 1 through 511 are no longer reserved for normal VLANs.

flexible-frame-relay—For IQ interfaces only, use flexible Frame Relay encapsulation when you want to configure multiple per-unit Frame Relay encapsulations. This encapsulation type allows you to configure any combination of TCC, CCC, and standard Frame Relay encapsulations on a single physical port. Also, each logical interface can have any DLCI value from 1 through 1022.

frame-relay—Use Frame Relay encapsulation.

frame-relay-ccc—Use Frame Relay encapsulation on CCC circuits.

frame-relay-ether-type—Use Frame Relay ether type encapsulation for compatibility with the Cisco Frame Relay.

frame-relay-ether-type-tcc—Use Frame Relay ether type TCC for Cisco-compatible Frame Relay on TCC circuits to connect different media.

frame-relay-port-ccc—Use Frame Relay port CCC encapsulation to transparently carry all the DLCIs between two customer edge (CE) routers without explicitly configuring each DLCI on the two provider edge (PE) routers with Frame Relay transport. When you use this encapsulation type, you can configure the **ccc** family only.

frame-relay-tcc—Use Frame Relay encapsulation on TCC circuits to connect different media.

generic-services—Use generic services encapsulation for services with a hierarchical scheduler.

multilink-frame-relay-uni-nni—Use MLFR UNI NNI encapsulation. This encapsulation is used on link services, voice services interfaces functioning as FRF.16 bundles, and their constituent T1 or E1 interfaces, and is supported on LSQ and redundant LSQ interfaces.

ppp—Use serial PPP encapsulation.

ppp-ccc—Use serial PPP encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only.

ppp-tcc—Use serial PPP encapsulation on TCC circuits for connecting different media. When you use this encapsulation type, you can configure the **tcc** family only.

vlan-ccc—Use Ethernet VLAN encapsulation on CCC circuits.

vlan-vci-ccc—Use ATM-to-Ethernet interworking encapsulation on CCC circuits. When you use this encapsulation type, you can configure the **ccc** family only. All logical interfaces configured on the Ethernet interface must also have the encapsulation type set to **vlan-vci-ccc**.

vlan-vpls—Use VLAN VPLS encapsulation on Ethernet interfaces with VLAN tagging and VPLS enabled. Interfaces with VLAN VPLS encapsulation accept packets carrying standard TPID values only. On M Series routers, except the M320 router, the 4-port Fast Ethernet TX PIC and the 1-port, 2-port, and 4-port, 4-slot Gigabit Ethernet PICs can use the Ethernet VPLS encapsulation type.



NOTE: Label-switched interfaces (LSIs) do not support VLAN VPLS encapsulation. Therefore, you can only use VLAN VPLS encapsulation on a PE-router-to-CE-router interface and not a core-facing interface.

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

- *Configuring Interface Encapsulation on Physical Interfaces*
- *Configuring CCC Encapsulation for Layer 2 VPNs*
- *Configuring Layer 2 Switching Cross-Connects Using CCC*
- *Configuring TCC Encapsulation for Layer 2 VPNs and Layer 2 Circuits*
- *Configuring ATM Interface Encapsulation*
- *Configuring ATM-to-Ethernet Interworking*
- *Configuring VLAN Encapsulation*
- *Configuring Extended VLAN Encapsulation*
- *Configuring Encapsulation for Layer 2 Wholesale VLAN Interfaces*
- *Configuring Interfaces for Layer 2 Circuits*
- [Configuring Interface Encapsulation on PTX Series Packet Transport Routers on page 19](#)
- *Configuring an MPLS-Based Layer 2 VPN (CLI Procedure)*
- *Configuring MPLS LSP Tunnel Cross-Connects Using CCC*
- *Configuring TCC*
- *Configuring VPLS Interface Encapsulation*
- *Configuring Interfaces for VPLS Routing*
- *Defining the Encapsulation for Switching Cross-Connects*
- *Understanding Encapsulation on an Interface*
- *Configuring Q-in-Q Tunneling (CLI Procedure)*

fec

Syntax	fec (efec gfec gfec-sdfec none);
Hierarchy Level	[edit interfaces <i>interface-name</i> otn-options]
Release Information	Statement introduced in Junos OS Release 9.4. Statement and gfec-sdfec option introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Enable Forward Error Correction (FEC) mode.
Default	If you do not specify a mode, the default mode on PTX Series routers is gfec-sdfec .
Options	<p>efec—(For M Series, MX Series, and SRX Series routers only) Enhanced Forward Error Correction (EFEC) is configured to detect and correct bit errors.</p> <p>gfec—(For M Series, MX Series, and SRX Series routers only) G.709 Forward Error Correction (GFEC) mode is configured to detect and correct bit errors.</p> <p>gfec-sdfec—(For PTX Series routers only) GFEC and Soft Decision Forward Error Correction (SDFEC) modes are configured to detect and correct bit errors.</p> <p>none—(For M Series, MX Series, and SRX Series routers only) FEC mode is not configured.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • 100-Gigabit Ethernet OTN Options Configuration Overview on page 38 • Configuring OTN Optics on page 39

flexible-vlan-tagging

Syntax	flexible-vlan-tagging;
Hierarchy Level	[edit interfaces aex], [edit interfaces ge- <i>fpc/pic/port</i>], [edit interfaces et- <i>fpc/pic/port</i>], [edit interfaces ps0], [edit interfaces xe- <i>fpc/pic/port</i>],
Release Information	Statement introduced in Junos OS Release 8.1. Support for aggregated Ethernet added in Junos OS Release 9.0. Statement introduced in Junos OS Release 13.2 for the QFX series. Statement introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers. Statement introduced in Junos OS Release 13.2X50-D15 for EX Series switches.
Description	<p>Support simultaneous transmission of 802.1Q VLAN single-tag and dual-tag frames as well as untagged frames on logical interfaces on the same Ethernet port, and on pseudowire logical interfaces.</p> <p>This statement is supported on M Series and T Series routers, for Fast Ethernet and Gigabit Ethernet interfaces only on Gigabit Ethernet IQ2 and IQ2-E, IQ, and IQE PICs, and for aggregated Ethernet interfaces with member links in IQ2, IQ2-E, and IQ PICs or in MX Series DPCs, or on Ethernet interfaces for PTX Series Packet Transport Routers or 100-Gigabit Ethernet Type 5 PIC with CFP.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Mixed Tagging</i>• Configuring Flexible VLAN Tagging on PTX Series Packet Transport Routers on page 18• <i>Configuring Q-in-Q Tunneling (CLI Procedure)</i>

forwarding-classes (Class-of-Service)

Syntax	<pre>forwarding-classes { class queue-num <i>queue-number</i> priority (high low); queue <i>queue-number class-name</i> priority (high low) [policing-priority (premium normal)]; }</pre>
Hierarchy Level	[edit class-of-service]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>policing-priority option introduced in Junos OS Release 9.5.</p> <p>Statement introduced on PTX Series Packet Transport Routers in Junos OS Release 12.1.</p>
Description	Associate the forwarding class with a queue name and number. For M320, MX Series, T Series routers and EX Series switches only, you can configure fabric priority queuing by including the priority statement. For Enhanced IQ PICs, you can include the policing-priority option.



NOTE: The **priority** add **policing-priority** options are not supported on PTX Series Packet Transport Routers.

The statements are explained separately.

Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Forwarding Classes</i> • <i>Forwarding Classes and Fabric Priority Queues</i> • <i>Example: Configuring CoS for a PBB Network on MX Series Routers</i> • <i>Configuring Layer 2 Policers on IQE PICs</i> • <i>Classifying Packets by Egress Interface</i>

forwarding-mode (PTX Series Packet Transport Routers)

Syntax	<code>forwarding-mode { sa-multicast }</code>
Hierarchy Level	[edit chassis fpc <i>slot</i> pic <i>slot</i> port <i>port-number</i>]
Release Information	Statement introduced in Junos OS Release 12.1X48R4.
Description	<p>Configure interoperability between 100-Gigabit Ethernet PICs PD-1CE-CFP-FPC4 and P1-PTX-2-100GE-CFP.</p> <p>The remaining statement is explained separately.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• Configuring the Interoperability Between the 100-Gigabit Ethernet PICs P1-PTX-2-100GE-CFP and PD-1CE-CFP-FPC4 on page 44• <i>Interoperability Between the 100-Gigabit Ethernet PICs PD-1CE-CFP-FPC4 and PF-1CGE-CFP</i>• <i>Configuring the Interoperability Between the 100-Gigabit Ethernet PICs PF-1CGE-CFP and PD-1CE-CFP-FPC4</i>

framing (10-Gigabit Ethernet Interfaces)

Syntax	<code>framing (lan-phy wan-phy);</code>
Hierarchy Level	<code>[edit interfaces xe-<i>fpc/pic/port</i>]</code> <code>[edit interfaces et-<i>fpc/pic/port</i>] (PTX Series Packet Transport Routers)</code>
Release Information	Statement introduced in Junos OS Release 8.0. Statement introduced in Junos OS Release 12.3R2 for PTX Series Packet Transport Routers.
Description	For routers supporting the 10-Gigabit Ethernet interface, configure the framing format. WAN PHY mode is supported on MX240, MX480, MX960, T640, T1600, T4000, and PTX Series Packet Transport Routers routers only.



NOTE:

- The T4000 Core Router supports only LAN PHY mode in Junos OS Release 12.1R1. Starting with Junos OS Release 12.1R2, WAN PHY mode is supported on the T4000 routers with the 12-port 10-Gigabit Ethernet LAN/WAN PIC with SFP+ (PF-12XGE-SFPP). Starting with Junos OS Release 12.2, WAN PHY mode is supported on the T4000 routers with the 24-port 10-Gigabit Ethernet LAN/WAN PIC with SFP+ (PF-24XGE-SFPP).
- On PTX Series routers, WAN PHY mode is supported only on the 24-port 10-Gigabit Ethernet LAN/WAN PIC with SFP+ .
- When the PHY mode changes, interface traffic is disrupted because of port reinitialization.

Default	Operates in LAN PHY mode.
Options	lan-phy —10GBASE-R interface framing format that bypasses the WIS sublayer to directly stream block-encoded Ethernet frames on a 10-Gigabit Ethernet serial interface. wan-phy —10GBASE-W interface framing format that allows 10-Gigabit Ethernet wide area links to use fiber-optic cables and SONET devices.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>10-Gigabit Ethernet Framing Overview</i> • <i>Configuring SONET Options for 10-Gigabit Ethernet Interfaces</i>

fru-poweron-sequence

Syntax	<code>fru-poweron-sequence fru-poweron-sequence;</code>
Hierarchy Level	[edit chassis]
Release Information	Statement introduced in Junos OS Release 10.0. Statement introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers. Statement introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Statement introduced in Junos OS Release 12.3 for T640, T1600, and T4000 routers.
Description	(MX Series 3D Universal Edge Routers only) Configure the power-on sequence for the DPCs in the chassis for routers with the enhanced AC Power Entry Module (PEM). (T640 routers, T1600 routers, T4000 routers, MX2020 routers, and PTX Series packet transport routers) Configure the power-on sequence for Flexible PIC Concentrators (FPCs) installed in the chassis.
Options	(MX Series 3D Universal Edge Routers only) <i>fru-poweron-sequence</i> —Power-on sequence for the DPCs in the chassis. The numbers indicate the slot number of the DPCs.



NOTE: If the power-on sequence is not configured by including the *fru-poweron-sequence* statement, Junos OS uses the `/var/log/poweron_seq.log` file to determine the power-on sequence for the last power-on operation for the DPCs and the same sequence is used. If the `/var/log/boot_seq.log` file, is not available, Junos OS uses the ascending order of the slot numbers of the DPCs as the sequence to power on the DPCs.

(T640 routers, T1600 routers, T4000 routers, MX2020 routers, and PTX Series packet transport routers) *fru-poweron-sequence*—Power-on sequence for the FPCs in the chassis. The numbers indicate the slot number of the FPCs.



NOTE:

- If the configured sequence contains invalid numbers, Junos OS considers only the valid numbers in the sequence. The invalid numbers are silently discarded.
- If the power-on sequence is not configured by including the *fru-poweron-sequence* statement, Junos OS uses the ascending order of the slot numbers of the FPCs as the sequence to power on the FPCs.

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

- | | |
|------------------------------|--|
| Related Documentation | <ul style="list-style-type: none"> • Configuring the Power-On Sequence for DPCs on MX Series Routers with the Enhanced AC PEM • Configuring the Power-On Sequence for FPCs on PTX Series Packet Transport Routers on page 34 • Configuring the Power-On Sequence for FPCs on T640, T1600, and T4000 Routers |
|------------------------------|--|

history-size

Syntax	<code>history-size size;</code>
Hierarchy Level	<code>[edit services rpm bgp],</code> <code>[edit services rpm probe owner test test-name]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Specify the number of stored history entries.
Options	<i>size</i> —A value from 0 to 255. Default: 50
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring BGP Neighbor Discovery Through RPM on page 121 • Configuring RPM Probes on page 123

hosted-service-identifier

Syntax	<code>hosted-service-identifier identifier;</code>
Hierarchy Level	<code>[edit services hosted-services server-profile server-profile-name]</code>
Release Information	Statement introduced in Junos OS Release 13.2.
Description	Configure the identifier for the service performed on the remote server
Options	<i>identifier</i> —Identifier for the service performed on the remote server. Range: 1 through 63
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring Active Flow Monitoring on PTX Series Packet Transport Routers on page 116

hosted-services

Syntax	<pre>hosted-services { server-profile server-profile-name { client-address ipv4-address; server-address ipv4-address; } }</pre>
Hierarchy Level	[edit services]
Release Information	Statement introduced in Junos OS Release 13.2.
Description	Configure services performed on the remote server.
Options	The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Active Flow Monitoring on PTX Series Packet Transport Routers on page 116

hold-interval (OAM)

Syntax	<pre>hold-interval minutes;</pre>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain domain-name maintenance-association ma-name continuity-check]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in junos os release 12.1X48 for PTX Series Packet Transport Routers.
Description	The time to wait before flushing the maintenance association end point (MEP) database, if no updates occur.
Options	<i>minutes</i> —Time to wait, in minutes.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Continuity Check Protocol</i>• Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers on page 22

inactivity-timeout (Services RPM)

Syntax	<code>inactivity-timeout <i>seconds</i>;</code>
Hierarchy Level	<code>[edit services rpm twamp server]</code>
Release Information	Statement introduced in Junos OS Release 9.3.
Description	Inactivity timeout period, in seconds.
Options	<p><i>seconds</i>—Length of time the session is inactive before it times out.</p> <p>Default: 1800 seconds</p>
Required Privilege Level	<p>system—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring TWAMP

is-ma

Syntax	<code>(is-ma no-is-ma);</code>
Hierarchy Level	<code>[edit interfaces <i>interface-name</i> otn-options]</code>
Release Information	Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specify whether masked alarms are enabled or disabled.
Default	If you omit the <code>is-ma</code> statement, masked alarms are disabled.
Options	<p><code>is-ma</code>—Enable masked alarms.</p> <p><code>no-is-ma</code>—Do not enable masked alarms.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • 100-Gigabit Ethernet OTN Options Configuration Overview on page 38 • Configuring OTN Optics on page 39

laser-enable

Syntax	(laser-enable no-laser-enable);
Hierarchy Level	[edit interfaces <i>interface-name</i> otn-options]
Release Information	Statement introduced in Junos OS Release 9.4. Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specify whether lasers are enabled or disabled.
Default	If you omit the laser-enable statement, lasers are disabled.
Options	laser-enable —Enable lasers. no-laser-enable —Do not enable lasers.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• 100-Gigabit Ethernet OTN Options Configuration Overview on page 38• Configuring OTN Optics on page 39

level

Syntax	level <i>number</i> ;
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i>]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in junos os release 12.1X48 for PTX Series Packet Transport Routers.
Description	A number used in CFM messages to identify the maintenance association.
Options	number —A number used to identify the maintenance domain to which the CFM message belongs. Range: 0 through 7
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the Maintenance Domain Level• Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers• Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers on page 22

line-loopback

Syntax	(line-loopback-enable no-line-loopback);
Hierarchy Level	[edit interfaces <i>interface-name</i> otn-options]
Release Information	Statement introduced in Junos OS Release 9.4. Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specify whether line-loopback is enabled or disabled.
Default	If you omit the line-loopback-enable statement, line-loopback is disabled.
Options	line-loopback-enable —Enable line-loopback. no-line-loopback —Disable line-loopback.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • 100-Gigabit Ethernet OTN Options Configuration Overview on page 38 • Configuring OTN Optics on page 39

local-loopback

Syntax	(local-loopback-enable no-local-loopback);
Hierarchy Level	[edit interfaces <i>interface-name</i> otn-options]
Release Information	Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specify whether local-loopback is enabled or disabled.
Default	If you omit the local-loopback-enable statement, local-loopback is disabled.
Options	local-loopback-enable —Enable local-loopback. no-local-loopback —Disable local-loopback.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • 100-Gigabit Ethernet OTN Options Configuration Overview on page 38 • Configuring OTN Optics on page 39

loss-threshold

Syntax	<code>loss-threshold <i>number</i>;</code>
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain <i>domain-name</i> maintenance-association <i>ma-name</i> continuity-check]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Description	Specify the number of continuity check messages lost before marking the remote MEP as down.
Options	<i>number</i> —The number of continuity check messages that can be lost before the remote MEP is considered down.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Continuity Check Protocol</i>• Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers on page 22

maintenance-domain

Syntax `maintenance-domain domain-name {`
 `bridge-domain name <vlan-id [vlan-ids]>;`
 `instance vpls-instance-name;`
 `level number;`
 `maintenance-association ma-name {`
 `protect-maintenance-association protect-ma-name;`
 `remote-maintenance-association remote-ma-name;`
 `short-name-format (character-string | vlan | 2octet | rfc-2685-vpn-id);`
 `continuity-check {`
 `hold-interval minutes;`
 `interval (10m | 10s | 1m | 1s | 100ms);`
 `loss-threshold number`
 `}`
 `mep mep-id {`
 `auto-discovery;`
 `direction (up | down);`
 `interface interface-name (protect | working);`
 `lowest-priority-defect (all-defects | err-xcon | mac-rem-err-xcon | no-defect |`
 `rem-err-xcon | xcon);`
 `priority number;`
 `remote-mep mep-id {`
 `action-profile profile-name;`
 `sla-iterator-profile profile-name {`
 `data-tlv-size size;`
 `iteration-count count-value;`
 `priority priority-value;`
 `}`
 `}`
 `}`
 `mip-half-function(none | default | explicit);`
 `name-format (character-string | none | dns | mac+2oct);`
 `}`
 `virtual-switch name {`
 `bridge-domain name <vlan-id [vlan-ids]>;`
 `}`
`}`

Hierarchy Level [edit protocols [oam](#) ethernet connectivity-fault-management]

Release Information Statement introduced in Junos OS Release 8.4.
 Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.

Description Configure the name of the maintenance domain in IEEE-compliant format.

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

The remaining statements are explained separately.

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

- Related Documentation**
- *Creating the Maintenance Domain*
 - *Configuring a Maintenance Endpoint*
 - *Example: Configuring Connectivity Fault Management for a PBB Network on MX Series Routers*
 - [Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers on page 22](#)

maximum-links

Syntax	maximum-links <i>maximum-links-limit</i> ;
Hierarchy Level	[edit chassis aggregated-devices]
Release Information	Statement introduced in Junos OS Release 11.1 for T Series routers. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers. Statement introduced in Junos OS Release 12.2 for MX Series routers.
Description	Configure the maximum links limit for aggregated devices.
Options	<i>maximum-links-limit</i> —Maximum links limit for aggregated devices. Range: 16, 32; (PTX Series routers only in Junos OS Release 12.3) 64
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Junos OS for Supporting Aggregated Devices</i>• <i>Configuring an Aggregated Ethernet Interface</i>

moving-average-size

Syntax	<code>moving-average-size <i>number</i>;</code>
Hierarchy Level	[edit services rpm bgp], [edit services rpm probe owner test <i>test-name</i>]
Release Information	Statement introduced in Junos OS Release 8.5. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement Introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Enable statistical calculation operations to be performed across a configurable number of the most recent samples.
Options	<i>number</i> —Number of samples to be used in calculations. Range: 0 through 255
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring RPM Probes on page 123

mtu

Syntax	<code>mtu bytes;</code>
Hierarchy Level	<p>[edit interfaces <i>interface-name</i>],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>],</p> <p>[edit interfaces interface-range <i>name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family <i>family</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> protocols l2circuit local-switching interface <i>interface-name</i> backup-neighbor <i>address</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> protocols l2circuit neighbor <i>address</i> interface <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> protocols l2circuit neighbor <i>address</i> interface <i>interface-name</i> backup-neighbor <i>address</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols l2vpn interface <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols vpls],</p> <p>[edit protocols l2circuit local-switching interface <i>interface-name</i> backup-neighbor <i>address</i>],</p> <p>[edit protocols l2circuit neighbor <i>address</i> interface <i>interface-name</i>],</p> <p>[edit protocols l2circuit neighbor <i>address</i> interface <i>interface-name</i> backup-neighbor <i>address</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols l2vpn interface <i>interface-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols vpls]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Support for Layer 2 VPNs and VPLS introduced in Junos OS Release 10.4.</p> <p>Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.</p> <p>Statement introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.</p> <p>Support at the <code>[set interfaces interface-name unit logical-unit-number family ccc]</code> hierarchy level introduced in Junos OS Release 12.3R3 for MX Series routers.</p>
Description	<p>Specify the maximum transmission unit (MTU) size for the media or protocol. The default MTU size depends on the device type. Changing the media MTU or protocol MTU causes an interface to be deleted and added again.</p> <p>To route jumbo data packets on an integrated routing and bridging (irb) interface or routed VLAN interface (RVI) on EX Series switches, you must configure the jumbo MTU size on the member physical interfaces and also on the IRB interface or RVI itself (the irb or vlan interface, respectively).</p>



CAUTION: For EX Series switches, setting or deleting the jumbo MTU size on an IRB interface or RVI while the switch is transmitting packets might cause packets to be dropped.



NOTE: If a packet whose size is larger than the configured MTU size is received on the receiving interface, the packet is eventually dropped. The value considered for MRU (maximum receive unit) size is also the same as the MTU size configured on that interface.



NOTE: Not all devices allow you to set an MTU value, and some devices have restrictions on the range of allowable MTU values. You cannot configure an MTU for management Ethernet interfaces (fxp0, em0, or me0) or for loopback, multilink, and multicast tunnel devices.

For more information about configuring MTU for specific interfaces and router or switch combinations, see *Configuring the Media MTU*.

Options *bytes*—MTU size.

Range: 256 through 9192 bytes, 256 through 9500 bytes (Junos OS 12.1X48R2 for PTX Series routers)

Default: 1500 bytes (INET, INET6, and ISO families), 1448 bytes (MPLS), 1514 bytes (EX Series switch interfaces)

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

Related Documentation

- *Configuring Gigabit Ethernet Interfaces (CLI Procedure)*
- *Configuring Gigabit Ethernet Interfaces (CLI Procedure)*
- *Configuring Routed VLAN Interfaces (CLI Procedure)*
- *Configuring Integrated Routing and Bridging Interfaces (CLI Procedure)*
- *Configuring the Media MTU*
- *Configuring the MTU for Layer 2 Interfaces*
- *Setting the Protocol MTU*

name-format

Syntax	name-format (character-string none dns mac+2oct);
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain domain-name]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Description	Specify the format of the maintenance domain name.
Options	<p>character-string—The name is an ASCII character string.</p> <p>none—The maintenance domain name is not used.</p> <p>dns—The name is in domain name service (DNS) format. For example: www.juniper.net.</p> <p>mac+2oct—Name is the MAC address plus a two-octet maintenance association identifier. For example: 08:00:22:33:44:55.100.</p> <p>Default: character-string</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Creating a Maintenance Association</i>• Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers on page 22

oam

```

Syntax  oam {
        ethernet {
            connectivity-fault-management {
                action-profile profile-name {
                    default-actions {
                        interface-down;
                    }
                }
            }
            performance-monitoring {
                delegate-server-processing;
                hardware-assisted-timestamping;
                sla-iterator-profiles {
                    profile-name {
                        disable;
                        calculation-weight {
                            delay delay-weight;
                            delay-variation delay-variation-weight;
                        }
                        cycle-time milliseconds;
                        iteration-period connections;
                        measurement-type (loss | statistical-frame-loss | two-way-delay);
                    }
                }
            }
            linktrace {
                age (30m | 10m | 1m | 30s | 10s);
                path-database-size path-database-size;
            }
            maintenance-domain domain-name {
                level number;
                name-format (character-string | none | dns | mac+2octet);
                maintenance-association ma-name {
                    short-name-format (character-string | vlan | 2octet | rfc-2685-vpn-id);
                    protect-maintenance-association protect-ma-name;
                    remote-maintenance-association remote-ma-name;
                    continuity-check {
                        convey-loss-threshold;
                        hold-interval minutes;
                        interface-status-tlv;
                        interval (10m | 10s | 1m | 1s | 100ms);
                        loss-threshold number;
                        port-status-tlv;
                    }
                }
                mep mep-id {
                    auto-discovery;
                    direction (up | down);
                    interface interface-name (protect | working);
                    lowest-priority-defect (all-defects | err-xcon | mac-rem-err-xcon | no-defect |
                        rem-err-xcon | xcon );
                    priority number;
                    remote-mep mep-id {
                        action-profile profile-name;
                    }
                }
            }
        }
    }

```

```
        sla-iterator-profile profile-name {
            data-tlv-size size;
            iteration-count count-value;
            priority priority-value;
        }
    }
}
}
}
link-fault-management {
    action-profile profile-name {
        action {
            link-down;
            send-critical-event;
            syslog;
        }
        event {
            link-adjacency-loss;
            link-event-rate {
                frame-error count;
                frame-period count;
                frame-period-summary count;
                symbol-period count;
            }
            protocol-down;
        }
    }
}
interface interface-name {
    apply-action-profile
    link-discovery (active | passive);
    pdu-interval interval;
    pdu-threshold threshold-value;
    remote-loopback;
    event-thresholds {
        frame-error count;
        frame-period count;
        frame-period-summary count;
        symbol-period count;
    }
    negotiation-options {
        allow-remote-loopback;
        no-allow-link-events;
    }
}
}
}
```

Hierarchy Level [edit protocols]

Release Information Statement introduced in Junos OS Release 8.2.
Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.

Description	For Ethernet interfaces on M320, M120, MX Series, and T Series routers and PTX Series Packet Transport Routers, provide IEEE 802.3ah Operation, Administration, and Maintenance (OAM) support. The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • IEEE 802.3ah OAM Link-Fault Management Overview • Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers on page 22

odu-delay-management

Syntax	<pre>odu-delay-management { (bypass no-bypass); (monitor-end-point no-monitor-end-point); number-of-frames <i>value</i>; (no-start-measurement start-measurement); }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> otn-options]
Release Information	Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specify Optical Channel Data Unit (ODU) delay management options.
Default	If you omit the odu-delay-management statement, the ODU delay management options are disabled.
Options	The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • 100-Gigabit Ethernet OTN Options Configuration Overview on page 38 • Configuring OTN Optics on page 39

odu-ttim-action-enable

Syntax	(odu-ttim-action-enable no-odu-ttim-action-enable);
Hierarchy Level	[edit interfaces <i>interface-name</i> otn-options]
Release Information	Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specify whether consequent action for Optical Channel Data Unit (ODU) TTIM is enabled or disabled.
Default	If you omit the odu-ttim-action-enable statement, consequent action for ODU TTIM is disabled.
Options	odu-ttim-action-enable —Enable consequent action for ODU TTIM. no-odu-ttim-action-enable —Disable consequent action for ODU TTIM.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• 100-Gigabit Ethernet OTN Options Configuration Overview on page 38• Configuring OTN Optics on page 39

optics-options

Syntax	<pre> optics-options { alarm low-light-alarm { (link-down syslog); } tx-power <i>dbm</i>; warning low-light-warning { (link-down syslog); } wavelength <i>nm</i>; } </pre>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>alarm option and warning options introduced in Junos OS Release 10.0.</p> <p>Statement introduced in Junos OS Release 12.1 for EX Series switches.</p> <p>Statement and tx-power option introduced in Junos OS Release 13.2 for PTX Series routers.</p>
Description	For 10-Gigabit Ethernet or 100-Gigabit Ethernet dense wavelength-division multiplexing (DWDM) interfaces only, configure full C-band International Telecommunication Union (ITU)-Grid tunable optics.
Options	The remaining statements are explained separately.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Ethernet DWDM Interface Wavelength Overview on page 37 • 100-Gigabit Ethernet OTN Options Configuration Overview on page 38

otn-options

```
Syntax  otn-options {
        bytes transmit-payload-type value;
        fec (efec | gfec | gfec-sdfec | none);
        (is-ma | no-is-ma);
        (laser-enable | no-laser-enable);
        (line-loopback | no-line-loopback);
        (local-loopback | no-local-loopback);
        (odu-ttim-action-enable | no-odu-ttim-action-enable);
        (otu-ttim-action-enable | no-otu-ttim-action-enable);
        odu-delay-management {
            (bypass | no-bypass);
            (monitor-end-point | no-monitor-end-point);
            number-of-frames value;
            (no-start-measurement | start-measurement);
        }
        (prbs | no-prbs);
        preemptive-fast-reroute {
            (backward-frr-enable | no-backward-frr-enable);
            (signal-degrade-monitor-enable | no-signal-degrade-monitor-enable);
        }
        rate {
            (fixed-stuff-bytes | no-fixed-stuff-bytes);
            otu4;
            (pass-through | no-pass-through);
        }
        signal-degrade {
            ber-threshold-clear value;
            ber-threshold-signal-degrade value;
            interval value;
        }
        trigger trigger-identifier;
        tti tti-identifier;
    }
```

Hierarchy Level [edit interfaces *ge-fpc/pic/port*]

Release Information Statement introduced in Junos OS Release 9.4.
bytes, **is-ma**, **local-loopback**, **no-is-ma**, **no-local-loopback**, **no-odu-ttim-action-enable**, **no-otu-ttim-action-enable**, **no-prbs**, **odu-delay-management**, **odu-ttim-action-enable**, **otu-ttim-action-enable**, **prbs**, **preemptive-fast-reroute**, and **signal-degrade** statements introduced in Junos OS Release 13.2 for PTX Series routers.

Description Specify the Ethernet Optical Transport Network (OTN) interface and options.

Options The remaining statements are explained separately.

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

- Related Documentation**
- [10-Gigabit Ethernet OTN Options Configuration Overview on page 37](#)
 - [100-Gigabit Ethernet OTN Options Configuration Overview on page 38](#)
 - [Configuring OTN Optics on page 39](#)

otu-ttim-action-enable

Syntax	(otu-ttim-action-enable no-otu-ttim-action-enable);
Hierarchy Level	[edit interfaces <i>interface-name</i> otn-options]
Release Information	Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specify whether consequent action for Optical Channel Transport Unit (OTU) TTIM is enabled or disabled.
Default	If you omit the otu-ttim-action-enable statement, consequent action for OTU TTIM is disabled.
Options	<p>otu-ttim-action-enable—Enable consequent action for OTU TTIM.</p> <p>no-otu-ttim-action-enable—Disable consequent action for OTU TTIM.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • 100-Gigabit Ethernet OTN Options Configuration Overview on page 38 • Configuring OTN Optics on page 39

output (Port Mirroring)

Syntax	<pre>output { interface <i>interface-name</i> { next-hop <i>address</i>; } no-filter-check; server-profile <i>server-profile-name</i>; }</pre>
Hierarchy Level	[edit forwarding-options port-mirroring family (ccc inet inet6 mpls vpls)], [edit forwarding-options port-mirroring instance <i>instance-name</i> family (ccc inet inet6 mpls vpls)]
Release Information	Statement introduced before Junos OS Release 7.4. vpls option introduced in Junos OS Release 9.3 for MX Series routers only; support extended to M7i, M10i, M120, and M320 routers in Junos OS Release 9.5. ccc option introduced in Junos OS Release 9.6 for M120 and M320 routers only. server-profile option introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers only.
Description	Configure the port mirroring destination properties. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Port Mirroring</i>• Configuring Active Flow Monitoring on PTX Series Packet Transport Routers on page 116

port (RPM)

Syntax	<code>port <i>number</i>;</code>
Hierarchy Level	[edit services rpm probe-server (tcp udp)]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Specify the port number for the probe server.
Options	<i>number</i> —Port number for the probe server. The value can be 7 or 49,160 through 65,535.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring RPM Receiver Servers on page 127

port-mirroring

```
Syntax  port-mirroring {
        input {
            maximum-packet-length bytes;
            rate number;
            run-length number;
        }
        family (ccc | inet | inet6 | vpls) {
            output {
                interface interface-name {
                    next-hop address;
                }
                no-filter-check;
            }
        }
        instance {
            instance-name {
                input {
                    maximum-packet-length bytes;
                    rate number;
                    run-length number;
                }
                family (ccc | inet | inet6 | vpls) {
                    output {
                        interface interface-name {
                            next-hop address;
                        }
                        no-filter-check;
                        server-profile server-profile-name;
                    }
                }
            }
        }
        mirror-once;
        traceoptions {
            file filename <files number> <size bytes> <world-readable | no-world-readable>;
        }
    }
```

Hierarchy Level [edit forwarding-options]

Release Information Statement introduced before Junos OS Release 7.4.

family vpls statement introduced in Junos OS Release 9.3 (MX Series routers only); support extended to M7i, M10, M120, and M320 routers in Junos OS Release 9.5.

instance port-mirroring-instance-name statement introduced in Junos OS Release 9.3 (MX Series routers only); support extended to M120 and M320 routers in Junos OS Release 9.5.

mirror-once statement introduced in Junos OS Release 9.3 (MX Series routers only); support extended to M120 routers in Junos OS Release 9.5.

family ccc statement introduced in Junos OS Release 9.6 (M120 and M320 routers only). Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.

Description	Specify the address family, rate, run length, interface, and next-hop address for sending copies of packets to an analyzer. The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Port Mirroring</i>• Configuring Active Flow Monitoring on PTX Series Packet Transport Routers on page 116

per-unit-scheduler

Syntax	<code>per-unit-scheduler;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 13.2 on 16x10GE MPC and MPC3E line cards. Statement introduced in Junos OS Release 13.2 on PTX Series Packet Transport Routers.
Description	For Channelized OC3 IQ, Channelized OC12 IQ, Channelized STM1 IQ, Channelized T3 IQ, Channelized E1 IQ, E3 IQ, link services IQ interfaces (lsq-), link services (ls-) on J Series routers, Gigabit Ethernet IQ, Gigabit Ethernet IQ2 and IQ2-E, and 10-, 40-, and 100-Gigabit Ethernet interfaces (including the 16x10GE MPC), enable the association of scheduler map names with logical interfaces.



NOTE: Per-unit scheduling is not supported on T1 interfaces configured on the Channelized OC12 IQ PIC.



NOTE: On Gigabit Ethernet IQ2 and IQ2-E PICs without the `per-unit-scheduler` statement, the entire PIC supports 4071 VLANs and the user can configure all the VLANs on the same port.

On Gigabit Ethernet IQ2 and IQ2-E PICs with the `per-unit-scheduler` statement, the entire PIC supports $1024 - 2 * \text{number of ports}$ (1024 minus two times the number of ports), because each port is allocated two default schedulers.

When including the `per-unit-scheduler` statement, you must also include the `vlan-tagging` statement or the `flexible-vlan-tagging` statement (to apply scheduling to VLANs) or the `encapsulation frame-relay` statement (to apply scheduling to DLCIs) at the [edit interfaces *interface-name*] hierarchy level.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Applying Scheduler Maps and Shaping Rate to DLCIs and VLANs</i>• <i>Applying Scheduling and Shaping to VLANs</i>• Configuring Virtual LAN Queuing and Shaping on PTX Series Packet Transport Routers on page 76• <i>Scaling of Per-VLAN Queuing on Non-Queuing MPCs</i>• flexible-vlan-tagging on page 160• <i>vlan-tagging</i>

prbs

Syntax	(prbs no-prbs);
Hierarchy Level	[edit interfaces <i>interface-name</i> otn-options]
Release Information	Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specify whether OTN payload Pseudo-Random Binary Sequence (PBRS) is enabled or disabled.
Default	By default, OTN payload prbs is disabled.
Options	prbs —Enable OTN payload PBRS. no-prbs —Disable OTN payload PBRS.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • 100-Gigabit Ethernet OTN Options Configuration Overview on page 38 • Configuring OTN Optics on page 39

preemptive-fast-reroute

Syntax	<pre>preemptive-fast-reroute { (backward-frr-enable no-backward-frr-enable); (signal-degrade-monitor-enable no-signal-degrade-monitor-enable); }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> otn-options]
Release Information	Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Enable or disable preemptive fast reroute (FRR) options.
Default	By default, FRR insertion and signal degrade monitoring are disabled.
Options	The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • 100-Gigabit Ethernet OTN Options Configuration Overview on page 38 • Configuring OTN Optics on page 39

probe-count

Syntax	<code>probe-count <i>count</i>;</code>
Hierarchy Level	[edit services rpm bgp], [edit services rpm probe owner test <i>test-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Specify the number of probes within a test.
Options	<i>count</i> —A value from 1 through 15.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring BGP Neighbor Discovery Through RPM on page 121• Configuring RPM Probes on page 123

probe-interval

Syntax	<code>probe-interval <i>interval</i>;</code>
Hierarchy Level	[edit services rpm bgp], [edit services rpm probe owner test <i>test-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Specify the time to wait between sending packets, in seconds.
Options	<i>interval</i> —Number of seconds, from 1 through 255.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring BGP Neighbor Discovery Through RPM on page 121• Configuring RPM Probes on page 123

probe-limit

Syntax	<code>probe-limit <i>limit</i>;</code>
Hierarchy Level	[edit services rpm]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Configure the maximum number of concurrent probes allowed.
Options	limit —Maximum number of concurrent probes allowed. Range: 1 through 500(PTX Series Packet Transport Routers only) 1 through 200 Default: 100
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Limiting the Number of Concurrent RPM Probes on page 127

probe-server

Syntax

```
probe-server {  
  tcp {  
    destination-interface interface-name;  
    port number;  
  }  
  udp {  
    destination-interface interface-name;  
    port number;  
  }  
}
```

Hierarchy Level [edit [services](#) rpm]

Release Information Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.3 for EX Series switches.
Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.

Description Specify the server to act as a receiver for the probes.

The remaining statements are explained separately.



.....

NOTE: The `destination-interface` statement is not supported on PTX Series routers.

.....

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

Related Documentation

- [Configuring RPM Receiver Servers on page 127](#)

probe-type

Syntax	<code>probe-type type;</code>
Hierarchy Level	[edit services rpm bgp], [edit services rpm probe owner test test-name]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Specify the packet and protocol contents of a probe.
Options	<p>type—Specify one of the following probe type values:</p> <ul style="list-style-type: none"> • http-get—(Not available at the [edit services rpm bgp] hierarchy level.) Sends a Hypertext Transfer Protocol (HTTP) get request to a target URL. • http-metadata-get—(Not available at the [edit services rpm bgp] hierarchy level.) Sends an HTTP get request for metadata to a target URL. • icmp-ping—Sends ICMP echo requests to a target address. • icmp-ping-timestamp—Sends ICMP timestamp requests to a target address. • tcp-ping—Sends TCP packets to a target. • udp-ping—Sends UDP packets to a target. • udp-ping-timestamp—Sends UDP timestamp requests to a target address.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring BGP Neighbor Discovery Through RPM on page 121

protocol (Schedulers)

Syntax	<code>protocol (any non-tcp tcp);</code>
Hierarchy Level	[edit class-of-service schedulers <i>scheduler-name</i> drop-profile-map]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers. Statement introduced in Junos OS Release 12.2 for ACX Series Routers.
Description	Specify the protocol type for the specified scheduler.
Options	any —Accept any protocol type. non-tcp —(ACX Series Routers, M Series and T Series (except T4000) routers only) Accept any protocol type other than TCP/IP.



NOTE: On ACX Series Routers, when you configure the **non-tcp** option, only the **any** option is supported for *loss-priority*.

	tcp —(ACX Series Routers, M Series and T Series (except T4000) routers only) Accept TCP/IP protocol type.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Schedulers</i>

rate

Syntax	<pre>rate { (fixed-stuff-bytes no-fixed-stuff-bytes); otu4; (pass-through no-pass-through); }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> otn-options]
Release Information	Statement introduced in Junos OS Release 9.4. Statement and otu4 option introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specify rate options.
Options	The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • 100-Gigabit Ethernet OTN Options Configuration Overview on page 38 • Configuring OTN Optics on page 39

recovered-clock

Syntax	<pre>recovered-clock { port <i>port-number</i>; }</pre>
Hierarchy Level	[edit chassis fpc <i>slot-number</i> pic <i>pic-number</i>]
Release Information	Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Description	Select the port where the synchronous clock may be recovered.
Options	<i>port-number</i> —Port number where the synchronous clock may be recovered.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Clock Sources for PTX Series Packet Transport Routers on page 27 • Configuring an External Clock Synchronization Interface for PTX Series Packet Transport Routers on page 30 • synchronization on page 207

routing-instance

Syntax	<code>routing-instance <i>instance-name</i>;</code>
Hierarchy Level	[edit services rpm probe owner test <i>test-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Specify the routing instance used by the probes.
Options	<i>instance-name</i> —A routing instance configured at the [edit routing-instance] hierarchy level. Default: Internet routing table <code>inet.0</code> .
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring RPM Probes on page 123

routing-instances

Syntax	<code>routing-instances <i>instance-name</i>;</code>
Hierarchy Level	[edit services rpm bgp], [edit services rpm bgp logical-system <i>logical-system-name</i>]
Release Information	Statement introduced in Junos OS Release 7.6. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Specify the routing instance used by the probes.
Options	<i>instance-name</i> —A routing instance configured at the [edit routing-instances] hierarchy level. Default: Internet routing table <code>inet.0</code> .
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring BGP Neighbor Discovery Through RPM on page 121

rpm

Syntax

```
rpm {
  bgp {
    data-fill data;
    data-size size;
    destination-port port;
    history-size size;
    logical-system logical-system-name <routing-instances routing-instance-name>;
    moving-average-size number;
    probe-count count;
    probe-interval seconds;
    probe-type type;
    routing-instances instance-name;
    test-interval interval;
  }
}
```

Hierarchy Level [edit services]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure BGP neighbor discovery through RPM.

The remaining statements are explained separately.

Usage Guidelines See [“Configuring BGP Neighbor Discovery Through RPM” on page 121](#).

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

sa-multicast (PTX Series Packet Transport Routers)

Syntax	sa-multicast;
Hierarchy Level	[edit chassis fpc <i>slot</i> pic <i>slot</i> port <i>port-number</i> forwarding-mode]
Release Information	Statement introduced in Junos OS Release 12.1X48R4.
Description	Configure source address (SA) multicast bit mode on the 100-Gigabit Ethernet PIC P1-PTX-2-100GE-CFP to enable interoperability with 100-Gigabit Ethernet PIC PD-ICE-CFP-FPC4.



NOTE: When SA multicast bit steering mode is configured on a PTX Series Packet Transport Router 100-Gigabit Ethernet port, VLANs are not supported for that port.

Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Interoperability Between the 100-Gigabit Ethernet PICs PD-ICE-CFP-FPC4 and P1-PTX-2-100GE-CFP on page 43• Configuring the Interoperability Between the 100-Gigabit Ethernet PICs P1-PTX-2-100GE-CFP and PD-ICE-CFP-FPC4 on page 44

server-address (Hosted Services)

Syntax	server-address <i>ipv4-address</i> ;
Hierarchy Level	[edit services hosted-services server-profile <i>server-profile-name</i>]
Release Information	Statement introduced in Junos OS Release 13.2.
Description	Configure the server address where sampled packets are sent.
Options	<i>ipv4-address</i> —IPv4 address of the server.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Active Flow Monitoring on PTX Series Packet Transport Routers on page 116

server-profile

Syntax	<code>server-profile <i>server-profile-name</i> { client-address <i>ipv4-address</i>; server-address <i>ipv4-address</i>; }</code>
Hierarchy Level	[edit services hosted-services]
Release Information	Statement introduced in Junos OS Release 13.2.
Description	Configure the server profile.
Options	<i>server-profile-name</i> —Name to apply to this server profile. The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring Active Flow Monitoring on PTX Series Packet Transport Routers on page 116


server-profile (Active Flow Monitoring)

Syntax	<code>server-profile <i>server-profile-name</i>;</code>
Hierarchy Level	[edit forwarding-options port-mirroring instance <i>instance-name</i> family (inet inet6 mpls) output]
Description	Specify the name of a server profile. This profile specifies a host where sampled traffic is sent.
Options	<i>server-profile-name</i> —Specify the name of a server profile configured at the [edit services hosted-services server-profile <i>server-profile-name</i>] hierarchy level.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • hosted-services on page 166 • Configuring Active Flow Monitoring on PTX Series Packet Transport Routers on page 116

services (RPM)

Syntax	<code>services rpm { ... }</code>
Hierarchy Level	[edit]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Define the service rules to be applied to traffic.
Options	rpm —Identifies the RPM set of rules statements.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring BGP Neighbor Discovery Through RPM on page 121• Configuring RPM Probes on page 123• Configuring RPM Receiver Servers on page 127• Limiting the Number of Concurrent RPM Probes on page 127• <i>Configuring RPM Timestamping</i>• <i>Configuring TWAMP</i>• <i>Enabling RPM for the Services SDK</i>

shaping-rate (Applying to an Interface)

Syntax	<code>shaping-rate rate;</code>
Hierarchy Level	[edit class-of-service interfaces <i>interface-name</i>], [edit class-of-service interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. [edit class-of-service interfaces <i>interface-name</i>] hierarchy level added in Junos OS Release 7.5. Statement introduced in Junos OS Release 13.2 on PTX Series Packet Transport Routers.
Description	<p>For logical interfaces on which you configure packet scheduling, configure traffic shaping by specifying the amount of bandwidth to be allocated to the logical interface.</p> <p>For physical interfaces on IQ PICs and T4000 routers with Type 5 FPCs only, configure traffic shaping based on the rate-limited bandwidth of the total interface bandwidth.</p> <p>Logical and physical interface traffic shaping rates are mutually exclusive. This means you can include the shaping-rate statement at the [edit class-of-service interfaces <i>interface-name</i>] hierarchy level or the [edit class-of-service interfaces <i>interface-name</i> unit <i>logical-unit-number</i>] hierarchy level, but not both.</p> <div style="margin-top: 20px;">  <p>NOTE: For MX Series routers and for EX Series switches, the shaping rate value for the physical interface at the [edit class-of-service interfaces <i>interface-name</i>] hierarchy level must be a minimum of 160 Kbps. If the value is less than the sum of the logical interface guaranteed rates, the user is not allowed to apply the shaping rate to a physical interface.</p> <p>For T4000 routers with Type 5 FPCs, the shaping rate value for the physical interface must be a minimum of 292 Kbps. The maximum value of shaping-rate is limited by the maximum transmission rate of the interface.</p> </div> <p>Alternatively, you can configure a shaping rate for a logical interface and oversubscribe the physical interface by including the shaping-rate statement at the [edit class-of-service traffic-control-profiles] hierarchy level. With this configuration approach, you can independently control the delay-buffer rate, as described in <i>Oversubscribing Interface Bandwidth</i>.</p> <p>For FRF.15 and FRF.16 bundles on link services interfaces, only shaping rates based on percentage are supported.</p>
Default	If you do not include this statement at the [edit class-of-service interfaces <i>interface-name</i> unit <i>logical-unit-number</i>] hierarchy level, the default logical interface bandwidth is the average of unused bandwidth for the number of logical interfaces that require default bandwidth treatment. If you do not include this statement at the [edit class-of-service interfaces <i>interface-name</i>] hierarchy level, the default physical interface bandwidth is the

average of unused bandwidth for the number of physical interfaces that require default bandwidth treatment.

Options *rate*—Peak rate, in bits per second (bps). You can specify a value in bits per second either as a complete decimal number or as a decimal number followed by the abbreviation **k** (1000), **m** (1,000,000), or **g** (1,000,000,000).

Range: For logical interfaces, 1000 through 32,000,000,000 bps. For physical interfaces, 1000 through 160,000,000,000 bps.



.....
NOTE: For all MX Series and EX series interfaces, the rate can be from 65,535 through 160,000,000,000 bps.
.....



.....
NOTE: For T4000 physical interfaces, the rate can be from 1000 through 160,000,000,000 bps.
.....

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

Related Documentation

- [Applying Scheduler Maps Overview](#)
- [Configuring Virtual LAN Queuing and Shaping on PTX Series Packet Transport Routers on page 76](#)

short-name-format

Syntax	short-name-format (character-string vlan 2octet rfc-2685-vpn-id);
Hierarchy Level	[edit protocols oam ethernet connectivity-fault-management maintenance-domain domain-name maintenance-association ma-name]
Release Information	Statement introduced in Junos OS Release 8.4. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Description	Specify the name format of the maintenance association name.
Options	<p>character-string—The name is an ASCII character string.</p> <p>vlan—The primary VLAN identifier.</p> <p>2octet—A number in the range 0 through 65,535.</p> <p>rfc-2685-vpn-id—A VPN identifier that complies with RFC 2685.</p> <p>Default: character-string</p>



NOTE: The PTX Series Packet Transport Routers support the **vlan** and **2octet** options only.

Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Creating a Maintenance Association • Configuring Ethernet 802.1ag OAM on PTX Series Packet Transport Routers on page 22

signal-degrade

Syntax	<pre>signal-degrade { ber-threshold-clear <i>value</i>; ber-threshold-signal-degrade <i>value</i>; interval <i>value</i>; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> otn-options]
Release Information	Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specify signal-degrade thresholds.
Options	The remaining statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• 100-Gigabit Ethernet OTN Options Configuration Overview on page 38• Configuring OTN Optics on page 39

source-address

Syntax	<pre>source-address <i>address</i>;</pre>
Hierarchy Level	[edit services rpm probe owner test <i>test-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Specify the source IP address used for probes. If the source IP address is not one of the router's or switch's assigned addresses, the packet will use the outgoing interface's address as its source.
Options	<i>address</i> —Valid IP address.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring RPM Probes on page 123

source-address-filter

Syntax	<pre>source-address-filter { mac-address; }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> aggregated-ether-options], [edit interfaces <i>interface-name</i> fastether-options], [edit interfaces <i>interface-name</i> gigether-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1X48 for PTX Packet Transport Routers.
Description	For aggregated Ethernet, Fast Ethernet, Gigabit Ethernet, Gigabit Ethernet IQ interfaces, and Gigabit Ethernet PICs with SFPs (except the 10-port Gigabit Ethernet PIC and the built-in Gigabit Ethernet port on the M7i router), specify the MAC addresses from which the interface can receive packets. For this statement to have any effect, you must include the source-filtering statement in the configuration to enable source address filtering. This statement is not supported on the J Series Services Routers.
Options	<p>mac-address—MAC address filter. You can specify the MAC address as <i>nn:nn:nn:nn:nn:nn</i> or <i>nnnn.nnnn.nnnn</i>, where <i>n</i> is a decimal digit. To specify more than one address, include multiple mac-address options in the source-address-filter statement.</p> <p>If you enable the VRRP on a Fast Ethernet or Gigabit Ethernet interface, as described in <i>VRRP and VRRP for IPv6 Overview</i>, and if you enable MAC source address filtering on the interface, you must include the virtual MAC address in the list of source MAC addresses that you specify in the source-address-filter statement. MAC addresses ranging from 00:00:5e:00:01:00 through 00:00:5e:00:01:ff are reserved for VRRP, as defined in RFC 3768, <i>Virtual Router Redundancy Protocol</i>. When you configure the VRRP group, the group number must be the decimal equivalent of the last hexadecimal byte of the virtual MAC address.</p> <p>On untagged Gigabit Ethernet interfaces, you should not configure the source-address-filter statement and the accept-source-mac statement simultaneously. On tagged Gigabit Ethernet interfaces, you should not configure the source-address-filter statement and the accept-source-mac statement with an identical MAC address specified in both filters.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Enabling Ethernet MAC Address Filtering</i> • Configuring MAC Filtering on PTX Series Packet Transport Routers on page 17 • source-filtering on page 206

source-filtering

Syntax	(source-filtering no-source-filtering);
Hierarchy Level	[edit interfaces <i>interface-name</i> aggregated-ether-options], [edit interfaces <i>interface-name</i> fastether-options], [edit interfaces <i>interface-name</i> gigether-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1X48 for PTX Packet Transport Routers.
Description	<p>For aggregated Ethernet, Fast Ethernet, Gigabit Ethernet, and Gigabit Ethernet IQ interfaces only, enable the filtering of MAC source addresses, which blocks all incoming packets to that interface. To allow the interface to receive packets from specific MAC addresses, include the source-address-filter statement.</p> <p>If the remote Ethernet card is changed, the interface is no longer able to receive packets from the new card because it has a different MAC address.</p>
Default	Source address filtering is disabled.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Enabling Ethernet MAC Address Filtering• Configuring MAC Filtering on PTX Series Packet Transport Routers on page 17• accept-source-mac on page 142• source-address-filter on page 205

synchronization (M Series, T Series, and PTX Series)

Syntax	<pre>synchronization { primary (external-a external-b fpc-slot-number gps-0-10mhz gps-0-5mhz gps-1-10mhz gps-1-5mhz bits-a bits-b); secondary (external-a external-b fpc-slot-number gps-0-10mhz gps-0-5mhz gps-1-10mhz gps-1-5mhz bits-a bits-b); signal-type (t1 e1); switching-mode (revertive non-revertive); transmitter-enable; validation-interval seconds; y-cable-line-termination; }</pre>
Hierarchy Level	[edit chassis]
Release Information	<p>Statement introduced in Junos OS Release 7.6.</p> <p>Statement introduced in Junos OS Release 9.3 for M120 routers.</p> <p>Statement introduced in Junos OS Release 10.2 for T320, T640, and T1600 routers.</p> <p>Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.</p>
Description	<p>(M320, M40e, M120, T320, T640, and T1600 routers and PTX Series Packet Transport Routers only) Configure an external synchronization interface to synchronize the internal Stratum 3 clock to an external source, and then synchronize the chassis interface clock to that source.</p>
Options	<p>primary—First external timing source specified in the configuration hierarchy. This statement has the following suboptions:</p> <ul style="list-style-type: none"> external-a—Use external-a as the primary clock synchronization source. external-b—Use external-b as the primary clock synchronization source. fpc-slot-number—Use fpc-slot-number as the primary clock synchronization source. For the PTX5000 Packet Transport Router, replace <i>slot-number</i> with a value from 0 through 7. gps-0-10mhz—Use gps-0-10mhz as the primary clock synchronization source. gps-0-5mhz—Use gps-0-5mhz as the primary clock synchronization source. gps-1-10mhz—Use gps-1-10mhz as the primary clock synchronization source. gps-1-5mhz—Use gps-1-5mhz as the primary clock synchronization source. bits-a—Use bits-a as the primary clock synchronization source. bits-b—Use bits-b as the primary clock synchronization source. <p>secondary—Second external timing source specified in the configuration hierarchy.</p> <ul style="list-style-type: none"> external-a—Use external-a as the secondary clock synchronization source. external-b—Use external-b as the secondary clock synchronization source.

- **fpc-slot-number**—Use **fpc-slot-number** as the secondary clock synchronization source. For the PTX5000 Packet Transport Router, replace *slot-number* with a value from 0 to 7.
- **gps-0-10mhz**—Use **gps-0-10mhz** as the secondary clock synchronization source.
- **gps-0-5mhz**—Use **gps-0-5mhz** as the secondary clock synchronization source.
- **gps-1-10mhz**—Use **gps-1-10mhz** as the secondary clock synchronization source.
- **gps-1-5mhz**—Use **gps-1-5mhz** as the secondary clock synchronization source.
- **bits-a**—Use **bits-a** as the secondary clock synchronization source.
- **bits-b**—Use **bits-b** as the secondary clock synchronization source.

signal-type—Specify the line encoding mode for interfaces: either **t1** or **e1**. For the M40e router, only the **t1 signal-type** mode is supported.

Default: t1

switching-mode—Specify **revertive** if a lower-priority synchronization can be switched to a valid, higher-priority synchronization.

Default: non-revertive

transmitter-enable—(M320 routers only) Control whether the diagnostic timing signal is transmitted.

validation-interval—Validate the synchronized deviation. If revertive switching is enabled and a higher-priority clock is validated, the clock module is directed to the higher-priority clock, and all configured and active synchronizations are validated. The validation timer resumes after the current validation interval expires. This feature is not supported on PTX Series Packet Transport Routers.

Range: (M320, M40e, T320, T640, T1600 routers) 90 through 86,400 seconds. (M120 routers) 30 through 86,400 seconds.

Default: (M320, M40e, T320, T640, T1600 routers) 90 seconds. (M120 routers) 30 seconds

y-cable-line-termination—(M320 routers only) Specify that a single signal be wired to both Control Boards (CBs) using a Y-cable.

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

Related Documentation	<ul style="list-style-type: none">• <i>Configuring the Junos OS to Support an External Clock Synchronization Interface for M Series and T Series Routers</i>
------------------------------	--

target (Services RPM)

Syntax	<code>target (url <i>url</i> address <i>address</i>);</code>
Hierarchy Level	<code>[edit services rpm probe <i>owner</i> test <i>test-name</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Packet Transport Routers.
Description	Specify the destination address or URL used for the probes.
Options	url <i>url</i> —For HTTP probe types, specify a fully formed URL that includes http:// in the URL address. address <i>address</i> —For all other probe types, specify an IPv4 address for the target host.
Required Privilege Level	interface —To view this statement in the configuration. interface-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring RPM Probes on page 123

tcp

Syntax	<pre>tcp { destination-interface <i>interface-name</i>; port <i>port</i>; }</pre>
Hierarchy Level	<code>[edit services rpm probe-server]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Specify the port information for the TCP server. The remaining statements are explained separately.
Required Privilege Level	interface —To view this statement in the configuration. interface-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring RPM Receiver Servers on page 127

test

Syntax `test test-name {
 data-fill data;
 data-size size;
 destination-interface interface-name;
 destination-port port;
 dscp-code-point dscp-bits;
 hardware-timestamp;
 history-size size;
 moving-average-size number;
 one-way-hardware-timestamp;
 probe-count count;
 probe-interval seconds;
 probe-type type;
 routing-instance instance-name;
 source-address address;
 target (url url | address address);
 test-interval interval;
 thresholds thresholds;
 traps traps;
 }`

Hierarchy Level [edit [services](#) rpm probe owner]

Release Information Statement introduced before Junos OS Release 7.4.
 Statement introduced in Junos OS Release 9.3 for EX Series switches.
 Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.

Description Specify the range of probes over which the standard deviation, average, and jitter are calculated. The test name combined with the owner name represent a single RPM configuration instance.

Options **test-name**—Specify a test name. The name can be up to 32 characters in length.

 The remaining statements are explained separately.

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

Related Documentation • [Configuring RPM Probes on page 123](#)

test-interval

Syntax	<code>test-interval <i>frequency</i>;</code>
Hierarchy Level	[edit services rpm bgp], [edit services rpm probe owner test test-name]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Specify the time to wait between tests, in seconds.
Options	<i>frequency</i> —Number of seconds, from 0 through 86400.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring BGP Neighbor Discovery Through RPM on page 121• Configuring RPM Probes on page 123

thresholds

Syntax	<code>thresholds thresholds;</code>
Hierarchy Level	[edit services rpm probe owner test test-name]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Packet Series Transport Routers.
Description	Specify thresholds used for the probes. A system log message is generated when the configured threshold is exceeded. Likewise, an SNMP trap (if configured) is generated when a threshold is exceeded.
Options	<p>thresholds—Specify one or more threshold measurements. The following options are supported:</p> <ul style="list-style-type: none">• egress-time—Measures maximum source-to-destination time per probe.• ingress-time—Measures maximum destination-to-source time per probe.• jitter-egress—Measures maximum source-to-destination jitter per test.• jitter-ingress—Measures maximum destination-to- source jitter per test.• jitter-rtt—Measures maximum jitter per test, from 0 through 60,000,000 microseconds.• rtt—Measures maximum round-trip time per probe, in microseconds.• std-dev-egress—Measures maximum source-to-destination standard deviation per test.• std-dev-ingress—Measures maximum destination-to-source standard deviation per test.• std-dev-rtt—Measures maximum standard deviation per test, in microseconds.• successive-loss—Measures successive probe loss count, indicating probe failure.• total-loss—Measures total probe loss count indicating test failure, from 0 through 15.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring RPM Probes on page 123

transport-type

Syntax	transport-type <i>type</i> ;
Hierarchy Level	[edit services hosted-services server-profile <i>server-profile-name</i>]
Release Information	Statement introduced in Junos OS Release 13.2.
Description	Configure the transport type.
Options	<i>type</i> —Transport type. Range: GRE, TCP, or UDP
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Active Flow Monitoring on PTX Series Packet Transport Routers on page 116

traps

Syntax	<code>traps traps;</code>
Hierarchy Level	[edit services rpm probe owner test test-name]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Set the trap bit to generate traps for probes. Traps are sent if the configured threshold is met or exceeded.
Options	<p>traps—Specify one or more traps. The following options are supported:</p> <ul style="list-style-type: none">• egress-jitter-exceeded—Generates traps when the jitter in egress time threshold is met or exceeded.• egress-std-dev-exceeded—Generates traps when the egress time standard deviation threshold is met or exceeded.• egress-time-exceeded—Generates traps when the maximum egress time threshold is met or exceeded.• ingress-jitter-exceeded—Generates traps when the jitter in ingress time threshold is met or exceeded.• ingress-std-dev-exceeded—Generates traps when the ingress time standard deviation threshold is met or exceeded.• ingress-time-exceeded—Generates traps when the maximum ingress time threshold is met or exceeded.• jitter-exceeded—Generates traps when the jitter in round-trip time threshold is met or exceeded.• probe-failure—Generates traps for successive probe loss thresholds crossed.• rtt-exceeded—Generates traps when the maximum round-trip time threshold is met or exceeded.• std-dev-exceeded—Generates traps when the round-trip time standard deviation threshold is met or exceeded.• test-completion—Generates traps when a test is completed.• test-failure—Generates traps when the total probe loss threshold is met or exceeded.



NOTE: For RPM traps to be generated, you must configure the remote-operations SNMP trap category by including the `categories` statement at the [edit snmp trap-group *trap-group-name* hierarchy level.

Required Privilege	interface—To view this statement in the configuration.
Level	interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring RPM Probes on page 123• <i>categories</i>

trigger

Syntax	<code>trigger trigger-identifier (hold-time hold-time-value ignore);</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> otn-options]
Release Information	Statement introduced in Junos OS Release 9.4. Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specify defect triggers.
Default	By default, triggers are ignored.
Options	<p><i>trigger-identifier</i>—(For M Series, MX Series, SRX Series, and T Series routers only) Trigger identifier. It can be one of the following:</p> <ul style="list-style-type: none">• oc-lof—Optical Channel (OC) Loss of Frame defect trigger.• oc-lom—OC Loss of Multiframe defect trigger.• oc-los—OC Loss of Signal defect trigger.• oc-wavelength-lock—OC Wavelength Lock defect trigger.• odu-ais—Optical Channel Data Unit (ODU) Alarm Indication Signal defect trigger.• odu-bbe-th—ODU Background Block Error Threshold defect trigger.• odu-bdi—ODU Backward Defect Indication defect trigger.• odu-es-th—ODU Errored Seconds Threshold defect trigger.• odu-lck—ODU Locked defect trigger.• odu-oci—ODU Open Connection Indication defect trigger.• odu-sd—ODU Signal Degrade defect trigger.• odu-ses-th—ODU Severely Errored Seconds Threshold defect trigger.• odu-ttim—ODU Trail Trace Identifier Mismatch defect trigger.• odu-uas-th—ODU Unavailable Seconds Threshold defect trigger.• opu-ptm—Optical Channel Payload (OPU) Payload Type Mismatch defect trigger.• otu-ais—Optical Channel Transport Unit (OTU) Alarm Indication Signal defect trigger.• otu-bbe-th—OTU Background Block Error Threshold defect trigger.• otu-bdi—OTU Backward Defect Indication defect trigger.• otu-es-th—OTU Errored Seconds Threshold defect trigger.• otu-fec-deg—OTU FEC Degrade defect trigger.• otu-fec-exe—OTU FEC Excessive Error defect trigger.• otu-iae—OTU Incoming Alignment defect trigger.

- **otu-sd**—OTU Signal Degrade defect trigger.
- **otu-ses-th**—OTU Severely Errored Seconds Threshold defect trigger.
- **otu-ttim**—OTU Trail Trace Identifier Mismatch defect trigger.
- **otu-uas-th**—OTU Unavailable Seconds Threshold defect trigger.

trigger-identifier—(For PTX Series routers only) Trigger identifier. It can be one of the following:

- **oc-lof**—Optical Channel (OC) Loss of Frame defect trigger.
- **oc-lom**—OC Loss of Multiframe defect trigger.
- **oc-los**—OC Loss of Signal defect trigger.
- **oc-tsfc**—OC TOE security functionality (TSF) defect trigger.
- **oc-wavelength-lock**—OC Wavelength Lock defect trigger.
- **odu-ais**—ODU Alarm Indication Signal defect trigger.
- **odu-bdi**—ODU Backward Defect Indication defect trigger.
- **odu-bei**—ODU Backward Error Indication defect trigger.
- **odu-iae**—ODU IAE defect trigger.
- **odu-lck**—ODU Locked defect trigger.
- **odu-oci**—ODU Open Connection Indication defect trigger.
- **odu-sd**—ODU Signal Degrade defect trigger.
- **odu-tca-bbe**—ODU Background Block Error Threshold crossing defect trigger.
- **odu-tca-bbe-fe**—ODU far-end Background Block Error (BEI) Threshold crossing defect trigger.
- **odu-tca-es**—ODU Errored Seconds Threshold crossing defect trigger.
- **odu-tca-es-fe**—ODU far-end Errored Seconds Threshold crossing defect trigger.
- **odu-tca-ses**—ODU Severely Errored Seconds Threshold crossing defect trigger.
- **odu-tca-ses-fe**—ODU far-end Severely Errored Seconds Threshold crossing defect trigger.
- **odu-tca-uas**—ODU Unavailable Seconds Threshold crossing defect trigger.
- **odu-tca-uas-fe**—ODU far-end Unavailable Seconds Threshold crossing defect trigger.
- **odu-ttim**—ODU Trail Trace Identifier Mismatch defect trigger.
- **opu-ptim**—Payload Type Identifier Mismatch defect trigger.
- **otu-ais**—OTU Alarm Indication Signal defect trigger.
- **otu-bdi**—OTU Backward Defect Indication defect trigger.
- **otu-fec-deg**—OTU FEC Degrade defect trigger.
- **otu-fec-exe**—OTU FEC Excessive Error defect trigger.
- **otu-iae**—OTU Incoming Alignment defect trigger.
- **otu-sd**—OTU Signal Degrade defect trigger.
- **otu-tca-bbe**—OTU Background Block Error Threshold crossing defect trigger.
- **otu-tca-bbe-fe**—OTU far-end Background Block Error (BEI) Threshold crossing defect trigger.
- **otu-tca-es**—OTU Errored Seconds Threshold crossing defect trigger.

- **otu-tca-es-fe**—OTU far-end Errored Seconds Threshold crossing defect trigger.
- **otu-tca-ses**—OTU Severely Errored Seconds Threshold crossing defect trigger.
- **otu-tca-ses-fe**—OTU far-end Severely Errored Seconds Threshold crossing defect trigger.
- **otu-tca-uas**—OTU Unavailable Seconds Threshold crossing defect trigger.
- **otu-tca-uas-fe**—OTU far-end Unavailable Seconds Threshold crossing defect trigger.
- **otu-ttim**—OTU Trail Trace Identifier Mismatch defect trigger.

hold-time *hold-time-value*—Hold time value. It can be one of the following:

- **down**—Delay before marking interface down when defect occurs (1.65534 milliseconds).
- **up**—Delay before marking interface up when defect is absent (1.65534 milliseconds).

Required Privilege Level	interface—To view this statement in the configuration.
	interface-control—To add this statement to the configuration.
Related Documentation	• 100-Gigabit Ethernet OTN Options Configuration Overview on page 38
	• Configuring OTN Optics on page 39


tti

Syntax	<code>tti <i>tti-identifier</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> otn-options]
Release Information	Statement introduced in Junos OS Release 9.4. Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specify trace identifier options.
Options	<p><i>tti-identifier</i>—Trace identifier. It can be one of the following:</p> <ul style="list-style-type: none"> • odu-dapi—Optical Channel Data Unit (ODU) Destination Access Point Identifier. • odu-expected-receive-dapi—ODU Expected Receive Destination Access Point Identifier. • odu-expected-receive-sapi—ODU Expected Receive Source Access Point Identifier. • odu-sapi—ODU Source Access Point Identifier. • otu-dapi—Optical Channel Transport Unit (OTU) Destination Access Point Identifier. • otu-expected-receive-dapi—OTU Expected Receive Destination Access Point Identifier. • otu-expected-receive-sapi—OTU Expected Receive Source Access Point Identifier. • otu-sapi—OTU Source Access Point Identifier.
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • 100-Gigabit Ethernet OTN Options Configuration Overview on page 38 • Configuring OTN Optics on page 39

tx-power

Syntax	<code>tx-power <i>dbm</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> optics-options]
Release Information	Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Transmit laser output power (dBm).
Default	If you don't specify a value, the default transmit laser output power is -2 dBm.
Options	<i>dbm</i> —Transmit power value.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Ethernet DWDM Interface Wavelength Overview on page 37• optics-options on page 181• 100-Gigabit Ethernet OTN Options Configuration Overview on page 38

udp

Syntax	<pre>udp { destination-interface <i>interface-name</i>; port <i>port</i>; }</pre>
Hierarchy Level	[edit services rpm probe-server]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.3 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Specify the port information for the UDP server. The remaining statements are explained separately.
	<div> NOTE: The <code>destination-interface</code> statement is not supported on PTX Series routers.</div>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring RPM Receiver Servers on page 127

vlan-tags (Stacked VLAN Tags)

Syntax	<code>vlan-tags inner <i>tpid.vlan-id</i> inner-range <i>vid1—vid2</i> outer <i>tpid.vlan-id</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.
Description	For Gigabit Ethernet IQ and IQE interfaces only, bind TPIDs and 802.1Q VLAN tag IDs to a logical interface.



NOTE: The inner-range *vid1—vid2* option is supported on MX Series with IQE PICs only.

Options	<p>inner <i>tpid.vlan-id</i>—A TPID and a valid VLAN identifier.</p> <p>Range: (most routers) For VLAN ID, 1 through 4094. VLAN ID 0 is reserved for tagging the priority of frames.</p> <p>Range: (PTX Series) For VLAN ID, 0 through 4094.</p> <p>inner-range <i>vid1—vid2</i>—For MX Series routers with Enhanced IQ (IQE) PICs only; specify a range of VLAN IDs where <i>vid1</i> is the start of the range and <i>vid2</i> is the end of the range.</p> <p>Range: For VLAN ID, 1 through 4094. VLAN ID 0 is reserved for tagging the priority of frames.</p> <p>outer <i>tpid.vlan-id</i>—A TPID and a valid VLAN identifier.</p> <p>Range: (most routers) For VLAN ID, 1 through 511 for normal interfaces, and 512 through 4094 for VLAN CCC interfaces. VLAN ID 0 is reserved for tagging the priority of frames.</p> <p>Range: (PTX Series) For VLAN ID, 0 through 511 for normal interfaces, and 512 through 4094 for VLAN CCC interfaces.</p>
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NOTE: Configuring inner-range with the entire *vlan-id* range consumes system resources and is not a best practice. It should be used only when a subset of VLAN IDs of inner tag (not the entire range) needs to be associated with a logical interface. If you specify the entire range (1–4094), it has the same result as not specifying a range; however, it consumes Packet Forwarding Engine resources such as VLAN lookup table entries, and so on.

The following examples illustrate this further:

```
[edit interfaces interface-name]
```

```
stacked-vlan-tagging;
unit number {
    vlan-tags outer vid inner-range 1-4094;
}

[edit interfaces interface-name]
vlan-tagging;
unit number {
    vlan-id vid;
}
```

Required Privilege Level	interface—To view this statement in the configuration.
	interface-control—To add this statement to the configuration.
Related Documentation	• Configuring Dual VLAN Tags
	• Configuring Flexible VLAN Tagging on PTX Series Packet Transport Routers on page 18
	• stacked-vlan-tagging

warning

Syntax	<pre>warning low-light-warning { (link-down syslog); }</pre>
Hierarchy Level	[edit interfaces <i>interface-name</i> optics-options]
Release Information	Statement introduced in Junos OS Release 10.0. Statement introduced in Junos OS Release 12.1 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	Specifies the action to take if the receiving optics signal is below the optics low-light warning threshold.
Options	link-down —Drop the 10-Gigabit Ethernet link and marks link as down.
	syslog —Write the optics information to the system log.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	• Configuring 10-Gigabit Ethernet Link Down Notification for Optics Options Alarm or Warning
	• optics-options on page 181
	• 100-Gigabit Ethernet OTN Options Configuration Overview on page 38

wavelength

Syntax	<code>wavelength <i>nm</i>;</code>
Hierarchy Level	[edit interfaces <i>interface-name</i> optics-options]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 12.1 for EX Series switches. Statement introduced in Junos OS Release 13.2 for PTX Series routers.
Description	For 10-Gigabit or 100-Gigabit Ethernet DWDM interfaces only, configure full C-band ITU-Grid tunable optics.
Options	<p><i>nm</i>—Wavelength value. It can be one of the following:</p> <ul style="list-style-type: none"> • 1528.77—1528.77 nanometers (nm), corresponds to 50 GHz through 100 GHz • 1529.16—1529.16 nm, corresponds to 50 GHz • 1529.55—1529.55 nm, corresponds to 50 GHz through 100 GHz • 1529.94—1529.94 nm, corresponds to 50 GHz • 1530.33—1530.33 nm, corresponds to 50 GHz through 100 GHz • 1530.72—1530.72 nm, corresponds to 50 GHz • 1531.12—1531.12 nm, corresponds to 50 GHz through 100 GHz • 1531.51—1531.51 nm, corresponds to 50 GHz • 1531.90—1531.90 nm, corresponds to 50 GHz through 100 GHz • 1532.29—1532.29 nm, corresponds to 50 GHz • 1532.68—1532.68 nm, corresponds to 50 GHz through 100 GHz • 1533.07—1533.07 nm, corresponds to 50 GHz • 1533.47—1533.47 nm, corresponds to 50 GHz through 100 GHz • 1533.86—1533.86 nm, corresponds to 50 GHz • 1534.25—1534.25 nm, corresponds to 50 GHz through 100 GHz • 1534.64—1534.64 nm, corresponds to 50 GHz • 1535.04—1535.04 nm, corresponds to 50 GHz through 100 GHz • 1535.43—1535.43 nm, corresponds to 50 GHz • 1535.82—1535.82 nm, corresponds to 50 GHz through 100 GHz • 1536.22—1536.22 nm, corresponds to 50 GHz • 1536.61—1536.61 nm, corresponds to 50 GHz through 100 GHz • 1537.00—1537.00 nm, corresponds to 50 GHz • 1537.40—1537.40 nm, corresponds to 50 GHz through 100 GHz

- **1537.79**—1537.79 nm, corresponds to 50 GHz
- **1538.19**—1538.19 nm, corresponds to 50 GHz through 100 GHz
- **1538.58**—1538.58 nm, corresponds to 50 GHz
- **1538.98**—1538.98 nm, corresponds to 50 GHz through 100 GHz
- **1539.37**—1539.37 nm, corresponds to 50 GHz
- **1539.77**—1539.77 nm, corresponds to 50 GHz through 100 GHz
- **1540.16**—1540.16 nm, corresponds to 50 GHz
- **1540.56**—1540.56 nm, corresponds to 50 GHz through 100 GHz
- **1540.95**—1540.95 nm, corresponds to 50 GHz
- **1541.35**—1541.35 nm, corresponds to 50 GHz through 100 GHz
- **1541.75**—1541.75 nm, corresponds to 50 GHz
- **1542.14**—1542.14 nm, corresponds to 50 GHz through 100 GHz
- **1542.54**—1542.54 nm, corresponds to 50 GHz
- **1542.94**—1542.94 nm, corresponds to 50 GHz through 100 GHz
- **1543.33**—1543.33 nm, corresponds to 50 GHz
- **1543.73**—1543.73 nm, corresponds to 50 GHz through 100 GHz
- **1544.13**—1544.13 nm, corresponds to 50 GHz
- **1544.53**—1544.53 nm, corresponds to 50 GHz through 100 GHz
- **1544.92**—1544.92 nm, corresponds to 50 GHz
- **1545.32**—1545.32 nm, corresponds to 50 GHz through 100 GHz
- **1545.72**—1545.72 nm, corresponds to 50 GHz
- **1546.12**—1546.12 nm, corresponds to 50 GHz through 100 GHz
- **1546.52**—1546.52 nm, corresponds to 50 GHz
- **1546.92**—1546.92 nm, corresponds to 50 GHz through 100 GHz
- **1547.32**—1547.32 nm, corresponds to 50 GHz
- **1547.72**—1547.72 nm, corresponds to 50 GHz through 100 GHz
- **1548.11**—1548.11 nm, corresponds to 50 GHz
- **1548.51**—1548.51 nm, corresponds to 50 GHz through 100 GHz
- **1548.91**—1548.91 nm, corresponds to 50 GHz
- **1549.32**—1549.32 nm, corresponds to 50 GHz through 100 GHz
- **1549.72**—1549.72 nm, corresponds to 50 GHz
- **1550.12**—1550.12 nm, corresponds to 50 GHz through 100 GHz
- **1550.52**—1550.52 nm, corresponds to 50 GHz

- **1550.92**—1550.92 nm, corresponds to 50 GHz through 100 GHz
- **1551.32**—1551.32 nm, corresponds to 50 GHz
- **1551.72**—1551.72 nm, corresponds to 50 GHz through 100 GHz
- **1552.12**—1552.12 nm, corresponds to 50 GHz
- **1552.52**—1552.52 nm, corresponds to 50 GHz through 100 GHz
- **1552.93**—1552.93 nm, corresponds to 50 GHz
- **1553.33**—1554.33 nm, corresponds to 50 GHz through 100 GHz
- **1553.73**—1554.73 nm, corresponds to 50 GHz
- **1554.13**—1554.13 nm, corresponds to 50 GHz through 100 GHz
- **1554.54**—1554.54 nm, corresponds to 50 GHz
- **1554.94**—1554.94 nm, corresponds to 50 GHz through 100 GHz
- **1555.34**—1555.34 nm, corresponds to 50 GHz
- **1555.75**—1555.75 nm, corresponds to 50 GHz through 100 GHz
- **1556.15**—1556.15 nm, corresponds to 50 GHz
- **1556.55**—1556.55 nm, corresponds to 50 GHz through 100 GHz
- **1556.96**—1556.96 nm, corresponds to 50 GHz
- **1557.36**—1557.36 nm, corresponds to 50 GHz through 100 GHz
- **1557.77**—1557.77 nm, corresponds to 50 GHz
- **1558.17**—1558.17 nm, corresponds to 50 GHz through 100 GHz
- **1558.58**—1558.58 nm, corresponds to 50 GHz
- **1558.98**—1558.98 nm, corresponds to 50 GHz through 100 GHz
- **1559.39**—1559.39 nm, corresponds to 50 GHz
- **1559.79**—1559.79 nm, corresponds to 50 GHz through 100 GHz
- **1560.20**—1560.20 nm, corresponds to 50 GHz
- **1560.61**—1560.61 nm, corresponds to 50 GHz through 100 GHz
- **1561.01**—1561.01 nm, corresponds to 50 GHz
- **1561.42**—1561.42 nm, corresponds to 50 GHz through 100 GHz
- **1561.83**—1561.83 nm, corresponds to 50 GHz
- **1562.23**—1562.23 nm, corresponds to 50 GHz through 100 GHz
- **1562.64**—1562.64 nm, corresponds to 50 GHz
- **1563.05**—1563.05 nm, corresponds to 50 GHz through 100 GHz
- **1563.45**—1563.45 nm, corresponds to 50 GHz

- **1563.86**—1563.86 nm, corresponds to 50 GHz through 100 GHz

Default: 1550.12—1550.12 nm, corresponds to 50 GHz through 100 GHz

Required Privilege	interface—To view this statement in the configuration.
Level	interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Ethernet DWDM Interface Wavelength Overview on page 37

PART 3

Administration

- [Managing PTX Series Packet Transport Routers on page 231](#)
- [Managing the Boot Sequence on page 241](#)
- [Monitoring Commands for PTX Series Packet Transport Routers on page 245](#)

CHAPTER 16

Managing PTX Series Packet Transport Routers

request chassis ccg

Syntax	<code>request chassis ccg (offline online) slot <i>slot-number</i></code>
Release Information	Command introduced in Junos OS 12.1x48 for the PTX5000 Packet Transport Routers.
Description	(PTX5000 Packet Transport Routers) Control the operation of the Centralized Clock Generator (CCG).
Options	offline —Take the CCG offline. online —Bring the CCG online. slot <i>slot-number</i> —CCG slot number. Replace <i>slot-number</i> with a value from 0 through 1.
Required Privilege Level	maintenance
Related Documentation	<ul style="list-style-type: none">• <i>PTX Series Getting Started Guide</i>
List of Sample Output	request chassis ccg on page 232
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis ccg

```
user@host> request chassis ccg offline slot 1
CCG 1 is  offline, Backup CCG 0 is now online.
```

request chassis clock master switch

Syntax	request chassis clock master switch
Release Information	Command introduced in Junos OS Release 12.1.
Description	(PTX Series Packet Transport Routers only) Control which Centralized Clock Generator (CCG) is the master.
Options	This command has no options.
Additional Information	<p>By default, the CCG in slot 0 (CCG0) is the master and the CCG in slot 1 (CCG1) is the backup. If you use this command to change the master, and then restart the chassis software for any reason, the master reverts to the default setting. To change the default master CCG, include the ccg statement at the [edit chassis redundancy] hierarchy level in the configuration. For more information, see the <i>Junos OS Administration Library for Routing Devices</i>.</p> <p>The configurations on the two CCGs do not have to be the same, and they are not automatically synchronized. If you configure both CCGs as masters, when the chassis software restarts for any reason, the CCG in slot 0 becomes the master and the one in slot 1 becomes the backup.</p> <p>The switchover from the primary CCG to the backup CCG is immediate.</p>
Required Privilege Level	maintenance
Related Documentation	<ul style="list-style-type: none"> • show chassis environment on page 258
List of Sample Output	request chassis clock master switch on page 233
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

request chassis clock master switch

```
user@host> request chassis clock master switch
CCG master switch initiated, use "show chassis environment ccg" to verify
```

request chassis fpc

Syntax	request chassis fpc (offline online restart) slot <i>slot-number</i>
Syntax (TX Matrix and TX Matrix Plus Routers)	request chassis fpc (offline online restart) slot <i>slot-number</i> <lcc <i>number</i> >
Syntax (MX Series Routers)	request chassis fpc (offline online restart) slot <i>slot-number</i> <all-members> <local> <member <i>member-id</i> >
Syntax (MX2020 3D Universal Edge Routers)	request chassis fpc (offline online restart) slot <i>slot-number</i>
Syntax (MX2010 3D Universal Edge Routers)	request chassis fpc (offline online restart) slot <i>slot-number</i>
Syntax (QFabric System)	request chassis fpc <interconnect-device <i>name</i> slot <i>slot-number</i> (offline online)> <(offline online) interconnect-device <i>name</i> slot <i>slot-number</i> > <slot <i>slot-number</i> interconnect-device <i>name</i> (offline online)>
Syntax (PTX Series Packet Transport Routers)	request chassis fpc (offline online restart) slot <i>slot-number</i>
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 11.3 for QFX Series. Command introduced in Junos OS 12.1x48 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.
Description	(M20, M40, M40e, M120, M160, M320, MX Series, and T Series routers, QFabric systems, EX Series switches, and PTX Series Packet Transport Routers only) Control the operation of the Flexible PIC Concentrator (FPC). For information about the meaning of “FPCs” on the switches, see <i>EX Series Switches Hardware and CLI Terminology Mapping</i> .
Options	offline —Take the FPC offline. online —Bring the FPC online. interconnect-device <i>name</i> —(QFabric systems only) Bring the Flexible Port Concentrator (FPC) on the QFX3008-I Interconnect device either offline or online:

- (QFabric System) On a QFabric system, specify the name of the QFX3008-I Interconnect device containing the Flexible Port Concentrator (FPC) you want to bring either offline or online.

restart—Restart the FPC.

slot slot-number—FPC slot number:

- M20 router—0 through 3.
- M120 router—0 through 5.
- MX240 router—0 through 2. On the MX240 router, slot-number corresponds to the Dense Port Concentrator (DPC) slot number. If an MPC is installed, slot-number corresponds to the MPC slot number.
- MX480 router—0 through 5. On the MX480 router, slot-number corresponds to the Dense Port Concentrator (DPC) slot number. If an MPC is installed, slot-number corresponds to the MPC slot number.
- MX960 router—0 through 11. On the MX960 router, slot-number corresponds to the Dense Port Concentrator (DPC) slot number. If an MPC is installed, slot-number corresponds to the MPC slot number.
- MX2020 router—0 through 19.
- MX2010 router—0 through 9.
- TX Matrix and TX Matrix Plus routers only—On the TX Matrix router, if you specify the number of the T640 router by using the **lcc number** option (the recommended method), replace **slot-number** with a value from 0 through 7. Otherwise, replace **slot-number** with a value from 0 through 31.

Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 or T4000 router by using the **lcc number** option (the recommended method), replace **slot-number** with a value from 0 through 7. Otherwise, replace **slot-number** with a value from 0 through 31. In case of TX Matrix Plus router with 3D SIBs, replace **slot-number** with a value from 0 through 63. For example, the following commands have the same result:

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

- Other routers—0 through 7.
- QFabric System—Replace **slot-number** with a value from 0 through 2.
- EX Series switches:
 - EX4200 switches in a Virtual Chassis configuration—Replace **slot-number** with a value from 0 through 9.
 - EX6210 switches—Replace **slot-number** with a value from 0 through 9.



NOTE: These commands are not supported for slots 4 and 5 when a Switch Fabric and Routing Engine (SRE) module is installed in those slots. These commands are supported for slots 4 and 5 only if a line card is installed in them.

- EX8208 switches—Replace **slot-number** with a value from 0 through 7.
- EX8216 switches—Replace **slot-number** with a value from 0 through 15.
- PTX5000 Packet Transport Router—Replace **slot-number** with a value from 0 through 7.

all-members—(MX Series routers only) (Optional) Change FPC status of all members of the Virtual Chassis configuration.

local—(MX Series routers only) (Optional) Change FPC status of the local Virtual Chassis member.

member member-id—(MX Series routers only) (Optional) Change FPC status of the specified member of the Virtual Chassis configuration. Replace **member-id** with a value of 0 or 1.

lcc number—(TX Matrix router and TX Matrix Plus router 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.

Required Privilege Level maintenance

Related Documentation

- [show chassis fpc on page 541](#)
- *show chassis fpc-feb-connectivity*
- [show chassis fabric fpcs on page 460](#)
- *Configuring the Junos OS to Make a Flexible PIC Concentrator Stay Offline*
- *Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online*

- *MX960 Flexible PIC Concentrator Description*

List of Sample Output [request chassis fpc on page 237](#)
[request chassis fpc \(MX Series Routers with Media Services Blade \[MSB\]\) on page 237](#)
[request chassis fpc \(MX2020 Router\) on page 237](#)
[request chassis fpc \(MX2010 Router\) on page 237](#)

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

Sample Output

[request chassis fpc](#)

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

[request chassis fpc \(MX Series Routers with Media Services Blade \[MSB\]\)](#)

```
user@host> request chassis fpc slot 0
Possible completions:
offline           Take FPC offline
online            Bring FPC online
restart           Restart FPC
```

[request chassis fpc \(MX2020 Router\)](#)

```
user@host >request chassis fpc online slot 2
FPC 2 already online
```

[request chassis fpc \(MX2010 Router\)](#)

```
user@host >request chassis fpc offline slot 5
Offline initiated, use "show chassis fpc" to verify
```

request chassis synchronization switch

Syntax	request chassis synchronization switch
Syntax (M Series, T Series)	request chassis synchronization switch (external-a external-b)
Syntax (PTX Series)	request chassis synchronization switch (bits-a bits-b fpc-slot-number gps-0-10mhz gps-0-5mhz gps-1-10mhz gps-1-5mhz)
Release Information	Command introduced in Junos OS Release 7.6. Command introduced in Junos OS Release 8.3 for M40e routers. Command introduced in Junos OS Release 9.3 for M120 routers. Command introduced in Junos OS Release 10.2 for T320, T640, and T1600 routers. Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Routers.
Description	(M320, M40e, M120, T320, T640, and T1600 routers and PTX Packet Transport Routers only) Change the external clock source used for chassis synchronization.
Options	<p>external-a—(Routing matrix only) Change the synchronization source to external source A.</p> <p>external-b—(Routing matrix only) Change the synchronization source to external source B.</p> <p>bits-a—(PTX Series only) Change the synchronization source to the BITS external source A.</p> <p>bits-b—(PTX Series only) Change the synchronization source to the BITS external source B.</p> <p>fpc-slot-number—(PTX Series only) Change the synchronization source to an FPC in the slot specified. For the PTX5000 Packet Transport Router, replace <i>slot-number</i> with a value from 0 through 7.</p> <p>gps-0-10mhz—(PTX Series only) Change the synchronization source to the 10 MHz GPS source on CCG port 0.</p> <p>gps-0-5mhz—(PTX Series only) Change the synchronization source to the 5 MHz GPS source on CCG port 0.</p> <p>gps-1-10mhz—(PTX Series only) Change the synchronization source to the 10 MHz GPS source on CCG port 1.</p> <p>gps-1-5mhz—(PTX Series only) Change the synchronization source to the 5 Hz GPS source on CCG port 1.</p>
Required Privilege Level	maintenance

Related Documentation	<ul style="list-style-type: none">• show chassis synchronization on page 744• <i>Configuring Clock Synchronization Interface for MX Series Routers</i>• <i>Supported Time Synchronization Standard</i>
List of Sample Output	request chassis synchronization switch (M Series, T Series) on page 239 request chassis synchronization switch (PTX Series) on page 239
Output Fields	When you enter this command, you are provided feedback on the status of your request. Not configured indicates that the source is not configured. Present indicates that the source is configured and present. Qualified indicates that the source is being used for synchronization.

Sample Output

[request chassis synchronization switch \(M Series, T Series\)](#)

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

[request chassis synchronization switch \(PTX Series\)](#)

```
user@host> request chassis synchronization switch fpc-2
switching to fpc-2, status: qualified
```


Managing the Boot Sequence

- Boot Sequence (M Series, MX Series, T Series, TX Matrix, TX Matrix Plus, and PTX Series Routing Engines) on page 241

Boot Sequence (M Series, MX Series, T Series, TX Matrix, TX Matrix Plus, and PTX Series Routing Engines)



NOTE: For information about which Routing Engines are supported by each device, see http://www.juniper.net/techpubs/en_US/release-independent/junos/topics/reference/general/routing-engine-m-mx-t-series-support-by-chassis.html.

The M Series, MX Series (except for the MX80 routers and the MX104 routers), T Series, and TX Matrix routers with a Routing Engine that has a hard disk attempt to boot from the storage media in the following order:

1. Removable media emergency boot device, such as a PC Card (if present)
2. CompactFlash card (if present)
3. Hard disk

The M Series and MX Series with a Routing Engine that has a solid-state drive (SSD) attempt to boot from the storage media in the following order:

1. USB media emergency boot device (if present)
2. CompactFlash card
3. Solid-state drive (SSD) in the SSD slot 1 or SSD slot 2 (if present)

MX80 routers attempt to boot from the storage media in the following order:

1. USB media emergency boot device
2. Dual, internal NAND flash device (first *da0*, then *da1*)

MX104 routers attempt to boot from the storage media in the following order:

1. USB storage media device
2. Internal NAND flash device (*da0*)

The T series routers with a Routing Engine that has a solid-state drive (SSD), and TX Matrix Plus routers attempt to boot from the storage media in the following order:

1. USB media emergency boot device
2. CompactFlash card (if present)
3. Solid-state drive (SSD) in the Disk 1 slot (if present)



NOTE: The Disk 2 slot is not currently supported.

4. Storage media available on the LAN

The PTX Series Packet Transport Routers attempt to boot from the storage media in the following order:

1. USB media emergency boot device
2. CompactFlash card
3. Solid-state drive (SSD) in the Disk 1 slot (if present)
4. Storage media available on the LAN



NOTE: Do not insert an emergency boot device during normal operations. The router does not operate normally when it is booted from an emergency boot device.

If the router boots from an alternate boot device, Junos OS displays a message indicating this when you log in to the router. For example, the following message shows that the software booted from the hard disk (`/dev/ad1s1a`):

```
login: username
Password: password
Last login: date on terminal
```

```
--- Junos 8.0 R1 built date
```

```
---
```

```
--- NOTICE: System is running on alternate media device (/dev/ad2s1a).
```

This situation results when the router detects a problem with the primary boot device—usually the CompactFlash card—that prevents it from booting, and consequently boots from the alternate boot device (the hard disk drive). When this happens, the primary boot device is removed from the list of candidate boot devices. The problem is usually a serious hardware error. We recommend you contact the Juniper Networks Technical Assistance Center (JTAC).



NOTE: On MX104 routers, if the router boots from an alternate boot device, Junos OS does not display any message indicating this when you log in to the router.

When the router boots from the alternate boot device, the software and configuration are only as current as the most recent **request system snapshot** command. However, if the **mirror-flash-on-disk** command was enabled, then the hard disk drive contains a synchronized, mirror image of the compact flash drive and therefore the current software and configuration.

Related Documentation

- *Routing Engine Specifications*

CHAPTER 18

Monitoring Commands for PTX Series Packet Transport Routers

show chassis alarms

Syntax	show chassis alarms
Syntax (TX Matrix Routers)	show chassis alarms <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Routers)	show chassis alarms <lcc <i>number</i> sfc <i>number</i> >
Syntax (MX Series Routers)	show chassis alarms <all-members> <local> <member <i>member-id</i> >
Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)	show chassis alarms
Syntax (QFX Series)	show chassis alarms <interconnect-device <i>name</i> > <node-device <i>name</i> >
Syntax (PTX Series Packet Transport Routers)	show chassis alarms
Syntax (ACX Series Universal Access Routers)	show chassis alarms
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. sfc option for the TX Matrix Plus router introduced in Junos OS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 12.1 for the PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers. Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.
Description	Display information about the conditions that have been configured to trigger alarms.
Options	none —Display information about the conditions that have been configured to trigger alarms. all-members —(MX Series routers only) (Optional) Display information about alarm conditions for all the member routers of the Virtual Chassis configuration.

interconnect-device *name*—(QFabric systems only) (Optional) Display information about alarm conditions for the Interconnect device.

lcc *number*—(TX Matrix router and TX Matrix Plus router 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—(MX Series routers only) (Optional) Display information about alarm conditions for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display information about alarm conditions for the specified member of the Virtual Chassis configuration. Replace *member-id* variable with a value of 0 or 1.

node-device *name*—(QFabric systems only) (Optional) Display information about alarm conditions for the Node device.

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

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

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

On routers, you can manually silence external devices connected to the alarm relay contacts by pressing the alarm cutoff button, located on the craft interface. Silencing the device does not remove the alarm messages from the display (if present on the router) or extinguish the alarm LEDs. In addition, new alarms that occur after you silence an external device reactivate the external device.

In Junos OS release 11.1 and later, alarms for fans also show the slot number of the fans in the CLI output.

In Junos OS Release 11.2 and later, the command output on EX8200 switches shows the detailed location (**Plane/FPC/PFE**) for link errors in the chassis.

In Junos OS Release 10.2 and later, an alarm is shown on T Series routers for a standby sonic clock generator (SCG) that is offline or absent.

You may often see the following error messages, in which only the error code is shown and no other information is provided:

Apr 12 08:04:10 send: red alarm set, device FPC 6, reason FPC 6 Major Errors - Error code: 257

Apr 12 08:04:19 send: red alarm set, device FPC 1, reason FPC 1 Major Errors - Error code: 559

To understand what CM_ALARM error codes mean, you need to first identify the structure of the CM Alarm codes. A CM_ALARM code has the following structure:

Bits:	Error type:
1-31	Major (1)
0	Minor (0)

According to the table above, the LSB (bit 0) identifies the **Error Type** (major alarm, if the bit is set and minor alarm if the bit is unset). The rest of the bits (1 - 31) identify the actual error code.

Take an example of the following error code, which was logged on a T1600:

Apr 12 08:04:10 send: red alarm set, device FPC 1, reason FPC 1 Major Errors - Error code: 559

First, you have to convert 559 to binary; that is **100010111**. The LSB in this case is 1, which means that this is a major alarm. After removing the LSB, you are left with **10001011**, which is equal to 279 in decimal. This is the actual error code, its meaning can be found from the following list:

Chip Type: L Chip	Code
CMALARM_LCHIP_LOUT_DESRD_PARITY_ERR	1
CMALARM_LCHIP_LOUT_DESRD_UNINIT_ERR	2
CMALARM_LCHIP_LOUT_DESRD_ILLEGALLINK_ERR	3
CMALARM_LCHIP_LOUT_DESRD_ILLEGALSIZERR	4
CMALARM_LCHIP_LOUT_HDRF_TOERR_ERR	5
CMALARM_LCHIP_LOUT_HDRF_PARITY_ERR	6
CMALARM_LCHIP_LOUT_HDRF_UCERR_ERR	7
CMALARM_LCHIP_LOUT_NLIF_CRCDROP_ERR	8

CMALARM_LCHIP_LOUT_NLIF_CRCERR_ERR	9
CMALARM_LCHIP_UCODE_TIMEOUT_ERR	10
CMALARM_LCHIP_LIN_SRCTL_ACCT_DROP_ERR	11
CMALARM_LCHIP_LIN_SRCTL_ACCT_ADDR_SIZE_ERR	12
CMALARM_LCHIP_SRAM_PARITY_ERR	13
CMALARM_LCHIP_UCODE_OVFLW_ERR	14
CMALARM_LCHIP_LOUT_HDRF_MTU_ERR	15

Chip Type: M Chip	Code
CMALARM_MCHIP_ECC_UNCORRECT_ERR	128

Chip Type: N Chip	Code
CMALARM_NCHIP_RDDMA_JBUS_TIMEOUT_ERR	256
CMALARM_NCHIP_RDDMA_FIFO_OVFLW_ERR	257
CMALARM_NCHIP_RDDMA_FIFO_UNFLW_ERR	258
CMALARM_NCHIP_RDDMA_SIZE_ERR	259
CMALARM_NCHIP_RDDMA_JBUS_CRC_ERR	260
CMALARM_NCHIP_WRDMA_PKTR_ERR	261
CMALARM_NCHIP_WRDMA_PKT_CRC_ERR	262
CMALARM_NCHIP_WRDMA_JBUS_TIMEOUT_ERR	263
CMALARM_NCHIP_WRDMA_FIFO_OVFLW_ERR	264
CMALARM_NCHIP_WRDMA_FIFO_UNFLW_ERR	265
CMALARM_NCHIP_WRDMA_PKT_LEN_ERR	266
CMALARM_NCHIP_WRDMA_JBUS_CRC_ERR	267
CMALARM_NCHIP_PKTR_DMA_AGE_ERR	268
CMALARM_NCHIP_PKTR_ICELLSIG_ERR	269
CMALARM_NCHIP_PKTR_FTTL_ERR	270

CMALARM_NCHIP_RODR_OFFSET_OVFLW_ERR	271
CMALARM_NCHIP_PKTR_TMO_CELL_ERR	272
CMALARM_NCHIP_PKTR_TMO_OUTRANGE_ERR	273
CMALARM_NCHIP_PKTR_MD_REQUEST_Q_OVFLW_ERR	274
CMALARM_NCHIP_PKTR_DMA_BUFFER_OVFLW_ERR	275
CMALARM_NCHIP_PKTR_GRT_OVFLW_ERR	276
CMALARM_NCHIP_FRQ_ERR	277
CMALARM_NCHIP_RODR_IN_Q_OVFLW_ERR	278
CMALARM_NCHIP_DBUF_CRC_ERR	279
<hr/>	
Chip Type: R Chip	Code
CMALARM_RCHIP_SRAM_PARITY_ERR	512
<hr/>	
Chip Type: R Chip	Code
CMALARM_ICHIP_WO_DESRD_ID_ERR	601
CMALARM_ICHIP_WO_DESRD_DATA_ERR	602
CMALARM_ICHIP_WO_DESRD_OFLOW_ERR	603
CMALARM_ICHIP_WO_HDRF_UCERR_ERR	604
CMALARM_ICHIP_WO_HDRF_MTUERR_ERR	605
CMALARM_ICHIP_WO_HDRF_PARITY_ERR	606
CMALARM_ICHIP_WO_HDRF_TOERR_ERR	607
CMALARM_ICHIP_WO_IP_CRC_ERR	608
CMALARM_ICHIP_WO_IP_INTER_ERR	609
CMALARM_ICHIP_WI_WAN_TIMEOUT_ERR	625
CMALARM_ICHIP_WI_FAB_TIMEOUT_ERR	626
CMALARM_ICHIP_RLDRAM_BIST_ERR	630
CMALARM_ICHIP_SDRAM_BIST_ERR	631

CMALARM_ICHIP_RLDRAM_PARITY_ERR	632
CMALARM_ICHIP_SDRAM_UNCORRECT_ERR	633
CMALARM_ICHIP_SDRAM_CORRECT_ERR	634
CMALARM_ICHIP_FUSE_DONE_ERR	635

According to the table above, the **279** error code corresponds to **CMALARM_NCHIP_DBUF_CRC_ERR**; this means that new CRC errors were seen on the NCHIP of this particular FPC, which is FPC as per the logs.

If you do not want to convert decimal to binary and vice versa, you may use the following shortcut:

For major alarms, the **Actual Error Code = (Error Code - 1)/2**, where **Error Code** is the code that you get in the log message. For example, if you get the following log:

Apr 12 08:04:10 send: red alarm set, device FPC 6, reason FPC 6 Major Errors - Error code: 257

Actual Error Code = $(257-1)/2 = 128$. Similarly, for minor alarms, Actual Error Code = $(\text{Error Code})/2$

Required Privilege Level view

Related Documentation

- *Configuring an Alarm Entry and Its Attributes*
- *Chassis Conditions That Trigger Alarms*

List of Sample Output

- [show chassis alarms \(Alarms Active\) on page 252](#)
- [show chassis alarms \(No Alarms Active\) on page 252](#)
- [show chassis alarms \(Fan Tray\) on page 252](#)
- [show chassis alarms \(MX104 Router\) on page 252](#)
- [show chassis alarms \(MX2010 Router\) on page 252](#)
- [show chassis alarms \(MX2020 Router\) on page 253](#)
- [show chassis alarms \(T4000 Router\) on page 253](#)
- [show chassis alarms \(Unreachable Destinations Present on a T Series Router\) on page 253](#)
- [show chassis alarms \(FPC Offline Due to Unreachable Destinations on a T Series Router\) on page 253](#)
- [show chassis alarms \(SCG Absent on a T Series Router\) on page 254](#)
- [show chassis alarms \(Alarms Active on a TX Matrix Router\) on page 254](#)
- [show chassis alarms \(TX Matrix Plus router with 3D SIBs\) on page 254](#)
- [show chassis alarms \(Alarms on a T4000 Router After the enhanced-mode Statement is Enabled\) on page 255](#)
- [show chassis alarms \(Backup Routing Engine\) on page 255](#)
- [show chassis alarms \(Alarms Active on the QFX Series\) on page 255](#)

[show chassis alarms node-device \(Alarms Active on the QFabric System\) on page 255](#)
[show chassis alarms \(Alarms Active on the QFabric System\) on page 256](#)
[show chassis alarms \(Alarms Active on an EX8200 Switch\) on page 256](#)
[show chassis alarms \(Alarms Active on a PTX5000 Packet Transport Router\) on page 256](#)
[show chassis alarms \(Alarms Active on an ACX2000 Universal Access Router\) on page 257](#)

Output Fields Table 14 on page 252 lists the output fields for the **show chassis alarms** command. Output fields are listed in the approximate order in which they appear.

Table 14: show chassis alarms Output Fields

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

Sample Output

show chassis alarms (Alarms Active)

```

user@host> show chassis alarms
3 alarms are currently active
Alarm time          Class  Description
2000-02-07 10:12:22 UTC Major fxp0: ethernet link down
2000-02-07 10:11:54 UTC Minor YELLOW ALARM - PEM 1 Removed
2000-02-07 10:11:03 UTC Minor YELLOW ALARM - Lower Fan Tray Removed

```

show chassis alarms (No Alarms Active)

```

user@host> show chassis alarms
No alarms are currently active

```

show chassis alarms (Fan Tray)

```

user@host> show chassis alarms
4 alarms currently active
Alarm time          Class  Description
2010-11-11 20:27:38 UTC Major Side Fan Tray 7 Failure
2010-11-11 20:27:13 UTC Minor Side Fan Tray 7 Overspeed
2010-11-11 20:27:13 UTC Major Side Fan Tray 5 Failure
2010-11-11 20:27:13 UTC Major Side Fan Tray 0 Failure

```

show chassis alarms (MX104 Router)

```

user@host >show chassis alarms
1 alarms currently active
Alarm time          Class  Description
2013-06-05 14:43:31 IST Minor Backup RE Active

```

show chassis alarms (MX2010 Router)

```

user@host> show chassis alarms

```



```

7 alarms currently active
Alarm time      Class Description
2012-08-07 00:46:06 PDT Major Fan Tray 2 Failure
2012-08-06 18:24:36 PDT Minor Redundant feed missing for PSM 6
2012-08-06 07:41:04 PDT Minor Redundant feed missing for PSM 8
2012-08-04 02:42:06 PDT Minor Redundant feed missing for PSM 5
2012-08-03 21:14:24 PDT Minor Loss of communication with Backup RE
2012-08-03 12:26:03 PDT Minor Redundant feed missing for PSM 4
2012-08-03 10:40:18 PDT Minor Redundant feed missing for PSM 7

```

show chassis alarms (MX2020 Router)

```

user@host> show chassis alarms
1 alarms currently active
Alarm time Class Description
2012-10-03 12:14:59 PDT Minor Plane 0 not online

```

show chassis alarms (T4000 Router)

```

user@host> show chassis alarms
9 alarms currently active
Alarm time      Class Description
2007-06-02 01:41:10 UTC Minor RE 0 Not Supported
2007-06-02 01:41:10 UTC Minor CB 0 Not Supported
2007-06-02 01:41:10 UTC Minor Mixed Master and Backup RE types
2007-05-30 19:37:33 UTC Major SPMB 1 not online
2007-05-30 19:37:29 UTC Minor Front Bottom Fan Tray Absent
2007-05-30 19:37:13 UTC Major PEM 1 Input Failure
2007-05-30 19:37:13 UTC Major PEM 0 Not OK
2007-05-30 19:37:03 UTC Major PEM 0 Improper for Platform
2007-05-30 19:37:03 UTC Minor Backup RE Active

```

show chassis alarms (Unreachable Destinations Present on a T Series Router)

```

user@host> show chassis alarms
10 alarms currently active
Alarm time      Class Description
2011-08-30 18:43:53 PDT Major FPC 7 has unreachable destinations
2011-08-30 18:43:53 PDT Major FPC 5 has unreachable destinations
2011-08-30 18:43:52 PDT Major FPC 3 has unreachable destinations
2011-08-30 18:43:52 PDT Major FPC 2 has unreachable destinations
2011-08-30 18:43:52 PDT Minor SIB 0 Not Online
2011-08-30 18:43:33 PDT Minor SIB 4 Not Online
2011-08-30 18:43:28 PDT Minor SIB 3 Not Online
2011-08-30 18:43:05 PDT Minor SIB 2 Not Online
2011-08-30 18:43:28 PDT Minor SIB 1 Not Online
2011-08-30 18:43:05 PDT Major PEM 1 Not Ok

```

show chassis alarms (FPC Offline Due to Unreachable Destinations on a T Series Router)

```

user@host> show chassis alarms
10 alarms currently active
Alarm time      Class Description
2011-08-30 18:43:53 PDT Major FPC 7 offline due to unreachable destinations
2011-08-30 18:43:53 PDT Major FPC 5 offline due to unreachable destinations
2011-08-30 18:43:52 PDT Major FPC 3 offline due to unreachable destinations
2011-08-30 18:43:52 PDT Major FPC 2 offline due to unreachable destinations
2011-08-30 18:43:52 PDT Minor SIB 0 Not Online
2011-08-30 18:43:33 PDT Minor SIB 4 Not Online
2011-08-30 18:43:28 PDT Minor SIB 3 Not Online
2011-08-30 18:43:05 PDT Minor SIB 2 Not Online

```

```

2011-08-30 18:43:28 PDT Minor SIB 1 Not Online
2011-08-30 18:43:05 PDT Major PEM 1 Not Ok

```

show chassis alarms (SCG Absent on a T Series Router)

```

user@host> show chassis alarms
4 alarms currently active
Alarm time          Class Description
2011-01-23 21:42:46 PST Major SCG 0 NO EXT CLK MEAS-BKUP SCG ABS

```

show chassis alarms (Alarms Active on a TX Matrix Router)

```

user@host> show chassis alarms
scc-re0:
-----
8 alarms currently active
Alarm time          Class Description
2004-08-05 18:43:53 PDT Minor LCC 0 Minor Errors
2004-08-05 18:43:53 PDT Minor SIB 3 Not Online
2004-08-05 18:43:52 PDT Major SIB 2 Absent
2004-08-05 18:43:52 PDT Major SIB 1 Absent
2004-08-05 18:43:52 PDT Major SIB 0 Absent
2004-08-05 18:43:33 PDT Major LCC 2 Major Errors
2004-08-05 18:43:28 PDT Major LCC 0 Major Errors
2004-08-05 18:43:05 PDT Minor LCC 2 Minor Errors
lcc0-re0:
-----
5 alarms currently active
Alarm time          Class Description
2004-08-05 18:43:53 PDT Minor SIB 3 Not Online
2004-08-05 18:43:49 PDT Major SIB 2 Absent
2004-08-05 18:43:49 PDT Major SIB 1 Absent
2004-08-05 18:43:49 PDT Major SIB 0 Absent
2004-08-05 18:43:28 PDT Major PEM 0 Not OK
lcc2-re0:
-----
5 alarms currently active
Alarm time          Class Description
2004-08-05 18:43:35 PDT Minor SIB 3 Not Online
2004-08-05 18:43:33 PDT Major SIB 2 Absent
2004-08-05 18:43:33 PDT Major SIB 1 Absent
2004-08-05 18:43:33 PDT Major SIB 0 Absent
2004-08-05 18:43:05 PDT Minor PEM 1 Absent

```

show chassis alarms (TX Matrix Plus router with 3D SIBs)

```

user@host> show chassis alarms
sfc0-re0:
-----
Alarm time          Class Description
2012-07-19 10:07:32 UTC Minor SIB F13 0 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F2S 0/6 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F2S 0/4 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F2S 0/2 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F2S 0/0 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F13 6 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F2S 2/6 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F2S 2/4 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F2S 2/2 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F2S 2/0 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F13 3 Temperature Warm
2012-07-19 10:06:17 UTC Minor Temperature Warm

```

```

2012-07-19 10:06:17 UTC Minor SIB F2S 1/6 Temperature Warm
2012-07-19 10:06:17 UTC Minor SIB F2S 1/4 Temperature Warm
2012-07-19 10:06:17 UTC Minor SIB F2S 1/2 Temperature Warm
2012-07-19 10:06:17 UTC Minor SIB F2S 1/0 Temperature Warm
lcc0-re0:

```

```

-----
Alarm time          Class Description
2012-07-19 10:04:13 UTC Minor Temperature Warm
2012-07-19 10:04:13 UTC Minor SIB 2 Temperature Warm
2012-07-19 10:04:13 UTC Minor SIB 1 Temperature Warm
2012-07-19 10:04:13 UTC Minor SIB 0 Temperature Warm

```

```
lcc2-re0:
```

```

-----
Alarm time          Class Description
2012-07-19 10:04:18 UTC Minor Temperature Warm
2012-07-19 10:04:18 UTC Minor SIB 2 Temperature Warm
2012-07-19 10:04:18 UTC Minor SIB 1 Temperature Warm
2012-07-19 10:04:18 UTC Minor SIB 0 Temperature Warm

```

show chassis alarms (Alarms on a T4000 Router After the enhanced-mode Statement is Enabled)

To enable improved virtual private LAN service (VPLS) MAC address learning on T4000 routers, you must include the **enhanced-mode** statement at the **[edit chassis network-services]** hierarchy level and reboot the router. When router reboots, only the T4000 Type 5 FPCs are required to be present on the router. If there are any other FPCs (apart from T4000 Type 5 FPCs) on the T4000 router, such FPCs become offline, and FPC misconfiguration alarms are generated. The **show chassis alarm** command output displays FPC misconfiguration (**FPC *fpc-slot* misconfig**) as the reason for the generation of the alarms.

```

user@host> show chassis alarms
2 alarms currently active
Alarm time          Class Description
2011-10-22 10:10:47 PDT Major FPC 1 misconfig
2011-10-22 10:10:46 PDT Major FPC 0 misconfig

```

show chassis alarms (Backup Routing Engine)

```

user@host> show chassis alarms
2 alarms are currently active
Alarm time          Class Description
2005-04-07 10:12:22 PDT Minor Host 1 Boot from alternate media
2005-04-07 10:11:54 PDT Major Host 1 compact-flash missing in Boot List

```

show chassis alarms (Alarms Active on the QFX Series)

```

user@switch> show chassis alarms
1 alarms currently active
Alarm time          Class Description
2012-03-05 2:10:24 UTC Major FPC 0 PEM 0 Airflow not matching Chassis Airflow

```

show chassis alarms node-device (Alarms Active on the QFabric System)

```

user@switch> show chassis alarms node-device ED3691
node-device ED3694
3 alarms currently active
Alarm time          Class Description
2011-08-24 16:04:15 UTC Major ED3694:fte-0/1/2: Link down

```

```
2011-08-24 16:04:14 UTC Major ED3694:fte-0/1/0: Link down
2011-08-24 14:21:14 UTC Major ED3694 PEM 0 is not supported/powered
```

show chassis alarms (Alarms Active on the QFabric System)

```
user@switch> show chassis alarms
IC-A0001:
-----
1 alarms currently active
Alarm time          Class  Description
2011-08-24 16:04:15 UTC Minor  Backup RE Active

ED3694:
-----
3 alarms currently active
Alarm time          Class  Description
2011-08-24 16:04:15 UTC Major  ED3694:fte-0/1/2: Link down
2011-08-24 16:04:14 UTC Major  ED3694:fte-0/1/0: Link down
2011-08-24 14:21:14 UTC Major  ED3694 PEM 0 is not supported/powered

SNG-0:
-----

NW-NG-0:
-----
1 alarms currently active
Alarm time          Class  Description
2011-08-24 15:49:27 UTC Major  ED3691 PEM 0 is not supported/powered
```

show chassis alarms (Alarms Active on an EX8200 Switch)

```
user@switch> show chassis alarms

6 alarms currently active
Alarm time          Class  Description
2010-12-02 19:15:22 UTC Major  Fan Tray Failure
2010-12-02 19:15:22 UTC Major  Fan Tray Failure
2010-12-02 19:15:14 UTC Minor  Check CB 0 Fabric Chip 1 on Plane/FPC/PFE: 1/5/0,
1/5/1, 1/5/2, 1/5/3, 1/7/0, 1/7/1, 1/7/2, 1/7/3, 2/5/0, 2/5/1, ...
2010-12-02 19:15:14 UTC Minor  Check CB 0 Fabric Chip 0 on Plane/FPC/PFE: 1/5/0,
1/5/1, 1/5/2, 1/5/3, 1/7/0, 1/7/1, 1/7/2, 1/7/3, 2/5/0, 2/5/1, ...
2010-12-02 19:14:18 UTC Major  PSU 1 Output Failure
2010-12-02 19:14:18 UTC Minor  Loss of communication with Backup RE
```

show chassis alarms (Alarms Active on a PTX5000 Packet Transport Router)

```
user@switch> show chassis alarms

23 alarms currently active
Alarm time          Class  Description
2011-07-12 16:22:05 PDT Minor  No Redundant Power for Rear Chassis
2011-07-12 16:22:05 PDT Major  PDU 0 PSM 1 Not OK
2011-07-12 16:21:57 PDT Minor  No Redundant Power for Fan 0-2
2011-07-12 16:21:57 PDT Major  PDU 0 PSM 0 Not OK
2011-07-12 15:56:06 PDT Major  PDU 1 PSM 2 Not OK
2011-07-12 15:56:06 PDT Minor  No Redundant Power for FPC 0-7
2011-07-12 15:56:06 PDT Major  PDU 0 PSM 3 Not OK
2011-07-12 15:28:20 PDT Major  PDU 0 PSM 2 Not OK
2011-07-12 15:19:14 PDT Minor  Backup RE Active
```

show chassis alarms (Alarms Active on an ACX2000 Universal Access Router)

```
user@host> show chassis alarms
7 alarms currently active
Alarm time          Class  Description
2012-05-22 11:19:09 UTC Major  xe-0/3/1: Link down
2012-05-22 11:19:09 UTC Major  xe-0/3/0: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/7: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/6: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/3: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/2: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/1: Link down
```

show chassis environment

Syntax	show chassis environment
Syntax (T320, T640, T1600, and T4000 Routers)	show chassis environment <cb <i>cb-slot-number</i> > <fpc <i>fpc-slot-number</i> > <fpm> <pem <i>pem-slot-number</i> > <routing-engine <i>re-slot-number</i> > <scg <i>scg-slot-number</i> > <sib <i>sib-slot-number</i> >
Syntax (TX Matrix Routers)	show chassis environment <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Routers)	show chassis environment <cb <i>cb-slot-number</i> > <cip <i>cip-slot-number</i> > <fpc <i>fpc-slot-number</i> > <fpm> <lcc <i>number</i> > <pem <i>pem-slot-number</i> > <routing-engine <i>re-slot-number</i> > <scg <i>scg-slot-number</i> > < sfc <i>number</i> > <sib <i>sib-slot-number</i> >
Syntax (MX Series Routers)	show chassis environment <all-members> <local> <member <i>member-id</i> >
Syntax (MX104 3D Universal Edge Routers)	show chassis environment <cb> <pem <i>pem-slot-number</i> > <routing-engine <i>re-slot-number</i> >
Syntax (MX2010 and MX2020 3D Universal Edge Routers)	show chassis environment <adc <i>adc-slot-number</i> > <cb <i>cb-slot-number</i> > <fpc <i>fpc-slot-number</i> > <fpm> <monitored> <psm <i>psm-slot-number</i> > <routing-engine <i>re-slot-number</i> > <sfb <i>sfb-slot-number</i> >
Syntax (EX8200 Switches)	show chassis environment <all-members> <cb <i>cb-slot-number</i> > <fpc <i>fpc-slot-number</i> > <local>

	<member <i>member-id</i> > <psu <i>psu-slot-number</i> > <routing-engine <i>re-slot-number</i> >
Syntax (EX Series Switches except EX8200)	show chassis environment <all-members> <fpc <i>fpc-slot-number</i> > <local> <member <i>member-id</i> > <power-supply-unit> <routing-engine>
Syntax (QFX Series)	show chassis environment <cb <i>slot-number</i> <interconnect-device name>> <fpc <i>slot-number</i> <interconnect-device name>> <interconnect-device name <slot-number> <node-device name> <pem <i>slot-number</i> (interconnect-device name <i>slot-number</i>) (node-device name)> <routing-engine name <interconnect-device name <i>slot-number</i> >>
Syntax (PTX Series Packet Transport Routers)	show chassis environment <cb <i>cb-slot-number</i> > <ccg <i>ccg-slot-number</i> > <fpc <i>fpc-slot-number</i> > <fpm> <monitored> <pdu <i>pdu-slot-number</i> > <routing-engine <i>re-slot-number</i> > <sib <i>sib-slot-number</i> >
Syntax (ACX Series Universal Access Routers)	show chassis environment <cb <i>cb-slot-number</i> > <pem <i>pem-slot-number</i> > <routing-engine <i>re-slot-number</i> >
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 QFX Series. Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers. monitored option added in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.1 for T4000 Core Routers. Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers. pem option introduced in Junos OS Release 12.3 for ACX4000 Universal Access Routers. Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.
Description	Display environmental information about the router or switch chassis, including the temperature and information about the fans, power supplies, and Routing Engine.

In addition, on ACX4000 routers, display temperature information about the different channels of a Modular Interface Card (MIC). The number of channels displayed depends on the type of MIC installed.

- Options** **none**—Display environmental information about the router or switch chassis. On a TX Matrix router, display environmental information about the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the TX Matrix Plus router and its attached routers.
- all-members**—(MX Series routers and EX Series switches only) (Optional) Display chassis environmental information for all the members of the Virtual Chassis configuration.
- adc *adc-slot-number***—(MX2020 and MX2010 routers only) (Optional) Display chassis environmental information for the adapter cards. For MX2020 routers, replace ***adc-slot-number*** with a value from 0 through 19. For MX2010 routers, replace ***adc-slot-number*** with a value from 0 through 9.
- cb *cb-slot-number***—(ACX Series Universal Access Routers, EX Series switches, M120, M320, and M40e routers, MX Series routers, MX2020 routers, MX2010 routers, PTX Series Packet Transport Routers, QFX Series, and T Series routers, and TX Matrix Plus routers only) (Optional) Display chassis environmental information for the Control Board. On devices other than EX Series switches, replace ***cb-slot*** with 0 or 1. For the EX Series switches, see *EX Series Switches Hardware and CLI Terminology Mapping* for information on CB slot numbering.
- cip *cip-slot-number***—(TX Matrix Plus routers only) (Optional) Display chassis environmental information for the Connection Interface Panel (CIP). Replace the ***cip-slot-number*** variable with a value of 0 or 1.
- cb interconnect-device *name***—(QFabric systems only) (Optional) Display chassis environmental information for the Control Board on an Interconnect device.
- ccg *ccg-slot-number***—(PTX Series only) (Optional) Display chassis environmental information for the Centralized Clock Generator. Replace ***cb-slot*** with a value of 0 or 1.
- fpc *fpc-slot***—(EX Series switches, M120, M320, and M40e routers, MX Series routers, MX2010 routers, MX2020 routers, PTX Series Packet Transport Routers, QFX Series, QFX3500 switches, QFabric systems, T Series routers, and TX Matrix Plus routers) (Optional) Display chassis environmental information for a specified Flexible PIC Concentrator. For MX2010 routers, replace ***fpc-slot*** with a value from 0 through 9. For MX2020 routers, replace ***fpc-slot*** with a value from 0 through 19. For information about FPC numbering, see [show chassis environment fpc](#). On a QFabric system, display chassis environmental information for a specified Flexible PIC Concentrator on an Interconnect device. On an EX Series switch, display chassis environmental information for a specified Flexible PIC Concentrator; see *EX Series Switches Hardware and CLI Terminology Mapping* for information on FPC numbering. On a TX Matrix Plus router with 3D SIBs replace ***fpc-slot*** with a value from 0 through 63.

fpm—(M120, M320, and M40e routers, MX2010 routers, MX2020 routers, PTX Series, Packet Transport Routers, T Series routers, and TX Matrix Plus routers only) (Optional) Display chassis environmental information for the craft interface (FPM).

interconnect-device *name*—(QFabric systems only) (Optional) Display chassis environmental information for the Interconnect device.

monitored—(MX2020 routers and PTX Series Packet Transport Routers only) (Optional) Display chassis environmental information for monitored temperatures only. Temperatures that are not included in temperature alarm computations are not displayed.

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—(MX Series routers and EX Series switches) (Optional) Display chassis environmental information for the local Virtual Chassis member.

member *member-id*—(MX Series routers and EX Series switches only) (Optional) Display chassis environmental information for the specified member of the Virtual Chassis configuration. On MX Series routers, replace *member-id* variable with a value of 0 or 1. For EX Series switches, see *member* for member ID values.

node-device *name*—(QFabric systems only) (Optional) Display chassis environmental information for the Node device.

pdu *pdu-slot-number*—(PTX Series only) (Optional) Display chassis environmental information for the specified power distribution unit.

pem—(QFX3500 switches and QFabric systems only) (Optional) Display chassis environmental information for the Power Entry Module on the specified Interconnect device or Node device.

pem *pem-slot-number*—(ACX Series Universal Access Routers, M120, M320, and M40e routers, MX Series routers, MX104 routers, QFX Series, and T Series routers only) (Optional) Display chassis environmental information for the Power Entry Module on the specified Power Entry Module. For information about the options, see *show chassis environment pem*.

psm *psm-slot-number*—(MX2020 and MX2010 routers only) (Optional) Display chassis environmental information for the power supply module. For MX2020 routers, replace ***psm-slot-number*** with a value from 0 through 17. For MX2010 routers, replace ***psm-slot-number*** with a value from 0 through 8.

psu *psu-slot-number*—(EX Series switches only) (Optional) Display chassis environmental information for a specified power supply. See *EX Series Switches Hardware and CLI Terminology Mapping* for detailed information.

routing-engine—(QFX3500 switches and QFabric systems only) (Optional) Display chassis environmental information for the Routing Engine on the specified Interconnect device.

routing-engine *re-slot-number*—(Optional) Display chassis environmental information for the specified Routing Engine. For information about the options, see [show chassis environment routing-engine](#).

scg—(T Series routers only) (Optional) Display chassis environmental information about the SONET Clock Generator.

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

sfb *sfb-slot-number*—(MX2020 and MX2010 routers only) (Optional) Display chassis environmental information for the power supply module. Replace ***sfb-slot-number*** with a value from 0 through 7.

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

sib *sib-slot-number*—(M320 routers, PTX Series Packet Transport Routers, and T Series routers only) (Optional) Display chassis environmental information about the specified switch interface board. For information about the options, see [show chassis environment sib](#).

Required Privilege Level

view

Related Documentation

- *show chassis environment adc*
- [show chassis environment cb on page 312](#)
- [show chassis environment ccg on page 330](#)
- *show chassis environment cip*
- [show chassis environment fpc on page 332](#)
- [show chassis environment fpm on page 357](#)
- *show chassis environment lcc*
- *show chassis environment mcs*

- [show chassis environment monitored on page 363](#)
- *show chassis environment pcg*
- [show chassis environment pdu on page 376](#)
- *show chassis environment pem*
- *show chassis environment psm*
- *show chassis environment psu*
- [show chassis environment routing-engine on page 378](#)
- *show chassis environment scg*
- *show chassis environment sfb*
- [show chassis environment sib on page 383](#)
- *show chassis environment sfc*

List of Sample Output

[show chassis environment \(J2300 Router\) on page 265](#)
[show chassis environment \(J4300 or J6300 Router\) on page 265](#)
[show chassis environment \(M5 Router\) on page 266](#)
[show chassis environment \(M7i Router\) on page 266](#)
[show chassis environment \(M10 Router\) on page 266](#)
[show chassis environment \(M10i Router\) on page 266](#)
[show chassis environment \(M20 Router\) on page 267](#)
[show chassis environment \(M40 Router\) on page 267](#)
[show chassis environment \(M40e Router\) on page 268](#)
[show chassis environment \(M120 Router\) on page 268](#)
[show chassis environment \(M160 Router\) on page 269](#)
[show chassis environment \(M320 Router\) on page 270](#)
[show chassis environment \(MX104 Router\) on page 271](#)
[show chassis environment \(MX240 Router\) on page 271](#)
[show chassis environment \(MX240 Router with Enhanced MX SCB\) on page 272](#)
[show chassis environment \(MX480 Router\) on page 273](#)
[show chassis environment \(MX480 Router with Enhanced MX SCB\) on page 274](#)
[show chassis environment \(MX960 Router\) on page 275](#)
[show chassis environment \(MX960 Router with Enhanced MX SCB\) on page 275](#)
[show chassis environment \(MX2020 Router\) on page 278](#)
[show chassis environment \(MX2010 Router\) on page 288](#)
[show chassis environment \(T320 Router\) on page 293](#)
[show chassis environment \(T640 Router\) on page 294](#)
[show chassis environment \(T4000 Router\) on page 294](#)
[show chassis environment \(TX Matrix Router\) on page 296](#)
[show chassis environment \(T1600 Router\) on page 298](#)
[show chassis environment \(TX Matrix Plus Router\) on page 299](#)
[show chassis environment \(TX Matrix Plus router with 3D SIBs\) on page 301](#)
[show chassis environment \(EX4200 Standalone Switch\) on page 304](#)
[show chassis environment \(EX8216 Switch\) on page 304](#)
[show chassis environment \(QFX Series\) on page 305](#)

[show chassis environment interconnect-device \(QFabric System\) on page 305](#)
[show chassis environment node-device \(QFabric System\) on page 307](#)
[show chassis environment pem node-device \(QFabric System\) on page 307](#)
[show chassis environment \(PTX5000 Packet Transport Router\) on page 307](#)
[show chassis environment \(ACX2000 Universal Access Router\) on page 310](#)
[show chassis environment \(ACX4000 Universal Access Router\) on page 310](#)

Output Fields [Table 15 on page 264](#) lists the output fields for the **show chassis environment** command. Output fields are listed in the approximate order in which they appear.

Table 15: show chassis environment Output Fields

Field Name	Field Description
Class	<p>Information about the category or class of chassis component:</p> <ul style="list-style-type: none"> • Power: Power information: <ul style="list-style-type: none"> • (M5, M10, M20, and M40 routers and EX Series switches only) Power supply status: OK, Testing, (during initial power-on), Failed, or Absent. • (M7i, M10i, M40e, M120, M160, M320, and T Series routers and EX Series switches only) Power Entry Modules status: OK, Testing, (during initial power-on), Check, Failed, or Absent. • (PTX Series only) Power information is reported in PDU or PSM combinations. The status is: OK, Testing, (during initial power-on), Check, Failed, or Absent. • Temp: Temperature of air flowing through the chassis in degrees Celsius (C) and Fahrenheit (F). <ul style="list-style-type: none"> • On PTX Series Packet Transport Routers and MX2010 and MX2020 Routers, multiple cooling zones are supported. FRU temperatures in each zone are coordinated with the fan speed of fan trays in those zones. • EX2200 switches have a side-to-rear cooling system. The Local Intake temperature is measured by the sensor on the right side of the chassis, and the Remote Intake temperature is measured by the sensor on the left side of the chassis. • Pic: On ACX4000 Routers, multiple temperature channels on a MIC. The status is: OK and the Measurement is in degrees Celsius (C) and Fahrenheit (F). • Fan: Fan status: OK, Testing (during initial power-on), Failed, or Absent. On PTX Series Packet Transport Routers and MX2010 and MX2020 Routers, multiple fan trays are supported. Fan status is reported in Fan Tray or Fan combinations. Measurement indicates actual fan RPM (PTX and MX2010 and MX2020 Routers only). • Misc: Information about other components of the chassis. <ul style="list-style-type: none"> • On some routers, this field indicates the status of one or more additional components. • On the M40e, M160, and M320 router, Misc includes CIP (Connector Interface Panel). OK indicates that the CIP is present. Absent indicates that the CIP is not present. • On T Series routers, Misc includes CIP and SPMB (Switch Processor Mezzanine Board). OK indicates that the CIP or SPMB is present. Absent indicates that the CIP or SPMB is not present. • On PTX Series Packet Transport Routers, Misc includes the SPMB (Switch Processor Mezzanine Board). The SPMB is located on the control boards. OK indicates that the control board is present. Absent indicates that the control board is not present.

Table 15: show chassis environment Output Fields (*continued*)

Field Name	Field Description
Item	<p>(MX2010 and MX2020 Routers) Information about the chassis component: Routing Engines, Controls Boards (CBs), Switch Fabric Boards (SFBs), PICs, Flexible PIC Concentrators (FPCs), and Adapter Cards (ADCs).</p> <p>(MX104 Routers) Information about the chassis components: Routing Engines, Control Board (CB), Power Entry Module (PEM), and Compact Forwarding Engine Board (AFEB).</p> <p>(QFabric Systems) Information about the chassis component: Control Boards, Routing Engines, Flexible PIC Concentrators (FPCs), and Power Entry Modules (PEMs), Node Devices, and Interconnect Devices.</p> <p>(QFX Series) Information about the chassis component: Flexible PIC Concentrators (FPCs), and Power Entry Modules (PEMs).</p>
Status	<p>(MX104, MX2010, and MX2020 Routers) Status of the specified chassis component. For example, if the Class is Fan, the fan status can be:</p> <ul style="list-style-type: none"> • OK: The fans are operational. • Testing: The fans are being tested during initial power-on. • Failed: The fans have failed or the fans are not spinning. • Absent: The fan tray is not installed. <p>If the Class is Power, the power supply status can be:</p> <ul style="list-style-type: none"> • OK: The power component is operational. • Testing: The power component is being tested during initial power-on. • Check: There is insufficient power---that is, fewer than the minimum required feeds are connected. • Failed: The inputs leads have failed. • Absent: The power component is not installed.
Measurement	<p>(MX104, MX2010, and MX2020 Routers) Dependant on the Class. For example, if the Class is Temp, indicates the temperature in degree Celsius and degrees Fahrenheit. If the Class is Fan, indicates actual fan RPM.</p>

Sample Output

show chassis environment (J2300 Router)

```

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

```

show chassis environment (J4300 or J6300 Router)

```

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

```

show chassis environment (M5 Router)

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

show chassis environment (M7i Router)

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

show chassis environment (M10 Router)

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

show chassis environment (M10i Router)

```
user@host> show chassis environment
Class Item                Status      Measurement
Power Power Supply 0        OK
       Power Supply 1      OK
```

	Power Supply 2	Absent	
	Power Supply 3	Absent	
Temp	Intake	OK	26 degrees C / 78 degrees F
	FPC 0	OK	27 degrees C / 80 degrees F
	FPC 1	OK	28 degrees C / 82 degrees F
	Lower Power Supplies	OK	29 degrees C / 84 degrees F
	Upper Power Supplies	OK	28 degrees C / 82 degrees F
	CFEB Intake	OK	27 degrees C / 80 degrees F
	CFEB Exhaust	OK	36 degrees C / 96 degrees F
	Routing Engine 0	OK	31 degrees C / 87 degrees F
	Routing Engine 1	OK	27 degrees C / 80 degrees F
Fans	Fan Tray 0 Fan 1	OK	Spinning at normal speed
	Fan Tray 0 Fan 2	OK	Spinning at normal speed
	Fan Tray 0 Fan 3	OK	Spinning at normal speed
	Fan Tray 0 Fan 4	OK	Spinning at normal speed
	Fan Tray 0 Fan 5	OK	Spinning at normal speed
	Fan Tray 0 Fan 6	OK	Spinning at normal speed
	Fan Tray 0 Fan 7	OK	Spinning at normal speed
	Fan Tray 0 Fan 8	OK	Spinning at normal speed
	Fan Tray 1 Fan 1	Absent	
	Fan Tray 1 Fan 2	Absent	
	Fan Tray 1 Fan 3	Absent	
	Fan Tray 1 Fan 4	Absent	
	Fan Tray 1 Fan 5	Absent	
	Fan Tray 1 Fan 6	Absent	
	Fan Tray 1 Fan 7	Absent	
	Fan Tray 1 Fan 8	Absent	

show chassis environment (M20 Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Power	Power Supply A	OK	
	Power Supply B	Absent	
Temp	FPC 0	OK	28 degrees C / 82 degrees F
	FPC 1	OK	27 degrees C / 80 degrees F
	Power Supply A	OK	22 degrees C / 71 degrees F
	Power Supply B	Absent	
	SSB 0	OK	30 degrees C / 86 degrees F
	Backplane	OK	22 degrees C / 71 degrees F
	Routing Engine 0	OK	26 degrees C / 78 degrees F
	Routing Engine 1	Testing	
Fans	Rear Fan	OK	Spinning at normal speed
	Front Upper Fan	OK	Spinning at normal speed
	Front Middle Fan	OK	Spinning at normal speed
	Front Bottom Fan	OK	Spinning at normal speed
Misc	Craft Interface	OK	

show chassis environment (M40 Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Power	Power Supply A	OK	
	Power Supply B	Absent	
Temp	FPC 3	OK	24 degrees C / 75 degrees F
	FPC 6	OK	26 degrees C / 78 degrees F
	SCB	OK	26 degrees C / 78 degrees F
	Backplane @ A1	OK	28 degrees C / 82 degrees F
	Backplane @ A2	OK	23 degrees C / 73 degrees F

	Routing Engine	OK	26 degrees C / 78 degrees F
Fans	Top Impeller	OK	Spinning at normal speed
	Bottom impeller	OK	Spinning at normal speed
	Rear Left Fan	OK	Spinning at normal speed
	Rear Center Fan	OK	Spinning at normal speed
	Rear Right Fan	OK	Spinning at normal speed
Misc	Craft Interface	OK	

show chassis environment (M40e Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Power	PEM 0	OK	
	PEM 1	Absent	
Temp	PCG 0	OK	44 degrees C / 111 degrees F
	PCG 1	OK	47 degrees C / 116 degrees F
	Routing Engine 0	OK	40 degrees C / 104 degrees F
	Routing Engine 1	OK	37 degrees C / 98 degrees F
	MCS 0	OK	45 degrees C / 113 degrees F
	MCS 1	OK	42 degrees C / 107 degrees F
	SFM 0 SPP	OK	40 degrees C / 104 degrees F
	SFM 0 SPR	OK	44 degrees C / 111 degrees F
	SFM 1 SPP	OK	43 degrees C / 109 degrees F
	SFM 1 SPR	OK	45 degrees C / 113 degrees F
	FPC 0	OK	38 degrees C / 100 degrees F
	FPC 1	OK	40 degrees C / 104 degrees F
	FPC 2	OK	38 degrees C / 100 degrees F
	FPC 4	OK	34 degrees C / 93 degrees F
	FPC 5	OK	43 degrees C / 109 degrees F
	FPC 6	OK	41 degrees C / 105 degrees F
	FPC 7	OK	43 degrees C / 109 degrees F
	FPM CMB	OK	28 degrees C / 82 degrees F
	FPM Display	OK	28 degrees C / 82 degrees F
Fans	Rear Bottom Blower	OK	Spinning at normal speed
	Rear Top Blower	OK	Spinning at normal speed
	Front Top Blower	OK	Spinning at normal speed
	Fan Tray Rear Left	OK	Spinning at normal speed
	Fan Tray Rear Right	OK	Spinning at normal speed
	Fan Tray Front Left	OK	Spinning at normal speed
Misc	Fan Tray Front Right	OK	Spinning at normal speed
	CIP	OK	

show chassis environment (M120 Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Temp	PEM 0	OK	
	PEM 1	OK	
	Routing Engine 0	OK	43 degrees C / 109 degrees F
	Routing Engine 1	OK	44 degrees C / 111 degrees F
	CB 0 Intake	OK	33 degrees C / 91 degrees F
	CB 0 Exhaust A	OK	36 degrees C / 96 degrees F
	CB 0 Exhaust B	OK	35 degrees C / 95 degrees F
	CB 1 Intake	OK	34 degrees C / 93 degrees F
	CB 1 Exhaust A	OK	38 degrees C / 100 degrees F
	CB 1 Exhaust B	OK	35 degrees C / 95 degrees F
	FEB 3 Intake	OK	35 degrees C / 95 degrees F
	FEB 3 Exhaust A	OK	37 degrees C / 98 degrees F
	FEB 3 Exhaust B	OK	39 degrees C / 102 degrees F

	FEB 4 Intake	OK	33 degrees C / 91 degrees F
	FEB 4 Exhaust A	OK	39 degrees C / 102 degrees F
	FEB 4 Exhaust B	OK	36 degrees C / 96 degrees F
	FPC 2 Exhaust A	OK	32 degrees C / 89 degrees F
	FPC 2 Exhaust B	OK	31 degrees C / 87 degrees F
	FPC 3 Exhaust A	OK	32 degrees C / 89 degrees F
	FPC 3 Exhaust B	OK	33 degrees C / 91 degrees F
	FPC 4 Exhaust A	OK	32 degrees C / 89 degrees F
	FPC 4 Exhaust B	OK	30 degrees C / 86 degrees F
Fans	Front Top Tray Fan 1	OK	Spinning at normal speed
	Front Top Tray Fan 2	OK	Spinning at normal speed
	Front Top Tray Fan 3	OK	Spinning at normal speed
	Front Top Tray Fan 4	OK	Spinning at normal speed
	Front Top Tray Fan 5	OK	Spinning at normal speed
	Front Top Tray Fan 6	OK	Spinning at normal speed
	Front Top Tray Fan 7	OK	Spinning at normal speed
	Front Top Tray Fan 8	OK	Spinning at normal speed
	Front Bottom Tray Fan 1	OK	Spinning at normal speed
	Front Bottom Tray Fan 2	OK	Spinning at normal speed
	Front Bottom Tray Fan 3	OK	Spinning at normal speed
	Front Bottom Tray Fan 4	OK	Spinning at normal speed
	Front Bottom Tray Fan 5	OK	Spinning at normal speed
	Front Bottom Tray Fan 6	OK	Spinning at normal speed
	Front Bottom Tray Fan 7	OK	Spinning at normal speed
	Front Bottom Tray Fan 8	OK	Spinning at normal speed
	Rear Top Tray Fan 1	OK	Spinning at normal speed
	Rear Top Tray Fan 2	OK	Spinning at normal speed
	Rear Top Tray Fan 3	OK	Spinning at normal speed
	Rear Top Tray Fan 4	OK	Spinning at normal speed
	Rear Top Tray Fan 5	OK	Spinning at normal speed
	Rear Top Tray Fan 6	OK	Spinning at normal speed
	Rear Top Tray Fan 7	OK	Spinning at normal speed
	Rear Top Tray Fan 8	OK	Spinning at normal speed
	Rear Bottom Tray Fan 1	OK	Spinning at normal speed
	Rear Bottom Tray Fan 2	OK	Spinning at normal speed
	Rear Bottom Tray Fan 3	OK	Spinning at normal speed
	Rear Bottom Tray Fan 4	OK	Spinning at normal speed
	Rear Bottom Tray Fan 5	OK	Spinning at normal speed
	Rear Bottom Tray Fan 6	OK	Spinning at normal speed
	Rear Bottom Tray Fan 7	OK	Spinning at normal speed
	Rear Bottom Tray Fan 8	OK	Spinning at normal speed

show chassis environment (M160 Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Power	PEM 0	OK	PEM 1
Temp	PCG 0	OK	45 degrees C / 113 degrees F
	PCG 1	Absent	
	Routing Engine 0	OK	35 degrees C / 95 degrees F
	Routing Engine 1	Absent	
	MCS 0	OK	50 degrees C / 122 degrees F
	SFM 0 SPP	OK	47 degrees C / 116 degrees F
	SFM 0 SPR	OK	49 degrees C / 120 degrees F
	SFM 1 SPP	OK	50 degrees C / 122 degrees F
	SFM 1 SPR	OK	50 degrees C / 122 degrees F
	SFM 2 SPP	OK	51 degrees C / 123 degrees F
	SFM 2 SPR	OK	52 degrees C / 125 degrees F
	SFM 3 SPP	OK	52 degrees C / 125 degrees F
	SFM 3 SPR	OK	48 degrees C / 118 degrees F
	FPC 0	OK	45 degrees C / 113 degrees F

	FPC 6	OK	43 degrees C / 109 degrees F
	FPM CMB	OK	31 degrees C / 87 degrees F
	FPM Display	OK	33 degrees C / 91 degrees F
Fans	Rear Bottom Blower	OK	Spinning at normal speed
	Rear Top Blower	OK	Spinning at normal speed
	Front Top Blower	OK	Spinning at normal speed
	Fan Tray Rear Left	OK	Spinning at normal speed
	Fan Tray Rear Right	OK	Spinning at normal speed
	Fan Tray Front Left	OK	Spinning at normal speed
	Fan Tray Front Right	OK	Spinning at normal speed
Misc	CIP	OK	

show chassis environment (M320 Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Temp	PEM 0	Absent	
	PEM 1	Absent	
	PEM 2	OK	
	PEM 3	OK	
	Routing Engine 0	OK	33 degrees C / 91 degrees F
	Routing Engine 1	OK	32 degrees C / 89 degrees F
	CB 0	OK	36 degrees C / 96 degrees F
	CB 1	OK	36 degrees C / 96 degrees F
	SIB 0	OK	38 degrees C / 100 degrees F
	SIB 1	OK	29 degrees C / 84 degrees F
	SIB 2	OK	38 degrees C / 100 degrees F
	SIB 3	OK	41 degrees C / 105 degrees F
	FPC 0 Intake	OK	28 degrees C / 82 degrees F
	FPC 0 Exhaust	OK	40 degrees C / 104 degrees F
	FPC 1 Intake	OK	29 degrees C / 84 degrees F
	FPC 1 Exhaust	OK	39 degrees C / 102 degrees F
	FPC 2 Intake	OK	28 degrees C / 82 degrees F
	FPC 2 Exhaust	OK	38 degrees C / 100 degrees F
	FPC 3 Intake	OK	28 degrees C / 82 degrees F
	FPC 3 Exhaust	OK	39 degrees C / 102 degrees F
	FPC 6 Intake	OK	27 degrees C / 80 degrees F
	FPC 6 Exhaust	OK	39 degrees C / 102 degrees F
	FPC 7 Intake	OK	27 degrees C / 80 degrees F
	FPC 7 Exhaust	OK	42 degrees C / 107 degrees F
	FPM GBUS	OK	30 degrees C / 86 degrees F
Fan	Top Left Front fan	OK	Spinning at normal speed
	Top Right Rear fan	OK	Spinning at normal speed
	Top Right Front fan	OK	Spinning at normal speed
	Top Left Rear fan	OK	Spinning at normal speed
	Bottom Left Front fan	OK	Spinning at normal speed
	Bottom Right Rear fan	OK	Spinning at normal speed
	Bottom Right Front fan	OK	Spinning at normal speed
	Bottom Left Rear fan	OK	Spinning at normal speed
	Rear Fan 1 (TOP)	OK	Spinning at normal speed
	Rear Fan 2	OK	Spinning at normal speed
	Rear Fan 3	OK	Spinning at normal speed
	Rear Fan 4	OK	Spinning at normal speed
	Rear Fan 5	OK	Spinning at normal speed
	Rear Fan 6	OK	Spinning at normal speed
	Rear Fan 7 (Bottom)	OK	Spinning at normal speed
Misc	CIP	OK	

show chassis environment (MX104 Router)

```

user@host> show chassis environment
Class Item                               Status      Measurement
Temp  PEM 0                               OK          34 degrees C / 93 degrees F
      PEM 1                               Absent
      ABB 0 Intake                         OK          33 degrees C / 91 degrees F
      ABB 0 Exhaust A                     OK          42 degrees C / 107 degrees F
      ABB 0 Exhaust B                     OK          43 degrees C / 109 degrees F
      ABB 1 Intake                         Absent
      ABB 1 Exhaust A                     Absent
      ABB 1 Exhaust B                     Absent
      Routing Engine 0                    OK          34 degrees C / 93 degrees F
      Routing Engine 0 CPU                 OK          46 degrees C / 114 degrees F
      Routing Engine 1                    Absent
      Routing Engine 1 CPU                 Absent
      AFEB 0 AFEB Processor                OK          33 degrees C / 91 degrees F
Fans  Fan 1                               OK          Spinning at normal speed
      Fan 2                               OK          Spinning at normal speed
      Fan 3                               OK          Spinning at normal speed
      Fan 4                               OK          Spinning at normal speed
      Fan 5                               OK          Spinning at normal speed

```

show chassis environment (MX240 Router)

```

user@host> show chassis environment
Class Item                               Status      Measurement
Temp  PEM 0                               OK          40 degrees C / 104 degrees F
      PEM 1                               OK          45 degrees C / 113 degrees F
      PEM 2                               Absent
      PEM 3                               Absent
      Routing Engine 0                    OK          39 degrees C / 102 degrees F
      Routing Engine 1                    OK          37 degrees C / 98 degrees F
      CB 0 Intake                         OK          36 degrees C / 96 degrees F
      CB 0 Exhaust A                     OK          34 degrees C / 93 degrees F
      CB 0 Exhaust B                     OK          38 degrees C / 100 degrees F
      CB 0 ACBC                           OK          37 degrees C / 98 degrees F
      CB 0 SF A                           OK          49 degrees C / 120 degrees F
      CB 0 SF B                           OK          41 degrees C / 105 degrees F
      CB 1 Intake                         OK          37 degrees C / 98 degrees F
      CB 1 Exhaust A                     OK          34 degrees C / 93 degrees F
      CB 1 Exhaust B                     OK          39 degrees C / 102 degrees F
      CB 1 ACBC                           OK          38 degrees C / 100 degrees F
      CB 1 SF A                           OK          47 degrees C / 116 degrees F
      CB 1 SF B                           OK          41 degrees C / 105 degrees F
      FPC 1 Intake                         OK          33 degrees C / 91 degrees F
      FPC 1 Exhaust A                     OK          38 degrees C / 100 degrees F
      FPC 1 Exhaust B                     OK          53 degrees C / 127 degrees F
      FPC 1 I3 0 TSensor                  OK          50 degrees C / 122 degrees F
      FPC 1 I3 0 Chip                     OK          53 degrees C / 127 degrees F
      FPC 1 I3 1 TSensor                  OK          49 degrees C / 120 degrees F
      FPC 1 I3 1 Chip                     OK          52 degrees C / 125 degrees F
      FPC 1 I3 2 TSensor                  OK          47 degrees C / 116 degrees F
      FPC 1 I3 2 Chip                     OK          49 degrees C / 120 degrees F
      FPC 1 I3 3 TSensor                  OK          44 degrees C / 111 degrees F
      FPC 1 I3 3 Chip                     OK          46 degrees C / 114 degrees F
      FPC 1 IA 0 TSensor                  OK          45 degrees C / 113 degrees F
      FPC 1 IA 0 Chip                     OK          44 degrees C / 111 degrees F
      FPC 1 IA 1 TSensor                  OK          44 degrees C / 111 degrees F
      FPC 1 IA 1 Chip                     OK          48 degrees C / 118 degrees F
      FPC 2 Intake                         OK          32 degrees C / 89 degrees F

```

	FPC 2 Exhaust A	OK	40 degrees C / 104 degrees F
	FPC 2 Exhaust B	OK	52 degrees C / 125 degrees F
	FPC 2 I3 0 TSensor	OK	52 degrees C / 125 degrees F
	FPC 2 I3 0 Chip	OK	56 degrees C / 132 degrees F
	FPC 2 I3 1 TSensor	OK	52 degrees C / 125 degrees F
	FPC 2 I3 1 Chip	OK	55 degrees C / 131 degrees F
	FPC 2 I3 2 TSensor	OK	49 degrees C / 120 degrees F
	FPC 2 I3 2 Chip	OK	52 degrees C / 125 degrees F
	FPC 2 I3 3 TSensor	OK	44 degrees C / 111 degrees F
	FPC 2 I3 3 Chip	OK	48 degrees C / 118 degrees F
	FPC 2 IA 0 TSensor	OK	50 degrees C / 122 degrees F
	FPC 2 IA 0 Chip	OK	48 degrees C / 118 degrees F
	FPC 2 IA 1 TSensor	OK	47 degrees C / 116 degrees F
	FPC 2 IA 1 Chip	OK	53 degrees C / 127 degrees F
Fans	Front Fan	OK	Spinning at normal speed
	Middle Fan	OK	Spinning at normal speed
	Rear Fan	OK	Spinning at normal speed

show chassis environment (MX240 Router with Enhanced MX SCB)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Temp	PEM 0	OK	40 degrees C / 104 degrees F
	PEM 1	OK	45 degrees C / 113 degrees F
	PEM 2	Absent	
	PEM 3	Absent	
	Routing Engine 0	OK	39 degrees C / 102 degrees F
	Routing Engine 1	OK	37 degrees C / 98 degrees F
	CB 0 Intake	OK	36 degrees C / 96 degrees F
	CB 0 Exhaust A	OK	34 degrees C / 93 degrees F
	CB 0 Exhaust B	OK	38 degrees C / 100 degrees F
	CB 0 ACBC	OK	37 degrees C / 98 degrees F
	CB 0 XF A	OK	49 degrees C / 120 degrees F
	CB 0 XF B	OK	41 degrees C / 105 degrees F
	CB 1 Intake	OK	37 degrees C / 98 degrees F
	CB 1 Exhaust A	OK	34 degrees C / 93 degrees F
	CB 1 Exhaust B	OK	39 degrees C / 102 degrees F
	CB 1 ACBC	OK	38 degrees C / 100 degrees F
	CB 1 XF A	OK	47 degrees C / 116 degrees F
	CB 1 XF B	OK	41 degrees C / 105 degrees F
	FPC 1 Intake	OK	33 degrees C / 91 degrees F
	FPC 1 Exhaust A	OK	38 degrees C / 100 degrees F
	FPC 1 Exhaust B	OK	53 degrees C / 127 degrees F
	FPC 1 I3 0 TSensor	OK	50 degrees C / 122 degrees F
	FPC 1 I3 0 Chip	OK	53 degrees C / 127 degrees F
	FPC 1 I3 1 TSensor	OK	49 degrees C / 120 degrees F
	FPC 1 I3 1 Chip	OK	52 degrees C / 125 degrees F
	FPC 1 I3 2 TSensor	OK	47 degrees C / 116 degrees F
	FPC 1 I3 2 Chip	OK	49 degrees C / 120 degrees F
	FPC 1 I3 3 TSensor	OK	44 degrees C / 111 degrees F
	FPC 1 I3 3 Chip	OK	46 degrees C / 114 degrees F
	FPC 1 IA 0 TSensor	OK	45 degrees C / 113 degrees F
	FPC 1 IA 0 Chip	OK	44 degrees C / 111 degrees F
	FPC 1 IA 1 TSensor	OK	44 degrees C / 111 degrees F
	FPC 1 IA 1 Chip	OK	48 degrees C / 118 degrees F
	FPC 2 Intake	OK	32 degrees C / 89 degrees F
	FPC 2 Exhaust A	OK	40 degrees C / 104 degrees F
	FPC 2 Exhaust B	OK	52 degrees C / 125 degrees F
	FPC 2 I3 0 TSensor	OK	52 degrees C / 125 degrees F
	FPC 2 I3 0 Chip	OK	56 degrees C / 132 degrees F
	FPC 2 I3 1 TSensor	OK	52 degrees C / 125 degrees F

	FPC 2 I3 1 Chip	OK	55 degrees C / 131 degrees F
	FPC 2 I3 2 TSensor	OK	49 degrees C / 120 degrees F
	FPC 2 I3 2 Chip	OK	52 degrees C / 125 degrees F
	FPC 2 I3 3 TSensor	OK	44 degrees C / 111 degrees F
	FPC 2 I3 3 Chip	OK	48 degrees C / 118 degrees F
	FPC 2 IA 0 TSensor	OK	50 degrees C / 122 degrees F
	FPC 2 IA 0 Chip	OK	48 degrees C / 118 degrees F
	FPC 2 IA 1 TSensor	OK	47 degrees C / 116 degrees F
	FPC 2 IA 1 Chip	OK	53 degrees C / 127 degrees F
Fans	Front Fan	OK	Spinning at normal speed
	Middle Fan	OK	Spinning at normal speed
	Rear Fan	OK	Spinning at normal speed

show chassis environment (MX480 Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Temp	PEM 0	OK	35 degrees C / 95 degrees F
	PEM 1	OK	40 degrees C / 104 degrees F
	PEM 2	Absent	
	PEM 3	Absent	
	Routing Engine 0	OK	44 degrees C / 111 degrees F
	Routing Engine 1	OK	45 degrees C / 113 degrees F
	CB 0 Intake	OK	36 degrees C / 96 degrees F
	CB 0 Exhaust A	OK	38 degrees C / 100 degrees F
	CB 0 Exhaust B	OK	39 degrees C / 102 degrees F
	CB 0 ACBC	OK	37 degrees C / 98 degrees F
	CB 0 SF A	OK	51 degrees C / 123 degrees F
	CB 0 SF B	OK	44 degrees C / 111 degrees F
	CB 1 Intake	OK	36 degrees C / 96 degrees F
	CB 1 Exhaust A	OK	39 degrees C / 102 degrees F
	CB 1 Exhaust B	OK	40 degrees C / 104 degrees F
	CB 1 ACBC	OK	37 degrees C / 98 degrees F
	CB 1 SF A	OK	50 degrees C / 122 degrees F
	CB 1 SF B	OK	43 degrees C / 109 degrees F
	FPC 0 Intake	OK	36 degrees C / 96 degrees F
	FPC 0 Exhaust A	OK	39 degrees C / 102 degrees F
	FPC 0 Exhaust B	OK	51 degrees C / 123 degrees F
	FPC 0 I3 0 TSensor	OK	49 degrees C / 120 degrees F
	FPC 0 I3 0 Chip	OK	56 degrees C / 132 degrees F
	FPC 0 I3 1 TSensor	OK	47 degrees C / 116 degrees F
	FPC 0 I3 1 Chip	OK	52 degrees C / 125 degrees F
	FPC 0 I3 2 TSensor	OK	46 degrees C / 114 degrees F
	FPC 0 I3 2 Chip	OK	48 degrees C / 118 degrees F
	FPC 0 I3 3 TSensor	OK	42 degrees C / 107 degrees F
	FPC 0 I3 3 Chip	OK	45 degrees C / 113 degrees F
	FPC 0 IA 0 TSensor	OK	45 degrees C / 113 degrees F
	FPC 0 IA 0 Chip	OK	45 degrees C / 113 degrees F
	FPC 0 IA 1 TSensor	OK	44 degrees C / 111 degrees F
	FPC 0 IA 1 Chip	OK	48 degrees C / 118 degrees F
	FPC 1 Intake	OK	37 degrees C / 98 degrees F
	FPC 1 Exhaust A	OK	41 degrees C / 105 degrees F
	FPC 1 Exhaust B	OK	52 degrees C / 125 degrees F
	FPC 1 I3 0 TSensor	OK	51 degrees C / 123 degrees F
	FPC 1 I3 0 Chip	OK	57 degrees C / 134 degrees F
	FPC 1 I3 1 TSensor	OK	48 degrees C / 118 degrees F
	FPC 1 I3 1 Chip	OK	52 degrees C / 125 degrees F
	FPC 1 I3 2 TSensor	OK	46 degrees C / 114 degrees F
	FPC 1 I3 2 Chip	OK	50 degrees C / 122 degrees F
	FPC 1 I3 3 TSensor	OK	42 degrees C / 107 degrees F
	FPC 1 I3 3 Chip	OK	46 degrees C / 114 degrees F

	FPC 1 IA 0 TSensor	OK	49 degrees C / 120 degrees F
	FPC 1 IA 0 Chip	OK	48 degrees C / 118 degrees F
	FPC 1 IA 1 TSensor	OK	46 degrees C / 114 degrees F
	FPC 1 IA 1 Chip	OK	50 degrees C / 122 degrees F
Fans	Top Rear Fan	OK	Spinning at normal speed
	Bottom Rear Fan	OK	Spinning at normal speed
	Top Middle Fan	OK	Spinning at normal speed
	Bottom Middle Fan	OK	Spinning at normal speed
	Top Front Fan	OK	Spinning at normal speed
	Bottom Front Fan	OK	Spinning at normal speed

show chassis environment (MX480 Router with Enhanced MX SCB)

user@host> show chassis environment

Class	Item	Status	Measurement
Temp	PEM 0	OK	35 degrees C / 95 degrees F
	PEM 1	OK	40 degrees C / 104 degrees F
	PEM 2	Absent	
	PEM 3	Absent	
	Routing Engine 0	OK	44 degrees C / 111 degrees F
	Routing Engine 1	OK	45 degrees C / 113 degrees F
	CB 0 Intake	OK	36 degrees C / 96 degrees F
	CB 0 Exhaust A	OK	38 degrees C / 100 degrees F
	CB 0 Exhaust B	OK	39 degrees C / 102 degrees F
	CB 0 ACBC	OK	37 degrees C / 98 degrees F
	CB 0 XF A	OK	51 degrees C / 123 degrees F
	CB 0 XF B	OK	44 degrees C / 111 degrees F
	CB 1 Intake	OK	36 degrees C / 96 degrees F
	CB 1 Exhaust A	OK	39 degrees C / 102 degrees F
	CB 1 Exhaust B	OK	40 degrees C / 104 degrees F
	CB 1 ACBC	OK	37 degrees C / 98 degrees F
	CB 1 XF A	OK	50 degrees C / 122 degrees F
	CB 1 XF B	OK	43 degrees C / 109 degrees F
	FPC 0 Intake	OK	36 degrees C / 96 degrees F
	FPC 0 Exhaust A	OK	39 degrees C / 102 degrees F
	FPC 0 Exhaust B	OK	51 degrees C / 123 degrees F
	FPC 0 I3 0 TSensor	OK	49 degrees C / 120 degrees F
	FPC 0 I3 0 Chip	OK	56 degrees C / 132 degrees F
	FPC 0 I3 1 TSensor	OK	47 degrees C / 116 degrees F
	FPC 0 I3 1 Chip	OK	52 degrees C / 125 degrees F
	FPC 0 I3 2 TSensor	OK	46 degrees C / 114 degrees F
	FPC 0 I3 2 Chip	OK	48 degrees C / 118 degrees F
	FPC 0 I3 3 TSensor	OK	42 degrees C / 107 degrees F
	FPC 0 I3 3 Chip	OK	45 degrees C / 113 degrees F
	FPC 0 IA 0 TSensor	OK	45 degrees C / 113 degrees F
	FPC 0 IA 0 Chip	OK	45 degrees C / 113 degrees F
	FPC 0 IA 1 TSensor	OK	44 degrees C / 111 degrees F
	FPC 0 IA 1 Chip	OK	48 degrees C / 118 degrees F
	FPC 1 Intake	OK	37 degrees C / 98 degrees F
	FPC 1 Exhaust A	OK	41 degrees C / 105 degrees F
	FPC 1 Exhaust B	OK	52 degrees C / 125 degrees F
	FPC 1 I3 0 TSensor	OK	51 degrees C / 123 degrees F
	FPC 1 I3 0 Chip	OK	57 degrees C / 134 degrees F
	FPC 1 I3 1 TSensor	OK	48 degrees C / 118 degrees F
	FPC 1 I3 1 Chip	OK	52 degrees C / 125 degrees F
	FPC 1 I3 2 TSensor	OK	46 degrees C / 114 degrees F
	FPC 1 I3 2 Chip	OK	50 degrees C / 122 degrees F
	FPC 1 I3 3 TSensor	OK	42 degrees C / 107 degrees F
	FPC 1 I3 3 Chip	OK	46 degrees C / 114 degrees F
	FPC 1 IA 0 TSensor	OK	49 degrees C / 120 degrees F
	FPC 1 IA 0 Chip	OK	48 degrees C / 118 degrees F

	FPC 1 IA 1 TSensor	OK	46 degrees C / 114 degrees F
	FPC 1 IA 1 Chip	OK	50 degrees C / 122 degrees F
Fans	Top Rear Fan	OK	Spinning at normal speed
	Bottom Rear Fan	OK	Spinning at normal speed
	Top Middle Fan	OK	Spinning at normal speed
	Bottom Middle Fan	OK	Spinning at normal speed
	Top Front Fan	OK	Spinning at normal speed
	Bottom Front Fan	OK	Spinning at normal speed

show chassis environment (MX960 Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Temp	PEM 0	Absent	
	PEM 1	Absent	
	PEM 2	Check	
	PEM 3	OK	35 degrees C / 95 degrees F
	Routing Engine 0	OK	37 degrees C / 98 degrees F
	Routing Engine 1	Absent	
	CB 0 Intake	OK	24 degrees C / 75 degrees F
	CB 0 Exhaust A	OK	30 degrees C / 86 degrees F
	CB 0 Exhaust B	OK	27 degrees C / 80 degrees F
	CB 1 Intake	Absent	
	CB 1 Exhaust A	Absent	
	CB 1 Exhaust B	Absent	
	CB 1 ACBC	Absent	
	CB 1 SF A	Absent	
	CB 1 SF B	Absent	
	CB 2 Intake	Absent	
	CB 2 Exhaust A	Absent	
	CB 2 Exhaust B	Absent	
	CB 2 ACBC	Absent	
	CB 2 SF A	Absent	
	CB 2 SF B	Absent	
	FPC 4 Intake	OK	24 degrees C / 75 degrees F
	FPC 4 Exhaust A	OK	36 degrees C / 96 degrees F
	FPC 4 Exhaust B	OK	38 degrees C / 100 degrees F
	FPC 7 Intake	OK	24 degrees C / 75 degrees F
	FPC 7 Exhaust A	OK	36 degrees C / 96 degrees F
	FPC 7 Exhaust B	OK	42 degrees C / 107 degrees F
Fans	Top Fan Tray Temp	Failed	
	Top Tray Fan 1	OK	Spinning at normal speed
	Top Tray Fan 2	OK	Spinning at normal speed
	Top Tray Fan 3	OK	Spinning at normal speed
	Top Tray Fan 4	OK	Spinning at normal speed
	Top Tray Fan 5	OK	Spinning at normal speed
	Top Tray Fan 6	OK	Spinning at normal speed
	Bottom Fan Tray Temp	Failed	
	Bottom Tray Fan 1	OK	Spinning at normal speed
	Bottom Tray Fan 2	OK	Spinning at normal speed
	Bottom Tray Fan 3	OK	Spinning at normal speed
	Bottom Tray Fan 4	OK	Spinning at normal speed
	Bottom Tray Fan 5	OK	Spinning at normal speed
	Bottom Tray Fan 6	OK	Spinning at normal speed

show chassis environment (MX960 Router with Enhanced MX SCB)

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user@host> show chassis environment
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Class	Item	Status	Measurement
Temp	PEM 0	Absent	
	PEM 1	OK	50 degrees C / 122 degrees F

PEM 2	OK	50 degrees C / 122 degrees F
PEM 3	OK	50 degrees C / 122 degrees F
Routing Engine 0	OK	42 degrees C / 107 degrees F
Routing Engine 0 CPU	OK	51 degrees C / 123 degrees F
Routing Engine 1	OK	39 degrees C / 102 degrees F
Routing Engine 1 CPU	OK	44 degrees C / 111 degrees F
CB 0 Intake	OK	35 degrees C / 95 degrees F
CB 0 Exhaust A	OK	36 degrees C / 96 degrees F
CB 0 Exhaust B	OK	43 degrees C / 109 degrees F
CB 0 ACBC	OK	38 degrees C / 100 degrees F
CB 0 XF A	OK	53 degrees C / 127 degrees F
CB 0 XF B	OK	47 degrees C / 116 degrees F
CB 1 Intake	OK	35 degrees C / 95 degrees F
CB 1 Exhaust A	OK	35 degrees C / 95 degrees F
CB 1 Exhaust B	OK	41 degrees C / 105 degrees F
CB 1 ACBC	OK	38 degrees C / 100 degrees F
CB 1 XF A	OK	52 degrees C / 125 degrees F
CB 1 XF B	OK	47 degrees C / 116 degrees F
CB 2 Intake	OK	32 degrees C / 89 degrees F
CB 2 Exhaust A	OK	30 degrees C / 86 degrees F
CB 2 Exhaust B	OK	35 degrees C / 95 degrees F
CB 2 ACBC	OK	33 degrees C / 91 degrees F
CB 2 XF A	OK	51 degrees C / 123 degrees F
CB 2 XF B	OK	50 degrees C / 122 degrees F
FPC 0 Intake	OK	35 degrees C / 95 degrees F
FPC 0 Exhaust A	OK	39 degrees C / 102 degrees F
FPC 0 Exhaust B	OK	50 degrees C / 122 degrees F
FPC 0 I3 0 TSensor	OK	50 degrees C / 122 degrees F
FPC 0 I3 0 Chip	OK	56 degrees C / 132 degrees F
FPC 0 I3 1 TSensor	OK	47 degrees C / 116 degrees F
FPC 0 I3 1 Chip	OK	50 degrees C / 122 degrees F
FPC 0 I3 2 TSensor	OK	45 degrees C / 113 degrees F
FPC 0 I3 2 Chip	OK	48 degrees C / 118 degrees F
FPC 0 I3 3 TSensor	OK	41 degrees C / 105 degrees F
FPC 0 I3 3 Chip	OK	44 degrees C / 111 degrees F
FPC 0 IA 0 TSensor	OK	45 degrees C / 113 degrees F
FPC 0 IA 0 Chip	OK	45 degrees C / 113 degrees F
FPC 0 IA 1 TSensor	OK	44 degrees C / 111 degrees F
FPC 0 IA 1 Chip	OK	48 degrees C / 118 degrees F
FPC 1 Intake	OK	36 degrees C / 96 degrees F
FPC 1 Exhaust A	OK	47 degrees C / 116 degrees F
FPC 1 Exhaust B	OK	43 degrees C / 109 degrees F
FPC 1 LU 0 TCAM TSensor	OK	53 degrees C / 127 degrees F
FPC 1 LU 0 TCAM Chip	OK	57 degrees C / 134 degrees F
FPC 1 LU 0 TSensor	OK	53 degrees C / 127 degrees F
FPC 1 LU 0 Chip	OK	60 degrees C / 140 degrees F
FPC 1 MQ 0 TSensor	OK	53 degrees C / 127 degrees F
FPC 1 MQ 0 Chip	OK	56 degrees C / 132 degrees F
FPC 1 LU 1 TCAM TSensor	OK	51 degrees C / 123 degrees F
FPC 1 LU 1 TCAM Chip	OK	52 degrees C / 125 degrees F
FPC 1 LU 1 TSensor	OK	51 degrees C / 123 degrees F
FPC 1 LU 1 Chip	OK	53 degrees C / 127 degrees F
FPC 1 MQ 1 TSensor	OK	51 degrees C / 123 degrees F
FPC 1 MQ 1 Chip	OK	58 degrees C / 136 degrees F
FPC 2 Intake	OK	35 degrees C / 95 degrees F
FPC 2 Exhaust A	OK	39 degrees C / 102 degrees F
FPC 2 Exhaust B	OK	54 degrees C / 129 degrees F
FPC 2 I3 0 TSensor	OK	52 degrees C / 125 degrees F
FPC 2 I3 0 Chip	OK	59 degrees C / 138 degrees F
FPC 2 I3 1 TSensor	OK	48 degrees C / 118 degrees F
FPC 2 I3 1 Chip	OK	52 degrees C / 125 degrees F

FPC 2 I3 2 TSensor	OK	47 degrees C / 116 degrees F
FPC 2 I3 2 Chip	OK	49 degrees C / 120 degrees F
FPC 2 I3 3 TSensor	OK	41 degrees C / 105 degrees F
FPC 2 I3 3 Chip	OK	44 degrees C / 111 degrees F
FPC 2 IA 0 TSensor	OK	47 degrees C / 116 degrees F
FPC 2 IA 0 Chip	OK	46 degrees C / 114 degrees F
FPC 2 IA 1 TSensor	OK	45 degrees C / 113 degrees F
FPC 2 IA 1 Chip	OK	49 degrees C / 120 degrees F
FPC 3 Intake	OK	34 degrees C / 93 degrees F
FPC 3 Exhaust A	OK	34 degrees C / 93 degrees F
FPC 3 Exhaust B	OK	47 degrees C / 116 degrees F
FPC 3 I3 0 TSensor	OK	48 degrees C / 118 degrees F
FPC 3 I3 0 Chip	OK	52 degrees C / 125 degrees F
FPC 3 I3 1 TSensor	OK	46 degrees C / 114 degrees F
FPC 3 I3 1 Chip	OK	48 degrees C / 118 degrees F
FPC 3 IA 0 TSensor	OK	41 degrees C / 105 degrees F
FPC 3 IA 0 Chip	OK	40 degrees C / 104 degrees F
FPC 5 Intake	OK	42 degrees C / 107 degrees F
FPC 5 Exhaust A	OK	42 degrees C / 107 degrees F
FPC 5 Exhaust B	OK	53 degrees C / 127 degrees F
FPC 5 LU 0 TSensor	OK	53 degrees C / 127 degrees F
FPC 5 LU 0 Chip	OK	54 degrees C / 129 degrees F
FPC 5 LU 1 TSensor	OK	53 degrees C / 127 degrees F
FPC 5 LU 1 Chip	OK	61 degrees C / 141 degrees F
FPC 5 LU 2 TSensor	OK	53 degrees C / 127 degrees F
FPC 5 LU 2 Chip	OK	51 degrees C / 123 degrees F
FPC 5 LU 3 TSensor	OK	53 degrees C / 127 degrees F
FPC 5 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 5 MQ 0 TSensor	OK	47 degrees C / 116 degrees F
FPC 5 MQ 0 Chip	OK	52 degrees C / 125 degrees F
FPC 5 MQ 1 TSensor	OK	47 degrees C / 116 degrees F
FPC 5 MQ 1 Chip	OK	52 degrees C / 125 degrees F
FPC 5 MQ 2 TSensor	OK	47 degrees C / 116 degrees F
FPC 5 MQ 2 Chip	OK	46 degrees C / 114 degrees F
FPC 5 MQ 3 TSensor	OK	47 degrees C / 116 degrees F
FPC 5 MQ 3 Chip	OK	45 degrees C / 113 degrees F
FPC 7 Intake	OK	36 degrees C / 96 degrees F
FPC 7 Exhaust A	OK	35 degrees C / 95 degrees F
FPC 7 Exhaust B	OK	33 degrees C / 91 degrees F
FPC 7 QX 0 TSensor	OK	42 degrees C / 107 degrees F
FPC 7 QX 0 Chip	OK	47 degrees C / 116 degrees F
FPC 7 LU 0 TCAM TSensor	OK	42 degrees C / 107 degrees F
FPC 7 LU 0 TCAM Chip	OK	44 degrees C / 111 degrees F
FPC 7 LU 0 TSensor	OK	42 degrees C / 107 degrees F
FPC 7 LU 0 Chip	OK	46 degrees C / 114 degrees F
FPC 7 MQ 0 TSensor	OK	42 degrees C / 107 degrees F
FPC 7 MQ 0 Chip	OK	45 degrees C / 113 degrees F
FPC 8 Intake	OK	33 degrees C / 91 degrees F
FPC 8 Exhaust A	OK	33 degrees C / 91 degrees F
FPC 8 Exhaust B	OK	36 degrees C / 96 degrees F
FPC 8 I3 0 TSensor	OK	38 degrees C / 100 degrees F
FPC 8 I3 0 Chip	OK	43 degrees C / 109 degrees F
FPC 8 BDS 0 TSensor	OK	37 degrees C / 98 degrees F
FPC 8 BDS 0 Chip	OK	36 degrees C / 96 degrees F
FPC 8 IA 0 TSensor	OK	37 degrees C / 98 degrees F
FPC 8 IA 0 Chip	OK	37 degrees C / 98 degrees F
FPC 10 Intake	OK	38 degrees C / 100 degrees F
FPC 10 Exhaust A	OK	36 degrees C / 96 degrees F
FPC 10 Exhaust B	OK	41 degrees C / 105 degrees F
FPC 10 I3 0 TSensor	OK	40 degrees C / 104 degrees F
FPC 10 I3 0 Chip	OK	42 degrees C / 107 degrees F

	FPC 10 I3 1 TSensor	OK	40 degrees C / 104 degrees F
	FPC 10 I3 1 Chip	OK	44 degrees C / 111 degrees F
	FPC 10 I3 2 TSensor	OK	42 degrees C / 107 degrees F
	FPC 10 I3 2 Chip	OK	43 degrees C / 109 degrees F
	FPC 10 I3 3 TSensor	OK	39 degrees C / 102 degrees F
	FPC 10 I3 3 Chip	OK	44 degrees C / 111 degrees F
	FPC 10 IA 0 TSensor	OK	36 degrees C / 96 degrees F
	FPC 10 IA 0 Chip	OK	36 degrees C / 96 degrees F
	FPC 10 IA 1 TSensor	OK	43 degrees C / 109 degrees F
	FPC 10 IA 1 Chip	OK	42 degrees C / 107 degrees F
Fans	Top Fan Tray Temp	OK	37 degrees C / 98 degrees F
	Top Tray Fan 1	OK	Spinning at normal speed
	Top Tray Fan 2	OK	Spinning at normal speed
	Top Tray Fan 3	OK	Spinning at normal speed
	Top Tray Fan 4	OK	Spinning at normal speed
	Top Tray Fan 5	OK	Spinning at normal speed
	Top Tray Fan 6	OK	Spinning at normal speed
	Bottom Fan Tray Temp	OK	28 degrees C / 82 degrees F
	Bottom Tray Fan 1	OK	Spinning at normal speed
	Bottom Tray Fan 2	OK	Spinning at normal speed
	Bottom Tray Fan 3	OK	Spinning at normal speed
	Bottom Tray Fan 4	OK	Spinning at normal speed
	Bottom Tray Fan 5	OK	Spinning at normal speed
	Bottom Tray Fan 6	OK	Spinning at normal speed

show chassis environment (MX2020 Router)

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user@host> show chassis environment
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Class	Item	Status	Measurement
Temp	PSM 0	Absent	
	PSM 1	Absent	
	PSM 2	OK	41 degrees C / 105 degrees F
	PSM 3	OK	39 degrees C / 102 degrees F
	PSM 4	OK	39 degrees C / 102 degrees F
	PSM 5	OK	38 degrees C / 100 degrees F
	PSM 6	OK	38 degrees C / 100 degrees F
	PSM 7	OK	38 degrees C / 100 degrees F
	PSM 8	OK	37 degrees C / 98 degrees F
	PSM 9	Absent	
	PSM 10	Absent	
	PSM 11	OK	47 degrees C / 116 degrees F
	PSM 12	OK	45 degrees C / 113 degrees F
	PSM 13	OK	44 degrees C / 111 degrees F
	PSM 14	OK	44 degrees C / 111 degrees F
	PSM 15	OK	43 degrees C / 109 degrees F
	PSM 16	OK	42 degrees C / 107 degrees F
	PSM 17	OK	41 degrees C / 105 degrees F
	PDM 0	OK	
	PDM 1	Absent	
	PDM 2	Absent	
	PDM 3	OK	
	CB 0 IntakeA-Zone0	OK	45 degrees C / 113 degrees F
	CB 0 IntakeB-Zone1	OK	34 degrees C / 93 degrees F
	CB 0 IntakeC-Zone0	OK	48 degrees C / 118 degrees F
	CB 0 ExhaustA-Zone0	OK	45 degrees C / 113 degrees F
	CB 0 ExhaustB-Zone1	OK	37 degrees C / 98 degrees F
	CB 0 TCBC-Zone0	OK	41 degrees C / 105 degrees F
	CB 1 IntakeA-Zone0	OK	46 degrees C / 114 degrees F
	CB 1 IntakeB-Zone1	OK	42 degrees C / 107 degrees F
	CB 1 IntakeC-Zone0	OK	49 degrees C / 120 degrees F
	CB 1 ExhaustA-Zone0	OK	46 degrees C / 114 degrees F

CB 1 ExhaustB-Zone1	OK	41 degrees C / 105 degrees F
CB 1 TCBC-Zone0	OK	46 degrees C / 114 degrees F
SPMB 0 Intake	OK	33 degrees C / 91 degrees F
SPMB 1 Intake	OK	42 degrees C / 107 degrees F
Routing Engine 0	OK	35 degrees C / 95 degrees F
Routing Engine 0 CPU	OK	34 degrees C / 93 degrees F
Routing Engine 1	OK	44 degrees C / 111 degrees F
Routing Engine 1 CPU	OK	42 degrees C / 107 degrees F
SFB 0 Intake-Zone0	OK	55 degrees C / 131 degrees F
SFB 0 Exhaust-Zone1	OK	48 degrees C / 118 degrees F
SFB 0 IntakeA-Zone0	OK	50 degrees C / 122 degrees F
SFB 0 IntakeB-Zone1	OK	40 degrees C / 104 degrees F
SFB 0 Exhaust-Zone0	OK	52 degrees C / 125 degrees F
SFB 0 SFB-XF2-Zone1	OK	61 degrees C / 141 degrees F
SFB 0 SFB-XF1-Zone0	OK	69 degrees C / 156 degrees F
SFB 0 SFB-XF0-Zone0	OK	68 degrees C / 154 degrees F
SFB 1 Intake-Zone0	OK	56 degrees C / 132 degrees F
SFB 1 Exhaust-Zone1	OK	47 degrees C / 116 degrees F
SFB 1 IntakeA-Zone0	OK	51 degrees C / 123 degrees F
SFB 1 IntakeB-Zone1	OK	40 degrees C / 104 degrees F
SFB 1 Exhaust-Zone0	OK	51 degrees C / 123 degrees F
SFB 1 SFB-XF2-Zone1	OK	62 degrees C / 143 degrees F
SFB 1 SFB-XF1-Zone0	OK	67 degrees C / 152 degrees F
SFB 1 SFB-XF0-Zone0	OK	69 degrees C / 156 degrees F
SFB 2 Intake-Zone0	OK	56 degrees C / 132 degrees F
SFB 2 Exhaust-Zone1	OK	47 degrees C / 116 degrees F
SFB 2 IntakeA-Zone0	OK	51 degrees C / 123 degrees F
SFB 2 IntakeB-Zone1	OK	40 degrees C / 104 degrees F
SFB 2 Exhaust-Zone0	OK	53 degrees C / 127 degrees F
SFB 2 SFB-XF2-Zone1	OK	65 degrees C / 149 degrees F
SFB 2 SFB-XF1-Zone0	OK	69 degrees C / 156 degrees F
SFB 2 SFB-XF0-Zone0	OK	70 degrees C / 158 degrees F
SFB 3 Intake-Zone0	OK	57 degrees C / 134 degrees F
SFB 3 Exhaust-Zone1	OK	48 degrees C / 118 degrees F
SFB 3 IntakeA-Zone0	OK	52 degrees C / 125 degrees F
SFB 3 IntakeB-Zone1	OK	41 degrees C / 105 degrees F
SFB 3 Exhaust-Zone0	OK	53 degrees C / 127 degrees F
SFB 3 SFB-XF2-Zone1	OK	66 degrees C / 150 degrees F
SFB 3 SFB-XF1-Zone0	OK	69 degrees C / 156 degrees F
SFB 3 SFB-XF0-Zone0	OK	71 degrees C / 159 degrees F
SFB 4 Intake-Zone0	OK	58 degrees C / 136 degrees F
SFB 4 Exhaust-Zone1	OK	49 degrees C / 120 degrees F
SFB 4 IntakeA-Zone0	OK	54 degrees C / 129 degrees F
SFB 4 IntakeB-Zone1	OK	42 degrees C / 107 degrees F
SFB 4 Exhaust-Zone0	OK	53 degrees C / 127 degrees F
SFB 4 SFB-XF2-Zone1	OK	64 degrees C / 147 degrees F
SFB 4 SFB-XF1-Zone0	OK	68 degrees C / 154 degrees F
SFB 4 SFB-XF0-Zone0	OK	71 degrees C / 159 degrees F
SFB 5 Intake-Zone0	OK	58 degrees C / 136 degrees F
SFB 5 Exhaust-Zone1	OK	50 degrees C / 122 degrees F
SFB 5 IntakeA-Zone0	OK	53 degrees C / 127 degrees F
SFB 5 IntakeB-Zone1	OK	43 degrees C / 109 degrees F
SFB 5 Exhaust-Zone0	OK	54 degrees C / 129 degrees F
SFB 5 SFB-XF2-Zone1	OK	66 degrees C / 150 degrees F
SFB 5 SFB-XF1-Zone0	OK	69 degrees C / 156 degrees F
SFB 5 SFB-XF0-Zone0	OK	74 degrees C / 165 degrees F
SFB 6 Intake-Zone0	OK	58 degrees C / 136 degrees F
SFB 6 Exhaust-Zone1	OK	49 degrees C / 120 degrees F
SFB 6 IntakeA-Zone0	OK	53 degrees C / 127 degrees F
SFB 6 IntakeB-Zone1	OK	43 degrees C / 109 degrees F
SFB 6 Exhaust-Zone0	OK	53 degrees C / 127 degrees F

SFB 6 SFB-XF2-Zone1	OK	65 degrees C / 149 degrees F
SFB 6 SFB-XF1-Zone0	OK	68 degrees C / 154 degrees F
SFB 6 SFB-XF0-Zone0	OK	72 degrees C / 161 degrees F
SFB 7 Intake-Zone0	OK	57 degrees C / 134 degrees F
SFB 7 Exhaust-Zone1	OK	50 degrees C / 122 degrees F
SFB 7 IntakeA-Zone0	OK	53 degrees C / 127 degrees F
SFB 7 IntakeB-Zone1	OK	43 degrees C / 109 degrees F
SFB 7 Exhaust-Zone0	OK	54 degrees C / 129 degrees F
SFB 7 SFB-XF2-Zone1	OK	68 degrees C / 154 degrees F
SFB 7 SFB-XF1-Zone0	OK	69 degrees C / 156 degrees F
SFB 7 SFB-XF0-Zone0	OK	73 degrees C / 163 degrees F
FPC 0 Intake	OK	41 degrees C / 105 degrees F
FPC 0 Exhaust A	OK	48 degrees C / 118 degrees F
FPC 0 Exhaust B	OK	62 degrees C / 143 degrees F
FPC 0 LU 0 TSen	OK	59 degrees C / 138 degrees F
FPC 0 LU 0 Chip	OK	62 degrees C / 143 degrees F
FPC 0 LU 1 TSen	OK	59 degrees C / 138 degrees F
FPC 0 LU 1 Chip	OK	64 degrees C / 147 degrees F
FPC 0 LU 2 TSen	OK	59 degrees C / 138 degrees F
FPC 0 LU 2 Chip	OK	53 degrees C / 127 degrees F
FPC 0 LU 3 TSen	OK	59 degrees C / 138 degrees F
FPC 0 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 0 MQ 0 TSen	OK	47 degrees C / 116 degrees F
FPC 0 MQ 0 Chip	OK	49 degrees C / 120 degrees F
FPC 0 MQ 1 TSen	OK	47 degrees C / 116 degrees F
FPC 0 MQ 1 Chip	OK	51 degrees C / 123 degrees F
FPC 0 MQ 2 TSen	OK	47 degrees C / 116 degrees F
FPC 0 MQ 2 Chip	OK	44 degrees C / 111 degrees F
FPC 0 MQ 3 TSen	OK	47 degrees C / 116 degrees F
FPC 0 MQ 3 Chip	OK	45 degrees C / 113 degrees F
FPC 1 Intake	OK	40 degrees C / 104 degrees F
FPC 1 Exhaust A	OK	49 degrees C / 120 degrees F
FPC 1 Exhaust B	OK	58 degrees C / 136 degrees F
FPC 1 LU 0 TSen	OK	55 degrees C / 131 degrees F
FPC 1 LU 0 Chip	OK	56 degrees C / 132 degrees F
FPC 1 LU 1 TSen	OK	55 degrees C / 131 degrees F
FPC 1 LU 1 Chip	OK	58 degrees C / 136 degrees F
FPC 1 LU 2 TSen	OK	55 degrees C / 131 degrees F
FPC 1 LU 2 Chip	OK	49 degrees C / 120 degrees F
FPC 1 LU 3 TSen	OK	55 degrees C / 131 degrees F
FPC 1 LU 3 Chip	OK	51 degrees C / 123 degrees F
FPC 1 MQ 0 TSen	OK	47 degrees C / 116 degrees F
FPC 1 MQ 0 Chip	OK	48 degrees C / 118 degrees F
FPC 1 MQ 1 TSen	OK	47 degrees C / 116 degrees F
FPC 1 MQ 1 Chip	OK	50 degrees C / 122 degrees F
FPC 1 MQ 2 TSen	OK	47 degrees C / 116 degrees F
FPC 1 MQ 2 Chip	OK	44 degrees C / 111 degrees F
FPC 1 MQ 3 TSen	OK	47 degrees C / 116 degrees F
FPC 1 MQ 3 Chip	OK	44 degrees C / 111 degrees F
FPC 2 Intake	OK	39 degrees C / 102 degrees F
FPC 2 Exhaust A	OK	49 degrees C / 120 degrees F
FPC 2 Exhaust B	OK	61 degrees C / 141 degrees F
FPC 2 LU 0 TSen	OK	58 degrees C / 136 degrees F
FPC 2 LU 0 Chip	OK	60 degrees C / 140 degrees F
FPC 2 LU 1 TSen	OK	58 degrees C / 136 degrees F
FPC 2 LU 1 Chip	OK	65 degrees C / 149 degrees F
FPC 2 LU 2 TSen	OK	58 degrees C / 136 degrees F
FPC 2 LU 2 Chip	OK	51 degrees C / 123 degrees F
FPC 2 LU 3 TSen	OK	58 degrees C / 136 degrees F
FPC 2 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 2 MQ 0 TSen	OK	47 degrees C / 116 degrees F

FPC 2 MQ 0 Chip	OK	50 degrees C / 122 degrees F
FPC 2 MQ 1 TSen	OK	47 degrees C / 116 degrees F
FPC 2 MQ 1 Chip	OK	52 degrees C / 125 degrees F
FPC 2 MQ 2 TSen	OK	47 degrees C / 116 degrees F
FPC 2 MQ 2 Chip	OK	45 degrees C / 113 degrees F
FPC 2 MQ 3 TSen	OK	47 degrees C / 116 degrees F
FPC 2 MQ 3 Chip	OK	46 degrees C / 114 degrees F
FPC 3 Intake	OK	40 degrees C / 104 degrees F
FPC 3 Exhaust A	OK	49 degrees C / 120 degrees F
FPC 3 Exhaust B	OK	61 degrees C / 141 degrees F
FPC 3 LU 0 TSen	OK	58 degrees C / 136 degrees F
FPC 3 LU 0 Chip	OK	61 degrees C / 141 degrees F
FPC 3 LU 1 TSen	OK	58 degrees C / 136 degrees F
FPC 3 LU 1 Chip	OK	62 degrees C / 143 degrees F
FPC 3 LU 2 TSen	OK	58 degrees C / 136 degrees F
FPC 3 LU 2 Chip	OK	51 degrees C / 123 degrees F
FPC 3 LU 3 TSen	OK	58 degrees C / 136 degrees F
FPC 3 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 3 MQ 0 TSen	OK	48 degrees C / 118 degrees F
FPC 3 MQ 0 Chip	OK	50 degrees C / 122 degrees F
FPC 3 MQ 1 TSen	OK	48 degrees C / 118 degrees F
FPC 3 MQ 1 Chip	OK	54 degrees C / 129 degrees F
FPC 3 MQ 2 TSen	OK	48 degrees C / 118 degrees F
FPC 3 MQ 2 Chip	OK	45 degrees C / 113 degrees F
FPC 3 MQ 3 TSen	OK	48 degrees C / 118 degrees F
FPC 3 MQ 3 Chip	OK	48 degrees C / 118 degrees F
FPC 4 Intake	OK	40 degrees C / 104 degrees F
FPC 4 Exhaust A	OK	49 degrees C / 120 degrees F
FPC 4 Exhaust B	OK	62 degrees C / 143 degrees F
FPC 4 LU 0 TSen	OK	59 degrees C / 138 degrees F
FPC 4 LU 0 Chip	OK	62 degrees C / 143 degrees F
FPC 4 LU 1 TSen	OK	59 degrees C / 138 degrees F
FPC 4 LU 1 Chip	OK	65 degrees C / 149 degrees F
FPC 4 LU 2 TSen	OK	59 degrees C / 138 degrees F
FPC 4 LU 2 Chip	OK	51 degrees C / 123 degrees F
FPC 4 LU 3 TSen	OK	59 degrees C / 138 degrees F
FPC 4 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 4 MQ 0 TSen	OK	48 degrees C / 118 degrees F
FPC 4 MQ 0 Chip	OK	52 degrees C / 125 degrees F
FPC 4 MQ 1 TSen	OK	48 degrees C / 118 degrees F
FPC 4 MQ 1 Chip	OK	53 degrees C / 127 degrees F
FPC 4 MQ 2 TSen	OK	48 degrees C / 118 degrees F
FPC 4 MQ 2 Chip	OK	46 degrees C / 114 degrees F
FPC 4 MQ 3 TSen	OK	48 degrees C / 118 degrees F
FPC 4 MQ 3 Chip	OK	47 degrees C / 116 degrees F
FPC 5 Intake	OK	41 degrees C / 105 degrees F
FPC 5 Exhaust A	OK	50 degrees C / 122 degrees F
FPC 5 Exhaust B	OK	63 degrees C / 145 degrees F
FPC 5 LU 0 TSen	OK	60 degrees C / 140 degrees F
FPC 5 LU 0 Chip	OK	63 degrees C / 145 degrees F
FPC 5 LU 1 TSen	OK	60 degrees C / 140 degrees F
FPC 5 LU 1 Chip	OK	66 degrees C / 150 degrees F
FPC 5 LU 2 TSen	OK	60 degrees C / 140 degrees F
FPC 5 LU 2 Chip	OK	56 degrees C / 132 degrees F
FPC 5 LU 3 TSen	OK	60 degrees C / 140 degrees F
FPC 5 LU 3 Chip	OK	54 degrees C / 129 degrees F
FPC 5 MQ 0 TSen	OK	49 degrees C / 120 degrees F
FPC 5 MQ 0 Chip	OK	52 degrees C / 125 degrees F
FPC 5 MQ 1 TSen	OK	49 degrees C / 120 degrees F
FPC 5 MQ 1 Chip	OK	53 degrees C / 127 degrees F
FPC 5 MQ 2 TSen	OK	49 degrees C / 120 degrees F

FPC 5 MQ 2 Chip	OK	48 degrees C / 118 degrees F
FPC 5 MQ 3 TSen	OK	49 degrees C / 120 degrees F
FPC 5 MQ 3 Chip	OK	47 degrees C / 116 degrees F
FPC 6 Intake	OK	42 degrees C / 107 degrees F
FPC 6 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 6 Exhaust B	OK	63 degrees C / 145 degrees F
FPC 6 LU 0 TSen	OK	61 degrees C / 141 degrees F
FPC 6 LU 0 Chip	OK	64 degrees C / 147 degrees F
FPC 6 LU 1 TSen	OK	61 degrees C / 141 degrees F
FPC 6 LU 1 Chip	OK	66 degrees C / 150 degrees F
FPC 6 LU 2 TSen	OK	61 degrees C / 141 degrees F
FPC 6 LU 2 Chip	OK	56 degrees C / 132 degrees F
FPC 6 LU 3 TSen	OK	61 degrees C / 141 degrees F
FPC 6 LU 3 Chip	OK	56 degrees C / 132 degrees F
FPC 6 MQ 0 TSen	OK	50 degrees C / 122 degrees F
FPC 6 MQ 0 Chip	OK	56 degrees C / 132 degrees F
FPC 6 MQ 1 TSen	OK	50 degrees C / 122 degrees F
FPC 6 MQ 1 Chip	OK	59 degrees C / 138 degrees F
FPC 6 MQ 2 TSen	OK	50 degrees C / 122 degrees F
FPC 6 MQ 2 Chip	OK	49 degrees C / 120 degrees F
FPC 6 MQ 3 TSen	OK	50 degrees C / 122 degrees F
FPC 6 MQ 3 Chip	OK	49 degrees C / 120 degrees F
FPC 7 Intake	OK	41 degrees C / 105 degrees F
FPC 7 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 7 Exhaust B	OK	63 degrees C / 145 degrees F
FPC 7 LU 0 TSen	OK	60 degrees C / 140 degrees F
FPC 7 LU 0 Chip	OK	61 degrees C / 141 degrees F
FPC 7 LU 1 TSen	OK	60 degrees C / 140 degrees F
FPC 7 LU 1 Chip	OK	65 degrees C / 149 degrees F
FPC 7 LU 2 TSen	OK	60 degrees C / 140 degrees F
FPC 7 LU 2 Chip	OK	54 degrees C / 129 degrees F
FPC 7 LU 3 TSen	OK	60 degrees C / 140 degrees F
FPC 7 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 7 MQ 0 TSen	OK	50 degrees C / 122 degrees F
FPC 7 MQ 0 Chip	OK	53 degrees C / 127 degrees F
FPC 7 MQ 1 TSen	OK	50 degrees C / 122 degrees F
FPC 7 MQ 1 Chip	OK	54 degrees C / 129 degrees F
FPC 7 MQ 2 TSen	OK	50 degrees C / 122 degrees F
FPC 7 MQ 2 Chip	OK	47 degrees C / 116 degrees F
FPC 7 MQ 3 TSen	OK	50 degrees C / 122 degrees F
FPC 7 MQ 3 Chip	OK	47 degrees C / 116 degrees F
FPC 8 Intake	OK	41 degrees C / 105 degrees F
FPC 8 Exhaust A	OK	50 degrees C / 122 degrees F
FPC 8 Exhaust B	OK	62 degrees C / 143 degrees F
FPC 8 LU 0 TSen	OK	59 degrees C / 138 degrees F
FPC 8 LU 0 Chip	OK	62 degrees C / 143 degrees F
FPC 8 LU 1 TSen	OK	59 degrees C / 138 degrees F
FPC 8 LU 1 Chip	OK	64 degrees C / 147 degrees F
FPC 8 LU 2 TSen	OK	59 degrees C / 138 degrees F
FPC 8 LU 2 Chip	OK	55 degrees C / 131 degrees F
FPC 8 LU 3 TSen	OK	59 degrees C / 138 degrees F
FPC 8 LU 3 Chip	OK	54 degrees C / 129 degrees F
FPC 8 MQ 0 TSen	OK	49 degrees C / 120 degrees F
FPC 8 MQ 0 Chip	OK	51 degrees C / 123 degrees F
FPC 8 MQ 1 TSen	OK	49 degrees C / 120 degrees F
FPC 8 MQ 1 Chip	OK	52 degrees C / 125 degrees F
FPC 8 MQ 2 TSen	OK	49 degrees C / 120 degrees F
FPC 8 MQ 2 Chip	OK	46 degrees C / 114 degrees F
FPC 8 MQ 3 TSen	OK	49 degrees C / 120 degrees F
FPC 8 MQ 3 Chip	OK	47 degrees C / 116 degrees F
FPC 9 Intake	OK	42 degrees C / 107 degrees F

FPC 9 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 9 Exhaust B	OK	63 degrees C / 145 degrees F
FPC 9 LU 0 TSen	OK	60 degrees C / 140 degrees F
FPC 9 LU 0 Chip	OK	65 degrees C / 149 degrees F
FPC 9 LU 1 TSen	OK	60 degrees C / 140 degrees F
FPC 9 LU 1 Chip	OK	67 degrees C / 152 degrees F
FPC 9 LU 2 TSen	OK	60 degrees C / 140 degrees F
FPC 9 LU 2 Chip	OK	54 degrees C / 129 degrees F
FPC 9 LU 3 TSen	OK	60 degrees C / 140 degrees F
FPC 9 LU 3 Chip	OK	54 degrees C / 129 degrees F
FPC 9 MQ 0 TSen	OK	51 degrees C / 123 degrees F
FPC 9 MQ 0 Chip	OK	55 degrees C / 131 degrees F
FPC 9 MQ 1 TSen	OK	51 degrees C / 123 degrees F
FPC 9 MQ 1 Chip	OK	59 degrees C / 138 degrees F
FPC 9 MQ 2 TSen	OK	51 degrees C / 123 degrees F
FPC 9 MQ 2 Chip	OK	49 degrees C / 120 degrees F
FPC 9 MQ 3 TSen	OK	51 degrees C / 123 degrees F
FPC 9 MQ 3 Chip	OK	49 degrees C / 120 degrees F
FPC 10 Intake	OK	44 degrees C / 111 degrees F
FPC 10 Exhaust A	OK	49 degrees C / 120 degrees F
FPC 10 Exhaust B	OK	55 degrees C / 131 degrees F
FPC 10 LU 0 TSen	OK	54 degrees C / 129 degrees F
FPC 10 LU 0 Chip	OK	55 degrees C / 131 degrees F
FPC 10 LU 1 TSen	OK	54 degrees C / 129 degrees F
FPC 10 LU 1 Chip	OK	59 degrees C / 138 degrees F
FPC 10 LU 2 TSen	OK	54 degrees C / 129 degrees F
FPC 10 LU 2 Chip	OK	52 degrees C / 125 degrees F
FPC 10 LU 3 TSen	OK	54 degrees C / 129 degrees F
FPC 10 LU 3 Chip	OK	51 degrees C / 123 degrees F
FPC 10 MQ 0 TSen	OK	48 degrees C / 118 degrees F
FPC 10 MQ 0 Chip	OK	49 degrees C / 120 degrees F
FPC 10 MQ 1 TSen	OK	48 degrees C / 118 degrees F
FPC 10 MQ 1 Chip	OK	52 degrees C / 125 degrees F
FPC 10 MQ 2 TSen	OK	48 degrees C / 118 degrees F
FPC 10 MQ 2 Chip	OK	47 degrees C / 116 degrees F
FPC 10 MQ 3 TSen	OK	48 degrees C / 118 degrees F
FPC 10 MQ 3 Chip	OK	47 degrees C / 116 degrees F
FPC 11 Intake	OK	30 degrees C / 86 degrees F
FPC 11 Exhaust A	OK	35 degrees C / 95 degrees F
FPC 11 Exhaust B	OK	30 degrees C / 86 degrees F
FPC 11 LU 0 TSen	OK	57 degrees C / 134 degrees F
FPC 11 LU 0 Chip	OK	58 degrees C / 136 degrees F
FPC 11 LU 1 TSen	OK	57 degrees C / 134 degrees F
FPC 11 LU 1 Chip	OK	62 degrees C / 143 degrees F
FPC 11 LU 2 TSen	OK	57 degrees C / 134 degrees F
FPC 11 LU 2 Chip	OK	53 degrees C / 127 degrees F
FPC 11 LU 3 TSen	OK	57 degrees C / 134 degrees F
FPC 11 LU 3 Chip	OK	54 degrees C / 129 degrees F
FPC 11 MQ 0 TSen	OK	52 degrees C / 125 degrees F
FPC 11 MQ 0 Chip	OK	52 degrees C / 125 degrees F
FPC 11 MQ 1 TSen	OK	52 degrees C / 125 degrees F
FPC 11 MQ 1 Chip	OK	57 degrees C / 134 degrees F
FPC 11 MQ 2 TSen	OK	52 degrees C / 125 degrees F
FPC 11 MQ 2 Chip	OK	48 degrees C / 118 degrees F
FPC 11 MQ 3 TSen	OK	52 degrees C / 125 degrees F
FPC 11 MQ 3 Chip	OK	52 degrees C / 125 degrees F
FPC 12 Intake	OK	40 degrees C / 104 degrees F
FPC 12 Exhaust A	OK	47 degrees C / 116 degrees F
FPC 12 Exhaust B	OK	52 degrees C / 125 degrees F
FPC 12 LU 0 TSen	OK	51 degrees C / 123 degrees F
FPC 12 LU 0 Chip	OK	52 degrees C / 125 degrees F

FPC 12 LU 1 TSen	OK	51 degrees C / 123 degrees F
FPC 12 LU 1 Chip	OK	55 degrees C / 131 degrees F
FPC 12 LU 2 TSen	OK	51 degrees C / 123 degrees F
FPC 12 LU 2 Chip	OK	47 degrees C / 116 degrees F
FPC 12 LU 3 TSen	OK	51 degrees C / 123 degrees F
FPC 12 LU 3 Chip	OK	50 degrees C / 122 degrees F
FPC 12 MQ 0 TSen	OK	46 degrees C / 114 degrees F
FPC 12 MQ 0 Chip	OK	46 degrees C / 114 degrees F
FPC 12 MQ 1 TSen	OK	46 degrees C / 114 degrees F
FPC 12 MQ 1 Chip	OK	50 degrees C / 122 degrees F
FPC 12 MQ 2 TSen	OK	46 degrees C / 114 degrees F
FPC 12 MQ 2 Chip	OK	44 degrees C / 111 degrees F
FPC 12 MQ 3 TSen	OK	46 degrees C / 114 degrees F
FPC 12 MQ 3 Chip	OK	46 degrees C / 114 degrees F
FPC 13 Intake	OK	40 degrees C / 104 degrees F
FPC 13 Exhaust A	OK	48 degrees C / 118 degrees F
FPC 13 Exhaust B	OK	52 degrees C / 125 degrees F
FPC 13 LU 0 TSen	OK	51 degrees C / 123 degrees F
FPC 13 LU 0 Chip	OK	52 degrees C / 125 degrees F
FPC 13 LU 1 TSen	OK	51 degrees C / 123 degrees F
FPC 13 LU 1 Chip	OK	55 degrees C / 131 degrees F
FPC 13 LU 2 TSen	OK	51 degrees C / 123 degrees F
FPC 13 LU 2 Chip	OK	48 degrees C / 118 degrees F
FPC 13 LU 3 TSen	OK	51 degrees C / 123 degrees F
FPC 13 LU 3 Chip	OK	48 degrees C / 118 degrees F
FPC 13 MQ 0 TSen	OK	46 degrees C / 114 degrees F
FPC 13 MQ 0 Chip	OK	46 degrees C / 114 degrees F
FPC 13 MQ 1 TSen	OK	46 degrees C / 114 degrees F
FPC 13 MQ 1 Chip	OK	50 degrees C / 122 degrees F
FPC 13 MQ 2 TSen	OK	46 degrees C / 114 degrees F
FPC 13 MQ 2 Chip	OK	44 degrees C / 111 degrees F
FPC 13 MQ 3 TSen	OK	46 degrees C / 114 degrees F
FPC 13 MQ 3 Chip	OK	46 degrees C / 114 degrees F
FPC 14 Intake	OK	40 degrees C / 104 degrees F
FPC 14 Exhaust A	OK	50 degrees C / 122 degrees F
FPC 14 Exhaust B	OK	51 degrees C / 123 degrees F
FPC 14 LU 0 TSen	OK	50 degrees C / 122 degrees F
FPC 14 LU 0 Chip	OK	50 degrees C / 122 degrees F
FPC 14 LU 1 TSen	OK	50 degrees C / 122 degrees F
FPC 14 LU 1 Chip	OK	54 degrees C / 129 degrees F
FPC 14 LU 2 TSen	OK	50 degrees C / 122 degrees F
FPC 14 LU 2 Chip	OK	47 degrees C / 116 degrees F
FPC 14 LU 3 TSen	OK	50 degrees C / 122 degrees F
FPC 14 LU 3 Chip	OK	49 degrees C / 120 degrees F
FPC 14 MQ 0 TSen	OK	47 degrees C / 116 degrees F
FPC 14 MQ 0 Chip	OK	46 degrees C / 114 degrees F
FPC 14 MQ 1 TSen	OK	47 degrees C / 116 degrees F
FPC 14 MQ 1 Chip	OK	51 degrees C / 123 degrees F
FPC 14 MQ 2 TSen	OK	47 degrees C / 116 degrees F
FPC 14 MQ 2 Chip	OK	45 degrees C / 113 degrees F
FPC 14 MQ 3 TSen	OK	47 degrees C / 116 degrees F
FPC 14 MQ 3 Chip	OK	48 degrees C / 118 degrees F
FPC 15 Intake	OK	44 degrees C / 111 degrees F
FPC 15 Exhaust A	OK	49 degrees C / 120 degrees F
FPC 15 Exhaust B	OK	60 degrees C / 140 degrees F
FPC 15 LU 0 TSen	OK	50 degrees C / 122 degrees F
FPC 15 LU 0 Chip	OK	56 degrees C / 132 degrees F
FPC 15 LU 1 TSen	OK	50 degrees C / 122 degrees F
FPC 15 LU 1 Chip	OK	50 degrees C / 122 degrees F
FPC 15 LU 2 TSen	OK	50 degrees C / 122 degrees F
FPC 15 LU 2 Chip	OK	58 degrees C / 136 degrees F

FPC 15 LU 3 TSen	OK	50 degrees C / 122 degrees F
FPC 15 LU 3 Chip	OK	63 degrees C / 145 degrees F
FPC 15 XM 0 TSen	OK	50 degrees C / 122 degrees F
FPC 15 XM 0 Chip	OK	56 degrees C / 132 degrees F
FPC 15 XF 0 TSen	OK	50 degrees C / 122 degrees F
FPC 15 XF 0 Chip	OK	68 degrees C / 154 degrees F
FPC 15 PLX Switch TSen	OK	50 degrees C / 122 degrees F
FPC 15 PLX Switch Chip	OK	56 degrees C / 132 degrees F
FPC 16 Intake	OK	42 degrees C / 107 degrees F
FPC 16 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 16 Exhaust B	OK	53 degrees C / 127 degrees F
FPC 16 LU 0 TSen	OK	51 degrees C / 123 degrees F
FPC 16 LU 0 Chip	OK	52 degrees C / 125 degrees F
FPC 16 LU 1 TSen	OK	51 degrees C / 123 degrees F
FPC 16 LU 1 Chip	OK	55 degrees C / 131 degrees F
FPC 16 LU 2 TSen	OK	51 degrees C / 123 degrees F
FPC 16 LU 2 Chip	OK	48 degrees C / 118 degrees F
FPC 16 LU 3 TSen	OK	51 degrees C / 123 degrees F
FPC 16 LU 3 Chip	OK	49 degrees C / 120 degrees F
FPC 16 MQ 0 TSen	OK	49 degrees C / 120 degrees F
FPC 16 MQ 0 Chip	OK	48 degrees C / 118 degrees F
FPC 16 MQ 1 TSen	OK	49 degrees C / 120 degrees F
FPC 16 MQ 1 Chip	OK	53 degrees C / 127 degrees F
FPC 16 MQ 2 TSen	OK	49 degrees C / 120 degrees F
FPC 16 MQ 2 Chip	OK	46 degrees C / 114 degrees F
FPC 16 MQ 3 TSen	OK	49 degrees C / 120 degrees F
FPC 16 MQ 3 Chip	OK	49 degrees C / 120 degrees F
FPC 17 Intake	OK	43 degrees C / 109 degrees F
FPC 17 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 17 Exhaust B	OK	55 degrees C / 131 degrees F
FPC 17 LU 0 TSen	OK	54 degrees C / 129 degrees F
FPC 17 LU 0 Chip	OK	57 degrees C / 134 degrees F
FPC 17 LU 1 TSen	OK	54 degrees C / 129 degrees F
FPC 17 LU 1 Chip	OK	60 degrees C / 140 degrees F
FPC 17 LU 2 TSen	OK	54 degrees C / 129 degrees F
FPC 17 LU 2 Chip	OK	53 degrees C / 127 degrees F
FPC 17 LU 3 TSen	OK	54 degrees C / 129 degrees F
FPC 17 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 17 MQ 0 TSen	OK	49 degrees C / 120 degrees F
FPC 17 MQ 0 Chip	OK	50 degrees C / 122 degrees F
FPC 17 MQ 1 TSen	OK	49 degrees C / 120 degrees F
FPC 17 MQ 1 Chip	OK	54 degrees C / 129 degrees F
FPC 17 MQ 2 TSen	OK	49 degrees C / 120 degrees F
FPC 17 MQ 2 Chip	OK	47 degrees C / 116 degrees F
FPC 17 MQ 3 TSen	OK	49 degrees C / 120 degrees F
FPC 17 MQ 3 Chip	OK	51 degrees C / 123 degrees F
FPC 18 Intake	OK	44 degrees C / 111 degrees F
FPC 18 Exhaust A	OK	53 degrees C / 127 degrees F
FPC 18 Exhaust B	OK	57 degrees C / 134 degrees F
FPC 18 LU 0 TSen	OK	56 degrees C / 132 degrees F
FPC 18 LU 0 Chip	OK	57 degrees C / 134 degrees F
FPC 18 LU 1 TSen	OK	56 degrees C / 132 degrees F
FPC 18 LU 1 Chip	OK	62 degrees C / 143 degrees F
FPC 18 LU 2 TSen	OK	56 degrees C / 132 degrees F
FPC 18 LU 2 Chip	OK	53 degrees C / 127 degrees F
FPC 18 LU 3 TSen	OK	56 degrees C / 132 degrees F
FPC 18 LU 3 Chip	OK	55 degrees C / 131 degrees F
FPC 18 MQ 0 TSen	OK	51 degrees C / 123 degrees F
FPC 18 MQ 0 Chip	OK	54 degrees C / 129 degrees F
FPC 18 MQ 1 TSen	OK	51 degrees C / 123 degrees F
FPC 18 MQ 1 Chip	OK	58 degrees C / 136 degrees F

FPC 18 MQ 2 TSen	OK	51 degrees C / 123 degrees F
FPC 18 MQ 2 Chip	OK	50 degrees C / 122 degrees F
FPC 18 MQ 3 TSen	OK	51 degrees C / 123 degrees F
FPC 18 MQ 3 Chip	OK	53 degrees C / 127 degrees F
FPC 19 Intake	OK	48 degrees C / 118 degrees F
FPC 19 Exhaust A	OK	56 degrees C / 132 degrees F
FPC 19 Exhaust B	OK	64 degrees C / 147 degrees F
FPC 19 LU 0 TSen	OK	63 degrees C / 145 degrees F
FPC 19 LU 0 Chip	OK	64 degrees C / 147 degrees F
FPC 19 LU 1 TSen	OK	63 degrees C / 145 degrees F
FPC 19 LU 1 Chip	OK	70 degrees C / 158 degrees F
FPC 19 LU 2 TSen	OK	63 degrees C / 145 degrees F
FPC 19 LU 2 Chip	OK	61 degrees C / 141 degrees F
FPC 19 LU 3 TSen	OK	63 degrees C / 145 degrees F
FPC 19 LU 3 Chip	OK	62 degrees C / 143 degrees F
FPC 19 MQ 0 TSen	OK	56 degrees C / 132 degrees F
FPC 19 MQ 0 Chip	OK	60 degrees C / 140 degrees F
FPC 19 MQ 1 TSen	OK	56 degrees C / 132 degrees F
FPC 19 MQ 1 Chip	OK	62 degrees C / 143 degrees F
FPC 19 MQ 2 TSen	OK	56 degrees C / 132 degrees F
FPC 19 MQ 2 Chip	OK	56 degrees C / 132 degrees F
FPC 19 MQ 3 TSen	OK	56 degrees C / 132 degrees F
FPC 19 MQ 3 Chip	OK	57 degrees C / 134 degrees F
ADC 0 Intake	OK	40 degrees C / 104 degrees F
ADC 0 Exhaust	OK	52 degrees C / 125 degrees F
ADC 0 ADC-XF1	OK	59 degrees C / 138 degrees F
ADC 0 ADC-XF0	OK	66 degrees C / 150 degrees F
ADC 1 Intake	OK	38 degrees C / 100 degrees F
ADC 1 Exhaust	OK	50 degrees C / 122 degrees F
ADC 1 ADC-XF1	OK	59 degrees C / 138 degrees F
ADC 1 ADC-XF0	OK	63 degrees C / 145 degrees F
ADC 2 Intake	OK	37 degrees C / 98 degrees F
ADC 2 Exhaust	OK	52 degrees C / 125 degrees F
ADC 2 ADC-XF1	OK	53 degrees C / 127 degrees F
ADC 2 ADC-XF0	OK	61 degrees C / 141 degrees F
ADC 3 Intake	OK	40 degrees C / 104 degrees F
ADC 3 Exhaust	OK	51 degrees C / 123 degrees F
ADC 3 ADC-XF1	OK	61 degrees C / 141 degrees F
ADC 3 ADC-XF0	OK	64 degrees C / 147 degrees F
ADC 4 Intake	OK	39 degrees C / 102 degrees F
ADC 4 Exhaust	OK	51 degrees C / 123 degrees F
ADC 4 ADC-XF1	OK	60 degrees C / 140 degrees F
ADC 4 ADC-XF0	OK	63 degrees C / 145 degrees F
ADC 5 Intake	OK	38 degrees C / 100 degrees F
ADC 5 Exhaust	OK	54 degrees C / 129 degrees F
ADC 5 ADC-XF1	OK	56 degrees C / 132 degrees F
ADC 5 ADC-XF0	OK	67 degrees C / 152 degrees F
ADC 6 Intake	OK	39 degrees C / 102 degrees F
ADC 6 Exhaust	OK	52 degrees C / 125 degrees F
ADC 6 ADC-XF1	OK	59 degrees C / 138 degrees F
ADC 6 ADC-XF0	OK	66 degrees C / 150 degrees F
ADC 7 Intake	OK	39 degrees C / 102 degrees F
ADC 7 Exhaust	OK	54 degrees C / 129 degrees F
ADC 7 ADC-XF1	OK	62 degrees C / 143 degrees F
ADC 7 ADC-XF0	OK	70 degrees C / 158 degrees F
ADC 8 Intake	OK	39 degrees C / 102 degrees F
ADC 8 Exhaust	OK	52 degrees C / 125 degrees F
ADC 8 ADC-XF1	OK	61 degrees C / 141 degrees F
ADC 8 ADC-XF0	OK	65 degrees C / 149 degrees F
ADC 9 Intake	OK	41 degrees C / 105 degrees F
ADC 9 Exhaust	OK	51 degrees C / 123 degrees F

ADC 9 ADC-XF1	OK	63 degrees C / 145 degrees F
ADC 9 ADC-XF0	OK	63 degrees C / 145 degrees F
ADC 10 Intake	OK	48 degrees C / 118 degrees F
ADC 10 Exhaust	OK	53 degrees C / 127 degrees F
ADC 10 ADC-XF1	OK	67 degrees C / 152 degrees F
ADC 10 ADC-XF0	OK	66 degrees C / 150 degrees F
ADC 12 Intake	OK	49 degrees C / 120 degrees F
ADC 12 Exhaust	OK	54 degrees C / 129 degrees F
ADC 12 ADC-XF1	OK	67 degrees C / 152 degrees F
ADC 12 ADC-XF0	OK	67 degrees C / 152 degrees F
ADC 13 Intake	OK	49 degrees C / 120 degrees F
ADC 13 Exhaust	OK	57 degrees C / 134 degrees F
ADC 13 ADC-XF1	OK	66 degrees C / 150 degrees F
ADC 13 ADC-XF0	OK	69 degrees C / 156 degrees F
ADC 14 Intake	OK	51 degrees C / 123 degrees F
ADC 14 Exhaust	OK	59 degrees C / 138 degrees F
ADC 14 ADC-XF1	OK	69 degrees C / 156 degrees F
ADC 14 ADC-XF0	OK	74 degrees C / 165 degrees F
ADC 15 Intake	OK	50 degrees C / 122 degrees F
ADC 15 Exhaust	OK	59 degrees C / 138 degrees F
ADC 15 ADC-XF1	OK	68 degrees C / 154 degrees F
ADC 15 ADC-XF0	OK	69 degrees C / 156 degrees F
ADC 16 Intake	OK	52 degrees C / 125 degrees F
ADC 16 Exhaust	OK	58 degrees C / 136 degrees F
ADC 16 ADC-XF1	OK	68 degrees C / 154 degrees F
ADC 16 ADC-XF0	OK	70 degrees C / 158 degrees F
ADC 17 Intake	OK	52 degrees C / 125 degrees F
ADC 17 Exhaust	OK	59 degrees C / 138 degrees F
ADC 17 ADC-XF1	OK	69 degrees C / 156 degrees F
ADC 17 ADC-XF0	OK	71 degrees C / 159 degrees F
ADC 18 Intake	OK	53 degrees C / 127 degrees F
ADC 18 Exhaust	OK	59 degrees C / 138 degrees F
ADC 18 ADC-XF1	OK	68 degrees C / 154 degrees F
ADC 18 ADC-XF0	OK	73 degrees C / 163 degrees F
ADC 19 Intake	OK	50 degrees C / 122 degrees F
ADC 19 Exhaust	OK	59 degrees C / 138 degrees F
ADC 19 ADC-XF1	OK	68 degrees C / 154 degrees F
ADC 19 ADC-XF0	OK	72 degrees C / 161 degrees F
Fans Fan Tray 0 Fan 1	OK	7440 RPM
Fan Tray 0 Fan 2	OK	7200 RPM
Fan Tray 0 Fan 3	OK	6960 RPM
Fan Tray 0 Fan 4	OK	7200 RPM
Fan Tray 0 Fan 5	OK	7080 RPM
Fan Tray 0 Fan 6	OK	6840 RPM
Fan Tray 1 Fan 1	OK	6840 RPM
Fan Tray 1 Fan 2	OK	6960 RPM
Fan Tray 1 Fan 3	OK	6960 RPM
Fan Tray 1 Fan 4	OK	7080 RPM
Fan Tray 1 Fan 5	OK	6960 RPM
Fan Tray 1 Fan 6	OK	6960 RPM
Fan Tray 2 Fan 1	OK	8640 RPM
Fan Tray 2 Fan 2	OK	8640 RPM
Fan Tray 2 Fan 3	OK	8760 RPM
Fan Tray 2 Fan 4	OK	8760 RPM
Fan Tray 2 Fan 5	OK	8640 RPM
Fan Tray 2 Fan 6	OK	8640 RPM
Fan Tray 3 Fan 1	OK	8520 RPM
Fan Tray 3 Fan 2	OK	8520 RPM
Fan Tray 3 Fan 3	OK	8640 RPM
Fan Tray 3 Fan 4	OK	8640 RPM

Fan Tray 3 Fan 5	OK	8520 RPM
Fan Tray 3 Fan 6	OK	8520 RPM

show chassis environment (MX2010 Router)

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Class	Item	Status	Measurement
Temp	PSM 0	OK	7 degrees C / 44 degrees F
	PSM 1	OK	7 degrees C / 44 degrees F
	PSM 2	OK	7 degrees C / 44 degrees F
	PSM 3	OK	6 degrees C / 42 degrees F
	PSM 4	OK	6 degrees C / 42 degrees F
	PSM 5	OK	6 degrees C / 42 degrees F
	PSM 6	OK	6 degrees C / 42 degrees F
	PSM 7	OK	7 degrees C / 44 degrees F
	PSM 8	OK	7 degrees C / 44 degrees F
	PDM 0	OK	
	PDM 1	Absent	
CB	0 IntakeA-Zone0	OK	14 degrees C / 57 degrees F
	0 IntakeB-Zone1	OK	7 degrees C / 44 degrees F
	0 IntakeC-Zone0	OK	22 degrees C / 71 degrees F
	0 ExhaustA-Zone0	OK	14 degrees C / 57 degrees F
	0 ExhaustB-Zone1	OK	9 degrees C / 48 degrees F
	0 TCBC-Zone0	OK	11 degrees C / 51 degrees F
	1 IntakeA-Zone0	OK	9 degrees C / 48 degrees F
	1 IntakeB-Zone1	OK	5 degrees C / 41 degrees F
	1 IntakeC-Zone0	OK	20 degrees C / 68 degrees F
	1 ExhaustA-Zone0	OK	12 degrees C / 53 degrees F
	1 ExhaustB-Zone1	OK	7 degrees C / 44 degrees F
	1 TCBC-Zone0	OK	10 degrees C / 50 degrees F
SPMB	0 Intake	OK	5 degrees C / 41 degrees F
	1 Intake	OK	4 degrees C / 39 degrees F
Routing Engine	0	OK	9 degrees C / 48 degrees F
	0 CPU	OK	9 degrees C / 48 degrees F
	1	OK	6 degrees C / 42 degrees F
	1 CPU	OK	6 degrees C / 42 degrees F
SFB	0 Intake-Zone0	OK	26 degrees C / 78 degrees F
	0 Exhaust-Zone1	OK	17 degrees C / 62 degrees F
	0 IntakeA-Zone0	OK	16 degrees C / 60 degrees F
	0 IntakeB-Zone1	OK	11 degrees C / 51 degrees F
	0 Exhaust-Zone0	OK	18 degrees C / 64 degrees F
	0 SFB-XF2-Zone1	OK	25 degrees C / 77 degrees F
	0 SFB-XF1-Zone0	OK	23 degrees C / 73 degrees F
	0 SFB-XF0-Zone0	OK	33 degrees C / 91 degrees F
	1 Intake-Zone0	OK	27 degrees C / 80 degrees F
	1 Exhaust-Zone1	OK	15 degrees C / 59 degrees F
	1 IntakeA-Zone0	OK	20 degrees C / 68 degrees F
	1 IntakeB-Zone1	OK	10 degrees C / 50 degrees F
	1 Exhaust-Zone0	OK	19 degrees C / 66 degrees F
	1 SFB-XF2-Zone1	OK	26 degrees C / 78 degrees F
	1 SFB-XF1-Zone0	OK	27 degrees C / 80 degrees F
	1 SFB-XF0-Zone0	OK	32 degrees C / 89 degrees F
	2 Intake-Zone0	OK	21 degrees C / 69 degrees F
	2 Exhaust-Zone1	OK	13 degrees C / 55 degrees F
	2 IntakeA-Zone0	OK	18 degrees C / 64 degrees F
	2 IntakeB-Zone1	OK	9 degrees C / 48 degrees F
	2 Exhaust-Zone0	OK	16 degrees C / 60 degrees F
SFB	2 SFB-XF2-Zone1	OK	24 degrees C / 75 degrees F
	2 SFB-XF1-Zone0	OK	21 degrees C / 69 degrees F
	2 SFB-XF0-Zone0	OK	26 degrees C / 78 degrees F
	4 Intake-Zone0	OK	28 degrees C / 82 degrees F

SFB 4 Exhaust-Zone1	OK	16 degrees C / 60 degrees F
SFB 4 IntakeA-Zone0	OK	18 degrees C / 64 degrees F
SFB 4 IntakeB-Zone1	OK	11 degrees C / 51 degrees F
SFB 4 Exhaust-Zone0	OK	19 degrees C / 66 degrees F
SFB 4 SFB-XF2-Zone1	OK	27 degrees C / 80 degrees F
SFB 4 SFB-XF1-Zone0	OK	27 degrees C / 80 degrees F
SFB 4 SFB-XF0-Zone0	OK	32 degrees C / 89 degrees F
SFB 5 Intake-Zone0	OK	22 degrees C / 71 degrees F
SFB 5 Exhaust-Zone1	OK	14 degrees C / 57 degrees F
SFB 5 IntakeA-Zone0	OK	18 degrees C / 64 degrees F
SFB 5 IntakeB-Zone1	OK	10 degrees C / 50 degrees F
SFB 5 Exhaust-Zone0	OK	17 degrees C / 62 degrees F
SFB 5 SFB-XF2-Zone1	OK	22 degrees C / 71 degrees F
SFB 5 SFB-XF1-Zone0	OK	29 degrees C / 84 degrees F
SFB 5 SFB-XF0-Zone0	OK	27 degrees C / 80 degrees F
SFB 6 Intake-Zone0	OK	27 degrees C / 80 degrees F
SFB 6 Exhaust-Zone1	OK	13 degrees C / 55 degrees F
SFB 6 IntakeA-Zone0	OK	19 degrees C / 66 degrees F
SFB 6 IntakeB-Zone1	OK	10 degrees C / 50 degrees F
SFB 6 Exhaust-Zone0	OK	20 degrees C / 68 degrees F
SFB 6 SFB-XF2-Zone1	OK	24 degrees C / 75 degrees F
SFB 6 SFB-XF1-Zone0	OK	32 degrees C / 89 degrees F
SFB 6 SFB-XF0-Zone0	OK	33 degrees C / 91 degrees F
SFB 7 Intake-Zone0	OK	25 degrees C / 77 degrees F
SFB 7 Exhaust-Zone1	OK	13 degrees C / 55 degrees F
SFB 7 IntakeA-Zone0	OK	14 degrees C / 57 degrees F
SFB 7 IntakeB-Zone1	OK	8 degrees C / 46 degrees F
SFB 7 Exhaust-Zone0	OK	17 degrees C / 62 degrees F
SFB 7 SFB-XF2-Zone1	OK	21 degrees C / 69 degrees F
SFB 7 SFB-XF1-Zone0	OK	21 degrees C / 69 degrees F
SFB 7 SFB-XF0-Zone0	OK	33 degrees C / 91 degrees F
FPC 0 Intake	OK	13 degrees C / 55 degrees F
FPC 0 Exhaust A	OK	13 degrees C / 55 degrees F
FPC 0 Exhaust B	OK	14 degrees C / 57 degrees F
FPC 0 LU 0 TSen	OK	28 degrees C / 82 degrees F
FPC 0 LU 0 Chip	OK	25 degrees C / 77 degrees F
FPC 0 LU 1 TSen	OK	28 degrees C / 82 degrees F
FPC 0 LU 1 Chip	OK	27 degrees C / 80 degrees F
FPC 0 LU 2 TSen	OK	28 degrees C / 82 degrees F
FPC 0 LU 2 Chip	OK	19 degrees C / 66 degrees F
FPC 0 LU 3 TSen	OK	28 degrees C / 82 degrees F
FPC 0 LU 3 Chip	OK	23 degrees C / 73 degrees F
FPC 0 XM 0 TSen	OK	28 degrees C / 82 degrees F
FPC 0 XM 0 Chip	OK	33 degrees C / 91 degrees F
FPC 0 XM 1 TSen	OK	28 degrees C / 82 degrees F
FPC 0 XM 1 Chip	OK	26 degrees C / 78 degrees F
FPC 0 PLX Switch TSen	OK	28 degrees C / 82 degrees F
FPC 0 PLX Switch Chip	OK	26 degrees C / 78 degrees F
FPC 1 Intake	OK	10 degrees C / 50 degrees F
FPC 1 Exhaust A	OK	24 degrees C / 75 degrees F
FPC 1 Exhaust B	OK	28 degrees C / 82 degrees F
FPC 1 LU 0 TSen	OK	22 degrees C / 71 degrees F
FPC 1 LU 0 Chip	OK	31 degrees C / 87 degrees F
FPC 1 LU 1 TSen	OK	22 degrees C / 71 degrees F
FPC 1 LU 1 Chip	OK	21 degrees C / 69 degrees F
FPC 1 LU 2 TSen	OK	22 degrees C / 71 degrees F
FPC 1 LU 2 Chip	OK	25 degrees C / 77 degrees F
FPC 1 LU 3 TSen	OK	22 degrees C / 71 degrees F
FPC 1 LU 3 Chip	OK	33 degrees C / 91 degrees F
FPC 1 XM 0 TSen	OK	22 degrees C / 71 degrees F
FPC 1 XM 0 Chip	OK	30 degrees C / 86 degrees F

	FPC 1 XF 0 TSen	OK	22 degrees C / 71 degrees F
	FPC 1 XF 0 Chip	OK	37 degrees C / 98 degrees F
	FPC 1 PLX Switch TSen	OK	22 degrees C / 71 degrees F
FPC 1	PLX Switch Chip	OK	22 degrees C / 71 degrees F
	FPC 2 Intake	OK	9 degrees C / 48 degrees F
	FPC 2 Exhaust A	OK	10 degrees C / 50 degrees F
	FPC 2 Exhaust B	OK	10 degrees C / 50 degrees F
	FPC 2 LU 0 TSen	OK	26 degrees C / 78 degrees F
	FPC 2 LU 0 Chip	OK	25 degrees C / 77 degrees F
	FPC 2 LU 1 TSen	OK	26 degrees C / 78 degrees F
	FPC 2 LU 1 Chip	OK	26 degrees C / 78 degrees F
	FPC 2 LU 2 TSen	OK	26 degrees C / 78 degrees F
	FPC 2 LU 2 Chip	OK	17 degrees C / 62 degrees F
	FPC 2 LU 3 TSen	OK	26 degrees C / 78 degrees F
	FPC 2 LU 3 Chip	OK	22 degrees C / 71 degrees F
	FPC 2 XM 0 TSen	OK	26 degrees C / 78 degrees F
	FPC 2 XM 0 Chip	OK	34 degrees C / 93 degrees F
	FPC 2 XM 1 TSen	OK	26 degrees C / 78 degrees F
	FPC 2 XM 1 Chip	OK	26 degrees C / 78 degrees F
	FPC 2 PLX Switch TSen	OK	26 degrees C / 78 degrees F
	FPC 2 PLX Switch Chip	OK	20 degrees C / 68 degrees F
	FPC 3 Intake	OK	12 degrees C / 53 degrees F
	FPC 3 Exhaust A	OK	16 degrees C / 60 degrees F
	FPC 3 Exhaust B	OK	26 degrees C / 78 degrees F
	FPC 3 LU 0 TSen	OK	23 degrees C / 73 degrees F
	FPC 3 LU 0 Chip	OK	26 degrees C / 78 degrees F
	FPC 3 LU 1 TSen	OK	23 degrees C / 73 degrees F
	FPC 3 LU 1 Chip	OK	27 degrees C / 80 degrees F
	FPC 3 LU 2 TSen	OK	23 degrees C / 73 degrees F
	FPC 3 LU 2 Chip	OK	22 degrees C / 71 degrees F
	FPC 3 LU 3 TSen	OK	23 degrees C / 73 degrees F
	FPC 3 LU 3 Chip	OK	21 degrees C / 69 degrees F
	FPC 3 MQ 0 TSen	OK	15 degrees C / 59 degrees F
	FPC 3 MQ 0 Chip	OK	18 degrees C / 64 degrees F
	FPC 3 MQ 1 TSen	OK	15 degrees C / 59 degrees F
	FPC 3 MQ 1 Chip	OK	20 degrees C / 68 degrees F
	FPC 3 MQ 2 TSen	OK	15 degrees C / 59 degrees F
	FPC 3 MQ 2 Chip	OK	17 degrees C / 62 degrees F
	FPC 3 MQ 3 TSen	OK	15 degrees C / 59 degrees F
	FPC 3 MQ 3 Chip	OK	16 degrees C / 60 degrees F
	FPC 4 Intake	OK	11 degrees C / 51 degrees F
	FPC 4 Exhaust A	OK	22 degrees C / 71 degrees F
	FPC 4 Exhaust B	OK	28 degrees C / 82 degrees F
	FPC 4 LU 0 TSen	OK	22 degrees C / 71 degrees F
	FPC 4 LU 0 Chip	OK	33 degrees C / 91 degrees F
	FPC 4 LU 1 TSen	OK	22 degrees C / 71 degrees F
	FPC 4 LU 1 Chip	OK	21 degrees C / 69 degrees F
	FPC 4 LU 2 TSen	OK	22 degrees C / 71 degrees F
	FPC 4 LU 2 Chip	OK	26 degrees C / 78 degrees F
	FPC 4 LU 3 TSen	OK	22 degrees C / 71 degrees F
	FPC 4 LU 3 Chip	OK	33 degrees C / 91 degrees F
	FPC 4 XM 0 TSen	OK	22 degrees C / 71 degrees F
	FPC 4 XM 0 Chip	OK	30 degrees C / 86 degrees F
	FPC 4 XF 0 TSen	OK	22 degrees C / 71 degrees F
	FPC 4 XF 0 Chip	OK	37 degrees C / 98 degrees F
	FPC 4 PLX Switch TSen	OK	22 degrees C / 71 degrees F
	FPC 4 PLX Switch Chip	OK	23 degrees C / 73 degrees F
	FPC 5 Intake	OK	12 degrees C / 53 degrees F
	FPC 5 Exhaust A	OK	12 degrees C / 53 degrees F
FPC 5	Exhaust B	OK	12 degrees C / 53 degrees F
	FPC 5 LU 0 TSen	OK	27 degrees C / 80 degrees F

FPC 5 LU 0 Chip	OK	28 degrees C / 82 degrees F
FPC 5 LU 1 TSen	OK	27 degrees C / 80 degrees F
FPC 5 LU 1 Chip	OK	27 degrees C / 80 degrees F
FPC 5 LU 2 TSen	OK	27 degrees C / 80 degrees F
FPC 5 LU 2 Chip	OK	19 degrees C / 66 degrees F
FPC 5 LU 3 TSen	OK	27 degrees C / 80 degrees F
FPC 5 LU 3 Chip	OK	22 degrees C / 71 degrees F
FPC 5 XM 0 TSen	OK	27 degrees C / 80 degrees F
FPC 5 XM 0 Chip	OK	36 degrees C / 96 degrees F
FPC 5 XM 1 TSen	OK	27 degrees C / 80 degrees F
FPC 5 XM 1 Chip	OK	26 degrees C / 78 degrees F
FPC 5 PLX Switch TSen	OK	27 degrees C / 80 degrees F
FPC 5 PLX Switch Chip	OK	24 degrees C / 75 degrees F
FPC 6 Intake	OK	12 degrees C / 53 degrees F
FPC 6 Exhaust A	OK	17 degrees C / 62 degrees F
FPC 6 Exhaust B	OK	28 degrees C / 82 degrees F
FPC 6 LU 0 TSen	OK	24 degrees C / 75 degrees F
FPC 6 LU 0 Chip	OK	29 degrees C / 84 degrees F
FPC 6 LU 1 TSen	OK	24 degrees C / 75 degrees F
FPC 6 LU 1 Chip	OK	30 degrees C / 86 degrees F
FPC 6 LU 2 TSen	OK	24 degrees C / 75 degrees F
FPC 6 LU 2 Chip	OK	24 degrees C / 75 degrees F
FPC 6 LU 3 TSen	OK	24 degrees C / 75 degrees F
FPC 6 LU 3 Chip	OK	22 degrees C / 71 degrees F
FPC 6 MQ 0 TSen	OK	16 degrees C / 60 degrees F
FPC 6 MQ 0 Chip	OK	19 degrees C / 66 degrees F
FPC 6 MQ 1 TSen	OK	16 degrees C / 60 degrees F
FPC 6 MQ 1 Chip	OK	20 degrees C / 68 degrees F
FPC 6 MQ 2 TSen	OK	16 degrees C / 60 degrees F
FPC 6 MQ 2 Chip	OK	17 degrees C / 62 degrees F
FPC 6 MQ 3 TSen	OK	16 degrees C / 60 degrees F
FPC 6 MQ 3 Chip	OK	16 degrees C / 60 degrees F
FPC 7 Intake	OK	10 degrees C / 50 degrees F
FPC 7 Exhaust A	OK	10 degrees C / 50 degrees F
FPC 7 Exhaust B	OK	11 degrees C / 51 degrees F
FPC 7 LU 0 TSen	OK	26 degrees C / 78 degrees F
FPC 7 LU 0 Chip	OK	26 degrees C / 78 degrees F
FPC 7 LU 1 TSen	OK	26 degrees C / 78 degrees F
FPC 7 LU 1 Chip	OK	29 degrees C / 84 degrees F
FPC 7 LU 2 TSen	OK	26 degrees C / 78 degrees F
FPC 7 LU 2 Chip	OK	19 degrees C / 66 degrees F
FPC 7 LU 3 TSen	OK	26 degrees C / 78 degrees F
FPC 7 LU 3 Chip	OK	24 degrees C / 75 degrees F
FPC 7 XM 0 TSen	OK	26 degrees C / 78 degrees F
FPC 7 XM 0 Chip	OK	34 degrees C / 93 degrees F
FPC 7 XM 1 TSen	OK	26 degrees C / 78 degrees F
FPC 7 XM 1 Chip	OK	32 degrees C / 89 degrees F
FPC 7 PLX Switch TSen	OK	26 degrees C / 78 degrees F
FPC 7 PLX Switch Chip	OK	22 degrees C / 71 degrees F
FPC 8 Intake	OK	10 degrees C / 50 degrees F
FPC 8 Exhaust A	OK	22 degrees C / 71 degrees F
FPC 8 Exhaust B	OK	28 degrees C / 82 degrees F
FPC 8 LU 0 TSen	OK	20 degrees C / 68 degrees F
FPC 8 LU 0 Chip	OK	33 degrees C / 91 degrees F
FPC 8 LU 1 TSen	OK	20 degrees C / 68 degrees F
FPC 8 LU 1 Chip	OK	23 degrees C / 73 degrees F
FPC 8 LU 2 TSen	OK	20 degrees C / 68 degrees F
FPC 8 LU 2 Chip	OK	26 degrees C / 78 degrees F
FPC 8 LU 3 TSen	OK	20 degrees C / 68 degrees F
FPC 8 LU 3 Chip	OK	33 degrees C / 91 degrees F
FPC 8 XM 0 TSen	OK	20 degrees C / 68 degrees F

FPC 8 XM 0 Chip	OK	29 degrees C / 84 degrees F
FPC 8 XF 0 TSen	OK	20 degrees C / 68 degrees F
FPC 8 XF 0 Chip	OK	38 degrees C / 100 degrees F
FPC 8 PLX Switch TSen	OK	20 degrees C / 68 degrees F
FPC 8 PLX Switch Chip	OK	24 degrees C / 75 degrees F
FPC 9 Intake	OK	11 degrees C / 51 degrees F
FPC 9 Exhaust A	OK	11 degrees C / 51 degrees F
FPC 9 Exhaust B	OK	11 degrees C / 51 degrees F
FPC 9 LU 0 TSen	OK	25 degrees C / 77 degrees F
FPC 9 LU 0 Chip	OK	24 degrees C / 75 degrees F
FPC 9 LU 1 TSen	OK	25 degrees C / 77 degrees F
FPC 9 LU 1 Chip	OK	26 degrees C / 78 degrees F
FPC 9 LU 2 TSen	OK	25 degrees C / 77 degrees F
FPC 9 LU 2 Chip	OK	16 degrees C / 60 degrees F
FPC 9 LU 3 TSen	OK	25 degrees C / 77 degrees F
FPC 9 LU 3 Chip	OK	21 degrees C / 69 degrees F
FPC 9 XM 0 TSen	OK	25 degrees C / 77 degrees F
FPC 9 XM 0 Chip	OK	32 degrees C / 89 degrees F
FPC 9 XM 1 TSen	OK	25 degrees C / 77 degrees F
FPC 9 XM 1 Chip	OK	25 degrees C / 77 degrees F
FPC 9 PLX Switch TSen	OK	25 degrees C / 77 degrees F
FPC 9 PLX Switch Chip	OK	21 degrees C / 69 degrees F
ADC 0 Intake	OK	12 degrees C / 53 degrees F
ADC 0 Exhaust	OK	20 degrees C / 68 degrees F
ADC 0 ADC-XF1	OK	26 degrees C / 78 degrees F
ADC 0 ADC-XF0	OK	32 degrees C / 89 degrees F
ADC 1 Intake	OK	11 degrees C / 51 degrees F
ADC 1 Exhaust	OK	21 degrees C / 69 degrees F
ADC 1 ADC-XF1	OK	24 degrees C / 75 degrees F
ADC 1 ADC-XF0	OK	31 degrees C / 87 degrees F
ADC 2 Intake	OK	14 degrees C / 57 degrees F
ADC 2 Exhaust	OK	21 degrees C / 69 degrees F
ADC 2 ADC-XF1	OK	28 degrees C / 82 degrees F
ADC 2 ADC-XF0	OK	34 degrees C / 93 degrees F
ADC 3 Intake	OK	13 degrees C / 55 degrees F
ADC 3 Exhaust	OK	19 degrees C / 66 degrees F
ADC 3 ADC-XF1	OK	24 degrees C / 75 degrees F
ADC 3 ADC-XF0	OK	31 degrees C / 87 degrees F
ADC 4 Intake	OK	9 degrees C / 48 degrees F
ADC 4 Exhaust	OK	22 degrees C / 71 degrees F
ADC 4 ADC-XF1	OK	28 degrees C / 82 degrees F
ADC 4 ADC-XF0	OK	35 degrees C / 95 degrees F
ADC 5 Intake	OK	12 degrees C / 53 degrees F
ADC 5 Exhaust	OK	22 degrees C / 71 degrees F
ADC 5 ADC-XF1	OK	28 degrees C / 82 degrees F
ADC 5 ADC-XF0	OK	34 degrees C / 93 degrees F
ADC 6 Intake	OK	11 degrees C / 51 degrees F
ADC 6 Exhaust	OK	21 degrees C / 69 degrees F
ADC 6 ADC-XF1	OK	26 degrees C / 78 degrees F
ADC 6 ADC-XF0	OK	35 degrees C / 95 degrees F
ADC 7 Intake	OK	14 degrees C / 57 degrees F
ADC 7 Exhaust	OK	22 degrees C / 71 degrees F
ADC 7 ADC-XF1	OK	26 degrees C / 78 degrees F
ADC 7 ADC-XF0	OK	34 degrees C / 93 degrees F
ADC 8 Intake	OK	14 degrees C / 57 degrees F
ADC 8 Exhaust	OK	21 degrees C / 69 degrees F
ADC 8 ADC-XF1	OK	24 degrees C / 75 degrees F
ADC 8 ADC-XF0	OK	31 degrees C / 87 degrees F
ADC 9 Intake	OK	10 degrees C / 50 degrees F
ADC 9 Exhaust	OK	22 degrees C / 71 degrees F
ADC 9 ADC-XF1	OK	28 degrees C / 82 degrees F

	ADC 9 ADC-XF0	OK	36 degrees C / 96 degrees F
Fans	Fan Tray 0 Fan 1	OK	3480 RPM
	Fan Tray 0 Fan 2	OK	3480 RPM
	Fan Tray 0 Fan 3	OK	3480 RPM
	Fan Tray 0 Fan 4	OK	3360 RPM
	Fan Tray 0 Fan 5	OK	3360 RPM
	Fan Tray 0 Fan 6	OK	3480 RPM
	Fan Tray 1 Fan 1	OK	3360 RPM
	Fan Tray 1 Fan 2	OK	3360 RPM
	Fan Tray 1 Fan 3	OK	3360 RPM
	Fan Tray 1 Fan 4	OK	3480 RPM
	Fan Tray 1 Fan 5	OK	3480 RPM
	Fan Tray 1 Fan 6	OK	3480 RPM
	Fan Tray 2 Fan 1	OK	3360 RPM
	Fan Tray 2 Fan 2	OK	3360 RPM
	Fan Tray 2 Fan 3	OK	3480 RPM
	Fan Tray 2 Fan 4	OK	3480 RPM
	Fan Tray 2 Fan 5	OK	3360 RPM
	Fan Tray 2 Fan 6	OK	3480 RPM
	Fan Tray 3 Fan 1	OK	3360 RPM
	Fan Tray 3 Fan 2	OK	3360 RPM
	Fan Tray 3 Fan 3	OK	3480 RPM
	Fan Tray 3 Fan 4	OK	3480 RPM
	Fan Tray 3 Fan 5	OK	3480 RPM
	Fan Tray 3 Fan 6	OK	3360 RPM

show chassis environment (T320 Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Power	PEM 0	OK	
	PEM 1	Absent	
Temp	SCG 0	OK	28 degrees C / 82 degrees F
	SCG 1	OK	28 degrees C / 82 degrees F
	Routing Engine 0	OK	31 degrees C / 87 degrees F
	Routing Engine 1	OK	30 degrees C / 86 degrees F
	CB 0	OK	32 degrees C / 89 degrees F
	CB 1	OK	32 degrees C / 89 degrees F
	SIB 0	OK	33 degrees C / 91 degrees F
	SIB 1	OK	33 degrees C / 91 degrees F
	SIB 2	OK	34 degrees C / 93 degrees F
	FPC 0 Top	OK	38 degrees C / 100 degrees F
	FPC 0 Bottom	OK	32 degrees C / 89 degrees F
	FPC 1 Top	OK	38 degrees C / 100 degrees F
	FPC 1 Bottom	OK	33 degrees C / 91 degrees F
	FPC 2 Top	OK	36 degrees C / 96 degrees F
	FPC 2 Bottom	OK	31 degrees C / 87 degrees F
	FPM GBUS	OK	26 degrees C / 78 degrees F
	FPM Display	OK	29 degrees C / 84 degrees F
Fans	Top Left Front fan	OK	Spinning at normal speed
	Top Left Middle fan	OK	Spinning at normal speed
	Top Left Rear fan	OK	Spinning at normal speed
	Top Right Front fan	OK	Spinning at normal speed
	Top Right Middle fan	OK	Spinning at normal speed
	Top Right Rear fan	OK	Spinning at normal speed
	Bottom Left Front fan	OK	Spinning at normal speed
	Bottom Left Middle fan	OK	Spinning at normal speed
	Bottom Left Rear fan	OK	Spinning at normal speed
	Bottom Right Front fan	OK	Spinning at normal speed
	Bottom Right Middle fan	OK	Spinning at normal speed
	Bottom Right Rear fan	OK	Spinning at normal speed

	Rear Tray Top fan	OK	Spinning at normal speed
	Rear Tray Second fan	OK	Spinning at normal speed
	Rear Tray Middle fan	OK	Spinning at normal speed
	Rear Tray Fourth fan	OK	Spinning at normal speed
	Rear Tray Bottom fan	OK	Spinning at normal speed
Misc	CIP	OK	
	SPMB 0	OK	
	SPMB 1	OK	

show chassis environment (T640 Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Temp	PEM 0	Absent	
	PEM 1	OK	22 degrees C / 71 degrees F
	SCG 0	OK	30 degrees C / 86 degrees F
	SCG 1	OK	30 degrees C / 86 degrees F
	Routing Engine 0	Present	
	Routing Engine 1	OK	27 degrees C / 80 degrees F
	CB 0	Present	
	CB 1	OK	33 degrees C / 91 degrees F
	SIB 0	Absent	
	SIB 1	Absent	
Fans	SIB 2	Absent	
	SIB 3	Absent	
	SIB 4	Absent	
	FPC 4 Top	Testing	
	FPC 4 Bottom	Testing	
	FPC 5 Top	Testing	
	FPC 5 Bottom	Testing	
	FPC 6 Top	Testing	
	FPC 6 Bottom	Testing	
	FPM GBUS	OK	23 degrees C / 73 degrees F
	FPM Display	Absent	
	Top Left Front fan	OK	Spinning at normal speed
	Top Left Middle fan	OK	Spinning at normal speed
	Top Left Rear fan	OK	Spinning at normal speed
	Top Right Front fan	OK	Spinning at normal speed
	Top Right Middle fan	OK	Spinning at normal speed
	Top Right Rear fan	OK	Spinning at normal speed
	Bottom Left Front fan	OK	Spinning at normal speed
	Bottom Left Middle fan	OK	Spinning at normal speed
	Bottom Left Rear fan	OK	Spinning at normal speed
	Bottom Right Front fan	OK	Spinning at normal speed
	Bottom Right Middle fan	OK	Spinning at normal speed
	Bottom Right Rear fan	OK	Spinning at normal speed
Misc	Fourth Blower from top	OK	Spinning at normal speed
	Bottom Blower	OK	Spinning at normal speed
	Middle Blower	OK	Spinning at normal speed
	Top Blower	OK	Spinning at normal speed
	Second Blower from top	OK	Spinning at normal speed
	CIP	OK	
	SPMB 0	OK	
	SPMB 1	OK	

show chassis environment (T4000 Router)

```
user@host> show chassis environment
```

Class	Item	Status	Measurement
Temp	PEM 0	OK	33 degrees C / 91 degrees F
	PEM 1	Absent	
	SCG 0	OK	33 degrees C / 91 degrees F
	SCG 1	OK	33 degrees C / 91 degrees F
	Routing Engine 0	OK	33 degrees C / 91 degrees F
	Routing Engine 0 CPU	OK	50 degrees C / 122 degrees F
	Routing Engine 1	OK	32 degrees C / 89 degrees F
	Routing Engine 1 CPU	OK	46 degrees C / 114 degrees F
	CB 0	OK	32 degrees C / 89 degrees F
	CB 1	OK	33 degrees C / 91 degrees F
	SIB 0	OK	42 degrees C / 107 degrees F
	SIB 1	OK	42 degrees C / 107 degrees F
	SIB 2	OK	42 degrees C / 107 degrees F
	SIB 3	OK	43 degrees C / 109 degrees F
	SIB 4	OK	45 degrees C / 113 degrees F
	FPC 0 Fan Intake	OK	34 degrees C / 93 degrees F
	FPC 0 Fan Exhaust	OK	48 degrees C / 118 degrees F
	FPC 0 PMB	OK	47 degrees C / 116 degrees F
	FPC 0 LMB0	OK	50 degrees C / 122 degrees F
	FPC 0 LMB1	OK	41 degrees C / 105 degrees F
	FPC 0 LMB2	OK	35 degrees C / 95 degrees F
	FPC 0 PFE1 LU2	OK	46 degrees C / 114 degrees F
	FPC 0 PFE1 LU0	OK	41 degrees C / 105 degrees F
	FPC 0 PFE0 LU0	OK	57 degrees C / 134 degrees F
	FPC 0 XF1	OK	46 degrees C / 114 degrees F
	FPC 0 XF0	OK	52 degrees C / 125 degrees F
	FPC 0 XM1	OK	41 degrees C / 105 degrees F
	FPC 0 XM0	OK	50 degrees C / 122 degrees F
	FPC 0 PFE0 LU1	OK	56 degrees C / 132 degrees F
	FPC 0 PFE0 LU2	OK	45 degrees C / 113 degrees F
	FPC 0 PFE1 LU1	OK	37 degrees C / 98 degrees F
	FPC 3 Fan Intake	OK	36 degrees C / 96 degrees F
	FPC 3 Fan Exhaust	OK	51 degrees C / 123 degrees F
	FPC 3 PMB	OK	43 degrees C / 109 degrees F
	FPC 3 LMB0	OK	57 degrees C / 134 degrees F
	FPC 3 LMB1	OK	54 degrees C / 129 degrees F
	FPC 3 LMB2	OK	38 degrees C / 100 degrees F
	FPC 3 PFE1 LU2	OK	63 degrees C / 145 degrees F
	FPC 3 PFE1 LU0	OK	45 degrees C / 113 degrees F
	FPC 3 PFE0 LU0	OK	69 degrees C / 156 degrees F
	FPC 3 XF1	OK	62 degrees C / 143 degrees F
	FPC 3 XF0	OK	63 degrees C / 145 degrees F
	FPC 3 XM1	OK	43 degrees C / 109 degrees F
	FPC 3 XM0	OK	67 degrees C / 152 degrees F
	FPC 3 PFE0 LU1	OK	63 degrees C / 145 degrees F
	FPC 3 PFE0 LU2	OK	66 degrees C / 150 degrees F
	FPC 3 PFE1 LU1	OK	41 degrees C / 105 degrees F
	FPC 5 Top	OK	39 degrees C / 102 degrees F
	FPC 5 Bottom	OK	38 degrees C / 100 degrees F
	FPC 6 Fan Intake	OK	33 degrees C / 91 degrees F
	FPC 6 Fan Exhaust	OK	49 degrees C / 120 degrees F
	FPC 6 PMB	OK	40 degrees C / 104 degrees F
	FPC 6 LMB0	OK	60 degrees C / 140 degrees F
	FPC 6 LMB1	OK	58 degrees C / 136 degrees F
	FPC 6 LMB2	OK	40 degrees C / 104 degrees F
	FPC 6 PFE1 LU2	OK	69 degrees C / 156 degrees F
	FPC 6 PFE1 LU0	OK	45 degrees C / 113 degrees F
	FPC 6 PFE0 LU0	OK	71 degrees C / 159 degrees F
	FPC 6 XF1	OK	58 degrees C / 136 degrees F
	FPC 6 XF0	OK	65 degrees C / 149 degrees F

	FPC 6 XM1	OK	39 degrees C / 102 degrees F
	FPC 6 XM0	OK	66 degrees C / 150 degrees F
	FPC 6 PFE0 LU1	OK	69 degrees C / 156 degrees F
	FPC 6 PFE0 LU2	OK	69 degrees C / 156 degrees F
	FPC 6 PFE1 LU1	OK	42 degrees C / 107 degrees F
	FPM GBUS	OK	24 degrees C / 75 degrees F
	FPM Display	OK	27 degrees C / 80 degrees F
Fans	Top Left Front fan	OK	Spinning at high speed
	Top Left Middle fan	OK	Spinning at high speed
	Top Left Rear fan	OK	Spinning at high speed
	Top Right Front fan	OK	Spinning at high speed
	Top Right Middle fan	OK	Spinning at high speed
	Top Right Rear fan	OK	Spinning at high speed
	Bottom Left Front fan	OK	Spinning at high speed
	Bottom Left Middle fan	OK	Spinning at high speed
	Bottom Left Rear fan	OK	Spinning at high speed
	Bottom Right Front fan	OK	Spinning at high speed
	Bottom Right Middle fan	OK	Spinning at high speed
	Bottom Right Rear fan	OK	Spinning at high speed
	Rear Tray Top fan	OK	Spinning at high speed
	Rear Tray Second fan	OK	Spinning at high speed
	Rear Tray Third fan	OK	Spinning at high speed
	Rear Tray Fourth fan	OK	Spinning at high speed
	Rear Tray Fifth fan	OK	Spinning at high speed
Misc	Rear Tray Sixth fan	OK	Spinning at high speed
	Rear Tray Seventh fan	OK	Spinning at high speed
	Rear Tray Bottom fan	OK	Spinning at high speed
	CIP	OK	
	SPMB 0	OK	
	SPMB 1	OK	

show chassis environment (TX Matrix Router)

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

Class	Item	Status	Measurement
Temp	PEM 0	Absent	
	PEM 1	OK	29 degrees C / 84 degrees F
	Routing Engine 0	OK	34 degrees C / 93 degrees F
	Routing Engine 1	OK	34 degrees C / 93 degrees F
	CB 0	OK	32 degrees C / 89 degrees F
	CB 1	OK	32 degrees C / 89 degrees F
	SIB 0	OK	44 degrees C / 111 degrees F
	SIB 0 (B)	OK	44 degrees C / 111 degrees F
	FPM GBUS	OK	27 degrees C / 80 degrees F
	FPM Display	OK	32 degrees C / 89 degrees F
Fans	Top Left Front fan	OK	Spinning at normal speed
	Top Left Middle fan	OK	Spinning at normal speed
	Top Left Rear fan	OK	Spinning at normal speed
	Top Right Front fan	OK	Spinning at normal speed
	Top Right Middle fan	OK	Spinning at normal speed
	Top Right Rear fan	OK	Spinning at normal speed
	Bottom Left Front fan	OK	Spinning at normal speed
	Bottom Left Middle fan	OK	Spinning at normal speed
	Bottom Left Rear fan	OK	Spinning at normal speed
	Bottom Right Front fan	OK	Spinning at normal speed
	Bottom Right Middle fan	OK	Spinning at normal speed
	Bottom Right Rear fan	OK	Spinning at normal speed
	Rear Tray Top fan	OK	Spinning at normal speed
	Rear Tray Second fan	OK	Spinning at normal speed

```

Rear Tray Third fan    OK      Spinning at normal speed
Rear Tray Fourth fan   OK      Spinning at normal speed
Rear Tray Fifth fan    OK      Spinning at normal speed
Rear Tray Sixth fan    OK      Spinning at normal speed
Rear Tray Seventh fan  OK      Spinning at normal speed
Rear Tray Bottom fan   OK      Spinning at normal speed
Misc CIP 0             OK
Misc CIP 1             OK
Misc SPMB 0            OK
Misc SPMB 1            OK

```

lcc0-re0:

```

-----
Class Item              Status      Measurement
Temp PEM 0              OK          29 degrees C / 84 degrees F
      PEM 1              Absent
      SCG 0              OK          35 degrees C / 95 degrees F
      SCG 1              Absent
      Routing Engine 0    OK          39 degrees C / 102 degrees F
      Routing Engine 1    OK          36 degrees C / 96 degrees F
      CB 0                OK          32 degrees C / 89 degrees F
      CB 1                OK          32 degrees C / 89 degrees F
      SIB 0               OK          40 degrees C / 104 degrees F
      SIB 0 (B)           OK          51 degrees C / 123 degrees F
      FPC 0 Top           OK          45 degrees C / 113 degrees F
      FPC 0 Bottom        OK          31 degrees C / 87 degrees F
      FPC 1 Top           OK          34 degrees C / 93 degrees F
      FPC 1 Bottom        OK          31 degrees C / 87 degrees F
      FPM GBUS            OK          30 degrees C / 86 degrees F
      FPM Display         OK          34 degrees C / 93 degrees F
Fans  Top Left Front fan  OK          Spinning at normal speed
      Top Left Middle fan OK          Spinning at normal speed
      Top Left Rear fan   OK          Spinning at normal speed
      Top Right Front fan OK          Spinning at normal speed
      Top Right Middle fan OK         Spinning at normal speed
      Top Right Rear fan  OK          Spinning at normal speed
      Bottom Left Front fan OK         Spinning at normal speed
      Bottom Left Middle fan OK        Spinning at normal speed
      Bottom Left Rear fan OK         Spinning at normal speed
      Bottom Right Front fan OK        Spinning at normal speed
      Bottom Right Middle fan OK       Spinning at normal speed
      Bottom Right Rear fan OK        Spinning at normal speed
      Rear Tray Top fan    OK          Spinning at normal speed
      Rear Tray Second fan OK         Spinning at normal speed
      Rear Tray Third fan  OK          Spinning at normal speed
      Rear Tray Fourth fan OK         Spinning at normal speed
      Rear Tray Fifth fan  OK          Spinning at normal speed
      Rear Tray Sixth fan  OK          Spinning at normal speed
      Rear Tray Seventh fan OK         Spinning at normal speed
      Rear Tray Bottom fan OK         Spinning at normal speed
Misc  CIP                 OK
      SPMB 0              OK
      SPMB 1              OK

```

lcc2-re0:

```

-----
Class Item              Status      Measurement
Temp PEM 0              OK          29 degrees C / 84 degrees F
      PEM 1              Absent
      SCG 0              OK          32 degrees C / 89 degrees F
      SCG 1              Absent

```

	Routing Engine 0	OK	31 degrees C / 87 degrees F
	Routing Engine 1	OK	32 degrees C / 89 degrees F
	CB 0	OK	30 degrees C / 86 degrees F
	SIB 0	OK	38 degrees C / 100 degrees F
	SIB 0 (B)	OK	49 degrees C / 120 degrees F
	FPC 0 Top	OK	45 degrees C / 113 degrees F
	FPC 0 Bottom	OK	33 degrees C / 91 degrees F
	FPC 1 Top	OK	37 degrees C / 98 degrees F
	FPC 1 Bottom	OK	33 degrees C / 91 degrees F
	FPM GBUS	OK	30 degrees C / 86 degrees F
	FPM Display	OK	34 degrees C / 93 degrees F
Fans	Top Left Front fan	OK	Spinning at normal speed
	Top Left Middle fan	OK	Spinning at normal speed
...			

show chassis environment (TI600 Router)

```
user@host> show chassis environment
```

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

```

Rear Tray Seventh fan      OK      Spinning at normal speed
Rear Tray Bottom fan      OK      Spinning at normal speed
Misc CIP                   OK
SPMB 0                     OK
SPMB 1                     OK

```

show chassis environment (TX Matrix Plus Router)

```

user@host> show chassis environment
sfc0-re0:

```

```

-----
Class Item                Status      Measurement
Temp PEM 0                OK          28 degrees C / 82 degrees F
      PEM 1                Absent
      Routing Engine 0     OK          27 degrees C / 80 degrees F
      Routing Engine 1     OK          29 degrees C / 84 degrees F
      CB 0 Intake          OK          26 degrees C / 78 degrees F
      CB 0 Exhaust A       OK          25 degrees C / 77 degrees F
      CB 0 Exhaust B       OK          25 degrees C / 77 degrees F
      CB 1 Intake          OK          26 degrees C / 78 degrees F
      CB 1 Exhaust A       OK          26 degrees C / 78 degrees F
      CB 1 Exhaust B       OK          26 degrees C / 78 degrees F
      SIB F13 0            OK          47 degrees C / 116 degrees F
      SIB F13 0 (B)        OK          48 degrees C / 118 degrees F
      SIB F13 1            OK          38 degrees C / 100 degrees F
      SIB F13 1 (B)        OK          37 degrees C / 98 degrees F
      SIB F2S 0/0          OK          27 degrees C / 80 degrees F
      SIB F2S 0/2          OK          28 degrees C / 82 degrees F
      SIB F2S 0/4          OK          27 degrees C / 80 degrees F
      SIB F2S 0/6          OK          28 degrees C / 82 degrees F
      SIB F2S 1/0          OK          26 degrees C / 78 degrees F
      SIB F2S 1/2          OK          26 degrees C / 78 degrees F
      SIB F2S 1/4          OK          26 degrees C / 78 degrees F
      SIB F2S 1/6          OK          26 degrees C / 78 degrees F
      SIB F2S 2/0          OK          25 degrees C / 77 degrees F
      SIB F2S 2/2          OK          25 degrees C / 77 degrees F
      SIB F2S 2/4          OK          23 degrees C / 73 degrees F
      CIP 0 Intake         OK          23 degrees C / 73 degrees F
      CIP 0 Exhaust A      OK          24 degrees C / 75 degrees F
      CIP 0 Exhaust B      OK          24 degrees C / 75 degrees F
      CIP 1 Intake         OK          24 degrees C / 75 degrees F
      CIP 1 Exhaust A      OK          25 degrees C / 77 degrees F
      CIP 1 Exhaust B      OK          25 degrees C / 77 degrees F
Fans  Fan Tray 0 Fan 1     OK          Spinning at normal speed
      Fan Tray 0 Fan 2     OK          Spinning at normal speed
      Fan Tray 0 Fan 3     OK          Spinning at normal speed
      Fan Tray 0 Fan 4     OK          Spinning at normal speed
      Fan Tray 0 Fan 5     OK          Spinning at normal speed
      Fan Tray 0 Fan 6     OK          Spinning at normal speed
      Fan Tray 1 Fan 1     OK          Spinning at normal speed
      Fan Tray 1 Fan 2     OK          Spinning at normal speed
      Fan Tray 1 Fan 3     OK          Spinning at normal speed
      Fan Tray 1 Fan 4     OK          Spinning at normal speed
      Fan Tray 1 Fan 5     OK          Spinning at normal speed
      Fan Tray 1 Fan 6     OK          Spinning at normal speed
      Fan Tray 2 Fan 1     OK          Spinning at normal speed
      Fan Tray 2 Fan 2     OK          Spinning at normal speed
      Fan Tray 2 Fan 3     OK          Spinning at normal speed
      Fan Tray 2 Fan 4     OK          Spinning at normal speed
      Fan Tray 2 Fan 5     OK          Spinning at normal speed
      Fan Tray 2 Fan 6     OK          Spinning at normal speed

```

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

1cc0-re0:

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

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

show chassis environment (TX Matrix Plus router with 3D SIBs)

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

Class	Item	Status	Measurement
Temp	PEM 0	Check	30 degrees C / 86 degrees F
	PEM 1	OK	33 degrees C / 91 degrees F
	Routing Engine 0	OK	28 degrees C / 82 degrees F
	Routing Engine 0 CPU	OK	42 degrees C / 107 degrees F
	Routing Engine 1	OK	29 degrees C / 84 degrees F
	Routing Engine 1 CPU	OK	44 degrees C / 111 degrees F
	CB 0 Intake	OK	30 degrees C / 86 degrees F
	CB 0 Exhaust A	OK	28 degrees C / 82 degrees F
	CB 0 Exhaust B	OK	30 degrees C / 86 degrees F
	CB 1 Intake	OK	31 degrees C / 87 degrees F
	CB 1 Exhaust A	OK	27 degrees C / 80 degrees F
	CB 1 Exhaust B	OK	31 degrees C / 87 degrees F
	SIB F13 0 Board	OK	44 degrees C / 111 degrees F
	SIB F13 0 XF Junction	OK	62 degrees C / 143 degrees F
	SIB F13 3 Board	OK	45 degrees C / 113 degrees F
	SIB F13 3 XF Junction	OK	60 degrees C / 140 degrees F
	SIB F13 6 Board	OK	47 degrees C / 116 degrees F
	SIB F13 6 XF Junction	OK	62 degrees C / 143 degrees F
	SIB F2S 0/0 Board	OK	32 degrees C / 89 degrees F
	SIB F2S 0/0 XF Junction	OK	42 degrees C / 107 degrees F
	SIB F2S 0/2 Board	OK	31 degrees C / 87 degrees F
	SIB F2S 0/2 XF Junction	OK	41 degrees C / 105 degrees F
	SIB F2S 0/4 Board	OK	31 degrees C / 87 degrees F
	SIB F2S 0/4 XF Junction	OK	42 degrees C / 107 degrees F
	SIB F2S 0/6 Board	OK	31 degrees C / 87 degrees F
	SIB F2S 0/6 XF Junction	OK	41 degrees C / 105 degrees F
	SIB F2S 1/0 Board	OK	31 degrees C / 87 degrees F
	SIB F2S 1/0 XF Junction	OK	41 degrees C / 105 degrees F
	SIB F2S 1/2 Board	OK	29 degrees C / 84 degrees F
	SIB F2S 1/2 XF Junction	OK	39 degrees C / 102 degrees F
	SIB F2S 1/4 Board	OK	29 degrees C / 84 degrees F
	SIB F2S 1/4 XF Junction	OK	35 degrees C / 95 degrees F

	SIB F2S 1/6 Board	OK	30 degrees C / 86 degrees F
	SIB F2S 1/6 XF Junction	OK	41 degrees C / 105 degrees F
	SIB F2S 2/0 Board	OK	30 degrees C / 86 degrees F
	SIB F2S 2/0 XF Junction	OK	42 degrees C / 107 degrees F
	SIB F2S 2/2 Board	OK	28 degrees C / 82 degrees F
	SIB F2S 2/2 XF Junction	OK	39 degrees C / 102 degrees F
	SIB F2S 2/4 Board	OK	29 degrees C / 84 degrees F
	SIB F2S 2/4 XF Junction	OK	42 degrees C / 107 degrees F
	SIB F2S 2/6 Board	OK	29 degrees C / 84 degrees F
	SIB F2S 2/6 XF Junction	OK	41 degrees C / 105 degrees F
	CIP 0 Intake	OK	25 degrees C / 77 degrees F
	CIP 0 Exhaust A	OK	26 degrees C / 78 degrees F
	CIP 0 Exhaust B	OK	26 degrees C / 78 degrees F
	CIP 1 Intake	OK	26 degrees C / 78 degrees F
	CIP 1 Exhaust A	OK	27 degrees C / 80 degrees F
	CIP 1 Exhaust B	OK	27 degrees C / 80 degrees F
Fans	Fan Tray 0 Fan 1	OK	Spinning at normal speed
	Fan Tray 0 Fan 2	OK	Spinning at normal speed
	Fan Tray 0 Fan 3	OK	Spinning at normal speed
	Fan Tray 0 Fan 4	OK	Spinning at normal speed
	Fan Tray 0 Fan 5	OK	Spinning at normal speed
	Fan Tray 0 Fan 6	OK	Spinning at normal speed
	Fan Tray 1 Fan 1	OK	Spinning at normal speed
	Fan Tray 1 Fan 2	OK	Spinning at normal speed
	Fan Tray 1 Fan 3	OK	Spinning at normal speed
	Fan Tray 1 Fan 4	OK	Spinning at normal speed
	Fan Tray 1 Fan 5	OK	Spinning at normal speed
	Fan Tray 1 Fan 6	OK	Spinning at normal speed
	Fan Tray 2 Fan 1	OK	Spinning at normal speed
	Fan Tray 2 Fan 2	OK	Spinning at normal speed
	Fan Tray 2 Fan 3	OK	Spinning at normal speed
	Fan Tray 2 Fan 4	OK	Spinning at normal speed
	Fan Tray 2 Fan 5	OK	Spinning at normal speed
	Fan Tray 2 Fan 6	OK	Spinning at normal speed
	Fan Tray 2 Fan 7	OK	Spinning at normal speed
	Fan Tray 2 Fan 8	OK	Spinning at normal speed
	Fan Tray 2 Fan 9	OK	Spinning at normal speed
	Fan Tray 3 Fan 1	OK	Spinning at normal speed
	Fan Tray 3 Fan 2	OK	Spinning at normal speed
	Fan Tray 3 Fan 3	OK	Spinning at normal speed
	Fan Tray 3 Fan 4	OK	Spinning at normal speed
	Fan Tray 3 Fan 5	OK	Spinning at normal speed
	Fan Tray 3 Fan 6	OK	Spinning at normal speed
	Fan Tray 3 Fan 7	OK	Spinning at normal speed
	Fan Tray 3 Fan 8	OK	Spinning at normal speed
	Fan Tray 3 Fan 9	OK	Spinning at normal speed
	Fan Tray 4 Fan 1	OK	Spinning at normal speed
	Fan Tray 4 Fan 2	OK	Spinning at normal speed
	Fan Tray 4 Fan 3	OK	Spinning at normal speed
	Fan Tray 4 Fan 4	OK	Spinning at normal speed
	Fan Tray 4 Fan 5	OK	Spinning at normal speed
	Fan Tray 4 Fan 6	OK	Spinning at normal speed
	Fan Tray 4 Fan 7	OK	Spinning at normal speed
	Fan Tray 4 Fan 8	OK	Spinning at normal speed
	Fan Tray 4 Fan 9	OK	Spinning at normal speed
	Fan Tray 5 Fan 1	OK	Spinning at normal speed
	Fan Tray 5 Fan 2	OK	Spinning at normal speed
	Fan Tray 5 Fan 3	OK	Spinning at normal speed
	Fan Tray 5 Fan 4	OK	Spinning at normal speed
	Fan Tray 5 Fan 5	OK	Spinning at normal speed
	Fan Tray 5 Fan 6	OK	Spinning at normal speed

	Fan Tray 5 Fan 7	OK	Spinning at normal speed
	Fan Tray 5 Fan 8	OK	Spinning at normal speed
	Fan Tray 5 Fan 9	Check	
Misc	SPMB 0	OK	
	SPMB 1	OK	

1cc0-re0:

Class	Item	Status	Measurement
Temp	PEM 0	OK	29 degrees C / 84 degrees F
	PEM 1	Check	29 degrees C / 84 degrees F
	SCG 0	OK	32 degrees C / 89 degrees F
	SCG 1	OK	33 degrees C / 91 degrees F
	Routing Engine 0	OK	32 degrees C / 89 degrees F
	Routing Engine 0 CPU	OK	51 degrees C / 123 degrees F
	Routing Engine 1	OK	32 degrees C / 89 degrees F
	Routing Engine 1 CPU	OK	49 degrees C / 120 degrees F
	CB 0	OK	34 degrees C / 93 degrees F
	CB 1	OK	34 degrees C / 93 degrees F
	SIB 0	OK	39 degrees C / 102 degrees F
	SIB 0 (B)	Absent	
	SIB 1	OK	39 degrees C / 102 degrees F
	SIB 1 (B)	Absent	
	SIB 2	OK	39 degrees C / 102 degrees F
	SIB 2 (B)	Absent	
	FPC 4 Top	OK	43 degrees C / 109 degrees F
	FPC 4 Bottom	OK	43 degrees C / 109 degrees F
	FPC 7 Fan Intake	OK	35 degrees C / 95 degrees F
	FPC 7 Fan Exhaust	OK	50 degrees C / 122 degrees F
	FPC 7 PMB	OK	50 degrees C / 122 degrees F
	FPC 7 LMB0	OK	55 degrees C / 131 degrees F
	FPC 7 LMB1	OK	49 degrees C / 120 degrees F
	FPC 7 LMB2	OK	39 degrees C / 102 degrees F
	FPC 7 PFE1 LU2	OK	55 degrees C / 131 degrees F
	FPC 7 PFE1 LU0	OK	45 degrees C / 113 degrees F
	FPC 7 PFE0 LU0	OK	62 degrees C / 143 degrees F
	FPC 7 XF1	OK	52 degrees C / 125 degrees F
	FPC 7 XF0	OK	61 degrees C / 141 degrees F
	FPC 7 XM1	OK	39 degrees C / 102 degrees F
	FPC 7 XM0	OK	56 degrees C / 132 degrees F
	FPC 7 PFE0 LU1	OK	60 degrees C / 140 degrees F
	FPC 7 PFE0 LU2	OK	55 degrees C / 131 degrees F
	FPC 7 PFE1 LU1	OK	41 degrees C / 105 degrees F
	FPM GBUS	OK	24 degrees C / 75 degrees F
	FPM Display	OK	28 degrees C / 82 degrees F
Fans	Top Left Front fan	OK	Spinning at normal speed
	Top Left Middle fan	OK	Spinning at normal speed
	Top Left Rear fan	OK	Spinning at normal speed
	Top Right Front fan	OK	Spinning at normal speed
	Top Right Middle fan	OK	Spinning at normal speed
	Top Right Rear fan	OK	Spinning at normal speed
	Bottom Left Front fan	OK	Spinning at normal speed
	Bottom Left Middle fan	OK	Spinning at normal speed
	Bottom Left Rear fan	OK	Spinning at normal speed
	Bottom Right Front fan	OK	Spinning at normal speed
	Bottom Right Middle fan	OK	Spinning at normal speed
	Bottom Right Rear fan	OK	Spinning at normal speed
	Rear Tray fan 1 (Top)	OK	Spinning at normal speed
	Rear Tray fan 2	OK	Spinning at normal speed
	Rear Tray fan 3	OK	Spinning at normal speed
	Rear Tray fan 4	OK	Spinning at normal speed

	Rear Tray fan 5	OK	Spinning at normal speed
	Rear Tray fan 6	OK	Spinning at normal speed
	Rear Tray fan 7	OK	Spinning at normal speed
	Rear Tray fan 8	OK	Spinning at normal speed
	Rear Tray fan 9	OK	Spinning at normal speed
	Rear Tray fan 10	OK	Spinning at normal speed
	Rear Tray fan 11	OK	Spinning at normal speed
	Rear Tray fan 12	OK	Spinning at normal speed
	Rear Tray fan 13	OK	Spinning at normal speed
	Rear Tray fan 14	OK	Spinning at normal speed
	Rear Tray fan 15	OK	Spinning at normal speed
	Rear Tray fan 16 (Bottom)	OK	Spinning at normal speed
Misc	CIP	OK	
	SPMB 0	OK	
	SPMB 1	OK	

show chassis environment (EX4200 Standalone Switch)

```
user@switch> show chassis environment
```

Class	Item	Status	Measurement
Power	FPC 0 Power Supply 0	OK	
	FPC 0 Power Supply 1	Absent	
Temp	FPC 0 CPU	OK	41 degrees C / 105 degrees F
	FPC 0 EX-PFE1	OK	42 degrees C / 107 degrees F
	FPC 0 EX-PFE2	OK	46 degrees C / 114 degrees F
	FPC 0 GEPHY Front Left	OK	25 degrees C / 77 degrees F
	FPC 0 GEPHY Front Right	OK	27 degrees C / 80 degrees F
	FPC 0 Uplink Conn	OK	29 degrees C / 84 degrees F
Fans	FPC 0 Fan 1	OK	Spinning at normal speed
	FPC 0 Fan 2	OK	Spinning at normal speed
	FPC 0 Fan 3	OK	Spinning at normal speed

show chassis environment (EX8216 Switch)

```
user@switch> show chassis environment
```

Class	Item	Status	Measurement
Power	PSU 0	OK	
	PSU 1	OK	
	PSU 2	OK	
	PSU 3	Check	
	PSU 4	Absent	
	PSU 5	Absent	
Temp	CB 0 Intake	OK	23 degrees C / 73 degrees F
	CB 0 Exhaust	OK	26 degrees C / 78 degrees F
	CB 1 Intake	OK	22 degrees C / 71 degrees F
	CB 1 Exhaust	OK	25 degrees C / 77 degrees F
	FPC 4 Intake	OK	49 degrees C / 120 degrees F
	FPC 4 Exhaust	OK	59 degrees C / 138 degrees F
	SIB 5 Intake	OK	25 degrees C / 77 degrees F
	SIB 5 Exhaust	OK	35 degrees C / 95 degrees F
	SIB 6 Intake	OK	25 degrees C / 77 degrees F
	SIB 6 Exhaust	OK	38 degrees C / 100 degrees F
Fans	Top Fan 1	OK	Spinning at normal speed
	Top Fan 2	OK	Spinning at normal speed
	Top Fan 3	OK	Spinning at normal speed
	Top Fan 4	OK	Spinning at normal speed
	Top Fan 5	OK	Spinning at normal speed
	Top Fan 6	OK	Spinning at normal speed
	Top Fan 7	OK	Spinning at normal speed
	Top Fan 8	OK	Spinning at normal speed
	Top Fan 9	OK	Spinning at normal speed

Bottom Fan 1	OK	Spinning at normal speed
Bottom Fan 2	OK	Spinning at normal speed
Bottom Fan 3	OK	Spinning at normal speed
Bottom Fan 4	OK	Spinning at normal speed
Bottom Fan 5	OK	Spinning at normal speed
Bottom Fan 6	OK	Spinning at normal speed
Bottom Fan 7	OK	Spinning at normal speed
Bottom Fan 8	OK	Spinning at normal speed
Bottom Fan 9	OK	Spinning at normal speed

show chassis environment (QFX Series)

```
user@switch> show chassis environment
```

Class	Item	Status	Measurement
Power	FPC 0 Power Supply 0	OK	
	FPC 0 Power Supply 1	OK	
Temp	FPC 0 Sensor TopLeft I	OK	26 degrees C / 78 degrees F
	FPC 0 Sensor TopRight I	OK	24 degrees C / 75 degrees F
	FPC 0 Sensor TopLeft E	OK	30 degrees C / 86 degrees F
	FPC 0 Sensor TopRight E	OK	30 degrees C / 86 degrees F
	FPC 0 Sensor TopMiddle I	OK	30 degrees C / 86 degrees F
	FPC 0 Sensor TopMiddle E	OK	38 degrees C / 100 degrees F
	FPC 0 Sensor Bottom I	OK	34 degrees C / 93 degrees F
	FPC 0 Sensor Bottom E	OK	38 degrees C / 100 degrees F
	FPC 0 Sensor Die Temp	OK	38 degrees C / 100 degrees F
	FPC 0 Sensor Mgmt Brd I	OK	24 degrees C / 75 degrees F
	FPC 0 Sensor Switch I	OK	28 degrees C / 82 degrees F
Fans	FPC 0 Fan 1 (left)	Failed	
	FPC 0 Fan 2 (right)	OK	Spinning at normal speed
	FPC 0 Fan 3 (middle)	OK	Spinning at normal speed

show chassis environment interconnect-device (QFabric System)

```
user@switch> show chassis environment interconnect-device IC-A0004
```

Class	Item	Status	Measurement
CB 0			
CB 0 L Intake		OK	30 degrees C / 86 degrees F
CB 0 R Intake		OK	31 degrees C / 87 degrees F
CB 0 L Exhaust		OK	32 degrees C / 89 degrees F
CB 0 R Exhaust		OK	33 degrees C / 91 degrees F
Routing Engine 0 CPU temp		OK	51 degrees C / 123 degrees F
CB 1			
CB 1 L Intake		OK	27 degrees C / 80 degrees F
CB 1 R Intake		OK	29 degrees C / 84 degrees F
CB 1 L Exhaust		OK	31 degrees C / 87 degrees F
CB 1 R Exhaust		OK	32 degrees C / 89 degrees F
Routing Engine 1 CPU temp		OK	40 degrees C / 104 degrees F
FC 0 FPC 0			
FPC 0 L Intake		OK	25 degrees C / 77 degrees F
FPC 0 R Intake		OK	28 degrees C / 82 degrees F
FPC 0 L Exhaust		OK	28 degrees C / 82 degrees F
FPC 0 R Exhaust		OK	29 degrees C / 84 degrees F
FC 7 FPC 7			
FPC 7 L Intake		OK	25 degrees C / 77 degrees F
FPC 7 R Intake		OK	26 degrees C / 78 degrees F
FPC 7 L Exhaust		OK	28 degrees C / 82 degrees F
FPC 7 R Exhaust		OK	29 degrees C / 84 degrees F
RC 0 FPC 8			
FPC 8 L Intake		OK	25 degrees C / 77 degrees F
FPC 8 R Intake		OK	26 degrees C / 78 degrees F
FPC 8 L Exhaust		OK	32 degrees C / 89 degrees F

FPC 8 R Exhaust	OK	30 degrees C / 86 degrees F
RC 7 FPC 15		
FPC 15 L Intake	OK	24 degrees C / 75 degrees F
FPC 15 R Intake	OK	25 degrees C / 77 degrees F
FPC 15 L Exhaust	OK	33 degrees C / 91 degrees F
FPC 15 R Exhaust	OK	31 degrees C / 87 degrees F
Fans TFT 0 Fan 0	OK	Spinning at normal speed
Fans TFT 0 Fan 1	OK	Spinning at normal speed
Fans TFT 0 Fan 2	OK	Spinning at normal speed
Fans TFT 0 Fan 3	OK	Spinning at normal speed
Fans TFT 0 Fan 4	OK	Spinning at normal speed
Fans TFT 0 Fan 5	OK	Spinning at normal speed
Fans BFT 1 Fan 0	OK	Spinning at normal speed
Fans BFT 1 Fan 1	OK	Spinning at normal speed
Fans BFT 1 Fan 2	OK	Spinning at normal speed
Fans BFT 1 Fan 3	Check	
Fans BFT 1 Fan 4	OK	Spinning at normal speed
Fans BFT 1 Fan 5	OK	Spinning at normal speed
Fans SFT 0 Fan 0 Rotor 0	OK	Spinning at normal speed
Fans SFT 0 Fan 0 Rotor 1	OK	Spinning at normal speed
Fans SFT 0 Fan 1 Rotor 0	OK	Spinning at normal speed
Fans SFT 0 Fan 1 Rotor 1	OK	Spinning at normal speed
Fans SFT 0 Fan 2 Rotor 0	OK	Spinning at normal speed
Fans SFT 0 Fan 2 Rotor 1	OK	Spinning at normal speed
Fans SFT 0 Fan 3 Rotor 0	OK	Spinning at normal speed
Fans SFT 0 Fan 3 Rotor 1	OK	Spinning at normal speed
Fans SFT 1 Fan 0 Rotor 0	OK	Spinning at normal speed
Fans SFT 1 Fan 0 Rotor 1	OK	Spinning at normal speed
Fans SFT 1 Fan 1 Rotor 0	OK	Spinning at normal speed
Fans SFT 1 Fan 1 Rotor 1	OK	Spinning at normal speed
Fans SFT 1 Fan 2 Rotor 0	OK	Spinning at normal speed
Fans SFT 1 Fan 2 Rotor 1	OK	Spinning at normal speed
Fans SFT 1 Fan 3 Rotor 0	OK	Spinning at normal speed
Fans SFT 1 Fan 3 Rotor 1	OK	Spinning at normal speed
Fans SFT 2 Fan 0 Rotor 0	OK	Spinning at normal speed
Fans SFT 2 Fan 0 Rotor 1	OK	Spinning at normal speed
Fans SFT 2 Fan 1 Rotor 0	OK	Spinning at normal speed
Fans SFT 2 Fan 1 Rotor 1	OK	Spinning at normal speed
Fans SFT 2 Fan 2 Rotor 0	OK	Spinning at normal speed
Fans SFT 2 Fan 2 Rotor 1	OK	Spinning at normal speed
Fans SFT 2 Fan 3 Rotor 0	OK	Spinning at normal speed
Fans SFT 2 Fan 3 Rotor 1	OK	Spinning at normal speed
Fans SFT 3 Fan 0 Rotor 0	OK	Spinning at normal speed
Fans SFT 3 Fan 0 Rotor 1	OK	Spinning at normal speed
Fans SFT 3 Fan 1 Rotor 0	OK	Spinning at normal speed
Fans SFT 3 Fan 1 Rotor 1	OK	Spinning at normal speed
Fans SFT 3 Fan 2 Rotor 0	OK	Spinning at normal speed
Fans SFT 3 Fan 2 Rotor 1	OK	Spinning at normal speed
Fans SFT 3 Fan 3 Rotor 0	OK	Spinning at normal speed
Fans SFT 3 Fan 3 Rotor 1	OK	Spinning at normal speed
Fans SFT 4 Fan 0 Rotor 0	OK	Spinning at normal speed
Fans SFT 4 Fan 0 Rotor 1	OK	Spinning at normal speed
Fans SFT 4 Fan 1 Rotor 0	OK	Spinning at normal speed
Fans SFT 4 Fan 1 Rotor 1	OK	Spinning at normal speed
Fans SFT 4 Fan 2 Rotor 0	OK	Spinning at normal speed
Fans SFT 4 Fan 2 Rotor 1	OK	Spinning at normal speed
Fans SFT 4 Fan 3 Rotor 0	OK	Spinning at normal speed
Fans SFT 4 Fan 3 Rotor 1	OK	Spinning at normal speed
Fans SFT 5 Fan 0 Rotor 0	OK	Spinning at normal speed
Fans SFT 5 Fan 0 Rotor 1	OK	Spinning at normal speed
Fans SFT 5 Fan 1 Rotor 0	OK	Spinning at normal speed

Fans	SFT 5	Fan 1	Rotor 1	OK	Spinning at normal speed
Fans	SFT 5	Fan 2	Rotor 0	OK	Spinning at normal speed
Fans	SFT 5	Fan 2	Rotor 1	OK	Spinning at normal speed
Fans	SFT 5	Fan 3	Rotor 0	OK	Spinning at normal speed
Fans	SFT 5	Fan 3	Rotor 1	OK	Spinning at normal speed
Fans	SFT 6	Fan 0	Rotor 0	OK	Spinning at normal speed
Fans	SFT 6	Fan 0	Rotor 1	OK	Spinning at normal speed
Fans	SFT 6	Fan 1	Rotor 0	OK	Spinning at normal speed
Fans	SFT 6	Fan 1	Rotor 1	OK	Spinning at normal speed
Fans	SFT 6	Fan 2	Rotor 0	OK	Spinning at normal speed
Fans	SFT 6	Fan 2	Rotor 1	OK	Spinning at normal speed
Fans	SFT 6	Fan 3	Rotor 0	OK	Spinning at normal speed
Fans	SFT 6	Fan 3	Rotor 1	OK	Spinning at normal speed
Fans	SFT 7	Fan 0	Rotor 0	OK	Spinning at normal speed
Fans	SFT 7	Fan 0	Rotor 1	OK	Spinning at normal speed
Fans	SFT 7	Fan 1	Rotor 0	OK	Spinning at normal speed
Fans	SFT 7	Fan 1	Rotor 1	OK	Spinning at normal speed
Fans	SFT 7	Fan 2	Rotor 0	OK	Spinning at normal speed
Fans	SFT 7	Fan 2	Rotor 1	OK	Spinning at normal speed
Fans	SFT 7	Fan 3	Rotor 0	OK	Spinning at normal speed
Fans	SFT 7	Fan 3	Rotor 1	OK	Spinning at normal speed
Power	PEM 0			OK	30 degrees C / 86 degrees F
Power	PEM 1			OK	30 degrees C / 86 degrees F
Power	PEM 2			OK	30 degrees C / 86 degrees F
Power	PEM 3			Absent	
Power	PEM 4			Absent	
Power	PEM 5			Absent	

show chassis environment node-device (QFabric System)

```

user@switch> show chassis environment node-device node1
Class Item                               Status Measurement
Power node1 Power Supply 0              Absent
      node1 Power Supply 1              Absent
Fans  node1 Fan Tray 0                  Testing
      node1 Fan Tray 1                  Testing
      node1 Fan Tray 2                  Testing

```

show chassis environment pem node-device (QFabric System)

```

user@switch> show chassis environment pem node-device node1
FPC 0 PEM 0 status:
  State           Check
  Airflow         Front to Back
  Temperature     OK
  AC Input:       OK
  DC Output       Voltage(V) Current(A) Power(W) Load(%)
                  12          10        120    18
FPC 0 PEM 1 status:
  State           Online
  Airflow         Back to Front
  Temperature     OK
  AC Input:       OK
  DC Output       Voltage(V) Current(A) Power(W) Load(%)
                  11          10        110    17

```

show chassis environment (PTX5000 Packet Transport Router)

```

user@switch> show chassis environment
Class Item                               Status Measurement
Temp  PDU 0                               OK
      PDU 0 PSM 0                         OK        36 degrees C / 96 degrees F

```

PDU 0 PSM 1	OK	38 degrees C / 100 degrees F
PDU 0 PSM 2	OK	38 degrees C / 100 degrees F
PDU 0 PSM 3	OK	37 degrees C / 98 degrees F
PDU 1	Absent	
CCG 0	OK	44 degrees C / 111 degrees F
CCG 1	OK	44 degrees C / 111 degrees F
Routing Engine 0	OK	62 degrees C / 143 degrees F
Routing Engine 0 CPU	OK	75 degrees C / 167 degrees F
Routing Engine 1	OK	51 degrees C / 123 degrees F
Routing Engine 1 CPU	OK	64 degrees C / 147 degrees F
CB 0 Intake	OK	38 degrees C / 100 degrees F
CB 0 Exhaust A	OK	46 degrees C / 114 degrees F
CB 0 Exhaust B	OK	42 degrees C / 107 degrees F
CB 1 Intake	OK	35 degrees C / 95 degrees F
CB 1 Exhaust A	OK	39 degrees C / 102 degrees F
CB 1 Exhaust B	OK	36 degrees C / 96 degrees F
SIB 0 Exhaust	OK	47 degrees C / 116 degrees F
SIB 0 Junction	OK	45 degrees C / 113 degrees F
SIB 1 Exhaust	OK	44 degrees C / 111 degrees F
SIB 1 Junction	OK	43 degrees C / 109 degrees F
SIB 2 Exhaust	OK	47 degrees C / 116 degrees F
SIB 2 Junction	OK	42 degrees C / 107 degrees F
SIB 3 Exhaust	OK	43 degrees C / 109 degrees F
SIB 3 Junction	OK	43 degrees C / 109 degrees F
SIB 4 Exhaust	OK	47 degrees C / 116 degrees F
SIB 4 Junction	OK	42 degrees C / 107 degrees F
SIB 5 Exhaust	OK	42 degrees C / 107 degrees F
SIB 5 Junction	OK	40 degrees C / 104 degrees F
SIB 6 Exhaust	OK	46 degrees C / 114 degrees F
SIB 6 Junction	OK	42 degrees C / 107 degrees F
SIB 7 Exhaust	OK	43 degrees C / 109 degrees F
SIB 7 Junction	OK	39 degrees C / 102 degrees F
SIB 8 Exhaust	OK	44 degrees C / 111 degrees F
SIB 8 Junction	OK	41 degrees C / 105 degrees F
FPC 0 PMB	OK	35 degrees C / 95 degrees F
FPC 0 Intake	OK	33 degrees C / 91 degrees F
FPC 0 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 0 Exhaust B	OK	43 degrees C / 109 degrees F
FPC 0 TL0	OK	48 degrees C / 118 degrees F
FPC 0 TQ0	OK	53 degrees C / 127 degrees F
FPC 0 TL1	OK	56 degrees C / 132 degrees F
FPC 0 TQ1	OK	58 degrees C / 136 degrees F
FPC 0 TL2	OK	55 degrees C / 131 degrees F
FPC 0 TQ2	OK	56 degrees C / 132 degrees F
FPC 0 TL3	OK	59 degrees C / 138 degrees F
FPC 0 TQ3	OK	59 degrees C / 138 degrees F
FPC 2 PMB	OK	35 degrees C / 95 degrees F
FPC 2 Intake	OK	34 degrees C / 93 degrees F
FPC 2 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 2 Exhaust B	OK	52 degrees C / 125 degrees F
FPC 2 TL0	OK	53 degrees C / 127 degrees F
FPC 2 TQ0	OK	53 degrees C / 127 degrees F
FPC 2 TL1	OK	57 degrees C / 134 degrees F
FPC 2 TQ1	OK	58 degrees C / 136 degrees F
FPC 2 TL2	OK	54 degrees C / 129 degrees F
FPC 2 TQ2	OK	59 degrees C / 138 degrees F
FPC 2 TL3	OK	60 degrees C / 140 degrees F
FPC 2 TQ3	OK	64 degrees C / 147 degrees F
PIC 2/0 Ambient	OK	49 degrees C / 120 degrees F
FPC 3 PMB	OK	34 degrees C / 93 degrees F
FPC 3 Intake	OK	35 degrees C / 95 degrees F

FPC 3 Exhaust A	OK	54 degrees C / 129 degrees F
FPC 3 Exhaust B	OK	49 degrees C / 120 degrees F
FPC 3 TL0	OK	49 degrees C / 120 degrees F
FPC 3 TQ0	OK	55 degrees C / 131 degrees F
FPC 3 TL1	OK	56 degrees C / 132 degrees F
FPC 3 TQ1	OK	58 degrees C / 136 degrees F
FPC 3 TL2	OK	56 degrees C / 132 degrees F
FPC 3 TQ2	OK	59 degrees C / 138 degrees F
FPC 3 TL3	OK	62 degrees C / 143 degrees F
FPC 3 TQ3	OK	63 degrees C / 145 degrees F
PIC 3/1	Absent	
FPC 5 PMB	OK	35 degrees C / 95 degrees F
FPC 5 Intake	OK	34 degrees C / 93 degrees F
FPC 5 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 5 Exhaust B	OK	53 degrees C / 127 degrees F
FPC 5 TL0	OK	54 degrees C / 129 degrees F
FPC 5 TQ0	OK	52 degrees C / 125 degrees F
FPC 5 TL1	OK	61 degrees C / 141 degrees F
FPC 5 TQ1	OK	60 degrees C / 140 degrees F
FPC 5 TL2	OK	55 degrees C / 131 degrees F
FPC 5 TQ2	OK	55 degrees C / 131 degrees F
FPC 5 TL3	OK	59 degrees C / 138 degrees F
FPC 5 TQ3	OK	58 degrees C / 136 degrees F
PIC 5/0 Ambient	OK	51 degrees C / 123 degrees F
PIC 5/1 Ambient	OK	34 degrees C / 93 degrees F
PIC 5/1 cfp-5/1/0	OK	34 degrees C / 93 degrees F
PIC 5/1 cfp-5/1/1	OK	36 degrees C / 96 degrees F
FPC 6 PMB	OK	36 degrees C / 96 degrees F
FPC 6 Intake	OK	33 degrees C / 91 degrees F
FPC 6 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 6 Exhaust B	OK	39 degrees C / 102 degrees F
FPC 6 TL0	OK	44 degrees C / 111 degrees F
FPC 6 TQ0	OK	54 degrees C / 129 degrees F
FPC 6 TL1	OK	59 degrees C / 138 degrees F
FPC 6 TQ1	OK	58 degrees C / 136 degrees F
FPC 6 TL2	OK	60 degrees C / 140 degrees F
FPC 6 TQ2	OK	57 degrees C / 134 degrees F
FPC 6 TL3	OK	65 degrees C / 149 degrees F
FPC 6 TQ3	OK	60 degrees C / 140 degrees F
FPC 7 PMB	OK	35 degrees C / 95 degrees F
FPC 7 Intake	OK	33 degrees C / 91 degrees F
FPC 7 Exhaust A	OK	53 degrees C / 127 degrees F
FPC 7 Exhaust B	OK	40 degrees C / 104 degrees F
FPC 7 TL0	OK	46 degrees C / 114 degrees F
FPC 7 TQ0	OK	58 degrees C / 136 degrees F
FPC 7 TL1	OK	53 degrees C / 127 degrees F
FPC 7 TQ1	OK	59 degrees C / 138 degrees F
FPC 7 TL2	OK	56 degrees C / 132 degrees F
FPC 7 TQ2	OK	61 degrees C / 141 degrees F
FPC 7 TL3	OK	63 degrees C / 145 degrees F
FPC 7 TQ3	OK	63 degrees C / 145 degrees F
FPM I2CS	OK	37 degrees C / 98 degrees F
Fans Fan Tray 0 Fan 1	OK	3042 RPM
Fan Tray 0 Fan 2	OK	3042 RPM
Fan Tray 0 Fan 3	OK	3000 RPM
Fan Tray 0 Fan 4	OK	3042 RPM
Fan Tray 0 Fan 5	OK	3000 RPM
Fan Tray 0 Fan 6	OK	3042 RPM
Fan Tray 0 Fan 7	OK	3085 RPM
Fan Tray 0 Fan 8	OK	3042 RPM
Fan Tray 0 Fan 9	OK	3042 RPM

	Fan Tray 0 Fan 10	OK	3085 RPM
	Fan Tray 0 Fan 11	OK	3085 RPM
	Fan Tray 0 Fan 12	OK	3128 RPM
	Fan Tray 0 Fan 13	OK	3128 RPM
	Fan Tray 0 Fan 14	OK	3042 RPM
	Fan Tray 1 Fan 1	OK	2299 RPM
	Fan Tray 1 Fan 2	OK	2399 RPM
	Fan Tray 1 Fan 3	OK	2299 RPM
	Fan Tray 1 Fan 4	OK	2266 RPM
	Fan Tray 1 Fan 5	OK	2266 RPM
	Fan Tray 1 Fan 6	OK	2366 RPM
	Fan Tray 2 Fan 1	OK	2199 RPM
	Fan Tray 2 Fan 2	OK	2133 RPM
	Fan Tray 2 Fan 3	OK	2366 RPM
	Fan Tray 2 Fan 4	OK	2233 RPM
	Fan Tray 2 Fan 5	OK	2399 RPM
	Fan Tray 2 Fan 6	OK	2233 RPM
Misc	SPMB 0 Intake	OK	50 degrees C / 122 degrees F
	SPMB 1 Intake	OK	40 degrees C / 104 degrees F

show chassis environment (ACX2000 Universal Access Router)

user@host> show chassis environment

Class	Item	Status	Measurement
	PCB Left	OK	44 degrees C / 111 degrees F
	SFP+ Xcvr	OK	50 degrees C / 122 degrees F
	FEB	OK	70 degrees C / 158 degrees F
	PCB Up	OK	63 degrees C / 145 degrees F
	PCB Mid	OK	66 degrees C / 150 degrees F
	Telecom Mod	OK	65 degrees C / 149 degrees F
	Routing Engine	OK	54 degrees C / 129 degrees F
	Heater off		

show chassis environment (ACX4000 Universal Access Router)

On the ACX4000 router, the MIC output of the **show chassis environment** command varies depending on the number of temperature channels present in the installed MIC.

user@host> show chassis environment

Class	Item	Status	Measurement
Temp	PEM 0	OK	33 degrees C / 91 degrees F
	PEM 1	Absent	
	PCB Bottom	OK	30 degrees C / 86 degrees F
	PCB Middle	OK	34 degrees C / 93 degrees F
	BCM56445	OK	33 degrees C / 91 degrees F
	SFP+ Xcvr	OK	32 degrees C / 89 degrees F
	Fan tray inlet	OK	39 degrees C / 102 degrees F
	Exhaust	OK	30 degrees C / 86 degrees F
	Routing Engine	OK	32 degrees C / 89 degrees F
	Heater off		
Pic	PIC 0/0 Channel 0	OK	28 degrees C / 82 degrees F
	PIC 0/0 Channel 1	OK	29 degrees C / 84 degrees F
	PIC 0/0 Channel 2	OK	0 degrees C / 32 degrees F
	PIC 0/0 Channel 3	OK	0 degrees C / 32 degrees F
	PIC 0/0 Channel 4	OK	0 degrees C / 32 degrees F
	PIC 0/0 Channel 5	OK	0 degrees C / 32 degrees F
	PIC 0/0 Channel 6	OK	0 degrees C / 32 degrees F
	PIC 0/0 Channel 7	OK	0 degrees C / 32 degrees F
	PIC 0/0 Channel 8	OK	0 degrees C / 32 degrees F
	PIC 0/0 Channel 9	OK	0 degrees C / 32 degrees F

	PIC 1/0 Channel 0	OK	33 degrees C / 91 degrees F
	PIC 1/0 Channel 1	OK	31 degrees C / 87 degrees F
	PIC 1/0 Channel 2	OK	30 degrees C / 86 degrees F
	PIC 1/0 Channel 3	OK	0 degrees C / 32 degrees F
	PIC 1/0 Channel 4	OK	0 degrees C / 32 degrees F
	PIC 1/0 Channel 5	OK	0 degrees C / 32 degrees F
	PIC 1/0 Channel 6	OK	0 degrees C / 32 degrees F
	PIC 1/0 Channel 7	OK	0 degrees C / 32 degrees F
	PIC 1/0 Channel 8	OK	0 degrees C / 32 degrees F
	PIC 1/1 Channel 0	OK	31 degrees C / 87 degrees F
	PIC 1/1 Channel 1	OK	29 degrees C / 84 degrees F
	PIC 1/1 Channel 2	OK	28 degrees C / 82 degrees F
	PIC 1/1 Channel 3	OK	0 degrees C / 32 degrees F
	PIC 1/1 Channel 4	OK	0 degrees C / 32 degrees F
	PIC 1/1 Channel 5	OK	0 degrees C / 32 degrees F
	PIC 1/1 Channel 6	OK	0 degrees C / 32 degrees F
	PIC 1/1 Channel 7	OK	0 degrees C / 32 degrees F
	PIC 1/1 Channel 8	OK	0 degrees C / 32 degrees F
Fans	Fan 1	OK	Spinning at normal speed
	Fan 2	OK	Spinning at normal speed

show chassis environment cb

Syntax	show chassis environment cb <slot>
Syntax (TX Matrix Routers)	show chassis environment cb <lcc number scc> <slot>
Syntax (TX Matrix Plus Routers)	show chassis environment cb <lcc number sfc number > <slot>
Syntax (MX Series Routers)	show chassis environment cb <slot> <all-members> <local> <member member-id>
Syntax (MX104 3D Universal Edge Routers)	show chassis environment cb
Syntax (MX2010 and MX2020 3D Universal Edge Routers)	show chassis environment cb <slot>
Syntax (QFabric System)	show chassis environment cb <slot interconnect-device interconnect-device-name> < interconnect-device interconnect-device-name slot>
Release Information	Command introduced before Junos Release 7.4. Command introduced in Junos OS Release 9.4 for EX Series switches. Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.1 for T4000 Core Routers. sfc option introduced for the TX Matrix Plus router in Junos Release 9.6. Command introduced in Junos OS Release 11.3 for the QFX Series. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers. Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.
Description	(M120, M320, MX Series, and T Series routers, EX8200 switches, and PTX Series Packet Transport Routers only) Display environmental information about the Control Boards (CBs). For information about the meaning of “CBs” on the switches, see <i>EX Series Switches Hardware and CLI Terminology Mapping</i> .
Options	none —Display environmental information about all CBs. For a TX Matrix router, display environmental information about all CBs on the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display environmental information about all CBs on the TX Matrix Plus router and its attached T1600 or T4000 routers.

all-members—(MX Series routers only) (Optional) Display environmental information about the CBs on all the members of the Virtual Chassis configuration.

interconnect-device—(QFabric systems only) Display environmental information about CBs on the Interconnect device.

lcc number—(TX Matrix router and TX Matrix Plus router 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—(MX Series routers only) (Optional) Display environmental information about the CBs on the local Virtual Chassis member.

member member-id—(MX Series routers only) (Optional) Display environmental information about the CBs 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 environmental information about the CBs in the TX Matrix router (switch-card chassis).

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

slot—(Optional) Display environmental information about the specified CB. On routers and PTX Series Packet Transport Routers, replace *slot* with 0 or 1. On EX Series switches replace *slot* with 0, 1, or 2. On QFX Series switches, replace *slot* with 0 or 1.

Required Privilege Level view

Related Documentation

- *request chassis cb*
- *Switching Control Board Redundancy*
- *Routing Engine and Switching Control Board Redundancy Configuration Statements*

List of Sample Output

- [show chassis environment cb \(M120 Router\) on page 315](#)
- [show chassis environment cb \(M320 Router\) on page 315](#)
- [show chassis environment cb \(MX80 Router\) on page 316](#)
- [show chassis environment cb \(MX104 Router\) on page 316](#)
- [show chassis environment cb \(MX240 Router\) on page 316](#)

[show chassis environment cb \(MX240 Router with Enhanced MX SCB\) on page 317](#)
[show chassis environment cb \(MX480 Router\) on page 317](#)
[show chassis environment cb \(MX480 Router with Enhanced MX SCB\) on page 318](#)
[show chassis environment cb \(MX960 Router\) on page 318](#)
[show chassis environment cb \(MX960 Router with Enhanced MX SCB\) on page 319](#)
[show chassis environment cb \(MX2020 Router\) on page 319](#)
[show chassis environment cb \(MX2010 Router\) on page 320](#)
[show chassis environment cb \(T4000 Core Router\) on page 321](#)
[show chassis environment cb \(TX Matrix Router\) on page 321](#)
[show chassis environment cb \(TX Matrix Plus Router\) on page 322](#)
[show chassis environment cb \(EX8200 Switch\) on page 325](#)
[show chassis environment cb \(EX8208 Switch\) on page 327](#)
[show chassis environment cb \(PTX5000 Packet Transport Router\) on page 328](#)
[show chassis environment cb \(QFabric System\) on page 329](#)

Output Fields [Table 16 on page 314](#) lists the output fields for the **show chassis environment cb** command. Output fields are listed in the approximate order in which they appear.

Table 16: show chassis environment cb Output Fields

Field Name	Field Description
State	<p>Status of the CB. If two CBs are installed and online, one is functioning as the master, and the other is the standby.</p> <ul style="list-style-type: none"> • Online—CB is online and running. • Offline—CB is powered down. <p>NOTE: On the EX8208 switch, the installation can include three CBs. See <i>EX Series Switches Hardware and CLI Terminology Mapping</i>.</p>
Temperature	<p>Temperature in Celsius (C) and Fahrenheit (F) of the air flowing past the CB.</p> <ul style="list-style-type: none"> • Temperature Intake—Measures the temperature of the air intake to cool the power supplies. • Temperature Exhaust—Measures the temperature of the hot air exhaust. <p>NOTE: On the MX2010 and MX2020 routers, the intake temperature measures the temperature of the air intake to cool the Control Board (CB). The MX2010 and MX2020 routers include intake and exhaust temperatures for multiple zones (Intake A, Intake B, Intake C, Exhaust A, Exhaust B, and TCBC).</p>
Power	<p>Power required and measured on the CB. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.</p>
BUS Revision	<p>Revision level of the generic bus device. (Not on switches.)</p>
FPGA Revision	<p>Revision level of the field-programmable gate array (FPGA). (Not on switches.)</p>

Table 16: show chassis environment cb Output Fields (*continued*)

Field Name	Field Description
PMBus device (on MX240, MX480, and MX960 routers with Enhanced MX SCB)	Enhanced SCB on MX 240, MX480, and MX960 routers allows the system to save power by supplying only the amount of voltage that is required. Configurable PMBus devices are used to provide the voltage for each individual device. There is one PMBus device for each XF ASIC so that the output can be customized to each device. The following PMBus device information is displayed for routers with Enhanced MX SCB: <ul style="list-style-type: none"> • Expected voltage • Measured voltage • Measured current • Calculated power

Sample Output

show chassis environment cb (M120 Router)

```

user@host> show chassis environment cb
CB 0 status:
  State                Online Master
  Temperature          33 degrees C / 91 degrees F
  Power
    1.2 V              1214 mV
    1.5 V              1495 mV
    2.5 V              2494 mV
    3.3 V              3319 mV
    5.0 V              5085 mV
    3.3 V bias         3296 mV
  Bus Revision         12
  FPGA Revision        17
CB 1 status:
  State                Online Standby
  Temperature          34 degrees C / 93 degrees F
  Power
    1.2 V              1195 mV
    1.5 V              1495 mV
    2.5 V              2504 mV
    3.3 V              3312 mV
    5.0 V              5111 mV
    3.3 V bias         3296 mV
  Bus Revision         12
  FPGA Revision        17

```

show chassis environment cb (M320 Router)

```

user@host> show chassis environment cb
CB 0 status:
  State                Online Master
  Temperature          29 degrees C / 84 degrees F
  Power:
    1.8 V              1805 mV
    2.5 V              2501 mV
    3.3 V              3293 mV
    4.6 V              4725 mV
    5.0 V              5032 mV
    12.0 V             11975 mV
    3.3 V bias         3286 mV

```

```
      8.0 V bias          7589 mV
      BUS Revision        40
      FPGA Revision       7
CB 1 status:
      State               Online Standby
      Temperature         32 degrees C / 89 degrees F
      Power:
        1.8 V             1802 mV
        2.5 V             2482 mV
        3.3 V             3289 mV
        4.6 V             4720 mV
        5.0 V             5001 mV
        12.0 V            11946 mV
        3.3 V bias        3274 mV
        8.0 V bias        7562 mV
      BUS Revision        40
      FPGA Revision       7
```

show chassis environment cb (MX80 Router)

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

show chassis environment cb (MX104 Router)

```
user@host > show chassis environment cb
CB 0 status:
      State               Online Master
      Temperature         33 degrees C / 91 degrees F
      Power 1
        0.75 V            751 mV
        1.0 V             1005 mV
        1.1 V             1113 mV
        1.5 V             1494 mV
        2.5 V             2518 mV
        3.3 V             3338 mV
        5.0 V             4960 mV
        12.0 V            12006 mV
      FPGA Revision       25
CB 1 status:
      State               Empty
```

show chassis environment cb (MX240 Router)

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



```

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

```

show chassis environment cb (MX240 Router with Enhanced MX SCB)

```

user@host> show chassis environment cb
CB 0 status:
State                Online Standby
Temperature          37 degrees C / 98 degrees F
Power 1
  1.2 V      1208 mV
  1.5 V      1521 mV
  1.8 V      1811 mV
  2.5 V      2513 mV
  3.3 V      3332 mV
  5.0 V      5059 mV
 12.0 V     12162 mV
  1.25 V     1260 mV
  3.3 V SM3  3306 mV
  5.0 V RE   5085 mV
 12.0 V RE  11872 mV
Power 2
 11.3 V bias PEM 11272 mV
  4.6 V bias MidPlane 4827 mV
 11.3 V bias FPD 11272 mV
 11.3 V bias POE 0 11292 mV
 11.3 V bias POE 1 11253 mV
Bus Revision      42
FPGA Revision     1
PMBus
device            Expected voltage    Measured voltage    Measured current    Calculated power
XF ASIC A         1000 mV      997 mV      11031 mA      10997 mW
XF ASIC B         1000 mV      996 mV      12125 mA      12076 mW

```

show chassis environment cb (MX480 Router)

```

user@host> show chassis environment cb
CB 0 status:
State                Online Master
Temperature          41 degrees C / 105 degrees F
Power 1
  1.2 V      1202 mV
  1.5 V      1511 mV

```

```

1.8 V          1798 mV
2.5 V          2507 mV
3.3 V          3312 mV
5.0 V          5027 mV
12.0 V         12200 mV
1.25 V         1260 mV
3.3 V SM3      3293 mV
5 V RE         5040 mV
12 V RE        11910 mV
Power 2
11.3 V bias PEM 11156 mV
4.6 V bias MidPlane 4801 mV
11.3 V bias FPD 11214 mV
11.3 V bias POE 0 11098 mV
11.3 V bias POE 1 11330 mV
Bus Revision    42
FPGA Revision   1

```

show chassis environment cb (MX480 Router with Enhanced MX SCB)

```

user@host> show chassis environment cb
CB 0 status:
State          Online Master
Temperature     41 degrees C / 105 degrees F
Power 1
1.2 V          1202 mV
1.5 V          1511 mV
1.8 V          1798 mV
2.5 V          2507 mV
3.3 V          3312 mV
5.0 V          5027 mV
12.0 V         12200 mV
1.25 V         1260 mV
3.3 V SM3      3293 mV
5 V RE         5040 mV
12 V RE        11910 mV
Power 2
11.3 V bias PEM 11156 mV
4.6 V bias MidPlane 4801 mV
11.3 V bias FPD 11214 mV
11.3 V bias POE 0 11098 mV
11.3 V bias POE 1 11330 mV
Bus Revision    42
FPGA Revision   1
PMBus           Expected Measured Measured Calculated
device          voltage  voltage  current  power
XF ASIC A       1000 mV   997 mV   11031 mA 10997 mW
XF ASIC B       1000 mV   996 mV   12125 mA 12076 mW

```

show chassis environment cb (MX960 Router)

```

user@host> show chassis environment cb
CB 0 status:
State          Online Master
Temperature     24 degrees C / 75 degrees F
Power 1
1.2 V          1965 mV
1.5 V          2465 mV
1.8 V          2990 mV
2.5 V          3296 mV
3.3 V          3296 mV

```

```

5.0 V          6593 mV
12.0 V         13187 mV
3.3 V bias     3296 mV
1.25 V        1994 mV
3.3 V SM3     3296 mV
5 V RE        6593 mV
12 V RE       13174 mV
Power 2       Sensor failure
Bus Revision   4
FPGA Revision  3

```

show chassis environment cb (MX960 Router with Enhanced MX SCB)

```

user@host> show chassis environment cb
CB 0 status:
State          Online Master
Temperature    24 degrees C / 75 degrees F
Power 1
  1.2 V        1965 mV
  1.5 V        2465 mV
  1.8 V        2990 mV
  2.5 V        3296 mV
  3.3 V        3296 mV
  5.0 V        6593 mV
  12.0 V       13187 mV
  3.3 V bias   3296 mV
  1.25 V      1994 mV
  3.3 V SM3   3296 mV
  5 V RE      6593 mV
  12 V RE     13174 mV
Power 2       Sensor failure
Bus Revision   4
FPGA Revision  3
PMBus
device         Expected voltage Measured voltage Measured current Calculated power
XF ASIC A      1000 mV          997 mV      11031 mA      10997 mW
XF ASIC B      1000 mV          996 mV      12125 mA      12076 mW

```

show chassis environment cb (MX2020 Router)

```

user@host> show chassis environment cb
CB 0 status:
State          Online Master
IntakeA-Zone0 Temperature 44 degrees C / 111 degrees F
IntakeB-Zone1 Temperature 34 degrees C / 93 degrees F
IntakeC-Zone0 Temperature 45 degrees C / 113 degrees F
ExhaustA-Zone0 Temperature 43 degrees C / 109 degrees F
ExhaustB-Zone1 Temperature 36 degrees C / 96 degrees F
TCBC-Zone0 Temperature 39 degrees C / 102 degrees F
Power 1
  1.0 V        1011 mV
  1.2 V        1208 mV
  1.8 V        1801 mV
  2.5 V        2552 mV
  3.3 V        3312 mV
  5.0 V        5040 mV
  5.0 V RE     4988 mV
  12.0 V       12065 mV
  12.0 V RE    12046 mV
Bus Revision   99
FPGA Revision  270

```

```

CB 1 status:
State                               Online Standby
IntakeA-Zone0 Temperature           45 degrees C / 113 degrees F
IntakeB-Zone1 Temperature           41 degrees C / 105 degrees F
IntakeC-Zone0 Temperature           46 degrees C / 114 degrees F
ExhaustA-Zone0 Temperature          44 degrees C / 111 degrees F
ExhaustB-Zone1 Temperature          41 degrees C / 105 degrees F
TCBC-Zone0 Temperature              45 degrees C / 113 degrees F
Power 1
  1.0 V                             1008 mV
  1.2 V                             1208 mV
  1.8 V                             1798 mV
  2.5 V                             2539 mV
  3.3 V                             3325 mV
  5.0 V                             5033 mV
  5.0 V RE                           4950 mV
  12.0 V                             12046 mV
  12.0 V RE                           11968 mV
Bus Revision                         99
FPGA Revision                        0

```

show chassis environment cb (MX2010 Router)

```

user@host> show chassis environment cb
CB 0 status:
State                               Online Master
IntakeA-Zone0 Temperature           36 degrees C / 96 degrees F
IntakeB-Zone1 Temperature           30 degrees C / 86 degrees F
IntakeC-Zone0 Temperature           38 degrees C / 100 degrees F
ExhaustA-Zone0 Temperature          36 degrees C / 96 degrees F
ExhaustB-Zone1 Temperature          32 degrees C / 89 degrees F
TCBC-Zone0 Temperature              34 degrees C / 93 degrees F
Power 1
  1.0 V                             1015 mV
  1.2 V                             1205 mV
  1.8 V                             1804 mV
  2.5 V                             2552 mV
  3.3 V                             3325 mV
  5.0 V                             5020 mV
  5.0 V RE                           4988 mV
  12.0 V                             12104 mV
  12.0 V RE                           12026 mV
Bus Revision                         100
FPGA Revision                        270
CB 1 status:
State                               Online
IntakeA-Zone0 Temperature           35 degrees C / 95 degrees F
IntakeB-Zone1 Temperature           28 degrees C / 82 degrees F
IntakeC-Zone0 Temperature           37 degrees C / 98 degrees F
ExhaustA-Zone0 Temperature          34 degrees C / 93 degrees F
ExhaustB-Zone1 Temperature          29 degrees C / 84 degrees F
TCBC-Zone0 Temperature              32 degrees C / 89 degrees F
Power 1
  1.0 V                             1011 mV
  1.2 V                             1208 mV
  1.8 V                             1788 mV
  2.5 V                             2526 mV
  3.3 V                             3319 mV
  5.0 V                             5046 mV
  5.0 V RE                           4975 mV
  12.0 V                             12046 mV

```

12.0 V RE	12007 mV
Bus Revision	100
FPGA Revision	0

show chassis environment cb (T4000 Core Router)

```

user@host> show chassis environment cb
CB 0 status:
  State                Online Master
  Temperature          33 degrees C / 91 degrees F
  Power 1
    1.8 V              1805 mV
    2.5 V              2523 mV
    3.3 V              3324 mV
    3.3 V bias         3296 mV
    4.6 V              4680 mV
    5.0 V              4893 mV
    8.0 V bias         7572 mV
    12.0 V             11916 mV
  Power 2
    1.0 V              993 mV
    1.2 V              1210 mV
    3.3 V RE           3330 mV
  Bus Revision         51
  FPGA Revision        5
CB 1 status:
  State                Online Standby
  Temperature          33 degrees C / 91 degrees F
  Power 1
    1.8 V              1810 mV
    2.5 V              2496 mV
    3.3 V              3308 mV
    3.3 V bias         3286 mV
    4.6 V              4692 mV
    5.0 V              4954 mV
    8.0 V bias         7282 mV
    12.0 V             11926 mV
  Power 2
    1.0 V              993 mV
    1.2 V              1185 mV
    3.3 V RE           3316 mV
  Bus Revision         51
  FPGA Revision        5

```

show chassis environment cb (TX Matrix Router)

```

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

```

```

FPGA Revision          1
CB 1 status:
  State                Online Standby
...

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

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

```

show chassis environment cb (TX Matrix Plus Router)

```

user@host> show chassis environment cb
sfc0-re0:
-----
CB 0 status:
  State                Online Master
  Temperature          38 degrees C / 100 degrees F
  Power 1
    1.0 V              1005 mV
    1.1 V              1108 mV
    1.2 V              1205 mV
    1.25 V             1269 mV
    1.5 V              1508 mV
    1.8 V              1814 mV
    2.5 V              2507 mV
    3.3 V              3306 mV
    3.3 V bias         3300 mV
    9.0 V              9058 mV
    9.0 V RE           9107 mV
  Power 2
    3.9 V              3963 mV
    5.0 V              5020 mV
    9.0 V              9087 mV
  Bus Revision         79

```

```

FPGA Revision                23
CB 1 status:
State                        Online Standby
Temperature                  39 degrees C / 102 degrees F
Power 1
  1.0 V                      1002 mV
  1.1 V                      1105 mV
  1.2 V                      1198 mV
  1.25 V                     1276 mV
  1.5 V                      1504 mV
  1.8 V                      1804 mV
  2.5 V                      2507 mV
  3.3 V                      3300 mV
  3.3 V bias                 3293 mV
  9.0 V                      9039 mV
  9.0 V RE                   9049 mV
Power 2
  3.9 V                      3892 mV
  5.0 V                      5040 mV
  9.0 V                      9058 mV
Bus Revision                 79
FPGA Revision                23

```

```
lcc0-re0:
```

```

-----
CB 0 status:
State                        Online Master
Temperature                  39 degrees C / 102 degrees F
Power 1
  1.8 V                      1799 mV
  2.5 V                      2499 mV
  3.3 V                      3327 mV
  3.3 V bias                 3299 mV
  4.6 V                      4673 mV
  5.0 V                      4918 mV
  8.0 V bias                 7308 mV
  12.0 V                     11887 mV
Power 2
  1.0 V                      996 mV
  1.2 V                      1199 mV
  3.3 V RE                   3319 mV
Bus Revision                 51
FPGA Revision                3
CB 1 status:
State                        Online Standby
Temperature                  40 degrees C / 104 degrees F
Power 1
  1.8 V                      1800 mV
  2.5 V                      2496 mV
  3.3 V                      3322 mV
  3.3 V bias                 3284 mV
  4.6 V                      4680 mV
  5.0 V                      4954 mV
  8.0 V bias                 7284 mV
  12.0 V                     11902 mV
Power 2
  1.0 V                      998 mV
  1.2 V                      1205 mV
  3.3 V RE                   3327 mV
Bus Revision                 51
FPGA Revision                3

```

lcc1-re0:

CB 0 status:

State	Online Master
Temperature	41 degrees C / 105 degrees F
Power 1	
1.8 V	1804 mV
2.5 V	2517 mV
3.3 V	3300 mV
3.3 V bias	3284 mV
4.6 V	4681 mV
5.0 V	4927 mV
8.0 V bias	7357 mV
12.0 V	11907 mV
Power 2	
1.0 V	991 mV
1.2 V	1202 mV
3.3 V RE	3301 mV
Bus Revision	51
FPGA Revision	3

CB 1 status:

State	Online Standby
Temperature	40 degrees C / 104 degrees F
Power 1	
1.8 V	1805 mV
2.5 V	2528 mV
3.3 V	3324 mV
3.3 V bias	3289 mV
4.6 V	4694 mV
5.0 V	4959 mV
8.0 V bias	7311 mV
12.0 V	11926 mV
Power 2	
1.0 V	998 mV
1.2 V	1200 mV
3.3 V RE	3313 mV
Bus Revision	51
FPGA Revision	3

lcc2-re0:

CB 0 status:

State	Online Master
Temperature	41 degrees C / 105 degrees F
Power 1	
1.8 V	1805 mV
2.5 V	2494 mV
3.3 V	3333 mV
3.3 V bias	3296 mV
4.6 V	4673 mV
5.0 V	4901 mV
8.0 V bias	7343 mV
12.0 V	11916 mV
Power 2	
1.0 V	993 mV
1.2 V	1213 mV
3.3 V RE	3328 mV
Bus Revision	51
FPGA Revision	3

CB 1 status:


```

State                               Online Standby
Temperature                         41 degrees C / 105 degrees F
Power 1
  1.8 V                             1804 mV
  2.5 V                             2523 mV
  3.3 V                             3334 mV
  3.3 V bias                         3291 mV
  4.6 V                             4697 mV
  5.0 V                             4969 mV
  8.0 V bias                         7308 mV
  12.0 V                            11936 mV
Power 2
  1.0 V                             996 mV
  1.2 V                             1200 mV
  3.3 V RE                           3328 mV
Bus Revision                         51
FPGA Revision                       3

```

```
lcc3-re0:
```

```
-----
CB 0 status:
```

```

State                               Online Master
Temperature                         37 degrees C / 98 degrees F
Power 1
  1.8 V                             1809 mV
  2.5 V                             2510 mV
  3.3 V                             3296 mV
  3.3 V bias                         3291 mV
  4.6 V                             4670 mV
  5.0 V                             4905 mV
  8.0 V bias                         7211 mV
  12.0 V                            11882 mV
Power 2
  1.0 V                             996 mV
  1.2 V                             1188 mV
  3.3 V RE                           3326 mV
Bus Revision                         51
FPGA Revision                       5

```

```
CB 1 status:
```

```

State                               Online Standby
Temperature                         38 degrees C / 100 degrees F
Power 1
  1.8 V                             1813 mV
  2.5 V                             2510 mV
  3.3 V                             3322 mV
  3.3 V bias                         3289 mV
  4.6 V                             4692 mV
  5.0 V                             4967 mV
  8.0 V bias                         7194 mV
  12.0 V                            11916 mV
Power 2
  1.0 V                             996 mV
  1.2 V                             1205 mV
  3.3 V RE                           3273 mV
Bus Revision                         51
FPGA Revision                       5

```

show chassis environment cb (EX8200 Switch)

```
user@host> show chassis environment cb
```

```
CB 0 status:
State                               Online Master
Temperature Intake                  20 degrees C / 68 degrees F
Temperature Exhaust                  24 degrees C / 75 degrees F
Power 1
  1.1 V                             1086 mV
  1.2 V                             1179 mV
  1.2 V *                           1182 mV
  1.2 V *                           1182 mV
  1.25 V                            1211 mV
  1.5 V                             1472 mV
  1.8 V                             1756 mV
  2.5 V                             2449 mV
  3.3 V                             3254 mV
  3.3 V bias                         3300 mV
  5.0 V                             4911 mV
  12.0 V                            11891 mV
Power 2
  3.3 V bias *                       3615 mV
  3.3 V bias *                       3615 mV
  3.3 V bias *                       3567 mV
  3.3 V bias *                       3664 mV
  4.3 V bias *                       4224 mV
  4.3 V bias *                       4215 mV
  4.3 V bias *                       4224 mV
  4.3 V bias *                       4205 mV
  4.3 V bias *                       4195 mV
  4.3 V bias *                       4215 mV
  5.0 V bias                         4920 mV
CB 1 status:
State                               Online Standby
Temperature Intake                  19 degrees C / 66 degrees F
Temperature Exhaust                  23 degrees C / 73 degrees F
Power 1
  1.1 V                             1082 mV
  1.2 V                             1169 mV
  1.2 V *                           1179 mV
  1.2 V *                           1179 mV
  1.25 V                            1214 mV
  1.5 V                             1482 mV
  1.8 V                             1759 mV
  2.5 V                             2481 mV
  3.3 V                             3248 mV
  3.3 V bias                         3306 mV
  5.0 V                             4911 mV
  12.0 V                            11910 mV
Power 2
  3.3 V bias *                       3644 mV
  3.3 V bias *                       3664 mV
  3.3 V bias *                       3586 mV
  3.3 V bias *                       3654 mV
  4.3 V bias *                       4224 mV
  4.3 V bias *                       4215 mV
  4.3 V bias *                       4224 mV
  4.3 V bias *                       4205 mV
  4.3 V bias *                       4244 mV
  4.3 V bias *                       4215 mV
  5.0 V bias                         4930 mV
CB 2 status:
State                               Online
```

Temperature Intake	19 degrees C / 66 degrees F
Temperature Exhaust	23 degrees C / 73 degrees F
Power 1	
1.2 V	1195 mV
1.5 V	1511 mV
1.8 V	1804 mV
2.5 V	2526 mV
3.3 V	3300 mV
3.3 V bias	3306 mV
12.0 V	12220 mV

show chassis environment cb (EX8208 Switch)

```

user@host> show chassis environment cb
CB 0 status:
State Online Master
Temperature Intake 20 degrees C / 68 degrees F
Temperature Exhaust 24 degrees C / 75 degrees F
Power 1
1.1 V 1086 mV
1.2 V 1179 mV
1.2 V * 1182 mV
1.2 V * 1182 mV
1.25 V 1211 mV
1.5 V 1466 mV
1.8 V 1759 mV
2.5 V 2455 mV
3.3 V 3261 mV
3.3 V bias 3300 mV
5.0 V 4930 mV
12.0 V 11891 mV
Power 2
3.3 V bias * 3606 mV
3.3 V bias * 3615 mV
3.3 V bias * 3567 mV
3.3 V bias * 3673 mV
4.3 V bias * 4224 mV
4.3 V bias * 4215 mV
4.3 V bias * 4234 mV
4.3 V bias * 4205 mV
4.3 V bias * 4186 mV
4.3 V bias * 4215 mV
5.0 V bias 4940 mV
CB 1 status:
State Online Standby
Temperature Intake 19 degrees C / 66 degrees F
Temperature Exhaust 23 degrees C / 73 degrees F
Power 1
1.1 V 1086 mV
1.2 V 1169 mV
1.2 V * 1179 mV
1.2 V * 1179 mV
1.25 V 1211 mV
1.5 V 1479 mV
1.8 V 1759 mV
2.5 V 2475 mV
3.3 V 3235 mV
3.3 V bias 3306 mV
5.0 V 4930 mV
12.0 V 11891 mV
Power 2

```

```

3.3 V bias *      3644 mV
3.3 V bias *      3664 mV
3.3 V bias *      3586 mV
3.3 V bias *      3654 mV
4.3 V bias *      4215 mV
4.3 V bias *      4224 mV
4.3 V bias *      4215 mV
4.3 V bias *      4215 mV
4.3 V bias *      4234 mV
4.3 V bias *      4224 mV
5.0 V bias        4920 mV
CB 2 status:
State              Online
Temperature Intake 20 degrees C / 68 degrees F
Temperature Exhaust 24 degrees C / 75 degrees F
Power 1
1.2 V              1202 mV
1.5 V              1508 mV
1.8 V              1804 mV
2.5 V              2520 mV
3.3 V              3300 mV
3.3 V bias         3300 mV
12.0 V             12200 mV

```

show chassis environment cb (PTX5000 Packet Transport Router)

```

user@host> show chassis environment cb
CB 0 status:
State              Online Master
Intake Temperature 38 degrees C / 100 degrees F
Exhaust A Temperature 45 degrees C / 113 degrees F
Exhaust B Temperature 42 degrees C / 107 degrees F
Power 1
1.2 V              1200 mV
1.25 V             1250 mV
2.5 V              2500 mV
3.3 V              3300 mV
Power 2
1.0 V              1000 mV
3.3 V bias         3293 mV
3.9 V              3921 mV
Bus Revision       132
FPGA Revision      27
CB 1 status:
State              Online Standby
Intake Temperature 34 degrees C / 93 degrees F
Exhaust A Temperature 39 degrees C / 102 degrees F
Exhaust B Temperature 36 degrees C / 96 degrees F
Power 1
1.2 V              1199 mV
1.25 V             1250 mV
2.5 V              2499 mV
3.3 V              3299 mV
Power 2
1.0 V              1000 mV
3.3 V bias         3312 mV
3.9 V              3961 mV
Bus Revision       132
FPGA Revision      28

```

show chassis environment cb (QFabric System)

```
user@switch> show chassis environment cb interconnect-device IC-123 0
CB 0 status:
State                               Online Master
Left Intake Temperature             33 degrees C / 91 degrees F
Right Intake Temperature            33 degrees C / 91 degrees F
Left Exhaust Temperature            36 degrees C / 96 degrees F
Right Exhaust Temperature           35 degrees C / 95 degrees F
Power                               OK
VDD 3V3                             3294 mV
VDD 2V5                             2436 mV
VDD 1V8                             1746 mV
VDD 1V5                             1460 mV
VDD 1V25                            1210 mV
VDD 1V2                             1164 mV
CPU CORE 1V2                        1120 mV
VDD 1V0                              968 mV
VDD 5V0                             5088 mV
CPU MP BIAS 4V3                     4050 mV
BIAS 3V3                             3180 mV
VTT 0V9                             866 mV
```

show chassis environment ccg

Syntax	<code>show chassis environment ccg</code> <code><slot></code>
Release Information	Command introduced in Junos OS Release 12.1.
Description	(PTX5000 Packet Transport Routers only) Display environmental information about the Centralized Clock Generators (CCGs).
Options	<p>none—Display environmental information about all CCGs on the router.</p> <p>slot —(Optional) Display environmental information about the specified CCG. Replace <i>slot</i> with 0 or 1.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show chassis environment on page 258 • <i>Chassis Operational Mode Commands</i> • <i>PTX Series Getting Started Guide</i>
List of Sample Output	show chassis environment ccg (PTX5000) on page 330
Output Fields	<p>Table 17 on page 330 lists the output fields for the <code>show chassis environment ccg</code> command. Output fields are listed in the approximate order in which they appear.</p>

Table 17: show chassis environment cb Output Fields

Field Name	Field Description
State	Status of the CCG: Online - Master clock , Online - Standby , or Offline . If two CCGs are installed and online, one is functioning as the master clock, and the other is the standby clock.
Temperature	Temperature of the air flowing past the CCG.
Power	Power required and measured on the CCG. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
BUS Revision	Revision level of the generic bus device.

Sample Output

show chassis environment ccg (PTX5000)

```

user@host> show chassis environment ccg
CCG 0 status:
  State                Online - Master clock
  Temperature          31 degrees C / 87 degrees F

```

Power	
1.2 V bias	1200 mV
1.8 V	1799 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
Bus Revision	103
CCG 1 status:	
State	Offline
Power	Disabled
Temperature	31 degrees C / 87 degrees F
Power	
1.2 V bias	1198 mV
1.8 V	161 mV
3.3 V	451 mV
3.3 V bias	3311 mV
Bus Revision	103

show chassis environment fpc

Syntax	show chassis environment fpc <slot>
Syntax (TX Matrix and TX Matrix Plus Routers)	show chassis environment fpc <lcc number> <slot>
Syntax (MX Series Routers)	show chassis environment fpc <slot> <all-members> <local> <member <i>member-id</i> >
Syntax (MX2010 3D Universal Edge Routers)	show chassis environment fpc <slot>
Syntax (MX2020 3D Universal Edge Routers)	show chassis environment fpc <slot>
Syntax (QFX Series)	show chassis environment fpc <fpc-slot> interconnect-device <i>name</i>
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 QFX Series. Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.1 for T4000 Core Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.
Description	(M40e, M120, M160, M320, MX Series, T Series routers, EX Series, QFX Series, and PTX Series routers only) Display environmental information about Flexible PIC Concentrators (FPCs).
Options	none —Display environmental information about all FPCs. On a TX Matrix router, display environmental information about all FPCs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all FPCs on the TX Matrix Plus router and its attached routers. all-members —(MX Series routers only) (Optional) Display environmental information for the FPCs in all the members of the Virtual Chassis configuration. interconnect-device <i>name</i> —(QFabric systems only) (Optional) Display chassis environmental information for the Interconnect device.

lcc number—(TX Matrix router and TX Matrix Plus router 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—(MX Series routers only) (Optional) Display environmental information for the FPCs in the local Virtual Chassis member.

member member-id—(MX Series routers only) (Optional) Display environmental information for the FPCs in the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

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

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

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

- M120 router—Replace **slot** with a value from 0 through 5.
- MX240 router—Replace **slot** with a value from 0 through 2.
- MX480 router—Replace **slot** with a value from 0 through 5.
- MX960 router—Replace **slot** with a value from 0 through 11.
- MX2010 router—Replace **slot** with a value from 0 through 9.
- MX2020 router—Replace **slot** with a value from 0 through 19.
- Other routers—Replace **slot** with a value from 0 through 7.
- EX Series switches:
 - EX3200 switches and EX4200 standalone switches—Replace **slot** with 0.
 - EX4200 switches in a Virtual Chassis configuration—Replace **slot** with a value from 0 through 9 (switch's member ID).

- EX6210 switches—Replace **slot** with a value from 0 through 3 (line card only), 4 or 5 (line card or Switch Fabric and Routing Engine (SRE) module), or 6 through 9 (line card only).
- EX8208 switches—Replace **slot** with a value from 0 through 7 (line card).
- EX8216 switches—Replace **slot** with a value from 0 through 15 (line card).
- QFX3500 switches —Replace **fpc-slot** with 0 through 15.
- PTX5000 Packet Transport Router—Replace **fpc-slot** with 0 through 7.

Required Privilege Level view

Related Documentation

- [request chassis fpc on page 234](#)
- [show chassis fpc on page 541](#)
- [show chassis fpc-feb-connectivity](#)
- [Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online](#)
- [MX960 Flexible PIC Concentrator Description](#)

List of Sample Output

[show chassis environment fpc \(M120 Router\) on page 336](#)
[show chassis environment fpc \(M160 Router\) on page 337](#)
[show chassis environment fpc \(M320 Router\) on page 337](#)
[show chassis environment fpc \(MX2020 Router\) on page 338](#)
[show chassis environment fpc \(MX2010 Router\) on page 341](#)
[show chassis environment fpc \(MX240 Router\) on page 343](#)
[show chassis environment fpc \(MX480 Router\) on page 344](#)
[show chassis environment fpc \(MX960 Router\) on page 345](#)
[show chassis environment fpc \(MX480 Router with 100-Gigabit Ethernet CFP\) on page 346](#)
[show chassis environment fpc \(MX240, MX480, MX960 with Application Services Modular Line Card on page 347](#)
[show chassis environment fpc \(T320, T640, and T1600 Routers\) on page 347](#)
[show chassis environment fpc \(T4000 Router\) on page 348](#)
[show chassis environment fpc lcc \(TX Matrix Router\) on page 353](#)
[show chassis environment fpc lcc \(TX Matrix Plus Router\) on page 354](#)
[show chassis environment fpc \(QFX Series\) on page 355](#)
[show chassis environment fpc interconnect-device \(QFabric Systems\) on page 355](#)
[show chassis environment fpc 0 \(PTX5000 Packet Transport Router\) on page 355](#)
[show chassis environment FPC 1 \(MX Routers with Media Services Blade \[MSB\]\) on page 356](#)

Output Fields [Table 18 on page 335](#) lists the output fields for the **show chassis environment fpc** command. Output fields are listed in the approximate order in which they appear.

Table 18: show chassis environment fpc Output Fields

Field Name	Field Description
State	<p>Status of the FPC:</p> <ul style="list-style-type: none"> • Unknown—FPC is not detected by the router. • Empty—No FPC is present. • Present—FPC is detected by the chassis daemon but is either not supported by the current version of the Junos OS, or the FPC is coming up but not yet online. • Ready—FPC is in intermediate or transition state. • Announce online—Intermediate state during which the FPC is coming up but not yet online, and the chassis manager acknowledges the chassisd FPC online initiative. • Online—FPC is online and running. • Offline—FPC is powered down. • Diagnostics—FPC is set to operate in diagnostics mode.
Temperature	(M40e and M160 routers and QFX Series only) Temperature of the air flowing past the FPC.
PMB Temperature	(PTX Series only) Temperature of the air flowing past the PMB (bottom of the FPC).
Temperature Intake	(M320 routers, MX2010 routers, MX2020 routers, and PTX Series only) Temperature of the air flowing into the chassis.
Temperature Top	(T Series routers only) Temperature of the air flowing past the top of the FPC.
Temperature Exhaust	<p>(M120 and M320 routers, MX2010 routers, MX2020 routers, and PTX Series only) Temperature of the air flowing out of the chassis.</p> <p>The PTX Series Packet Transport Routers, and the MX2010 and MX2020 routers include exhaust temperatures for multiple zones (Exhaust A and Exhaust B).</p>
Temperature Bottom	(T Series routers only) Temperature of the air flowing past the bottom of the FPC.
TL <i>n</i> Temperature	(PTX Series only) Temperature of the air flowing past the specified TL area of the packet forwarding engine (PFE) on the FPC.
TQ <i>n</i> Temperature	(PTX Series only) Temperature of the air flowing past the specified TQ area of the packet forwarding engine (PFE) on the FPC.
Temperature MMBO	(T640 router only) Temperature of the air flowing past the type 3 FPC.
Temperature MMB1	(M320 and T Series routers only) Temperature of the air flowing past the type 1, type 2, and type 3 FPC.
Power	Information about the voltage supplied to the FPC. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
CMB Revision or BUS revision	Revision level of the chassis management bus device (M Series router) or bus (T Series routers).

Sample Output

show chassis environment fpc (M120 Router)

```
user@host> show chassis environment fpc
FPC 2 status:
  State Online
  Temperature Exhaust A 32 degrees C / 89 degrees F
  Temperature Exhaust B 31 degrees C / 87 degrees F
  Power A-Board
    1.2 V 1202 mV
    1.5 V 1508 mV
    1.8 V 1798 mV
    2.5 V 2507 mV
    3.3 V 3351 mV
    5.0 V 4995 mV
    3.3 V bias 3296 mV
    1.2 V Rocket IO 1205 mV
    1.5 V Rocket IO 1501 mV
  I2C Slave Revision 12
FPC 3 status:
  State Online
  Temperature Exhaust A 31 degrees C / 87 degrees F
  Temperature Exhaust B 33 degrees C / 91 degrees F
  Power A-Board
    1.2 V 1211 mV
    1.5 V 1501 mV
    1.8 V 1798 mV
    2.5 V 2471 mV
    3.3 V 3293 mV
    5.0 V 4930 mV
    3.3 V bias 3296 mV
    1.2 V Rocket IO 1205 mV
    1.5 V Rocket IO 1501 mV
  Power B-Board
    1.2 V 1214 mV
    1.5 V 1501 mV
    2.5 V 2471 mV
    3.3 V 3300 mV
    5.0 V 4943 mV
    3.3 V bias 3296 mV
    1.2 V Rocket IO 1205 mV
    1.5 V Rocket IO 1501 mV
  I2C Slave Revision 12
FPC 4 status:
  State Online
  Temperature Exhaust A 32 degrees C / 89 degrees F
  Temperature Exhaust B 30 degrees C / 86 degrees F
  Power A-Board
    1.2 V 1195 mV
    1.5 V 1504 mV
    1.8 V 1801 mV
    2.5 V 2504 mV
    3.3 V 3293 mV
    5.0 V 4917 mV
    3.3 V bias 3296 mV
    1.2 V Rocket IO 1202 mV
    1.5 V Rocket IO 1492 mV
  I2C Slave Revision 12
```

show chassis environment fpc (M160 Router)

```

user@host> show chassis environment fpc
FPC 0 status:
  State                               Online
  Temperature                         42 degrees C / 107 degrees F
  Power:
    1.5 V                             1500 mV
    2.5 V                             2509 mV
    3.3 V                             3308 mV
    5.0 V                             4991 mV
    5.0 V bias                         4952 mV
    8.0 V bias                         8307 mV
  CMB Revision                        12
FPC 1 status:
  State                               Online
  Temperature                         45 degrees C / 113 degrees F
  Power:
    1.5 V                             1498 mV
    2.5 V                             2501 mV
    3.3 V                             3319 mV
    5.0 V                             5020 mV
    5.0 V bias                         5025 mV
    8.0 V bias                         8307 mV
  CMB Revision                        12

```

show chassis environment fpc (M320 Router)

```

user@host> show chassis environment fpc
FPC 0 status:
  State                               Online
  Temperature Intake                  27 degrees C / 80 degrees F
  Temperature Exhaust                 38 degrees C / 100 degrees F
  Temperature MMB1                    31 degrees C / 87 degrees F
  Power:
    1.5 V                             1487 mV
    1.5 V *                           1494 mV
    1.8 V                             1821 mV
    2.5 V                             2533 mV
    3.3 V                             3323 mV
    5.0 V                             5028 mV
    3.3 V bias                        3296 mV
    5.0 V bias                        4984 mV
  CMB Revision                        16
FPC 1 status:
  State                               Online
  Temperature Intake                  27 degrees C / 80 degrees F
  Temperature Exhaust                 37 degrees C / 98 degrees F
  Temperature MMB1                    32 degrees C / 89 degrees F
  Power:
    1.5 V                             1504 mV
    1.5 V *                           1499 mV
    1.8 V                             1820 mV
    2.5 V                             2529 mV
    3.3 V                             3328 mV
    5.0 V                             5013 mV
    3.3 V bias                        3294 mV
    5.0 V bias                        4984 mV
  CMB Revision                        16
FPC 2 status:
  State                               Online

```

```

Temperature Intake          28 degrees C / 82 degrees F
Temperature Exhaust         38 degrees C / 100 degrees F
Temperature MMB1            32 degrees C / 89 degrees F
Power:
  1.5 V                     1498 mV
  1.5 V *                   1487 mV
  1.8 V                     1816 mV
  2.5 V                     2531 mV
  3.3 V                     3324 mV
  5.0 V                     5025 mV
  3.3 V bias                3277 mV
  5.0 V bias                5013 mV
CMB Revision                17
FPC 3 status:
...
```

show chassis environment fpc (MX2020 Router)

```

user@host> show chassis environment fpc
FPC 0 status:
State                               Online
Temperature Intake                 41 degrees C / 105 degrees F
Temperature Exhaust A              48 degrees C / 118 degrees F
Temperature Exhaust B              60 degrees C / 140 degrees F
Temperature LU 0 TSen              56 degrees C / 132 degrees F
Temperature LU 0 Chip              59 degrees C / 138 degrees F
Temperature LU 1 TSen              56 degrees C / 132 degrees F
Temperature LU 1 Chip              61 degrees C / 141 degrees F
Temperature LU 2 TSen              56 degrees C / 132 degrees F
Temperature LU 2 Chip              52 degrees C / 125 degrees F
Temperature LU 3 TSen              56 degrees C / 132 degrees F
Temperature LU 3 Chip              52 degrees C / 125 degrees F
Temperature MQ 0 TSen              49 degrees C / 120 degrees F
Temperature MQ 0 Chip              49 degrees C / 120 degrees F
Temperature MQ 1 TSen              49 degrees C / 120 degrees F
Temperature MQ 1 Chip              52 degrees C / 125 degrees F
Temperature MQ 2 TSen              49 degrees C / 120 degrees F
Temperature MQ 2 Chip              45 degrees C / 113 degrees F
Temperature MQ 3 TSen              49 degrees C / 120 degrees F
Temperature MQ 3 Chip              46 degrees C / 114 degrees F
Power
  AS-BIAS3V3-z12105               3299 mV
  AS-VDD1V8-z12006                1807 mV
  AS-VDD2V5-z12006                2512 mV
  AS-AVDD1V0-z12004                997 mV
  AS-PCIE_1V0-z12004                996 mV
  AS-VDD3V3-z12004                3294 mV
  AS-VDD_1V5A-z12004              1501 mV
  AS-VDD_1V5B-z12004              1498 mV
  AS-LU0_1V0-z12004                998 mV
  AS-LU1_1V0-z12004              1002 mV
  AS-MQ0_1V0-z12004                999 mV
  AS-MQ1_1V0-z12004                994 mV
  AS-LU2_1V0-z12004              1000 mV
  AS-LU3_1V0-z12004                998 mV
  AS-MQ2_1V0-z12004              1002 mV
  AS-MQ3_1V0-z12004                999 mV
  AS-PMB_1V1-z12006              1096 mV
I2C Slave Revision              68
FPC 1 status:
State                               Online
```

```

Temperature Intake          39 degrees C / 102 degrees F
Temperature Exhaust A       48 degrees C / 118 degrees F
Temperature Exhaust B       55 degrees C / 131 degrees F
Temperature LU 0 TSen        52 degrees C / 125 degrees F
Temperature LU 0 Chip        54 degrees C / 129 degrees F
Temperature LU 1 TSen        52 degrees C / 125 degrees F
Temperature LU 1 Chip        56 degrees C / 132 degrees F
Temperature LU 2 TSen        52 degrees C / 125 degrees F
Temperature LU 2 Chip        49 degrees C / 120 degrees F
Temperature LU 3 TSen        52 degrees C / 125 degrees F
Temperature LU 3 Chip        50 degrees C / 122 degrees F
Temperature MQ 0 TSen        48 degrees C / 118 degrees F
Temperature MQ 0 Chip        48 degrees C / 118 degrees F
Temperature MQ 1 TSen        48 degrees C / 118 degrees F
Temperature MQ 1 Chip        51 degrees C / 123 degrees F
Temperature MQ 2 TSen        48 degrees C / 118 degrees F
Temperature MQ 2 Chip        45 degrees C / 113 degrees F
Temperature MQ 3 TSen        48 degrees C / 118 degrees F
Temperature MQ 3 Chip        45 degrees C / 113 degrees F
Power
  AS-BIAS3V3-z12105         3291 mV
  AS-VDD1V8-z12006          1786 mV
  AS-VDD2V5-z12006          2496 mV
  AS-AVDD1V0-z12004          1000 mV
  AS-PCIE_1V0-z12004          1000 mV
  AS-VDD3V3-z12004           3294 mV
  AS-VDD_1V5A-z12004          1500 mV
  AS-VDD_1V5B-z12004          1498 mV
  AS-LU0_1V0-z12004           1003 mV
  AS-LU1_1V0-z12004           1000 mV
  AS-MQ0_1V0-z12004           1000 mV
  AS-MQ1_1V0-z12004            995 mV
  AS-LU2_1V0-z12004           1002 mV
  AS-LU3_1V0-z12004            997 mV
  AS-MQ2_1V0-z12004           1000 mV
  AS-MQ3_1V0-z12004            998 mV
  AS-PMB_1V1-z12006           1096 mV
I2C Slave Revision         68
FPC 2 status:
State                       Online
Temperature Intake          39 degrees C / 102 degrees F
Temperature Exhaust A       48 degrees C / 118 degrees F
Temperature Exhaust B       58 degrees C / 136 degrees F
Temperature LU 0 TSen        55 degrees C / 131 degrees F
Temperature LU 0 Chip        57 degrees C / 134 degrees F
Temperature LU 1 TSen        55 degrees C / 131 degrees F
Temperature LU 1 Chip        63 degrees C / 145 degrees F
Temperature LU 2 TSen        55 degrees C / 131 degrees F
Temperature LU 2 Chip        51 degrees C / 123 degrees F
Temperature LU 3 TSen        55 degrees C / 131 degrees F
Temperature LU 3 Chip        52 degrees C / 125 degrees F
Temperature MQ 0 TSen        48 degrees C / 118 degrees F
Temperature MQ 0 Chip        50 degrees C / 122 degrees F
Temperature MQ 1 TSen        48 degrees C / 118 degrees F
Temperature MQ 1 Chip        52 degrees C / 125 degrees F
Temperature MQ 2 TSen        48 degrees C / 118 degrees F
Temperature MQ 2 Chip        47 degrees C / 116 degrees F
Temperature MQ 3 TSen        48 degrees C / 118 degrees F
Temperature MQ 3 Chip        47 degrees C / 116 degrees F
Power
  AS-BIAS3V3-z12105         3299 mV

```

AS-VDD1V8-z12006	1805 mV
AS-VDD2V5-z12006	2510 mV
AS-AVDD1V0-z12004	999 mV
AS-PCIE_1V0-z12004	998 mV
AS-VDD3V3-z12004	3296 mV
AS-VDD_1V5A-z12004	1492 mV
AS-VDD_1V5B-z12004	1497 mV
AS-LU0_1V0-z12004	997 mV
AS-LU1_1V0-z12004	1000 mV
AS-MQ0_1V0-z12004	998 mV
AS-MQ1_1V0-z12004	1001 mV
AS-LU2_1V0-z12004	996 mV
AS-LU3_1V0-z12004	995 mV
AS-MQ2_1V0-z12004	998 mV
AS-MQ3_1V0-z12004	997 mV
AS-PMB_1V1-z12006	1100 mV
I2C Slave Revision	68
FPC 3 status:	
State	Online
Temperature Intake	41 degrees C / 105 degrees F
Temperature Exhaust A	48 degrees C / 118 degrees F
Temperature Exhaust B	58 degrees C / 136 degrees F
Temperature LU 0 TSen	56 degrees C / 132 degrees F
Temperature LU 0 Chip	59 degrees C / 138 degrees F
Temperature LU 1 TSen	56 degrees C / 132 degrees F
Temperature LU 1 Chip	61 degrees C / 141 degrees F
Temperature LU 2 TSen	56 degrees C / 132 degrees F
Temperature LU 2 Chip	51 degrees C / 123 degrees F
Temperature LU 3 TSen	56 degrees C / 132 degrees F
Temperature LU 3 Chip	53 degrees C / 127 degrees F
Temperature MQ 0 TSen	50 degrees C / 122 degrees F
Temperature MQ 0 Chip	51 degrees C / 123 degrees F
Temperature MQ 1 TSen	50 degrees C / 122 degrees F
Temperature MQ 1 Chip	55 degrees C / 131 degrees F
Temperature MQ 2 TSen	50 degrees C / 122 degrees F
Temperature MQ 2 Chip	47 degrees C / 116 degrees F
Temperature MQ 3 TSen	50 degrees C / 122 degrees F
Temperature MQ 3 Chip	50 degrees C / 122 degrees F
Power	
AS-BIAS3V3-z12105	3305 mV
AS-VDD1V8-z12006	1810 mV
AS-VDD2V5-z12006	2508 mV
AS-AVDD1V0-z12004	999 mV
AS-PCIE_1V0-z12004	1001 mV
AS-VDD3V3-z12004	3294 mV
AS-VDD_1V5A-z12004	1500 mV
AS-VDD_1V5B-z12004	1498 mV
AS-LU0_1V0-z12004	998 mV
AS-LU1_1V0-z12004	998 mV
AS-MQ0_1V0-z12004	999 mV
AS-MQ1_1V0-z12004	998 mV
AS-LU2_1V0-z12004	1000 mV
AS-LU3_1V0-z12004	1001 mV
AS-MQ2_1V0-z12004	996 mV
AS-MQ3_1V0-z12004	998 mV
AS-PMB_1V1-z12006	1098 mV
I2C Slave Revision	68
FPC 4 status:	
...	

show chassis environment fpc (MX2010 Router)

```

user@host> show chassis environment fpc
FPC 0 status:
  State      Online
  Temperature Intake      36 degrees C / 96 degrees F
  Temperature Exhaust A   42 degrees C / 107 degrees F
  Temperature Exhaust B   51 degrees C / 123 degrees F
  Temperature LU 0 TSen    49 degrees C / 120 degrees F
  Temperature LU 0 Chip    50 degrees C / 122 degrees F
  Temperature LU 1 TSen    49 degrees C / 120 degrees F
  Temperature LU 1 Chip    54 degrees C / 129 degrees F
  Temperature LU 2 TSen    49 degrees C / 120 degrees F
  Temperature LU 2 Chip    45 degrees C / 113 degrees F
  Temperature LU 3 TSen    49 degrees C / 120 degrees F
  Temperature LU 3 Chip    46 degrees C / 114 degrees F
  Temperature MQ 0 TSen    40 degrees C / 104 degrees F
  Temperature MQ 0 Chip    41 degrees C / 105 degrees F
  Temperature MQ 1 TSen    40 degrees C / 104 degrees F
  Temperature MQ 1 Chip    44 degrees C / 111 degrees F
  Temperature MQ 2 TSen    40 degrees C / 104 degrees F
  Temperature MQ 2 Chip    38 degrees C / 100 degrees F
  Temperature MQ 3 TSen    40 degrees C / 104 degrees F
  Temperature MQ 3 Chip    41 degrees C / 105 degrees F
  Power
    AS-BIAS3V3-z12105      3300 mV
    AS-VDD1V8-z12006       1805 mV
    AS-VDD2V5-z12006       2505 mV
    AS-AVDD1V0-z12004       998 mV
    AS-PCIE_1V0-z12004       999 mV
    AS-VDD3V3-z12004       3303 mV
    AS-VDD_1V5A-z12004      1497 mV
    AS-VDD_1V5B-z12004      1497 mV
    AS-LU0_1V0-z12004       998 mV
    AS-LU1_1V0-z12004      1003 mV
    AS-MQ0_1V0-z12004       998 mV
    AS-MQ1_1V0-z12004       998 mV
    AS-LU2_1V0-z12004       997 mV
    AS-LU3_1V0-z12004      1001 mV
    AS-MQ2_1V0-z12004       996 mV
    AS-MQ3_1V0-z12004       994 mV
    AS-PMB_1V1-z12006      1097 mV
  I2C Slave Revision      68
FPC 1 status:
  State      Online
  Temperature Intake      34 degrees C / 93 degrees F
  Temperature Exhaust A   46 degrees C / 114 degrees F
  Temperature Exhaust B   54 degrees C / 129 degrees F
  Temperature LU 0 TSen    45 degrees C / 113 degrees F
  Temperature LU 0 Chip    55 degrees C / 131 degrees F
  Temperature LU 1 TSen    45 degrees C / 113 degrees F
  Temperature LU 1 Chip    44 degrees C / 111 degrees F
  Temperature LU 2 TSen    45 degrees C / 113 degrees F
  Temperature LU 2 Chip    50 degrees C / 122 degrees F
  Temperature LU 3 TSen    45 degrees C / 113 degrees F
  Temperature LU 3 Chip    58 degrees C / 136 degrees F
  Temperature XM 0 TSen    45 degrees C / 113 degrees F
  Temperature XM 0 Chip    51 degrees C / 123 degrees F
  Temperature XF 0 TSen    45 degrees C / 113 degrees F
  Temperature XF 0 Chip    63 degrees C / 145 degrees F
  Temperature PLX Switch TSen 45 degrees C / 113 degrees F

```

```

Temperature PLX Switch Chip47 degrees C / 116 degrees F
Power
MPC-BIAS3V3-z12105      3300 mV
MPC-VDD3V3-z16100      3294 mV
MPC-VDD2V5-z16100      2505 mV
MPC-VDD1V8-z12004      1796 mV
MPC-AVDD1V0-z12004      991 mV
MPC-VDD1V2-z16100      1196 mV
MPC-VDD1V5A-z12004      1491 mV
MPC-VDD1V5B-z12004      1492 mV
MPC-XF_0V9-z12004      996 mV
MPC-PCIE_1V0-z16100     1003 mV
MPC-LU0_1V0-z12004      996 mV
MPC-LU1_1V0-z12004      996 mV
MPC-LU2_1V0-z12004      998 mV
MPC-LU3_1V0-z12004      994 mV
MPC-12VA-BMR453         12031 mV
MPC-12VB-BMR453         12003 mV
MPC-PMB_1V1-z12006      1104 mV
MPC-PMB_1V2-z12106      1194 mV
MPC-XM_0V9-vt273m       911 mV
I2C Slave Revision      110
FPC 8 status:
State                    Online
Temperature Intake       32 degrees C / 89 degrees F
Temperature Exhaust A    44 degrees C / 111 degrees F
Temperature Exhaust B    37 degrees C / 98 degrees F
Temperature LU 0 TCAM TSen 41 degrees C / 105 degrees F
Temperature LU 0 TCAM Chip 49 degrees C / 120 degrees F
Temperature LU 0 TSen     41 degrees C / 105 degrees F
Temperature LU 0 Chip     52 degrees C / 125 degrees F
Temperature MQ 0 TSen     41 degrees C / 105 degrees F
Temperature MQ 0 Chip     47 degrees C / 116 degrees F
Temperature LU 1 TCAM TSen 39 degrees C / 102 degrees F
Temperature LU 1 TCAM Chip 42 degrees C / 107 degrees F
Temperature LU 1 TSen     39 degrees C / 102 degrees F
Temperature LU 1 Chip     46 degrees C / 114 degrees F
Temperature MQ 1 TSen     39 degrees C / 102 degrees F
Temperature MQ 1 Chip     45 degrees C / 113 degrees F
Power
MPC-BIAS3V3-z12105      3296 mV
MPC-VDD3V3-z12006      3298 mV
MPC-VDD2V5-z12006      2505 mV
MPC-TCAM_1V0-z12004      997 mV
MPC-AVDD1V0-z12006      1007 mV
MPC-VDD1V8-z12006      1803 mV
MPC-PCIE_1V0-z12006      1004 mV
MPC-LU0_1V0-z12004      1000 mV
MPC-MQ0_1V0-z12004      999 mV
MPC-VDD_1V5-z12004      1498 mV
MPC-PMB_1V1-z12006      1102 mV
MPC-9VA-BMR453          9009 mV
MPC-9VB-BMR453          8960 mV
MPC-PMB_1V2-z12105      1202 mV
MPC-LU1_1V0-z12004      1005 mV
MPC-MQ1_1V0-z12004      1000 mV
I2C Slave Revision      70
FPC 9 status:
State                    Online
Temperature Intake       34 degrees C / 93 degrees F
Temperature Exhaust A    41 degrees C / 105 degrees F

```

```

Temperature Exhaust B      54 degrees C / 129 degrees F
Temperature LU 0 TSen      51 degrees C / 123 degrees F
Temperature LU 0 Chip      52 degrees C / 125 degrees F
Temperature LU 1 TSen      51 degrees C / 123 degrees F
Temperature LU 1 Chip      55 degrees C / 131 degrees F
Temperature LU 2 TSen      51 degrees C / 123 degrees F
Temperature LU 2 Chip      47 degrees C / 116 degrees F
Temperature LU 3 TSen      51 degrees C / 123 degrees F
Temperature LU 3 Chip      47 degrees C / 116 degrees F
Temperature MQ 0 TSen      40 degrees C / 104 degrees F
Temperature MQ 0 Chip      42 degrees C / 107 degrees F
Temperature MQ 1 TSen      40 degrees C / 104 degrees F
Temperature MQ 1 Chip      44 degrees C / 111 degrees F
Temperature MQ 2 TSen      40 degrees C / 104 degrees F
Temperature MQ 2 Chip      38 degrees C / 100 degrees F
Temperature MQ 3 TSen      40 degrees C / 104 degrees F
Temperature MQ 3 Chip      40 degrees C / 104 degrees F
Power
  AS-BIAS3V3-z12105        3302 mV
  AS-VDD1V8-z12006         1808 mV
  AS-VDD2V5-z12006         2513 mV
  AS-AVDD1V0-z12004         997 mV
  AS-PCIE_1V0-z12004         999 mV
  AS-VDD3V3-z12004         3294 mV
  AS-VDD_1V5A-z12004        1503 mV
  AS-VDD_1V5B-z12004        1502 mV
  AS-LU0_1V0-z12004         996 mV
  AS-LU1_1V0-z12004         999 mV
  AS-MQ0_1V0-z12004         997 mV
  AS-MQ1_1V0-z12004         999 mV
  AS-LU2_1V0-z12004         997 mV
  AS-LU3_1V0-z12004         998 mV
  AS-MQ2_1V0-z12004        1000 mV
  AS-MQ3_1V0-z12004        1000 mV
  AS-PMB_1V1-z12006         1102 mV
I2C Slave Revision        68

```

show chassis environment fpc (MX240 Router)

```

user@host> show chassis environment fpc
FPC 1 status:
State                               Online
Temperature Intake                  34 degrees C / 93 degrees F
Temperature Exhaust A                39 degrees C / 102 degrees F
Temperature Exhaust B                53 degrees C / 127 degrees F
Temperature I3 0 TSensor             51 degrees C / 123 degrees F
Temperature I3 0 Chip                54 degrees C / 129 degrees F
Temperature I3 1 TSensor             50 degrees C / 122 degrees F
Temperature I3 1 Chip                53 degrees C / 127 degrees F
Temperature I3 2 TSensor             48 degrees C / 118 degrees F
Temperature I3 2 Chip                51 degrees C / 123 degrees F
Temperature I3 3 TSensor             45 degrees C / 113 degrees F
Temperature I3 3 Chip                48 degrees C / 118 degrees F
Temperature IA 0 TSensor             45 degrees C / 113 degrees F
Temperature IA 0 Chip                45 degrees C / 113 degrees F
Temperature IA 1 TSensor             45 degrees C / 113 degrees F
Temperature IA 1 Chip                49 degrees C / 120 degrees F
Power
  1.5 V                             1492 mV
  2.5 V                             2507 mV
  3.3 V                             3306 mV

```

```

1.8 V PFE 0          1801 mV
1.8 V PFE 1          1804 mV
1.8 V PFE 2          1798 mV
1.8 V PFE 3          1798 mV
1.2 V PFE 0          1169 mV
1.2 V PFE 1          1189 mV
1.2 V PFE 2          1182 mV
1.2 V PFE 3          1176 mV
I2C Slave Revision   42
FPC 2 status:
State                Online
Temperature Intake    33 degrees C / 91 degrees F
Temperature Exhaust A 41 degrees C / 105 degrees F
Temperature Exhaust B 53 degrees C / 127 degrees F
Temperature I3 0 TSensor 53 degrees C / 127 degrees F
Temperature I3 0 Chip  58 degrees C / 136 degrees F
Temperature I3 1 TSensor 52 degrees C / 125 degrees F
Temperature I3 1 Chip  56 degrees C / 132 degrees F
Temperature I3 2 TSensor 50 degrees C / 122 degrees F
Temperature I3 2 Chip  52 degrees C / 125 degrees F
Temperature I3 3 TSensor 46 degrees C / 114 degrees F
Temperature I3 3 Chip  49 degrees C / 120 degrees F
Temperature IA 0 TSensor 51 degrees C / 123 degrees F
Temperature IA 0 Chip  49 degrees C / 120 degrees F
Temperature IA 1 TSensor 48 degrees C / 118 degrees F
Temperature IA 1 Chip  53 degrees C / 127 degrees F
Power
1.5 V                1492 mV
2.5 V                2445 mV
3.3 V                3293 mV
1.8 V PFE 0          1827 mV
1.8 V PFE 1          1775 mV
1.8 V PFE 2          1788 mV
1.8 V PFE 3          1798 mV
1.2 V PFE 0          1250 mV
1.2 V PFE 1          1234 mV
1.2 V PFE 2          1231 mV
1.2 V PFE 3          1192 mV
I2C Slave Revision   42

```

show chassis environment fpc (MX480 Router)

```

user@host> show chassis environment fpc
FPC 1 status:
State                Online
Temperature Intake    36 degrees C / 96 degrees F
Temperature Exhaust A 41 degrees C / 105 degrees F
Temperature Exhaust B 55 degrees C / 131 degrees F
Temperature I3 0 TSensor 55 degrees C / 131 degrees F
Temperature I3 0 Chip  57 degrees C / 134 degrees F
Temperature I3 1 TSensor 53 degrees C / 127 degrees F
Temperature I3 1 Chip  53 degrees C / 127 degrees F
Temperature I3 2 TSensor 52 degrees C / 125 degrees F
Temperature I3 2 Chip  49 degrees C / 120 degrees F
Temperature I3 3 TSensor 47 degrees C / 116 degrees F
Temperature I3 3 Chip  47 degrees C / 116 degrees F
Temperature IA 0 TSensor 54 degrees C / 129 degrees F
Temperature IA 0 Chip  58 degrees C / 136 degrees F
Temperature IA 1 TSensor 48 degrees C / 118 degrees F
Temperature IA 1 Chip  53 degrees C / 127 degrees F
Power

```

1.5 V	1479 mV
2.5 V	2542 mV
3.3 V	3319 mV
1.8 V PFE 0	1811 mV
1.8 V PFE 1	1804 mV
1.8 V PFE 2	1804 mV
1.8 V PFE 3	1814 mV
1.2 V PFE 0	1192 mV
1.2 V PFE 1	1202 mV
1.2 V PFE 2	1205 mV
1.2 V PFE 3	1189 mV
I2C Slave Revision	40

show chassis environment fpc (MX960 Router)

```
user@host> show chassis environment fpc
```

```
FPC 5 status:
```

State	Online
Temperature Intake	27 degrees C / 80 degrees F
Temperature Exhaust A	34 degrees C / 93 degrees F
Temperature Exhaust B	40 degrees C / 104 degrees F
Temperature I3 0 TSensor	39 degrees C / 102 degrees F
Temperature I3 0 Chip	41 degrees C / 105 degrees F
Temperature I3 1 TSensor	38 degrees C / 100 degrees F
Temperature I3 1 Chip	37 degrees C / 98 degrees F
Temperature I3 2 TSensor	37 degrees C / 98 degrees F
Temperature I3 2 Chip	34 degrees C / 93 degrees F
Temperature I3 3 TSensor	32 degrees C / 89 degrees F
Temperature I3 3 Chip	33 degrees C / 91 degrees F
Temperature IA 0 TSensor	39 degrees C / 102 degrees F
Temperature IA 0 Chip	44 degrees C / 111 degrees F
Temperature IA 1 TSensor	36 degrees C / 96 degrees F
Temperature IA 1 Chip	44 degrees C / 111 degrees F
Power	
1.5 V	1479 mV
2.5 V	2523 mV
3.3 V	3254 mV
1.8 V PFE 0	1798 mV
1.8 V PFE 1	1798 mV
1.8 V PFE 2	1807 mV
1.8 V PFE 3	1791 mV
1.2 V PFE 0	1173 mV
1.2 V PFE 1	1179 mV
1.2 V PFE 2	1179 mV
1.2 V PFE 3	1185 mV
I2C Slave Revision	6

```
FPC 6 status:
```

State	Online
Temperature Intake	25 degrees C / 77 degrees F
Temperature Exhaust A	38 degrees C / 100 degrees F
Temperature Exhaust B	38 degrees C / 100 degrees F
Temperature I3 0 TSensor	40 degrees C / 104 degrees F
Temperature I3 0 Chip	40 degrees C / 104 degrees F
Temperature I3 1 TSensor	40 degrees C / 104 degrees F
Temperature I3 1 Chip	38 degrees C / 100 degrees F
Temperature I3 2 TSensor	37 degrees C / 98 degrees F
Temperature I3 2 Chip	32 degrees C / 89 degrees F
Temperature I3 3 TSensor	34 degrees C / 93 degrees F
Temperature I3 3 Chip	33 degrees C / 91 degrees F
Temperature IA 0 TSensor	45 degrees C / 113 degrees F
Temperature IA 0 Chip	47 degrees C / 116 degrees F

```

Temperature IA 1 TSensor 37 degrees C / 98 degrees F
Temperature IA 1 Chip    42 degrees C / 107 degrees F
Power
  1.5 V                  1485 mV
  2.5 V                  2510 mV
  3.3 V                  3332 mV
  1.8 V PFE 0            1801 mV
  1.8 V PFE 1            1814 mV
  1.8 V PFE 2            1804 mV
  1.8 V PFE 3            1820 mV
  1.2 V PFE 0            1192 mV
  1.2 V PFE 1            1189 mV
  1.2 V PFE 2            1202 mV
  1.2 V PFE 3            1156 mV
I2C Slave Revision      40

```

show chassis environment fpc (MX480 Router with 100-Gigabit Ethernet CFP)

```

user@host> show chassis environment fpc
FPC 0 status:
State                               Online
Temperature Intake                  32 degrees C / 89 degrees F
Temperature Exhaust A               39 degrees C / 102 degrees F
Temperature Exhaust B               37 degrees C / 98 degrees F
Temperature QX 0 TSen               44 degrees C / 111 degrees F
Temperature QX 0 Chip               48 degrees C / 118 degrees F
Temperature LU 0 TCAM TSen          44 degrees C / 111 degrees F
Temperature LU 0 TCAM Chip          47 degrees C / 116 degrees F
Temperature LU 0 TSen               44 degrees C / 111 degrees F
Temperature LU 0 Chip               48 degrees C / 118 degrees F
Temperature MQ 0 TSen               44 degrees C / 111 degrees F
Temperature MQ 0 Chip               47 degrees C / 116 degrees F
Power
MPC-BIAS3V3-z12105                 3297 mV
MPC-VDD3V3-z12105                   3306 mV
MPC-VDD2V5-z12105                   2498 mV
MPC-TCAM_1V0-z12004                 999 mV
MPC-AVDD1V0-z12006                  999 mV
MPC-VDD1V8-z12006                   1796 mV
MPC-PCIE_1V0-z12006                 1002 mV
MPC-LU0_1V0-z12004                  997 mV
MPC-MQ0_1V0-z12004                  995 mV
MPC-VDD_1V5-z12004                 1496 mV
MPC-PMB_1V1-z12006                 1094 mV
MPC-9VA-BMR453                     9054 mV
MPC-9VB-BMR453                     9037 mV
MPC-PMB_1V2-z12106                 1191 mV
MPC-QXM0_1V0-z12006                1000 mV
I2C Slave Revision                  66
FPC 1 status:
State                               Online
Temperature Intake                  35 degrees C / 95 degrees F
Temperature Exhaust A               50 degrees C / 122 degrees F
Temperature Exhaust B               56 degrees C / 132 degrees F
Temperature LU 0 TSen               46 degrees C / 114 degrees F
Temperature LU 0 Chip               59 degrees C / 138 degrees F
Temperature LU 1 TSen               46 degrees C / 114 degrees F
Temperature LU 1 Chip               45 degrees C / 113 degrees F
Temperature LU 2 TSen               46 degrees C / 114 degrees F
Temperature LU 2 Chip               60 degrees C / 140 degrees F
Temperature LU 3 TSen               46 degrees C / 114 degrees F

```

```

Temperature LU 3 Chip      71 degrees C / 159 degrees F
Temperature XM 0 TSen      46 degrees C / 114 degrees F
Temperature XM 0 Chip      -18 degrees C / 0 degrees F
Temperature XF 0 TSen      46 degrees C / 114 degrees F
Temperature XF 0 Chip      76 degrees C / 168 degrees F
Power
MPC-BIAS3V3-z12105        3292 mV
MPC-VDD3V3-z16100         3303 mV
MPC-VDD2V5-z16100         2501 mV
MPC-VDD1V8-z12004         1801 mV
MPC-AVDD1V0-z12006        996 mV
MPC-VDD1V2-z16100         1199 mV
MPC-VDD1V5A-z12004        1493 mV
MPC-VDD1V5B-z12004        1498 mV
MPC-XF_0V9-z12006         996 mV
MPC-PCIE_1V0-z16100       1000 mV
MPC-LU0_1V0-z12004        994 mV
MPC-LU1_1V0-z12004        994 mV
MPC-LU2_1V0-z12004        992 mV
MPC-LU3_1V0-z12004        993 mV
MPC-12VA-BMR453           12003 mV
MPC-12VB-BMR453           12043 mV
MPC-PMB_1V1-z12006        1091 mV
MPC-PMB_1V2-z12106        1196 mV
MPC-XM_0V9-vt273m         899 mV
I2C Slave Revision        106

```

show chassis environment fpc (MX240, MX480, MX960 with Application Services Modular Line Card)

```

user@host>show chassis environment fpc 1
FPC 1 status:
State                Online
Temperature Intake    36 degrees C / 96 degrees F
Temperature Exhaust A 39 degrees C / 102 degrees F
Temperature LU TSen    52 degrees C / 125 degrees F
Temperature LU Chip    54 degrees C / 129 degrees F
Temperature XM TSen    52 degrees C / 125 degrees F
Temperature XM Chip    60 degrees C / 140 degrees F
Temperature PCIE TSen  52 degrees C / 125 degrees F
Temperature PCIE Chip  69 degrees C / 156 degrees F
Power
MPC-BIAS3V3-z12106    3302 mV
MPC-VDD3V3-z16100     3325 mV
MPC-AVDD1V0-z16100    1007 mV
MPC-PCIE_1V0-z16100    904 mV
MPC-LU0_1V0-z12004     996 mV
MPC-VDD_1V5-z12004    1498 mV
MPC-12VA-BMR453       11733 mV
MPC-12VB-BMR453       11728 mV
MPC-XM_0V9-vt273m     900 mV
I2C Slave Revision    81

```

show chassis environment fpc (T320, T640, and T1600 Routers)

```

user@host> show chassis environment fpc
FPC 0 status:
State                Online
Temperature Top       42 degrees C / 107 degrees F
Temperature Bottom    36 degrees C / 96 degrees F
Temperature MMB1       39 degrees C / 102 degrees F
Power:

```

```

1.8 V          1959 mV
2.5 V          2495 mV
3.3 V          3344 mV
5.0 V          5047 mV
1.8 V bias     1787 mV
3.3 V bias     3291 mV
5.0 V bias     4998 mV
8.0 V bias     7343 mV
BUS Revision   40
FPC 1 status:
State          Online
Temperature Top 42 degrees C / 107 degrees F
Temperature Bottom 39 degrees C / 102 degrees F
Temperature MMB1 40 degrees C / 104 degrees F
Power:
1.8 V          1956 mV
2.5 V          2498 mV
3.3 V          3340 mV
5.0 V          5023 mV
1.8 V bias     1782 mV
3.3 V bias     3277 mV
5.0 V bias     4989 mV
8.0 V bias     7289 mV
BUS Revision   40
FPC 2 status:
State          Online
Temperature Top 43 degrees C / 109 degrees F
Temperature Bottom 39 degrees C / 102 degrees F
Temperature MMB1 41 degrees C / 105 degrees F
Power:
1.8 V          1963 mV
2.5 V          2503 mV
3.3 V          3340 mV
5.0 V          5042 mV
1.8 V bias     1797 mV
3.3 V bias     3311 mV
5.0 V bias     5013 mV
8.0 V bias     7221 mV
BUS Revision   40

```

show chassis environment fpc (T4000 Router)

```

user@host> show chassis environment fpc
FPC 0 status:
State          Online
Fan Intake     34 degrees C / 93 degrees F
Fan Exhaust    48 degrees C / 118 degrees F
PMB            47 degrees C / 116 degrees F
LMB0           50 degrees C / 122 degrees F
LMB1           41 degrees C / 105 degrees F
LMB2           35 degrees C / 95 degrees F
PFE1 LU2       46 degrees C / 114 degrees F
PFE1 LU0       41 degrees C / 105 degrees F
PFE0 LU0       57 degrees C / 134 degrees F
XF1            47 degrees C / 116 degrees F
XF0            52 degrees C / 125 degrees F
XM1            41 degrees C / 105 degrees F
XM0            50 degrees C / 122 degrees F
PFE0 LU1       56 degrees C / 132 degrees F
PFE0 LU2       45 degrees C / 113 degrees F
PFE1 LU1       37 degrees C / 98 degrees F

```



```

Power 1
  1.0 V          991 mV
  1.2 V bias     1195 mV
  1.8 V          1788 mV
  2.5 V          2483 mV
  3.3 V          3289 mV
  3.3 V bias     3299 mV
  12.0 V A       10608 mV
  12.0 V B       10637 mV
Power 2
  0.9 V          881 mV
  0.9 V PFE0     916 mV
  0.9 V PFE1     903 mV
  1.0 V PFE0     1012 mV
  1.0 V PFE1     1002 mV
  1.1 V          1095 mV
  1.5 V_0        1494 mV
  1.5 V_1        1479 mV
Power 3
  1.0 V PFE0     1000 mV
  1.0 V PFE1     1002 mV
  1.0 V PFE0 *   995 mV
  1.0 V PFE1 *   995 mV
  1.8 V PFE 0    1788 mV
  1.8 V PFE 1    1789 mV
  2.5 V          2482 mV
  12.0 V         11614 mV
Power 4
  1.0 V PFE0 LU0 1003 mV
  1.0 V PFE1 LU0 1003 mV
  1.0 V PFE1 LU2 1004 mV
  1.0 V PFE0 LU0 * 995 mV
  1.0 V PFE1 LU0 * 998 mV
  1.0 V PFE1 LU2 * 996 mV
  12.0 V         11643 mV
  12.0 V C       11711 mV
Power (Base/PMB/MMB)
  LMB0 VDD2V5    2488 mV
  LMB0 VDD1V8    1788 mV
  LMB0 VDD1V5    1496 mV
  LMB0 PFE0 LU0 AVDD1V0 1002 mV
  LMB0 PFE0 LU0 VDD1V0 1000 mV
  LMB0 VDD12V0   10752 mV
  LMB1 VDD2V5    2472 mV
  LMB1 VDD1V8    1792 mV
  LMB1 VDD1V5    1480 mV
  LMB1 PFE0 LU2 AVDD1V0 994 mV
  LMB1 PFE0 LU2 VDD1V0 1002 mV
  LMB1 VDD12V0   10800 mV
  LMB2 VDD2V5    2472 mV
  LMB2 VDD1V8    1792 mV
  LMB2 VDD1V5    1486 mV
  LMB2 PFE1 LU1 AVDD1V0 996 mV
  LMB2 PFE1 LU1 VDD1V0 998 mV
  LMB2 VDD12V0   10704 mV
  PMB 1.05v      1049 mV
  PMB 1.5v       1500 mV
  PMB 2.5v       2500 mV
  PMB 3.3v       3299 mV
Bus Revision     113
FPC 3 status:

```

State	Online
Fan Intake	37 degrees C / 98 degrees F
Fan Exhaust	51 degrees C / 123 degrees F
PMB	43 degrees C / 109 degrees F
LMB0	57 degrees C / 134 degrees F
LMB1	54 degrees C / 129 degrees F
LMB2	38 degrees C / 100 degrees F
PFE1 LU2	63 degrees C / 145 degrees F
PFE1 LU0	45 degrees C / 113 degrees F
PFE0 LU0	69 degrees C / 156 degrees F
XF1	62 degrees C / 143 degrees F
XF0	63 degrees C / 145 degrees F
XM1	43 degrees C / 109 degrees F
XM0	67 degrees C / 152 degrees F
PFE0 LU1	63 degrees C / 145 degrees F
PFE0 LU2	66 degrees C / 150 degrees F
PFE1 LU1	41 degrees C / 105 degrees F
Power 1	
1.0 V	1002 mV
1.2 V bias	1201 mV
1.8 V	1785 mV
2.5 V	2485 mV
3.3 V	3288 mV
3.3 V bias	3285 mV
12.0 V A	10412 mV
12.0 V B	10515 mV
Power 2	
0.9 V	882 mV
0.9 V PFE0	920 mV
0.9 V PFE1	905 mV
1.0 V PFE0	1015 mV
1.0 V PFE1	1001 mV
1.1 V	1094 mV
1.5 V_0	1495 mV
1.5 V_1	1478 mV
Power 3	
0.92 V PFE1	998 mV
1.0 V PFE0	997 mV
1.0 V PFE0 *	992 mV
1.0 V PFE1 *	991 mV
1.8 V PFE 0	1780 mV
1.8 V PFE 1	1797 mV
2.5 V	2492 mV
12.0 V	11604 mV
Power 4	
1.0 V PFE0 LU0	1003 mV
1.0 V PFE1 LU0	1004 mV
1.0 V PFE1 LU2	1003 mV
1.0 V PFE0 LU0 *	1000 mV
1.0 V PFE1 LU0 *	1001 mV
1.0 V PFE1 LU2 *	1003 mV
12.0 V	11653 mV
12.0 V C	11672 mV
Power (Base/PMB/MMB)	
LMB0 VDD2V5	2512 mV
LMB0 VDD1V8	1790 mV
LMB0 VDD1V5	1500 mV
LMB0 PFE0 LU0 AVDD1V0	1004 mV
LMB0 PFE0 LU0 VDD1V0	1002 mV
LMB0 VDD12V0	10608 mV
LMB1 VDD2V5	2472 mV

```

LMB1 VDD1V8          1788 mV
LMB1 VDD1V5          1480 mV
LMB1 PFE0 LU2 AVDD1V0 1000 mV
LMB1 PFE0 LU2 VDD1V0  1004 mV
LMB1 VDD12V0         10672 mV
LMB2 VDD2V5          2488 mV
LMB2 VDD1V8          1798 mV
LMB2 VDD1V5          1494 mV
LMB2 PFE1 LU1 AVDD1V0 1000 mV
LMB2 PFE1 LU1 VDD1V0  1004 mV
LMB2 VDD12V0         10528 mV
PMB 1.05v            1050 mV
PMB 1.5v              1500 mV
PMB 2.5v              2499 mV
PMB 3.3v              3299 mV
Bus Revision          113
FPC 5 status:
State                  Online
Temperature Top        39 degrees C / 102 degrees F
Temperature Bottom     38 degrees C / 100 degrees F
Power
  1.8 V                1804 mV
  1.8 V bias           1802 mV
  3.3 V                3294 mV
  3.3 V bias           3277 mV
  5.0 V bias           5008 mV
  5.0 V TOP            5067 mV
  8.0 V bias           6642 mV
Power (Base/PMB/MMB)
  1.2 V                1202 mV
  1.5 V                1504 mV
  5.0 V BOT            5079 mV
  12.0 V TOP Base      11848 mV
  12.0 V BOT Base      11780 mV
  1.1 V PMB            1111 mV
  1.2 V PMB            1189 mV
  1.5 V PMB            1494 mV
  1.8 V PMB            1819 mV
  2.5 V PMB            2503 mV
  3.3 V PMB            3294 mV
  5.0 V PMB            5035 mV
  12.0 V PMB           11788 mV
  0.75 MMB TOP         766 mV
  1.5 V MMB TOP        1484 mV
  1.8 V MMB TOP        1772 mV
  2.5 V MMB TOP        2485 mV
  1.2 V MMB TOP        1137 mV
  5.0 V MMB TOP        4946 mV
  12.0 V MMB TOP       11772 mV
  3.3 V MMB TOP        3289 mV
  0.75 MMB BOT         759 mV
  1.5 V MMB BOT        1482 mV
  1.8 V MMB BOT        1792 mV
  2.5 V MMB BOT        2490 mV
  1.2 V MMB BOT        1145 mV
  5.0 V MMB BOT        4922 mV
  12.0 V MMB BOT       11625 mV
  3.3 V MMB BOT        3282 mV
APS 00                2495 mV
APS 01                3308 mV
APS 02                3301 mV

```

5.0 V PIC 0	4967 mV
APS 10	2512 mV
APS 11	3316 mV
APS 12	3304 mV
5.0 V PIC 1	5081 mV
Bus Revision	49
FPC 6 status:	
State	Online
Fan Intake	34 degrees C / 93 degrees F
Fan Exhaust	49 degrees C / 120 degrees F
PMB	40 degrees C / 104 degrees F
LMB0	60 degrees C / 140 degrees F
LMB1	58 degrees C / 136 degrees F
LMB2	40 degrees C / 104 degrees F
PFE1 LU2	69 degrees C / 156 degrees F
PFE1 LU0	45 degrees C / 113 degrees F
PFE0 LU0	71 degrees C / 159 degrees F
XF1	58 degrees C / 136 degrees F
XF0	65 degrees C / 149 degrees F
XM1	40 degrees C / 104 degrees F
XM0	66 degrees C / 150 degrees F
PFE0 LU1	69 degrees C / 156 degrees F
PFE0 LU2	68 degrees C / 154 degrees F
PFE1 LU1	42 degrees C / 107 degrees F
Power 1	
1.0 V	998 mV
1.2 V bias	1191 mV
1.8 V	1781 mV
2.5 V	2487 mV
3.3 V	3302 mV
3.3 V bias	3300 mV
12.0 V A	10388 mV
12.0 V B	10388 mV
Power 2	
0.9 V	902 mV
0.9 V PFE0	921 mV
0.9 V PFE1	907 mV
1.0 V PFE0	996 mV
1.0 V PFE1	974 mV
1.1 V	1095 mV
1.5 V_0	1495 mV
1.5 V_1	1478 mV
Power 3	
1.0 V PFE0	997 mV
1.0 V PFE1	998 mV
1.0 V PFE0 *	993 mV
1.0 V PFE1 *	991 mV
1.8 V PFE 0	1796 mV
1.8 V PFE 1	1789 mV
2.5 V	2465 mV
12.0 V	11609 mV
Power 4	
1.0 V PFE0 LU0	1003 mV
1.0 V PFE1 LU0	1006 mV
1.0 V PFE1 LU2	1002 mV
1.0 V PFE0 LU0 *	1000 mV
1.0 V PFE1 LU0 *	998 mV
1.0 V PFE1 LU2 *	998 mV
12.0 V	11638 mV
12.0 V C	11702 mV
Power (Base/PMB/MMB)	

LMB0 VDD2V5	2484 mV
LMB0 VDD1V8	1780 mV
LMB0 VDD1V5	1496 mV
LMB0 PFE0 LU0 AVDD1V0	998 mV
LMB0 PFE0 LU0 VDD1V0	1004 mV
LMB0 VDD12V0	10528 mV
LMB1 VDD2V5	2472 mV
LMB1 VDD1V8	1776 mV
LMB1 VDD1V5	1474 mV
LMB1 PFE0 LU2 AVDD1V0	994 mV
LMB1 PFE0 LU2 VDD1V0	1004 mV
LMB1 VDD12V0	10544 mV
LMB2 VDD2V5	2476 mV
LMB2 VDD1V8	1790 mV
LMB2 VDD1V5	1492 mV
LMB2 PFE1 LU1 AVDD1V0	996 mV
LMB2 PFE1 LU1 VDD1V0	1010 mV
LMB2 VDD12V0	10528 mV
PMB 1.05v	1050 mV
PMB 1.5v	1499 mV
PMB 2.5v	2500 mV
PMB 3.3v	3300 mV
Bus Revision	80

show chassis environment fpc lcc (TX Matrix Router)

```
user@host> show chassis environment fpc lcc 0
lcc0-re0:
```

FPC 1 status:

State	Online
Temperature Top	30 degrees C / 86 degrees F
Temperature Bottom	25 degrees C / 77 degrees F
Temperature MMB0	Absent
Temperature MMB1	27 degrees C / 80 degrees F
Power:	
1.8 V	1813 mV
2.5 V	2504 mV
3.3 V	3338 mV
5.0 V	5037 mV
1.8 V bias	1797 mV
3.3 V bias	3301 mV
5.0 V bias	5013 mV
8.0 V bias	7345 mV
BUS Revision	40

FPC 2 status:

State	Online
Temperature Top	37 degrees C / 98 degrees F
Temperature Bottom	26 degrees C / 78 degrees F
Temperature MMB0	32 degrees C / 89 degrees F
Temperature MMB1	27 degrees C / 80 degrees F
Power:	
1.8 V	1791 mV
2.5 V	2517 mV
3.3 V	3308 mV
5.0 V	5052 mV
1.8 V bias	1797 mV
3.3 V bias	3289 mV
5.0 V bias	4991 mV

8.0 V bias	7477 mV
BUS Revision	40

show chassis environment fpc lcc (TX Matrix Plus Router)

```
user@host> show chassis environment fpc lcc 0
lcc0-re0:
```

FPC 1 status:

State	Online
Temperature Top	46 degrees C / 114 degrees F
Temperature Bottom	47 degrees C / 116 degrees F
Power	
1.8 V	1788 mV
1.8 V bias	1787 mV
3.3 V	3321 mV
3.3 V bias	3306 mV
5.0 V bias	5018 mV
5.0 V TOP	5037 mV
8.0 V bias	7223 mV
Power (Base/PMB/MMB)	
1.2 V	1205 mV
1.5 V	1503 mV
5.0 V BOT	5084 mV
12.0 V TOP Base	11775 mV
12.0 V BOT Base	11794 mV
1.1 V PMB	1108 mV
1.2 V PMB	1196 mV
1.5 V PMB	1499 mV
1.8 V PMB	1811 mV
2.5 V PMB	2515 mV
3.3 V PMB	3318 mV
5.0 V PMB	5030 mV
12.0 V PMB	11832 mV
0.75 MMB TOP	752 mV
1.5 V MMB TOP	1489 mV
1.8 V MMB TOP	1782 mV
2.5 V MMB TOP	2498 mV
1.2 V MMB TOP	1155 mV
5.0 V MMB TOP	4902 mV
12.0 V MMB TOP	11721 mV
3.3 V MMB TOP	3316 mV
0.75 MMB BOT	754 mV
1.5 V MMB BOT	1482 mV
1.8 V MMB BOT	1758 mV
2.5 V MMB BOT	2488 mV
1.2 V MMB BOT	1157 mV
5.0 V MMB BOT	4962 mV
12.0 V MMB BOT	11691 mV
3.3 V MMB BOT	3308 mV
APS 00	1484 mV
APS 01	2503 mV
APS 02	3313 mV
5.0 V PIC 0	5025 mV
APS 10	1501 mV
APS 11	2466 mV
APS 12	3311 mV
5.0 V PIC 1	5081 mV
Bus Revision	49

show chassis environment fpc (QFX Series)

```

user@switch> show chassis environment fpc 0
FPC 0 status:
  State                Online
  Temperature          42 degrees C / 107 degrees F

```

show chassis environment fpc interconnect-device (QFabric Systems)

```

user@switch> show chassis environment fpc interconnect-device interconnect1 0
FC 0 FPC 0 status:
  State                Online
  Left Intake Temperature 24 degrees C / 75 degrees F
  Right Intake Temperature 24 degrees C / 75 degrees F
  Left Exhaust Temperature 27 degrees C / 80 degrees F
  Right Exhaust Temperature 27 degrees C / 80 degrees F
  Power
    BIAS 3V3            3330 mV
    VDD 3V3             3300 mV
    VDD 2V5             2502 mV
    VDD 1V5             1496 mV
    VDD 1V2             1194 mV
    VDD 1V0             1000 mV
    SW0 VDD 1V0         1020 mV
    SW0 CVDD 1V025      1032 mV
    SW1 VDD 1V0         1022 mV
    SW1 CVDD 1V025      1030 mV
    VDD 12V0 DIV3_33    3414 mV

```

show chassis environment fpc 0 (PTX5000 Packet Transport Router)

```

user@switch> show chassis environment fpc 0
FPC 0 status:
  State                Online
  PMB Temperature      35 degrees C / 95 degrees F
  Intake Temperature   33 degrees C / 91 degrees F
  Exhaust A Temperature 51 degrees C / 123 degrees F
  Exhaust B Temperature 43 degrees C / 109 degrees F
  TL0 Temperature      48 degrees C / 118 degrees F
  TQ0 Temperature      53 degrees C / 127 degrees F
  TL1 Temperature      56 degrees C / 132 degrees F
  TQ1 Temperature      58 degrees C / 136 degrees F
  TL2 Temperature      55 degrees C / 131 degrees F
  TQ2 Temperature      57 degrees C / 134 degrees F
  TL3 Temperature      59 degrees C / 138 degrees F
  TQ3 Temperature      59 degrees C / 138 degrees F
  Power
    PMB 1.05v          1049 mV
    PMB 1.5v           1500 mV
    PMB 2.5v           2500 mV
    PMB 3.3v           3299 mV
    PFE0 1.5v          1500 mV
    PFE0 1.0v          999 mV
    TQ0 0.9v           900 mV
    TL0 0.9v           900 mV
    PFE1 1.5v          1499 mV
    PFE1 1.0v          999 mV
    TQ1 0.9v           899 mV
    TL1 0.9v           900 mV
    PFE2 1.5v          1500 mV
    PFE2 1.0v          1000 mV

```

TQ2	0.9v	900 mV
TL2	0.9v	900 mV
PFE3	1.5v	1499 mV
PFE3	1.0v	1000 mV
TQ3	0.9v	900 mV
TL3	0.9v	900 mV
Bias	3.3v	3327 mV
FPC	3.3v	3300 mV
FPC	2.5v	2500 mV
SAM	0.9v	900 mV
A	12.0v	2014 mV
B	12.0v	2030 mV

show chassis environment FPC 1 (MX Routers with Media Services Blade [MSB])

```
user@switch> show chassis environment fpc 1
FPC 1 status:
State                               Online
Temperature Intake                  36 degrees C / 96 degrees F
Temperature Exhaust A               39 degrees C / 102 degrees F
Temperature LU TSen                  52 degrees C / 125 degrees F
Temperature LU Chip                  54 degrees C / 129 degrees F
Temperature XM TSen                  52 degrees C / 125 degrees F
Temperature XM Chip                  60 degrees C / 140 degrees F
Temperature PCIe TSen                52 degrees C / 125 degrees F
Temperature PCIe Chip                69 degrees C / 156 degrees F
Power
MPC-BIAS3V3-z12106                  3302 mV
MPC-VDD3V3-z16100                    3325 mV
MPC-AVDD1V0-z16100                   1007 mV
MPC-PCIE_1V0-z16100                   904 mV
MPC-LU0_1V0-z12004                    996 mV
MPC-VDD_1V5-z12004                   1498 mV
MPC-12VA-BMR453                      11733 mV
MPC-12VB-BMR453                      11728 mV
MPC-XM_0V9-vt273m                    900 mV
I2C Slave Revision                   81
```


show chassis environment fpm

Syntax	show chassis environment fpm
Syntax (TX Matrix Routers)	show chassis environment fpm <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Routers)	show chassis environment fpm <lcc <i>number</i> sfc <i>number</i> >
Release Information	<p>Command introduced before Junos OS Release 7.4.</p> <p>sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.</p> <p>Command introduced in Junos OS Release 12.1 for T4000 Core Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p>
Description	(M40e, M120, M160, M320, MX Series, and T Series routers and the PTX Series Packet Transport Routers only) Display environmental information about the front panel module in the router.
Options	<p>none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display environmental information about the front panel modules (craft interfaces) on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the front panel modules (craft interfaces) on the TX Matrix Plus router and its attached routers.</p> <p>lcc <i>number</i>—(TX Matrix router and TX Matrix Plus router only) (Optional) Line-card chassis number.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> • 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. <p>scc—(TX Matrix router only) (Optional) Display environmental information about the front panel module (craft interface) on the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus router only) (Optional) Display environmental information about the front panel module (craft interface) on the TX Matrix Plus router (or switch-fabric chassis).</p>

Required Privilege Level view

Related Documentation

- *request chassis fpm resync*

List of Sample Output

[show chassis environment fpm \(M40e and M160 Routers\) on page 359](#)
[show chassis environment fpm \(M320 Router\) on page 359](#)
[show chassis environment fpm \(MX2010 Router\) on page 359](#)
[show chassis environment fpm \(MX2020 Router\) on page 359](#)
[show chassis environment fpm \(MX240 Router\) on page 360](#)
[show chassis environment fpm \(MX480 Router\) on page 360](#)
[show chassis environment fpm \(T Series Routers\) on page 360](#)
[show chassis environment fpm lcc \(TX Matrix Router\) on page 360](#)
[show chassis environment fpm scc \(TX Matrix Router\) on page 360](#)
[show chassis environment fpm sfc \(TX Matrix Plus Router\) on page 361](#)
[show chassis environment fpm \(T4000 Core Router\) on page 361](#)
[show chassis environment fpm \(PTX5000 Packet Transport Router\) on page 362](#)

Output Fields [Table 19 on page 358](#) lists the output fields for the **show chassis environment fpm** command. Output fields are listed in the approximate order in which they appear.

Table 19: show chassis environment fpm Output Fields

Field Name	Field Description
State	FPM status: <ul style="list-style-type: none"> • Online—FPM is online and running. • Offline—FPM is powered down.
FPM CMB Voltage	(M40e and M160 routers only) Information about the voltage supplied to the FPM chassis management bus (CMB) device. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM GBUS Voltage	(M320 and T Series routers only) Information about the voltage supplied to the FPM generic bus (GBUS) device. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM I2CS Voltage	(PTX Series only) Information about the voltage supplied to the FPM generic bus (I2CS) device. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM Display Voltage	Information about the voltage supplied to the FPM display. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.
FPM CMB Temperature	(M40e and M160 routers only) Temperature of the air flowing past the FPM CMB device
FPM GBUS Temperature	(M320 and T Series routers only) Temperature of the air flowing past the FPM GBUS device.
FPM I2CS Temperature	(PTX Series only) Temperature of the air flowing past the FPM I2CS device.

Table 19: show chassis environment fpm Output Fields (*continued*)

Field Name	Field Description
FPM Display Temperature	Temperature of the air flowing past the FPM display.
CMB Revision	(M40e and M160 routers only) Revision level of the CMB device.
GBUS Revision	(M320 and T Series routers only) Revision level of the GBUS device.
I2CS Revision	(MX2010 routers, MX2020 routers, and PTX Series only) Revision level of the I2CS device.

Sample Output

show chassis environment fpm (M40e and M160 Routers)

```

user@host> show chassis environment fpm
FPM status:
  State                               Online
  FPM CMB Voltage:
    5.0 V bias                        5030 mV
    8.0 V bias                        8083 mV
  FPM Display Voltage:
    5.0 V bias                        4998 mV
  FPM CMB temperature                 34 degrees C / 93 degrees F
  FPM Display temperature             35 degrees C / 95 degrees F
  CMB Revision                        12

```

show chassis environment fpm (M320 Router)

```

user@host> show chassis environment fpm
FPM status:
  State                               Online
  FPM GBUS Voltage:
    5.0 V                             5006 mV
    1.8 V bias                        1799 mV
    3.3 V bias                        3294 mV
    5.0 V bias                        4998 mV
    8.0 V bias                        7682 mV
  FPM GBUS temperature                30 degrees C / 86 degrees F
  GBUS Revision                       51

```

show chassis environment fpm (MX2010 Router)

```

user@host > show chassis environment fpm
FPM status:
  State                               Online
  I2CS Revision                       4

```

show chassis environment fpm (MX2020 Router)

```

user@host > show chassis environment fpm
FPM status:
  State                               Online
  I2CS Revision                       3

```

show chassis environment fpm (MX240 Router)

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

show chassis environment fpm (MX480 Router)

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

show chassis environment fpm (T Series Routers)

```
user@host> show chassis environment fpm
FPM status:
  State                Online
  FPM GBUS Voltage:
    1.8 V bias        1787 mV
    3.3 V bias        3286 mV
    5.0 V bias        4991 mV
    8.0 V bias        7162 mV
  FPM Display Voltage:
    5.0 V             4996 mV
  FPM GBUS temperature 29 degrees C / 84 degrees F
  FPM Display temperature 26 degrees C / 78 degrees F
  GBUS Revision        37
```

show chassis environment fpm lcc (TX Matrix Router)

```
user@host> show chassis environment fpm lcc 0
lcc0-re0:
-----
FPM status:
  State                Online
  FPM GBUS Voltage:
    1.8 V bias        1797 mV
    3.3 V bias        3294 mV
    5.0 V bias        5015 mV
    8.0 V bias        7470 mV
  FPM Display Voltage:
    5.0 V             5018 mV
  FPM GBUS temperature 25 degrees C / 77 degrees F
  FPM Display temperature 29 degrees C / 84 degrees F
  GBUS Revision        37
```

show chassis environment fpm scc (TX Matrix Router)

```
user@host> show chassis environment fpm scc
scc-re0:
-----
FPM status:
  State                Online
  FPM GBUS Voltage:
    1.8 V bias        1789 mV
    3.3 V bias        3296 mV
    5.0 V bias        5003 mV
    8.0 V bias        7592 mV
  FPM Display Voltage:
```

```

5.0 V          5010 mV
FPM GBUS temperature  22 degrees C / 71 degrees F
FPM Display temperature 27 degrees C / 80 degrees F
GBUS Revision        37

```

show chassis environment fpm sfc (TX Matrix Plus Router)

```
user@host> show chassis environment fpm sfc
```

```
sfc0-re0:
```

```

-----
FPM status:
State          Online
FPM I2CS Voltage:
  3.3 V        3300 mV
  5.0 V        5001 mV
  9.0 V FPD    8672 mV
FPM I2CS temperature 33 degrees C / 91 degrees F
I2CS Revision      69

```

```
lcc0-re0:
```

```

-----
FPM status:
State          Online
FPM GBUS Voltage:
  1.8 V bias   1802 mV
  3.3 V bias   3301 mV
  5.0 V bias   4984 mV
  8.0 V bias   7377 mV
FPM Display Voltage:
  5.0 V        5015 mV
FPM GBUS temperature 30 degrees C / 86 degrees F
FPM Display temperature 32 degrees C / 89 degrees F
GBUS Revision      37

```

```
lcc1-re0:
```

```

-----
FPM status:
State          Online
FPM GBUS Voltage:
  1.8 V bias   1789 mV
  3.3 V bias   3311 mV
  5.0 V bias   5013 mV
  8.0 V bias   7467 mV
FPM Display Voltage:
  5.0 V        5015 mV
FPM GBUS temperature 29 degrees C / 84 degrees F
FPM Display temperature 31 degrees C / 87 degrees F
GBUS Revision      37

```

show chassis environment fpm (T4000 Core Router)

```
user@host> show chassis environment fpm
```

```

CB 0 status:
State          Online Master
Temperature    34 degrees C / 93 degrees F
Power 1
  1.8 V        1804 mV
  2.5 V        2499 mV
  3.3 V        3317 mV
  3.3 V bias   3291 mV

```

```
4.6 V          4663 mV
5.0 V          4905 mV
8.0 V bias     7658 mV
12.0 V         11877 mV
Power 2
1.0 V          996 mV
1.2 V          1207 mV
3.3 V RE       3354 mV
Bus Revision   51
FPGA Revision  5
CB 1 status:
State          Online Standby
Temperature    36 degrees C / 96 degrees F
Power 1
1.8 V          1791 mV
2.5 V          2494 mV
3.3 V          3321 mV
3.3 V bias     3301 mV
4.6 V          4666 mV
5.0 V          4945 mV
8.0 V bias     7645 mV
12.0 V         11897 mV
Power 2
1.0 V          991 mV
1.2 V          1201 mV
3.3 V RE       3289 mV
Bus Revision   51
FPGA Revision  5

user@host> show chassis environment fpm
FPM status:
State          Online
FPM GBUS Voltage:
1.8 V bias     1802 mV
3.3 V bias     3294 mV
5.0 V bias     5003 mV
8.0 V bias     7306 mV
FPM Display Voltage:
5.0 V          5010 mV
FPM GBUS temperature 26 degrees C / 78 degrees F
FPM Display temperature 29 degrees C / 84 degrees F
GBUS Revision   37
```

show chassis environment fpm (PTX5000 Packet Transport Router)

```
user@host> show chassis environment fpm

FPM status:
State          Online
FPM I2CS Voltage:
3.3 V          3300 mV
5.0 V          4975 mV
FPM I2CS temperature 37 degrees C / 98 degrees F
I2CS Revision  109
```

show chassis environment monitored

Syntax	show chassis environment monitored
Release Information	Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.
Description	<p>(PTX Series Packet Transport Routers, and MX2010 and MX2020 routers) Display status information for monitored temperatures.</p> <p>On the PTX Series Packet Transport Routers, and on MX2010 and MX2020 routers, you can configure which temperatures are monitored for computing temperature alarms. Use this command to display only the temperatures that are monitored. Temperatures that are not included in the temperature alarm computations are not displayed.</p>
Options	This command has no options.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show chassis environment on page 258 • <i>Chassis-Level Feature Guide</i> • <i>Chassis Operational Mode Commands</i> • <i>PTX Series Getting Started Guide</i>
List of Sample Output	show chassis environment monitored (PTX5000 Packet Transport Router) on page 364 show chassis environment monitored (MX2010 Router) on page 364 show chassis environment monitored (MX2020 Router) on page 367
Output Fields	Table 20 on page 363 lists the output fields for the show chassis environment monitored command. Output fields are listed in the approximate order in which they appear.

Table 20: show chassis environment monitored Output Fields

Field Name	Field Description
Item	<p>Chassis component:</p> <ul style="list-style-type: none"> • (PTX Series Packet Transport Routers, and MX2010 and MX2020 routers)—Information about the chassis, Routing Engines, Control Boards (CBs), Switch Interface Boards (SIBs), PICs, and Flexible PIC Concentrators (FPCs).
Status	Status of the specified item. Status can be OK or Alarm .
Measurement	Temperature of the air flowing past the specified chassis component. Temperature is displayed in degrees Celsius (C) and degrees Fahrenheit (F).

Sample Output

show chassis environment monitored (PTX5000 Packet Transport Router)

```

user@host> show chassis environment monitored
Class Item                               Status      Measurement
Routing Engine 0 CPU                    OK          71 degrees C / 159 degrees F
Routing Engine 1 CPU                    OK          62 degrees C / 143 degrees F
CB 0 Exhaust A                          OK          45 degrees C / 113 degrees F
CB 0 Exhaust B                          OK          41 degrees C / 105 degrees F
CB 1 Exhaust A                          OK          39 degrees C / 102 degrees F
CB 1 Exhaust B                          OK          36 degrees C / 96 degrees F

```

show chassis environment monitored (MX2010 Router)

```

user@host > show chassis environment monitored
Class Item                               Status      Measurement
Temp CB 0 IntakeA-Zone0                  OK          37 degrees C / 98 degrees F
      CB 0 IntakeB-Zone1                  OK          31 degrees C / 87 degrees F
      CB 0 IntakeC-Zone0                  OK          39 degrees C / 102 degrees F
      CB 0 ExhaustA-Zone0                 OK          36 degrees C / 96 degrees F
      CB 0 ExhaustB-Zone1                 OK          32 degrees C / 89 degrees F
      CB 0 TCBC-Zone0                    OK          34 degrees C / 93 degrees F
      CB 1 IntakeA-Zone0                  OK          36 degrees C / 96 degrees F
      CB 1 IntakeB-Zone1                  OK          28 degrees C / 82 degrees F
      CB 1 IntakeC-Zone0                  OK          38 degrees C / 100 degrees F
      CB 1 ExhaustA-Zone0                 OK          36 degrees C / 96 degrees F
      CB 1 ExhaustB-Zone1                 OK          30 degrees C / 86 degrees F
      CB 1 TCBC-Zone0                    OK          33 degrees C / 91 degrees F
      SPMB 0 Intake                       OK          30 degrees C / 86 degrees F
      SPMB 1 Intake                       OK          28 degrees C / 82 degrees F
Routing Engine 0 CPU                    OK          32 degrees C / 89 degrees F
Routing Engine 1 CPU                    Present
SFB 0 Intake-Zone0                      OK          46 degrees C / 114 degrees F
SFB 0 Exhaust-Zone1                      OK          38 degrees C / 100 degrees F
SFB 0 IntakeA-Zone0                      OK          35 degrees C / 95 degrees F
SFB 0 IntakeB-Zone1                      OK          31 degrees C / 87 degrees F
SFB 0 Exhaust-Zone0                      OK          39 degrees C / 102 degrees F
SFB 0 SFB-XF2-Zone1                      OK          44 degrees C / 111 degrees F
SFB 0 SFB-XF1-Zone0                      OK          47 degrees C / 116 degrees F
SFB 0 SFB-XF0-Zone0                      OK          56 degrees C / 132 degrees F
SFB 1 Intake-Zone0                      OK          34 degrees C / 93 degrees F
SFB 1 Exhaust-Zone1                      OK          34 degrees C / 93 degrees F
SFB 1 IntakeA-Zone0                      OK          29 degrees C / 84 degrees F
SFB 1 IntakeB-Zone1                      OK          29 degrees C / 84 degrees F
SFB 1 Exhaust-Zone0                      OK          32 degrees C / 89 degrees F
SFB 1 SFB-XF2-Zone1                      OK          42 degrees C / 107 degrees F
SFB 1 SFB-XF1-Zone0                      OK          40 degrees C / 104 degrees F
SFB 1 SFB-XF0-Zone0                      OK          42 degrees C / 107 degrees F
SFB 2 Intake-Zone0                      OK          33 degrees C / 91 degrees F
SFB 2 Exhaust-Zone1                      OK          33 degrees C / 91 degrees F
SFB 2 IntakeA-Zone0                      OK          28 degrees C / 82 degrees F
SFB 2 IntakeB-Zone1                      OK          28 degrees C / 82 degrees F
SFB 2 Exhaust-Zone0                      OK          31 degrees C / 87 degrees F
SFB 2 SFB-XF2-Zone1                      OK          41 degrees C / 105 degrees F
SFB 2 SFB-XF1-Zone0                      OK          39 degrees C / 102 degrees F
SFB 2 SFB-XF0-Zone0                      OK          42 degrees C / 107 degrees F
SFB 3 Intake-Zone0                      OK          33 degrees C / 91 degrees F
SFB 3 Exhaust-Zone1                      OK          33 degrees C / 91 degrees F
SFB 3 IntakeA-Zone0                      OK          29 degrees C / 84 degrees F

```


SFB 3 IntakeB-Zone1	OK	28 degrees C / 82 degrees F
SFB 3 Exhaust-Zone0	OK	31 degrees C / 87 degrees F
SFB 3 SFB-XF2-Zone1	OK	43 degrees C / 109 degrees F
SFB 3 SFB-XF1-Zone0	OK	40 degrees C / 104 degrees F
SFB 3 SFB-XF0-Zone0	OK	42 degrees C / 107 degrees F
SFB 4 Intake-Zone0	OK	34 degrees C / 93 degrees F
SFB 4 Exhaust-Zone1	OK	34 degrees C / 93 degrees F
SFB 4 IntakeA-Zone0	OK	29 degrees C / 84 degrees F
SFB 4 IntakeB-Zone1	OK	28 degrees C / 82 degrees F
SFB 4 Exhaust-Zone0	OK	32 degrees C / 89 degrees F
SFB 4 SFB-XF2-Zone1	OK	43 degrees C / 109 degrees F
SFB 4 SFB-XF1-Zone0	OK	42 degrees C / 107 degrees F
SFB 4 SFB-XF0-Zone0	OK	43 degrees C / 109 degrees F
SFB 5 Intake-Zone0	OK	34 degrees C / 93 degrees F
SFB 5 Exhaust-Zone1	OK	34 degrees C / 93 degrees F
SFB 5 IntakeA-Zone0	OK	30 degrees C / 86 degrees F
SFB 5 IntakeB-Zone1	OK	28 degrees C / 82 degrees F
SFB 5 Exhaust-Zone0	OK	32 degrees C / 89 degrees F
SFB 5 SFB-XF2-Zone1	OK	41 degrees C / 105 degrees F
SFB 5 SFB-XF1-Zone0	OK	41 degrees C / 105 degrees F
SFB 5 SFB-XF0-Zone0	OK	44 degrees C / 111 degrees F
SFB 6 Intake-Zone0	OK	35 degrees C / 95 degrees F
SFB 6 Exhaust-Zone1	OK	34 degrees C / 93 degrees F
SFB 6 IntakeA-Zone0	OK	30 degrees C / 86 degrees F
SFB 6 IntakeB-Zone1	OK	29 degrees C / 84 degrees F
SFB 6 Exhaust-Zone0	OK	33 degrees C / 91 degrees F
SFB 6 SFB-XF2-Zone1	OK	44 degrees C / 111 degrees F
SFB 6 SFB-XF1-Zone0	OK	43 degrees C / 109 degrees F
SFB 6 SFB-XF0-Zone0	OK	46 degrees C / 114 degrees F
SFB 7 Intake-Zone0	OK	39 degrees C / 102 degrees F
SFB 7 Exhaust-Zone1	OK	34 degrees C / 93 degrees F
SFB 7 IntakeA-Zone0	OK	34 degrees C / 93 degrees F
SFB 7 IntakeB-Zone1	OK	29 degrees C / 84 degrees F
SFB 7 Exhaust-Zone0	OK	37 degrees C / 98 degrees F
SFB 7 SFB-XF2-Zone1	OK	43 degrees C / 109 degrees F
SFB 7 SFB-XF1-Zone0	OK	47 degrees C / 116 degrees F
SFB 7 SFB-XF0-Zone0	OK	52 degrees C / 125 degrees F
FPC 0 Intake	OK	36 degrees C / 96 degrees F
FPC 0 Exhaust A	OK	42 degrees C / 107 degrees F
FPC 0 Exhaust B	OK	51 degrees C / 123 degrees F
FPC 0 LU 0 TSen	OK	49 degrees C / 120 degrees F
FPC 0 LU 0 Chip	OK	50 degrees C / 122 degrees F
FPC 0 LU 1 TSen	OK	49 degrees C / 120 degrees F
FPC 0 LU 1 Chip	OK	54 degrees C / 129 degrees F
FPC 0 LU 2 TSen	OK	49 degrees C / 120 degrees F
FPC 0 LU 2 Chip	OK	45 degrees C / 113 degrees F
FPC 0 LU 3 TSen	OK	49 degrees C / 120 degrees F
FPC 0 LU 3 Chip	OK	46 degrees C / 114 degrees F
FPC 0 MQ 0 TSen	OK	40 degrees C / 104 degrees F
FPC 0 MQ 0 Chip	OK	41 degrees C / 105 degrees F
FPC 0 MQ 1 TSen	OK	40 degrees C / 104 degrees F
FPC 0 MQ 1 Chip	OK	44 degrees C / 111 degrees F
FPC 0 MQ 2 TSen	OK	40 degrees C / 104 degrees F
FPC 0 MQ 2 Chip	OK	38 degrees C / 100 degrees F
FPC 0 MQ 3 TSen	OK	40 degrees C / 104 degrees F
FPC 0 MQ 3 Chip	OK	41 degrees C / 105 degrees F
FPC 1 Intake	OK	34 degrees C / 93 degrees F
FPC 1 Exhaust A	OK	46 degrees C / 114 degrees F
FPC 1 Exhaust B	OK	54 degrees C / 129 degrees F
FPC 1 LU 0 TSen	OK	45 degrees C / 113 degrees F
FPC 1 LU 0 Chip	OK	55 degrees C / 131 degrees F

FPC 1 LU 1 TSen	OK	45 degrees C / 113 degrees F
FPC 1 LU 1 Chip	OK	44 degrees C / 111 degrees F
FPC 1 LU 2 TSen	OK	45 degrees C / 113 degrees F
FPC 1 LU 2 Chip	OK	50 degrees C / 122 degrees F
FPC 1 LU 3 TSen	OK	45 degrees C / 113 degrees F
FPC 1 LU 3 Chip	OK	58 degrees C / 136 degrees F
FPC 1 XM 0 TSen	OK	45 degrees C / 113 degrees F
FPC 1 XM 0 Chip	OK	52 degrees C / 125 degrees F
FPC 1 XF 0 TSen	OK	45 degrees C / 113 degrees F
FPC 1 XF 0 Chip	OK	63 degrees C / 145 degrees F
FPC 1 PLX Switch TSen	OK	45 degrees C / 113 degrees F
FPC 1 PLX Switch Chip	OK	47 degrees C / 116 degrees F
FPC 8 Intake	OK	32 degrees C / 89 degrees F
FPC 8 Exhaust A	OK	44 degrees C / 111 degrees F
FPC 8 Exhaust B	OK	37 degrees C / 98 degrees F
FPC 8 LU 0 TCAM TSen	OK	41 degrees C / 105 degrees F
FPC 8 LU 0 TCAM Chip	OK	49 degrees C / 120 degrees F
FPC 8 LU 0 TSen	OK	41 degrees C / 105 degrees F
FPC 8 LU 0 Chip	OK	52 degrees C / 125 degrees F
FPC 8 MQ 0 TSen	OK	41 degrees C / 105 degrees F
FPC 8 MQ 0 Chip	OK	47 degrees C / 116 degrees F
FPC 8 LU 1 TCAM TSen	OK	39 degrees C / 102 degrees F
FPC 8 LU 1 TCAM Chip	OK	42 degrees C / 107 degrees F
FPC 8 LU 1 TSen	OK	39 degrees C / 102 degrees F
FPC 8 LU 1 Chip	OK	46 degrees C / 114 degrees F
FPC 8 MQ 1 TSen	OK	39 degrees C / 102 degrees F
FPC 8 MQ 1 Chip	OK	45 degrees C / 113 degrees F
FPC 9 Intake	OK	34 degrees C / 93 degrees F
FPC 9 Exhaust A	OK	41 degrees C / 105 degrees F
FPC 9 Exhaust B	OK	54 degrees C / 129 degrees F
FPC 9 LU 0 TSen	OK	51 degrees C / 123 degrees F
FPC 9 LU 0 Chip	OK	52 degrees C / 125 degrees F
FPC 9 LU 1 TSen	OK	51 degrees C / 123 degrees F
FPC 9 LU 1 Chip	OK	55 degrees C / 131 degrees F
FPC 9 LU 2 TSen	OK	51 degrees C / 123 degrees F
FPC 9 LU 2 Chip	OK	47 degrees C / 116 degrees F
FPC 9 LU 3 TSen	OK	51 degrees C / 123 degrees F
FPC 9 LU 3 Chip	OK	47 degrees C / 116 degrees F
FPC 9 MQ 0 TSen	OK	40 degrees C / 104 degrees F
FPC 9 MQ 0 Chip	OK	42 degrees C / 107 degrees F
FPC 9 MQ 1 TSen	OK	40 degrees C / 104 degrees F
FPC 9 MQ 1 Chip	OK	44 degrees C / 111 degrees F
FPC 9 MQ 2 TSen	OK	40 degrees C / 104 degrees F
FPC 9 MQ 2 Chip	OK	38 degrees C / 100 degrees F
FPC 9 MQ 3 TSen	OK	40 degrees C / 104 degrees F
FPC 9 MQ 3 Chip	OK	40 degrees C / 104 degrees F
ADC 0 Intake	OK	35 degrees C / 95 degrees F
ADC 0 Exhaust	OK	44 degrees C / 111 degrees F
ADC 0 ADC-XF1	OK	48 degrees C / 118 degrees F
ADC 0 ADC-XF0	OK	59 degrees C / 138 degrees F
ADC 1 Intake	OK	34 degrees C / 93 degrees F
ADC 1 Exhaust	OK	45 degrees C / 113 degrees F
ADC 1 ADC-XF1	OK	53 degrees C / 127 degrees F
ADC 1 ADC-XF0	OK	56 degrees C / 132 degrees F
ADC 8 Intake	OK	35 degrees C / 95 degrees F
ADC 8 Exhaust	OK	41 degrees C / 105 degrees F
ADC 8 ADC-XF1	OK	52 degrees C / 125 degrees F
ADC 8 ADC-XF0	OK	55 degrees C / 131 degrees F
ADC 9 Intake	OK	33 degrees C / 91 degrees F
ADC 9 Exhaust	OK	42 degrees C / 107 degrees F

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ADC 9 ADC-XF1          OK          55 degrees C / 131 degrees F
ADC 9 ADC-XF0          OK          56 degrees C / 132 degrees F

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show chassis environment monitored (MX2020 Router)

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Class	Item	Status	Measurement
Temp	CB 0 IntakeA-Zone0	OK	44 degrees C / 111 degrees F
	CB 0 IntakeB-Zone1	OK	34 degrees C / 93 degrees F
	CB 0 IntakeC-Zone0	OK	46 degrees C / 114 degrees F
	CB 0 ExhaustA-Zone0	OK	44 degrees C / 111 degrees F
	CB 0 ExhaustB-Zone1	OK	36 degrees C / 96 degrees F
	CB 0 TCBC-Zone0	OK	39 degrees C / 102 degrees F
	CB 1 IntakeA-Zone0	OK	46 degrees C / 114 degrees F
	CB 1 IntakeB-Zone1	OK	43 degrees C / 109 degrees F
	CB 1 IntakeC-Zone0	OK	47 degrees C / 116 degrees F
	CB 1 ExhaustA-Zone0	OK	45 degrees C / 113 degrees F
	CB 1 ExhaustB-Zone1	OK	42 degrees C / 107 degrees F
	CB 1 TCBC-Zone0	OK	46 degrees C / 114 degrees F
	SPMB 0 Intake	OK	33 degrees C / 91 degrees F
	SPMB 1 Intake	OK	43 degrees C / 109 degrees F
	Routing Engine 0 CPU	OK	34 degrees C / 93 degrees F
	Routing Engine 1 CPU	OK	42 degrees C / 107 degrees F
	SFB 0 Intake-Zone0	OK	52 degrees C / 125 degrees F
	SFB 0 Exhaust-Zone1	OK	45 degrees C / 113 degrees F
	SFB 0 IntakeA-Zone0	OK	47 degrees C / 116 degrees F
	SFB 0 IntakeB-Zone1	OK	38 degrees C / 100 degrees F
	SFB 0 Exhaust-Zone0	OK	49 degrees C / 120 degrees F
	SFB 0 SFB-XF2-Zone1	OK	59 degrees C / 138 degrees F
	SFB 0 SFB-XF1-Zone0	OK	65 degrees C / 149 degrees F
	SFB 0 SFB-XF0-Zone0	OK	65 degrees C / 149 degrees F
	SFB 1 Intake-Zone0	OK	53 degrees C / 127 degrees F
	SFB 1 Exhaust-Zone1	OK	45 degrees C / 113 degrees F
	SFB 1 IntakeA-Zone0	OK	48 degrees C / 118 degrees F
	SFB 1 IntakeB-Zone1	OK	39 degrees C / 102 degrees F
	SFB 1 Exhaust-Zone0	OK	48 degrees C / 118 degrees F
	SFB 1 SFB-XF2-Zone1	OK	60 degrees C / 140 degrees F
	SFB 1 SFB-XF1-Zone0	OK	64 degrees C / 147 degrees F
	SFB 1 SFB-XF0-Zone0	OK	66 degrees C / 150 degrees F
	SFB 2 Intake-Zone0	OK	54 degrees C / 129 degrees F
	SFB 2 Exhaust-Zone1	OK	46 degrees C / 114 degrees F
	SFB 2 IntakeA-Zone0	OK	48 degrees C / 118 degrees F
	SFB 2 IntakeB-Zone1	OK	39 degrees C / 102 degrees F
	SFB 2 Exhaust-Zone0	OK	50 degrees C / 122 degrees F
	SFB 2 SFB-XF2-Zone1	OK	63 degrees C / 145 degrees F
	SFB 2 SFB-XF1-Zone0	OK	67 degrees C / 152 degrees F
	SFB 2 SFB-XF0-Zone0	OK	67 degrees C / 152 degrees F
	SFB 3 Intake-Zone0	OK	54 degrees C / 129 degrees F
	SFB 3 Exhaust-Zone1	OK	46 degrees C / 114 degrees F
	SFB 3 IntakeA-Zone0	OK	50 degrees C / 122 degrees F
	SFB 3 IntakeB-Zone1	OK	40 degrees C / 104 degrees F
	SFB 3 Exhaust-Zone0	OK	50 degrees C / 122 degrees F
	SFB 3 SFB-XF2-Zone1	OK	64 degrees C / 147 degrees F
	SFB 3 SFB-XF1-Zone0	OK	66 degrees C / 150 degrees F
	SFB 3 SFB-XF0-Zone0	OK	68 degrees C / 154 degrees F
	SFB 4 Intake-Zone0	OK	55 degrees C / 131 degrees F
	SFB 4 Exhaust-Zone1	OK	48 degrees C / 118 degrees F
	SFB 4 IntakeA-Zone0	OK	51 degrees C / 123 degrees F
	SFB 4 IntakeB-Zone1	OK	42 degrees C / 107 degrees F
	SFB 4 Exhaust-Zone0	OK	51 degrees C / 123 degrees F
	SFB 4 SFB-XF2-Zone1	OK	63 degrees C / 145 degrees F

SFB 4 SFB-XF1-Zone0	OK	66 degrees C / 150 degrees F
SFB 4 SFB-XF0-Zone0	OK	68 degrees C / 154 degrees F
SFB 5 Intake-Zone0	OK	55 degrees C / 131 degrees F
SFB 5 Exhaust-Zone1	OK	49 degrees C / 120 degrees F
SFB 5 IntakeA-Zone0	OK	51 degrees C / 123 degrees F
SFB 5 IntakeB-Zone1	OK	43 degrees C / 109 degrees F
SFB 5 Exhaust-Zone0	OK	51 degrees C / 123 degrees F
SFB 5 SFB-XF2-Zone1	OK	65 degrees C / 149 degrees F
SFB 5 SFB-XF1-Zone0	OK	66 degrees C / 150 degrees F
SFB 5 SFB-XF0-Zone0	OK	71 degrees C / 159 degrees F
SFB 6 Intake-Zone0	OK	55 degrees C / 131 degrees F
SFB 6 Exhaust-Zone1	OK	49 degrees C / 120 degrees F
SFB 6 IntakeA-Zone0	OK	51 degrees C / 123 degrees F
SFB 6 IntakeB-Zone1	OK	43 degrees C / 109 degrees F
SFB 6 Exhaust-Zone0	OK	51 degrees C / 123 degrees F
SFB 6 SFB-XF2-Zone1	OK	64 degrees C / 147 degrees F
SFB 6 SFB-XF1-Zone0	OK	66 degrees C / 150 degrees F
SFB 6 SFB-XF0-Zone0	OK	68 degrees C / 154 degrees F
SFB 7 Intake-Zone0	OK	55 degrees C / 131 degrees F
SFB 7 Exhaust-Zone1	OK	49 degrees C / 120 degrees F
SFB 7 IntakeA-Zone0	OK	51 degrees C / 123 degrees F
SFB 7 IntakeB-Zone1	OK	43 degrees C / 109 degrees F
SFB 7 Exhaust-Zone0	OK	52 degrees C / 125 degrees F
SFB 7 SFB-XF2-Zone1	OK	66 degrees C / 150 degrees F
SFB 7 SFB-XF1-Zone0	OK	67 degrees C / 152 degrees F
SFB 7 SFB-XF0-Zone0	OK	70 degrees C / 158 degrees F
FPC 0 Intake	OK	41 degrees C / 105 degrees F
FPC 0 Exhaust A	OK	48 degrees C / 118 degrees F
FPC 0 Exhaust B	OK	60 degrees C / 140 degrees F
FPC 0 LU 0 TSen	OK	56 degrees C / 132 degrees F
FPC 0 LU 0 Chip	OK	59 degrees C / 138 degrees F
FPC 0 LU 1 TSen	OK	56 degrees C / 132 degrees F
FPC 0 LU 1 Chip	OK	61 degrees C / 141 degrees F
FPC 0 LU 2 TSen	OK	56 degrees C / 132 degrees F
FPC 0 LU 2 Chip	OK	52 degrees C / 125 degrees F
FPC 0 LU 3 TSen	OK	56 degrees C / 132 degrees F
FPC 0 LU 3 Chip	OK	52 degrees C / 125 degrees F
FPC 0 MQ 0 TSen	OK	49 degrees C / 120 degrees F
FPC 0 MQ 0 Chip	OK	49 degrees C / 120 degrees F
FPC 0 MQ 1 TSen	OK	49 degrees C / 120 degrees F
FPC 0 MQ 1 Chip	OK	52 degrees C / 125 degrees F
FPC 0 MQ 2 TSen	OK	49 degrees C / 120 degrees F
FPC 0 MQ 2 Chip	OK	45 degrees C / 113 degrees F
FPC 0 MQ 3 TSen	OK	49 degrees C / 120 degrees F
FPC 0 MQ 3 Chip	OK	46 degrees C / 114 degrees F
FPC 1 Intake	OK	39 degrees C / 102 degrees F
FPC 1 Exhaust A	OK	48 degrees C / 118 degrees F
FPC 1 Exhaust B	OK	55 degrees C / 131 degrees F
FPC 1 LU 0 TSen	OK	52 degrees C / 125 degrees F
FPC 1 LU 0 Chip	OK	54 degrees C / 129 degrees F
FPC 1 LU 1 TSen	OK	52 degrees C / 125 degrees F
FPC 1 LU 1 Chip	OK	56 degrees C / 132 degrees F
FPC 1 LU 2 TSen	OK	52 degrees C / 125 degrees F
FPC 1 LU 2 Chip	OK	49 degrees C / 120 degrees F
FPC 1 LU 3 TSen	OK	52 degrees C / 125 degrees F
FPC 1 LU 3 Chip	OK	50 degrees C / 122 degrees F
FPC 1 MQ 0 TSen	OK	48 degrees C / 118 degrees F
FPC 1 MQ 0 Chip	OK	48 degrees C / 118 degrees F
FPC 1 MQ 1 TSen	OK	48 degrees C / 118 degrees F
FPC 1 MQ 1 Chip	OK	51 degrees C / 123 degrees F
FPC 1 MQ 2 TSen	OK	48 degrees C / 118 degrees F

FPC 1 MQ 2 Chip	OK	45 degrees C / 113 degrees F
FPC 1 MQ 3 TSen	OK	48 degrees C / 118 degrees F
FPC 1 MQ 3 Chip	OK	45 degrees C / 113 degrees F
FPC 2 Intake	OK	39 degrees C / 102 degrees F
FPC 2 Exhaust A	OK	48 degrees C / 118 degrees F
FPC 2 Exhaust B	OK	58 degrees C / 136 degrees F
FPC 2 LU 0 TSen	OK	55 degrees C / 131 degrees F
FPC 2 LU 0 Chip	OK	57 degrees C / 134 degrees F
FPC 2 LU 1 TSen	OK	55 degrees C / 131 degrees F
FPC 2 LU 1 Chip	OK	63 degrees C / 145 degrees F
FPC 2 LU 2 TSen	OK	55 degrees C / 131 degrees F
FPC 2 LU 2 Chip	OK	51 degrees C / 123 degrees F
FPC 2 LU 3 TSen	OK	55 degrees C / 131 degrees F
FPC 2 LU 3 Chip	OK	52 degrees C / 125 degrees F
FPC 2 MQ 0 TSen	OK	48 degrees C / 118 degrees F
FPC 2 MQ 0 Chip	OK	50 degrees C / 122 degrees F
FPC 2 MQ 1 TSen	OK	48 degrees C / 118 degrees F
FPC 2 MQ 1 Chip	OK	52 degrees C / 125 degrees F
FPC 2 MQ 2 TSen	OK	48 degrees C / 118 degrees F
FPC 2 MQ 2 Chip	OK	47 degrees C / 116 degrees F
FPC 2 MQ 3 TSen	OK	48 degrees C / 118 degrees F
FPC 2 MQ 3 Chip	OK	47 degrees C / 116 degrees F
FPC 3 Intake	OK	41 degrees C / 105 degrees F
FPC 3 Exhaust A	OK	48 degrees C / 118 degrees F
FPC 3 Exhaust B	OK	58 degrees C / 136 degrees F
FPC 3 LU 0 TSen	OK	56 degrees C / 132 degrees F
FPC 3 LU 0 Chip	OK	59 degrees C / 138 degrees F
FPC 3 LU 1 TSen	OK	56 degrees C / 132 degrees F
FPC 3 LU 1 Chip	OK	61 degrees C / 141 degrees F
FPC 3 LU 2 TSen	OK	56 degrees C / 132 degrees F
FPC 3 LU 2 Chip	OK	51 degrees C / 123 degrees F
FPC 3 LU 3 TSen	OK	56 degrees C / 132 degrees F
FPC 3 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 3 MQ 0 TSen	OK	50 degrees C / 122 degrees F
FPC 3 MQ 0 Chip	OK	51 degrees C / 123 degrees F
FPC 3 MQ 1 TSen	OK	50 degrees C / 122 degrees F
FPC 3 MQ 1 Chip	OK	55 degrees C / 131 degrees F
FPC 3 MQ 2 TSen	OK	50 degrees C / 122 degrees F
FPC 3 MQ 2 Chip	OK	47 degrees C / 116 degrees F
FPC 3 MQ 3 TSen	OK	50 degrees C / 122 degrees F
FPC 3 MQ 3 Chip	OK	50 degrees C / 122 degrees F
FPC 4 Intake	OK	41 degrees C / 105 degrees F
FPC 4 Exhaust A	OK	48 degrees C / 118 degrees F
FPC 4 Exhaust B	OK	59 degrees C / 138 degrees F
FPC 4 LU 0 TSen	OK	56 degrees C / 132 degrees F
FPC 4 LU 0 Chip	OK	60 degrees C / 140 degrees F
FPC 4 LU 1 TSen	OK	56 degrees C / 132 degrees F
FPC 4 LU 1 Chip	OK	64 degrees C / 147 degrees F
FPC 4 LU 2 TSen	OK	56 degrees C / 132 degrees F
FPC 4 LU 2 Chip	OK	51 degrees C / 123 degrees F
FPC 4 LU 3 TSen	OK	56 degrees C / 132 degrees F
FPC 4 LU 3 Chip	OK	54 degrees C / 129 degrees F
FPC 4 MQ 0 TSen	OK	49 degrees C / 120 degrees F
FPC 4 MQ 0 Chip	OK	53 degrees C / 127 degrees F
FPC 4 MQ 1 TSen	OK	49 degrees C / 120 degrees F
FPC 4 MQ 1 Chip	OK	55 degrees C / 131 degrees F
FPC 4 MQ 2 TSen	OK	49 degrees C / 120 degrees F
FPC 4 MQ 2 Chip	OK	48 degrees C / 118 degrees F
FPC 4 MQ 3 TSen	OK	49 degrees C / 120 degrees F
FPC 4 MQ 3 Chip	OK	49 degrees C / 120 degrees F
FPC 5 Intake	OK	42 degrees C / 107 degrees F

FPC 5 Exhaust A	OK	49 degrees C / 120 degrees F
FPC 5 Exhaust B	OK	61 degrees C / 141 degrees F
FPC 5 LU 0 TSen	OK	58 degrees C / 136 degrees F
FPC 5 LU 0 Chip	OK	61 degrees C / 141 degrees F
FPC 5 LU 1 TSen	OK	58 degrees C / 136 degrees F
FPC 5 LU 1 Chip	OK	64 degrees C / 147 degrees F
FPC 5 LU 2 TSen	OK	58 degrees C / 136 degrees F
FPC 5 LU 2 Chip	OK	56 degrees C / 132 degrees F
FPC 5 LU 3 TSen	OK	58 degrees C / 136 degrees F
FPC 5 LU 3 Chip	OK	54 degrees C / 129 degrees F
FPC 5 MQ 0 TSen	OK	51 degrees C / 123 degrees F
FPC 5 MQ 0 Chip	OK	53 degrees C / 127 degrees F
FPC 5 MQ 1 TSen	OK	51 degrees C / 123 degrees F
FPC 5 MQ 1 Chip	OK	55 degrees C / 131 degrees F
FPC 5 MQ 2 TSen	OK	51 degrees C / 123 degrees F
FPC 5 MQ 2 Chip	OK	50 degrees C / 122 degrees F
FPC 5 MQ 3 TSen	OK	51 degrees C / 123 degrees F
FPC 5 MQ 3 Chip	OK	49 degrees C / 120 degrees F
FPC 6 Intake	OK	42 degrees C / 107 degrees F
FPC 6 Exhaust A	OK	50 degrees C / 122 degrees F
FPC 6 Exhaust B	OK	61 degrees C / 141 degrees F
FPC 6 LU 0 TSen	OK	58 degrees C / 136 degrees F
FPC 6 LU 0 Chip	OK	62 degrees C / 143 degrees F
FPC 6 LU 1 TSen	OK	58 degrees C / 136 degrees F
FPC 6 LU 1 Chip	OK	64 degrees C / 147 degrees F
FPC 6 LU 2 TSen	OK	58 degrees C / 136 degrees F
FPC 6 LU 2 Chip	OK	56 degrees C / 132 degrees F
FPC 6 LU 3 TSen	OK	58 degrees C / 136 degrees F
FPC 6 LU 3 Chip	OK	56 degrees C / 132 degrees F
FPC 6 MQ 0 TSen	OK	51 degrees C / 123 degrees F
FPC 6 MQ 0 Chip	OK	58 degrees C / 136 degrees F
FPC 6 MQ 1 TSen	OK	51 degrees C / 123 degrees F
FPC 6 MQ 1 Chip	OK	61 degrees C / 141 degrees F
FPC 6 MQ 2 TSen	OK	51 degrees C / 123 degrees F
FPC 6 MQ 2 Chip	OK	51 degrees C / 123 degrees F
FPC 6 MQ 3 TSen	OK	51 degrees C / 123 degrees F
FPC 6 MQ 3 Chip	OK	51 degrees C / 123 degrees F
FPC 7 Intake	OK	42 degrees C / 107 degrees F
FPC 7 Exhaust A	OK	50 degrees C / 122 degrees F
FPC 7 Exhaust B	OK	61 degrees C / 141 degrees F
FPC 7 LU 0 TSen	OK	58 degrees C / 136 degrees F
FPC 7 LU 0 Chip	OK	59 degrees C / 138 degrees F
FPC 7 LU 1 TSen	OK	58 degrees C / 136 degrees F
FPC 7 LU 1 Chip	OK	64 degrees C / 147 degrees F
FPC 7 LU 2 TSen	OK	58 degrees C / 136 degrees F
FPC 7 LU 2 Chip	OK	54 degrees C / 129 degrees F
FPC 7 LU 3 TSen	OK	58 degrees C / 136 degrees F
FPC 7 LU 3 Chip	OK	53 degrees C / 127 degrees F
FPC 7 MQ 0 TSen	OK	51 degrees C / 123 degrees F
FPC 7 MQ 0 Chip	OK	53 degrees C / 127 degrees F
FPC 7 MQ 1 TSen	OK	51 degrees C / 123 degrees F
FPC 7 MQ 1 Chip	OK	54 degrees C / 129 degrees F
FPC 7 MQ 2 TSen	OK	51 degrees C / 123 degrees F
FPC 7 MQ 2 Chip	OK	48 degrees C / 118 degrees F
FPC 7 MQ 3 TSen	OK	51 degrees C / 123 degrees F
FPC 7 MQ 3 Chip	OK	48 degrees C / 118 degrees F
FPC 8 Intake	OK	42 degrees C / 107 degrees F
FPC 8 Exhaust A	OK	50 degrees C / 122 degrees F
FPC 8 Exhaust B	OK	61 degrees C / 141 degrees F
FPC 8 LU 0 TSen	OK	58 degrees C / 136 degrees F
FPC 8 LU 0 Chip	OK	63 degrees C / 145 degrees F

FPC 8 LU 1 TSen	OK	58 degrees C / 136 degrees F
FPC 8 LU 1 Chip	OK	65 degrees C / 149 degrees F
FPC 8 LU 2 TSen	OK	58 degrees C / 136 degrees F
FPC 8 LU 2 Chip	OK	56 degrees C / 132 degrees F
FPC 8 LU 3 TSen	OK	58 degrees C / 136 degrees F
FPC 8 LU 3 Chip	OK	56 degrees C / 132 degrees F
FPC 8 MQ 0 TSen	OK	50 degrees C / 122 degrees F
FPC 8 MQ 0 Chip	OK	53 degrees C / 127 degrees F
FPC 8 MQ 1 TSen	OK	50 degrees C / 122 degrees F
FPC 8 MQ 1 Chip	OK	58 degrees C / 136 degrees F
FPC 8 MQ 2 TSen	OK	50 degrees C / 122 degrees F
FPC 8 MQ 2 Chip	OK	48 degrees C / 118 degrees F
FPC 8 MQ 3 TSen	OK	50 degrees C / 122 degrees F
FPC 8 MQ 3 Chip	OK	49 degrees C / 120 degrees F
FPC 9 Intake	OK	43 degrees C / 109 degrees F
FPC 9 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 9 Exhaust B	OK	61 degrees C / 141 degrees F
FPC 9 LU 0 TSen	OK	58 degrees C / 136 degrees F
FPC 9 LU 0 Chip	OK	61 degrees C / 141 degrees F
FPC 9 LU 1 TSen	OK	58 degrees C / 136 degrees F
FPC 9 LU 1 Chip	OK	63 degrees C / 145 degrees F
FPC 9 LU 2 TSen	OK	58 degrees C / 136 degrees F
FPC 9 LU 2 Chip	OK	55 degrees C / 131 degrees F
FPC 9 LU 3 TSen	OK	58 degrees C / 136 degrees F
FPC 9 LU 3 Chip	OK	54 degrees C / 129 degrees F
FPC 9 MQ 0 TSen	OK	52 degrees C / 125 degrees F
FPC 9 MQ 0 Chip	OK	53 degrees C / 127 degrees F
FPC 9 MQ 1 TSen	OK	52 degrees C / 125 degrees F
FPC 9 MQ 1 Chip	OK	54 degrees C / 129 degrees F
FPC 9 MQ 2 TSen	OK	52 degrees C / 125 degrees F
FPC 9 MQ 2 Chip	OK	48 degrees C / 118 degrees F
FPC 9 MQ 3 TSen	OK	52 degrees C / 125 degrees F
FPC 9 MQ 3 Chip	OK	49 degrees C / 120 degrees F
FPC 10 Intake	OK	44 degrees C / 111 degrees F
FPC 10 Exhaust A	OK	48 degrees C / 118 degrees F
FPC 10 Exhaust B	OK	54 degrees C / 129 degrees F
FPC 10 LU 0 TSen	OK	53 degrees C / 127 degrees F
FPC 10 LU 0 Chip	OK	54 degrees C / 129 degrees F
FPC 10 LU 1 TSen	OK	53 degrees C / 127 degrees F
FPC 10 LU 1 Chip	OK	58 degrees C / 136 degrees F
FPC 10 LU 2 TSen	OK	53 degrees C / 127 degrees F
FPC 10 LU 2 Chip	OK	51 degrees C / 123 degrees F
FPC 10 LU 3 TSen	OK	53 degrees C / 127 degrees F
FPC 10 LU 3 Chip	OK	51 degrees C / 123 degrees F
FPC 10 MQ 0 TSen	OK	49 degrees C / 120 degrees F
FPC 10 MQ 0 Chip	OK	50 degrees C / 122 degrees F
FPC 10 MQ 1 TSen	OK	49 degrees C / 120 degrees F
FPC 10 MQ 1 Chip	OK	52 degrees C / 125 degrees F
FPC 10 MQ 2 TSen	OK	49 degrees C / 120 degrees F
FPC 10 MQ 2 Chip	OK	48 degrees C / 118 degrees F
FPC 10 MQ 3 TSen	OK	49 degrees C / 120 degrees F
FPC 10 MQ 3 Chip	OK	48 degrees C / 118 degrees F
FPC 11 Intake	OK	39 degrees C / 102 degrees F
FPC 11 Exhaust A	OK	47 degrees C / 116 degrees F
FPC 11 Exhaust B	OK	51 degrees C / 123 degrees F
FPC 11 LU 0 TSen	OK	50 degrees C / 122 degrees F
FPC 11 LU 0 Chip	OK	52 degrees C / 125 degrees F
FPC 11 LU 1 TSen	OK	50 degrees C / 122 degrees F
FPC 11 LU 1 Chip	OK	55 degrees C / 131 degrees F
FPC 11 LU 2 TSen	OK	50 degrees C / 122 degrees F
FPC 11 LU 2 Chip	OK	49 degrees C / 120 degrees F

FPC 11 LU 3 TSen	OK	50 degrees C / 122 degrees F
FPC 11 LU 3 Chip	OK	49 degrees C / 120 degrees F
FPC 11 MQ 0 TSen	OK	47 degrees C / 116 degrees F
FPC 11 MQ 0 Chip	OK	47 degrees C / 116 degrees F
FPC 11 MQ 1 TSen	OK	47 degrees C / 116 degrees F
FPC 11 MQ 1 Chip	OK	51 degrees C / 123 degrees F
FPC 11 MQ 2 TSen	OK	47 degrees C / 116 degrees F
FPC 11 MQ 2 Chip	OK	45 degrees C / 113 degrees F
FPC 11 MQ 3 TSen	OK	47 degrees C / 116 degrees F
FPC 11 MQ 3 Chip	OK	49 degrees C / 120 degrees F
FPC 12 Intake	OK	39 degrees C / 102 degrees F
FPC 12 Exhaust A	OK	47 degrees C / 116 degrees F
FPC 12 Exhaust B	OK	50 degrees C / 122 degrees F
FPC 12 LU 0 TSen	OK	49 degrees C / 120 degrees F
FPC 12 LU 0 Chip	OK	51 degrees C / 123 degrees F
FPC 12 LU 1 TSen	OK	49 degrees C / 120 degrees F
FPC 12 LU 1 Chip	OK	54 degrees C / 129 degrees F
FPC 12 LU 2 TSen	OK	49 degrees C / 120 degrees F
FPC 12 LU 2 Chip	OK	47 degrees C / 116 degrees F
FPC 12 LU 3 TSen	OK	49 degrees C / 120 degrees F
FPC 12 LU 3 Chip	OK	49 degrees C / 120 degrees F
FPC 12 MQ 0 TSen	OK	47 degrees C / 116 degrees F
FPC 12 MQ 0 Chip	OK	46 degrees C / 114 degrees F
FPC 12 MQ 1 TSen	OK	47 degrees C / 116 degrees F
FPC 12 MQ 1 Chip	OK	51 degrees C / 123 degrees F
FPC 12 MQ 2 TSen	OK	47 degrees C / 116 degrees F
FPC 12 MQ 2 Chip	OK	45 degrees C / 113 degrees F
FPC 12 MQ 3 TSen	OK	47 degrees C / 116 degrees F
FPC 12 MQ 3 Chip	OK	47 degrees C / 116 degrees F
FPC 13 Intake	OK	40 degrees C / 104 degrees F
FPC 13 Exhaust A	OK	48 degrees C / 118 degrees F
FPC 13 Exhaust B	OK	51 degrees C / 123 degrees F
FPC 13 LU 0 TSen	OK	50 degrees C / 122 degrees F
FPC 13 LU 0 Chip	OK	52 degrees C / 125 degrees F
FPC 13 LU 1 TSen	OK	50 degrees C / 122 degrees F
FPC 13 LU 1 Chip	OK	54 degrees C / 129 degrees F
FPC 13 LU 2 TSen	OK	50 degrees C / 122 degrees F
FPC 13 LU 2 Chip	OK	48 degrees C / 118 degrees F
FPC 13 LU 3 TSen	OK	50 degrees C / 122 degrees F
FPC 13 LU 3 Chip	OK	48 degrees C / 118 degrees F
FPC 13 MQ 0 TSen	OK	48 degrees C / 118 degrees F
FPC 13 MQ 0 Chip	OK	47 degrees C / 116 degrees F
FPC 13 MQ 1 TSen	OK	48 degrees C / 118 degrees F
FPC 13 MQ 1 Chip	OK	51 degrees C / 123 degrees F
FPC 13 MQ 2 TSen	OK	48 degrees C / 118 degrees F
FPC 13 MQ 2 Chip	OK	46 degrees C / 114 degrees F
FPC 13 MQ 3 TSen	OK	48 degrees C / 118 degrees F
FPC 13 MQ 3 Chip	OK	47 degrees C / 116 degrees F
FPC 14 Intake	OK	41 degrees C / 105 degrees F
FPC 14 Exhaust A	OK	49 degrees C / 120 degrees F
FPC 14 Exhaust B	OK	50 degrees C / 122 degrees F
FPC 14 LU 0 TSen	OK	49 degrees C / 120 degrees F
FPC 14 LU 0 Chip	OK	50 degrees C / 122 degrees F
FPC 14 LU 1 TSen	OK	49 degrees C / 120 degrees F
FPC 14 LU 1 Chip	OK	54 degrees C / 129 degrees F
FPC 14 LU 2 TSen	OK	49 degrees C / 120 degrees F
FPC 14 LU 2 Chip	OK	48 degrees C / 118 degrees F
FPC 14 LU 3 TSen	OK	49 degrees C / 120 degrees F
FPC 14 LU 3 Chip	OK	50 degrees C / 122 degrees F
FPC 14 MQ 0 TSen	OK	48 degrees C / 118 degrees F
FPC 14 MQ 0 Chip	OK	48 degrees C / 118 degrees F

FPC 14 MQ 1 TSen	OK	48 degrees C / 118 degrees F
FPC 14 MQ 1 Chip	OK	52 degrees C / 125 degrees F
FPC 14 MQ 2 TSen	OK	48 degrees C / 118 degrees F
FPC 14 MQ 2 Chip	OK	47 degrees C / 116 degrees F
FPC 14 MQ 3 TSen	OK	48 degrees C / 118 degrees F
FPC 14 MQ 3 Chip	OK	50 degrees C / 122 degrees F
FPC 15 Intake	OK	42 degrees C / 107 degrees F
FPC 15 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 15 Exhaust B	OK	52 degrees C / 125 degrees F
FPC 15 LU 0 TSen	OK	52 degrees C / 125 degrees F
FPC 15 LU 0 Chip	OK	55 degrees C / 131 degrees F
FPC 15 LU 1 TSen	OK	52 degrees C / 125 degrees F
FPC 15 LU 1 Chip	OK	59 degrees C / 138 degrees F
FPC 15 LU 2 TSen	OK	52 degrees C / 125 degrees F
FPC 15 LU 2 Chip	OK	50 degrees C / 122 degrees F
FPC 15 LU 3 TSen	OK	52 degrees C / 125 degrees F
FPC 15 LU 3 Chip	OK	51 degrees C / 123 degrees F
FPC 15 MQ 0 TSen	OK	51 degrees C / 123 degrees F
FPC 15 MQ 0 Chip	OK	53 degrees C / 127 degrees F
FPC 15 MQ 1 TSen	OK	51 degrees C / 123 degrees F
FPC 15 MQ 1 Chip	OK	60 degrees C / 140 degrees F
FPC 15 MQ 2 TSen	OK	51 degrees C / 123 degrees F
FPC 15 MQ 2 Chip	OK	52 degrees C / 125 degrees F
FPC 15 MQ 3 TSen	OK	51 degrees C / 123 degrees F
FPC 15 MQ 3 Chip	OK	53 degrees C / 127 degrees F
FPC 16 Intake	OK	44 degrees C / 111 degrees F
FPC 16 Exhaust A	OK	51 degrees C / 123 degrees F
FPC 16 Exhaust B	OK	53 degrees C / 127 degrees F
FPC 16 LU 0 TSen	OK	51 degrees C / 123 degrees F
FPC 16 LU 0 Chip	OK	52 degrees C / 125 degrees F
FPC 16 LU 1 TSen	OK	51 degrees C / 123 degrees F
FPC 16 LU 1 Chip	OK	56 degrees C / 132 degrees F
FPC 16 LU 2 TSen	OK	51 degrees C / 123 degrees F
FPC 16 LU 2 Chip	OK	50 degrees C / 122 degrees F
FPC 16 LU 3 TSen	OK	51 degrees C / 123 degrees F
FPC 16 LU 3 Chip	OK	50 degrees C / 122 degrees F
FPC 16 MQ 0 TSen	OK	51 degrees C / 123 degrees F
FPC 16 MQ 0 Chip	OK	50 degrees C / 122 degrees F
FPC 16 MQ 1 TSen	OK	51 degrees C / 123 degrees F
FPC 16 MQ 1 Chip	OK	55 degrees C / 131 degrees F
FPC 16 MQ 2 TSen	OK	51 degrees C / 123 degrees F
FPC 16 MQ 2 Chip	OK	49 degrees C / 120 degrees F
FPC 16 MQ 3 TSen	OK	51 degrees C / 123 degrees F
FPC 16 MQ 3 Chip	OK	52 degrees C / 125 degrees F
FPC 17 Intake	OK	45 degrees C / 113 degrees F
FPC 17 Exhaust A	OK	52 degrees C / 125 degrees F
FPC 17 Exhaust B	OK	55 degrees C / 131 degrees F
FPC 17 LU 0 TSen	OK	54 degrees C / 129 degrees F
FPC 17 LU 0 Chip	OK	57 degrees C / 134 degrees F
FPC 17 LU 1 TSen	OK	54 degrees C / 129 degrees F
FPC 17 LU 1 Chip	OK	61 degrees C / 141 degrees F
FPC 17 LU 2 TSen	OK	54 degrees C / 129 degrees F
FPC 17 LU 2 Chip	OK	54 degrees C / 129 degrees F
FPC 17 LU 3 TSen	OK	54 degrees C / 129 degrees F
FPC 17 LU 3 Chip	OK	55 degrees C / 131 degrees F
FPC 17 MQ 0 TSen	OK	53 degrees C / 127 degrees F
FPC 17 MQ 0 Chip	OK	53 degrees C / 127 degrees F
FPC 17 MQ 1 TSen	OK	53 degrees C / 127 degrees F
FPC 17 MQ 1 Chip	OK	57 degrees C / 134 degrees F
FPC 17 MQ 2 TSen	OK	53 degrees C / 127 degrees F
FPC 17 MQ 2 Chip	OK	51 degrees C / 123 degrees F

FPC 17 MQ 3 TSen	OK	53 degrees C / 127 degrees F
FPC 17 MQ 3 Chip	OK	54 degrees C / 129 degrees F
FPC 18 Intake	OK	46 degrees C / 114 degrees F
FPC 18 Exhaust A	OK	53 degrees C / 127 degrees F
FPC 18 Exhaust B	OK	57 degrees C / 134 degrees F
FPC 18 LU 0 TSen	OK	56 degrees C / 132 degrees F
FPC 18 LU 0 Chip	OK	58 degrees C / 136 degrees F
FPC 18 LU 1 TSen	OK	56 degrees C / 132 degrees F
FPC 18 LU 1 Chip	OK	63 degrees C / 145 degrees F
FPC 18 LU 2 TSen	OK	56 degrees C / 132 degrees F
FPC 18 LU 2 Chip	OK	54 degrees C / 129 degrees F
FPC 18 LU 3 TSen	OK	56 degrees C / 132 degrees F
FPC 18 LU 3 Chip	OK	56 degrees C / 132 degrees F
FPC 18 MQ 0 TSen	OK	54 degrees C / 129 degrees F
FPC 18 MQ 0 Chip	OK	57 degrees C / 134 degrees F
FPC 18 MQ 1 TSen	OK	54 degrees C / 129 degrees F
FPC 18 MQ 1 Chip	OK	62 degrees C / 143 degrees F
FPC 18 MQ 2 TSen	OK	54 degrees C / 129 degrees F
FPC 18 MQ 2 Chip	OK	53 degrees C / 127 degrees F
FPC 18 MQ 3 TSen	OK	54 degrees C / 129 degrees F
FPC 18 MQ 3 Chip	OK	56 degrees C / 132 degrees F
FPC 19 Intake	OK	49 degrees C / 120 degrees F
FPC 19 Exhaust A	OK	56 degrees C / 132 degrees F
FPC 19 Exhaust B	OK	62 degrees C / 143 degrees F
FPC 19 LU 0 TSen	OK	62 degrees C / 143 degrees F
FPC 19 LU 0 Chip	OK	63 degrees C / 145 degrees F
FPC 19 LU 1 TSen	OK	62 degrees C / 143 degrees F
FPC 19 LU 1 Chip	OK	69 degrees C / 156 degrees F
FPC 19 LU 2 TSen	OK	62 degrees C / 143 degrees F
FPC 19 LU 2 Chip	OK	61 degrees C / 141 degrees F
FPC 19 LU 3 TSen	OK	62 degrees C / 143 degrees F
FPC 19 LU 3 Chip	OK	62 degrees C / 143 degrees F
FPC 19 MQ 0 TSen	OK	58 degrees C / 136 degrees F
FPC 19 MQ 0 Chip	OK	62 degrees C / 143 degrees F
FPC 19 MQ 1 TSen	OK	58 degrees C / 136 degrees F
FPC 19 MQ 1 Chip	OK	64 degrees C / 147 degrees F
FPC 19 MQ 2 TSen	OK	58 degrees C / 136 degrees F
FPC 19 MQ 2 Chip	OK	59 degrees C / 138 degrees F
FPC 19 MQ 3 TSen	OK	58 degrees C / 136 degrees F
FPC 19 MQ 3 Chip	OK	60 degrees C / 140 degrees F
ADC 0 Intake	OK	40 degrees C / 104 degrees F
ADC 0 Exhaust	OK	50 degrees C / 122 degrees F
ADC 0 ADC-XF1	OK	58 degrees C / 136 degrees F
ADC 0 ADC-XF0	OK	63 degrees C / 145 degrees F
ADC 1 Intake	OK	38 degrees C / 100 degrees F
ADC 1 Exhaust	OK	48 degrees C / 118 degrees F
ADC 1 ADC-XF1	OK	59 degrees C / 138 degrees F
ADC 1 ADC-XF0	OK	61 degrees C / 141 degrees F
ADC 2 Intake	OK	36 degrees C / 96 degrees F
ADC 2 Exhaust	OK	50 degrees C / 122 degrees F
ADC 2 ADC-XF1	OK	53 degrees C / 127 degrees F
ADC 2 ADC-XF0	OK	59 degrees C / 138 degrees F
ADC 3 Intake	OK	39 degrees C / 102 degrees F
ADC 3 Exhaust	OK	49 degrees C / 120 degrees F
ADC 3 ADC-XF1	OK	61 degrees C / 141 degrees F
ADC 3 ADC-XF0	OK	62 degrees C / 143 degrees F
ADC 4 Intake	OK	39 degrees C / 102 degrees F
ADC 4 Exhaust	OK	49 degrees C / 120 degrees F
ADC 4 ADC-XF1	OK	60 degrees C / 140 degrees F
ADC 4 ADC-XF0	OK	61 degrees C / 141 degrees F
ADC 5 Intake	OK	38 degrees C / 100 degrees F

ADC 5 Exhaust	OK	52 degrees C / 125 degrees F
ADC 5 ADC-XF1	OK	55 degrees C / 131 degrees F
ADC 5 ADC-XF0	OK	65 degrees C / 149 degrees F
ADC 6 Intake	OK	39 degrees C / 102 degrees F
ADC 6 Exhaust	OK	51 degrees C / 123 degrees F
ADC 6 ADC-XF1	OK	58 degrees C / 136 degrees F
ADC 6 ADC-XF0	OK	63 degrees C / 145 degrees F
ADC 7 Intake	OK	39 degrees C / 102 degrees F
ADC 7 Exhaust	OK	52 degrees C / 125 degrees F
ADC 7 ADC-XF1	OK	61 degrees C / 141 degrees F
ADC 7 ADC-XF0	OK	68 degrees C / 154 degrees F
ADC 8 Intake	OK	39 degrees C / 102 degrees F
ADC 8 Exhaust	OK	50 degrees C / 122 degrees F
ADC 8 ADC-XF1	OK	64 degrees C / 147 degrees F
ADC 8 ADC-XF0	OK	63 degrees C / 145 degrees F
ADC 9 Intake	OK	41 degrees C / 105 degrees F
ADC 9 Exhaust	OK	50 degrees C / 122 degrees F
ADC 9 ADC-XF1	OK	60 degrees C / 140 degrees F
ADC 9 ADC-XF0	OK	62 degrees C / 143 degrees F
ADC 10 Intake	OK	46 degrees C / 114 degrees F
ADC 10 Exhaust	OK	53 degrees C / 127 degrees F
ADC 10 ADC-XF1	OK	66 degrees C / 150 degrees F
ADC 10 ADC-XF0	OK	65 degrees C / 149 degrees F
ADC 11 Intake	OK	46 degrees C / 114 degrees F
ADC 11 Exhaust	OK	53 degrees C / 127 degrees F
ADC 11 ADC-XF1	OK	63 degrees C / 145 degrees F
ADC 11 ADC-XF0	OK	64 degrees C / 147 degrees F
ADC 12 Intake	OK	47 degrees C / 116 degrees F
ADC 12 Exhaust	OK	53 degrees C / 127 degrees F
ADC 12 ADC-XF1	OK	65 degrees C / 149 degrees F
ADC 12 ADC-XF0	OK	65 degrees C / 149 degrees F
ADC 13 Intake	OK	48 degrees C / 118 degrees F
ADC 13 Exhaust	OK	55 degrees C / 131 degrees F
ADC 13 ADC-XF1	OK	65 degrees C / 149 degrees F
ADC 13 ADC-XF0	OK	67 degrees C / 152 degrees F
ADC 14 Intake	OK	49 degrees C / 120 degrees F
ADC 14 Exhaust	OK	57 degrees C / 134 degrees F
ADC 14 ADC-XF1	OK	68 degrees C / 154 degrees F
ADC 14 ADC-XF0	OK	72 degrees C / 161 degrees F
ADC 15 Intake	OK	50 degrees C / 122 degrees F
ADC 15 Exhaust	OK	56 degrees C / 132 degrees F
ADC 15 ADC-XF1	OK	68 degrees C / 154 degrees F
ADC 15 ADC-XF0	OK	68 degrees C / 154 degrees F
ADC 16 Intake	OK	51 degrees C / 123 degrees F
ADC 16 Exhaust	OK	57 degrees C / 134 degrees F
ADC 16 ADC-XF1	OK	67 degrees C / 152 degrees F
ADC 16 ADC-XF0	OK	68 degrees C / 154 degrees F
ADC 17 Intake	OK	51 degrees C / 123 degrees F
ADC 17 Exhaust	OK	57 degrees C / 134 degrees F
ADC 17 ADC-XF1	OK	69 degrees C / 156 degrees F
ADC 17 ADC-XF0	OK	69 degrees C / 156 degrees F
ADC 18 Intake	OK	52 degrees C / 125 degrees F
ADC 18 Exhaust	OK	58 degrees C / 136 degrees F
ADC 18 ADC-XF1	OK	67 degrees C / 152 degrees F
ADC 18 ADC-XF0	OK	72 degrees C / 161 degrees F
ADC 19 Intake	OK	50 degrees C / 122 degrees F
ADC 19 Exhaust	OK	58 degrees C / 136 degrees F
ADC 19 ADC-XF1	OK	68 degrees C / 154 degrees F
ADC 19 ADC-XF0	OK	71 degrees C / 159 degrees F

show chassis environment pdu

Syntax	<code>show chassis environment pdu</code> <code><slot></code>
Release Information	Command introduced in Junos OS Release 12.1X48 for PTX5000 Packet Transport Routers.
Description	Display Power Distribution Unit (PDU) environmental status information.
Options	<p>none—Display environmental information about all PDUs.</p> <p>slot —(Optional) Display environmental information about an individual PDU. For the PTX5000, replace slot with 0 or 1.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> <i>PTX5000 Packet Transport Routers</i>
List of Sample Output	show chassis environment pdu (PTX5000) on page 377
Output Fields	Table 21 on page 376 lists the output fields for the <code>show chassis environment pdu</code> command. Output fields are listed in the approximate order in which they appear.

Table 21: show chassis environment pdu Output Fields

Field Name	Field Description
PDU <i>slot</i> status	Number of the PDU slot.
PDU - State	Status of the PDU. Status can be Online , Present , or Absent .
PDU - Hours Used	Number of hours the PDU has been operational.
PDU - Firmware Version	Version level of the firmware running on the PDU.
PSM <i>number</i> status	PSM number. PSMs are numbered 0 through 3 .
PSM - State	Status of the PSM. Status can be Online , Present , or Absent .
PSM - Temperature	Temperature of the air flowing past the PSM.
PSM - Fans	Status of the cooling fans associated with the PSM.
PSM - AC Input	Status of the AC input for the specified component
PSM - AC Output	Status of the AC output for the specified component.
PSM - DC input	Status of the DC input for the specified component.

Table 21: show chassis environment pdu Output Fields (*continued*)

Field Name	Field Description
PSM - DC output	Status of the DC output for the specified component.
PSM - Hours Used	Number of hours the PSM has been operational.
PSM - Firmware Version	Version level of the firmware running on the PSM.

Sample Output

show chassis environment pdu (PTX5000)

```

user@host> show chassis environment pdu 0
PDU 0 status:
  State                Online
  Hours Used           4281
  Firmware Version (MCU1) 00.02
  Firmware Version (MCU2) 00.02
  Firmware Version (MCU3) 00.02
  Firmware Version (MCU4) 00.02
PDU 0 PSM 0 status:
  State                Online
  Temperature          OK   32 degrees C / 89 degrees F
  Fans                 OK
  DC Input              OK
  DC Output             OK
  Hours Used           2864
  Firmware Version     00.04
PDU 0 PSM 1 status:
  State                Online
  Temperature          OK   30 degrees C / 86 degrees F
  Fans                 OK
  DC Input              OK
  DC Output             OK
  Hours Used           3540
  Firmware Version     00.04
PDU 0 PSM 2 status:
  State                Online
  Temperature          OK   29 degrees C / 84 degrees F
  Fans                 OK
  DC Input              OK
  DC Output             OK
  Hours Used           3711
  Firmware Version     00.04
PDU 0 PSM 3 status:
  State                Online
  Temperature          OK   29 degrees C / 84 degrees F
  Fans                 OK
  DC Input              OK
  DC Output             OK
  Hours Used           4243
  Firmware Version     00.04

```

show chassis environment routing-engine

Syntax	show chassis environment routing-engine <slot>
Syntax (TX Matrix Routers)	show chassis environment routing-engine <lcc <i>number</i> scc> <slot>
Syntax (TX Matrix Plus Routers)	show chassis environment routing-engine <lcc <i>number</i> sfc <i>number</i> > <slot>
Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)	show chassis environment routing-engine <slot>
Syntax (MX Series Routers)	show chassis environment routing-engine <slot> <all-members> <local> <member <i>member-id</i> >
Syntax (QFX Series)	show chassis environment routing-engine interconnect-device <i>name</i>
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 12.1 for the PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.1 for the T4000 Core Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers. Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.
Description	Display Routing Engine environmental status information.
Options	none —Display environmental information about all Routing Engines. For a TX Matrix router, display environmental information about all Routing Engines on the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display environmental information about all Routing Engines on the TX Matrix Plus router and its attached routers. all-members —(MX Series routers only) (Optional) Display environmental information about the Routing Engines in all member routers in the Virtual Chassis configuration. interconnect-device <i>name</i> —(QFabric systems only) (Optional) Display environmental information about the Routing Engines for the Interconnect device.

lcc *number*—(TX Matrix router and TX Matrix Plus router 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—(MX Series routers only) (Optional) Display environmental information about the Routing Engines in the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display environmental information about the Routing Engines in the specified member in the Virtual Chassis configuration. Replace *member-id* with the value of 0 or 1.

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

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

slot—(Optional) Display environmental information about an individual Routing Engine. On M10i, M20, M40e, M120, M160, M320, MX Series, MX104 routers, MX2010 routers, MX2020 routers, and T Series routers, replace *slot* with 0 or 1. On M5, M7i, M10, and M40 routers and on the J Series router, replace *slot* with 0. On EX3200 and EX4200 standalone switches, replace *slot* with 0. On EX4200 switches in a Virtual Chassis configuration and on EX8208 and EX8216 switches, replace *slot* with 0 or 1. On the QFX3500 switch, there is only one Routing Engine, so you do not need to specify the slot number. On PTX Series Packet Transport Routers, replace *slot* with 0 or 1.

Required Privilege Level view

Related Documentation

- [request chassis routing-engine master](#)
- [show chassis routing-engine on page 712](#)

List of Sample Output

- [show chassis environment routing-engine \(Nonredundant\) on page 380](#)
- [show chassis environment routing-engine \(Redundant\) on page 380](#)
- [show chassis environment routing-engine \(MX104 Router\) on page 380](#)
- [show chassis environment routing-engine \(MX2010 Router\) on page 381](#)
- [show chassis environment routing-engine \(MX2020 Router\) on page 381](#)
- [show chassis environment routing-engine \(TX Matrix Plus Router\) on page 381](#)
- [show chassis environment routing-engine \(T4000 Core Router\) on page 381](#)

[show chassis environment routing-engine \(QFX Series\) on page 382](#)
[show chassis environment routing-engine interconnect-device \(QFabric System\) on page 382](#)
[show chassis environment routing-engine \(PTX5000 Packet Transport Router\) on page 382](#)

Output Fields Table 22 on page 380 lists the output fields for the **show chassis environment routing-engine** command. Output fields are listed in the approximate order in which they appear.

Table 22: show chassis environment routing-engine Output Fields

Field Name	Field Description
Routing engine <i>slot</i> status	Number of the Routing Engine slot: 0 or 1.
State	Status of the Routing Engine: <ul style="list-style-type: none"> • Online Master—Routing Engine is online, operating as Master. • Online Standby—Routing Engine is online, operating as Standby. • Offline—Routing Engine is offline.
Temperature	Temperature of the air flowing past the Routing Engine.
CPU Temperature	(PTX Series and T4000 Core Routers only) Temperature of the air flowing past the Routing Engine CPU.

Sample Output

show chassis environment routing-engine (Nonredundant)

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

show chassis environment routing-engine (Redundant)

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

show chassis environment routing-engine (MX104 Router)

```
user@ host >show chassis environment routing-engine
Routing Engine 0 status:
  State                Online Master
  Temperature           34 degrees C / 93 degrees F
  CPU Temperature       43 degrees C / 109 degrees F
Routing Engine 1 status:
  State                Online Standby
```



```

Temperature          33 degrees C / 91 degrees F
CPU Temperature       39 degrees C / 102 degrees F

```

show chassis environment routing-engine (MX2010 Router)

```

user@host> show chassis environment routing-engine
Routing Engine 0 status:
  State          Online Master
  Temperature     37 degrees C / 98 degrees F
  CPU Temperature 37 degrees C / 98 degrees F
Routing Engine 1 status:
  State          Online Standby
  Temperature     35 degrees C / 95 degrees F
  CPU Temperature 34 degrees C / 93 degrees F

```

show chassis environment routing-engine (MX2020 Router)

```

user@host> show chassis environment routing-engine
Routing Engine 0 status:
  State          Online Master
  Temperature     35 degrees C / 95 degrees F
  CPU Temperature 34 degrees C / 93 degrees F
Routing Engine 1 status:
  State          Online Standby
  Temperature     44 degrees C / 111 degrees F
  CPU Temperature 43 degrees C / 109 degrees F

```

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

```

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

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

```

show chassis environment routing-engine (T4000 Core Router)

```

user@host> show chassis environment routing-engine
Routing Engine 0 status:
  State          Online Master
  Temperature     33 degrees C / 91 degrees F
  CPU Temperature 50 degrees C / 122 degrees F
Routing Engine 1 status:
  State          Online Standby
  Temperature     33 degrees C / 91 degrees F
  CPU Temperature 46 degrees C / 114 degrees F

```

show chassis environment routing-engine (QFX Series)

```
user@switch> show chassis environment routing-engine
Routing Engine 0 status:
  State           Online Master
  Temperature      42 degrees C / 107 degrees F
```

show chassis environment routing-engine interconnect-device (QFabric System)

```
user@switch> show chassis environment routing-engine interconnect-device interconnect1
routing-engine interconnect-device interconnect1
Routing Engine 0 status:
  State           Online Standby
  Temperature      52 degrees C / 125 degrees F
Routing Engine 1 status:
  State           Online Master
  Temperature      57 degrees C / 134 degrees F
```

show chassis environment routing-engine (PTX5000 Packet Transport Router)

```
user@switch> show chassis environment routing-engine
Routing Engine 0 status:
  State           Online Master
  Temperature      55 degrees C / 131 degrees F
  CPU Temperature  66 degrees C / 150 degrees F
Routing Engine 1 status:
  State           Online Standby
  Temperature      52 degrees C / 125 degrees F
  CPU Temperature  64 degrees C / 147 degrees F
```

show chassis environment sib

Syntax	show chassis environment sib <slot>
Syntax (TX Matrix router)	show chassis environment sib <lcc number scc> <slot>
Syntax (TX Matrix Plus Router)	show chassis environment sib <sib-slot> <lcc number sfc number> <f13 sib-slot> <f2s sib-slot/sib-f2s-slot-number>
Release Information	Command introduced before Junos OS Release 7.4. sfc option introduced in Junos OS Release 9.6. for the TX Matrix Plus router. Command introduced in Junos OS 12.1X48 for PTX Series Packet Transport Routers. Command introduced in Junos OS 12.1 for T4000 Core Routers.
Description	Display Switch Interface Board (SIB) environmental information.
Options	<p>none—Display environmental information about all SIBs. On a TX Matrix router, display environmental information about all SIBs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all SIBs on the TX Matrix Plus router and its attached routers .</p> <p>f13 sib-slot—(TX Matrix Plus routers only) (Optional) Display SIB F13 environmental information only. Replace sib-slot with one of the following values: 0, 1, 3, 4, 6, 7, 8, 9, 11, or 12. (Slots 2, 5, 10, 13, 14, and 15 are unused).</p> <p>f2s sib-slot/sib-f2s-slot-number—(TX Matrix Plus routers only) (Optional) Display SIB F2s environmental information only. Replace sib-slot with a value from 0 through 4, followed by a sib-f2s-slot-number value of 0, 2, 4 or 6.</p> <p>lcc number—(TX Matrix router, and TX Matrix Plus router only) (Optional) Line-card chassis number. Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> • 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.

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

sfc—(TX Matrix Plus routers only) (Optional) On a TX Matrix Plus router, display environmental information about the SIB in the TX Matrix Plus router (switch-fabric chassis).

sib-slot—(Optional) Display environmental information about the specified SIB. For the M320 router, replace **sib-slot** with a value from 0 through 3. For the T640, T1600, T4000, and TX Matrix routers, replace **sib-slot** with a value from 0 through 4. For the TX Matrix Plus router, see `f13 sib-slot` and `f2s sib-slot/sib-f2s-slot-number`. For the T320 router, replace **sib-slot** with a value from 0 through 2. For the PTX5000 Packet Transport Router, replace **sib-slot** with a value from 0 through 8.

Required Privilege Level view

Related Documentation

- [request chassis sib](#)
- [show chassis sibs on page 733](#)
- [Configuring the Junos OS to Upgrade and Downgrade Switch Interface Boards on a TX Matrix Router](#)
- [M320 SIB Description](#)

List of Sample Output

- [show chassis environment sib \(M320 Router\) on page 385](#)
- [show chassis environment sib 1 \(T640 Router\) on page 386](#)
- [show chassis environment sib 1 \(T4000 Router\) on page 386](#)
- [show chassis environment sib scc \(TX Matrix Router\) on page 387](#)
- [show chassis environment sib \(TX Matrix Plus Router\) on page 388](#)
- [show chassis environment sib sfc \(TX Matrix Plus Router\) on page 397](#)
- [show chassis environment sib f13 \(TX Matrix Plus Router\) on page 403](#)
- [show chassis environment sib f2s \(TX Matrix Plus Router\) on page 403](#)
- [show chassis environment sib \(TX Matrix Plus router with 3D SIBs\) on page 404](#)
- [show chassis environment sib \(PTX5000 Packet Transport Router\) on page 406](#)

Output Fields [Table 23 on page 385](#) lists the output fields for the **show chassis environment sib** command. Output fields are listed in the approximate order in which they appear.

Table 23: show chassis environment sib Output Fields

Field Name	Field Description
SIB slot status	<p>SIB slot number:</p> <ul style="list-style-type: none"> • 0 through 3 on an M320 router. • 0 or 2 on a T320 router. • 0 through 4 on a T640, T1600, T4000, or TX Matrix router. • 0, 1, 3, 4, 6, 7, 8, 9, 11, or 12 for F13 SIBs on a TX Matrix Plus router. (Slots 2, 5, 10, 13, 14, and 15 are unused). • 0 through 4, followed by 0, 2, 4, or 6 for F2S SIBs on a TX Matrix Plus router. For example, SIB F2S 0/4. • 0 through 8 on a PTX5000 Packet Transport Router.
State	<p>Status of the SIB:</p> <ul style="list-style-type: none"> • Online—SIB is online and running. • Offline—SIB is powered down. • Spare (T640, T1600, T4000, and TX Matrix routers only)—SIB is redundant and will move to active state if one of the working SIBs fails. <p>Only four of the SIBs are active at any time. The fifth one is marked Spare. It is activated if there is a fault on one of the active SIBs.</p> <p>Online standby (TX Matrix Plus router only).</p>
Temperature	<p>Temperature of the air flowing past the SIB.</p> <p>On PTX Series Packet Transport Routers, separate temperatures are displayed for Intake, Exhaust, and Junction.</p>
Power	<p>Information about the voltage supplied to the SIB. The left column displays the required power, in volts. The right column displays the measured power, in millivolts.</p>

Sample Output

show chassis environment sib (M320 Router)

```

user@host> show chassis environment sib
SIB 0 status:
  State                Online
  Temperature          34 degrees C / 93 degrees F
  Power:
    GROUND              0 mV
    1.8 V               1805 mV
    2.5 V               2498 mV
    3.3 V               3306 mV
    1.8 V bias          1789 mV
    3.3 V bias          3299 mV
    5.0 V bias          5003 mV
    8.0 V bias          7374 mV
SIB 1 status:
  State                Online
  Temperature          35 degrees C / 95 degrees F
  Power:
    GROUND              0 mV

```

```
1.8 V          1814 mV
2.5 V          2477 mV
3.3 V          3319 mV
1.8 V bias     1792 mV
3.3 V bias     3291 mV
5.0 V bias     4981 mV
8.0 V bias     7335 mV
SIB 2 status:
State          Online
Temperature    33 degrees C / 91 degrees F
Power:
GROUND         0 mV
1.8 V          1811 mV
2.5 V          2489 mV
3.3 V          3330 mV
1.8 V bias     1797 mV
3.3 V bias     3304 mV
5.0 V bias     5025 mV
8.0 V bias     7330 mV
SIB 3 status:
State          Online
Temperature    37 degrees C / 98 degrees F
Power:
GROUND         0 mV
1.8 V          1798 mV
2.5 V          2481 mV
3.3 V          3328 mV
1.8 V bias     1792 mV
3.3 V bias     3313 mV
5.0 V bias     5013 mV
8.0 V bias     7467 mV
```

show chassis environment sib 1 (T640 Router)

```
user@host> show chassis environment sib 1
SIB 1 status:
State          Online
Temperature    39 degrees C / 102 degrees F
Power:
GROUND         0 mV
1.8 V          1809 mV
2.5 V          2478 mV
3.3 V          3308 mV
1.8 V bias     1794 mV
3.3 V bias     3274 mV
5.0 V bias     4996 mV
8.0 V bias     7247 mV
```

show chassis environment sib 1 (T4000 Router)

```
user@host> show chassis environment sib 1
SIB 1 status:
State          Online
Temperature    42 degrees C / 107 degrees F
Power
8.0 V bias     8100 mV
3.3 V bias     3284 mV
0.9 V bias     904 mV
1.1 V bias     1090 mV
1.5 V bias     1488 mV
2.5 V bias     2504 mV
```

9.0 V	8940 mV
3.3 V	3288 mV
XF0 1.0 V	998 mV
XF0 1.0 V LDO	994 mV
PCIe SW 1.0 V	990 mV
XF0 1.8 V	1788 mV
XF1 1.0 V	1002 mV
XF2 1.0 V	1002 mV
XF3 1.0 V	998 mV
1.2 V	1194 mV
XF1 1.0 V LDO	1000 mV
XF2 1.0 V LDO	998 mV
XF3 1.0 V LDO	998 mV
XF1 1.8 V	1798 mV
XF2 1.8 V	1800 mV
XF3 1.8 V	1794 mV
1.5 V	1488 mV
SW 3.3 V	3320 mV

show chassis environment sib scc (TX Matrix Router)

```
user@host> show chassis environment sib scc
scc-re0:
```

SIB 3 status:

State	Offline
Reason	Offlined by button press
Temperature	0 degrees C / 32 degrees F
Power:	
GROUND	0 mV
1.8 V	0 mV
2.5 V	0 mV
3.3 V	0 mV
1.8 V bias	0 mV
3.3 V bias	0 mV
5.0 V bias	0 mV
8.0 V bias	0 mV

SIB 4 status:

State	Online
Temperature	42 degrees C / 107 degrees F
Temperature (B)	41 degrees C / 105 degrees F
Power:	
GROUND	0 mV
1.8 V	1787 mV
2.5 V	2488 mV
3.3 V	3294 mV
1.8 V bias	1787 mV
3.3 V bias	3306 mV
5.0 V bias	5010 mV
8.0 V bias	7418 mV
Power (B):	
GROUND	0 mV
1.8 V	1785 mV
2.5 V	2485 mV
3.3 V	3289 mV
1.8 V bias	1799 mV
3.3 V bias	3284 mV
5.0 V bias	4979 mV
8.0 V bias	7882 mV

show chassis environment sib (TX Matrix Plus Router)

```
user@host> show chassis environment sib
sfc0-re0:
```

SIB F13 0 status:

State	Online - Standby
Temperature	54 degrees C / 129 degrees F
Temperature (B)	50 degrees C / 122 degrees F
Power	
1.2 V_0	1205 mV
1.2 V_1	1202 mV
1.2 V_2	1205 mV
1.2 V_3	1208 mV
1.5 V_0	1501 mV
1.5 V_1	1508 mV
1.8 V	1798 mV
2.5 V	2510 mV
3.3 V	3312 mV
9.0 V	8991 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2510 mV
3.3 V	3318 mV
9.0 V	9024 mV

SIB F13 1 status:

State	Online - Standby
Temperature	45 degrees C / 113 degrees F
Temperature (B)	42 degrees C / 107 degrees F
Power	
1.2 V_0	1202 mV
1.2 V_1	1198 mV
1.2 V_2	1202 mV
1.2 V_3	1202 mV
1.5 V_0	1498 mV
1.5 V_1	1501 mV
1.8 V	1811 mV
2.5 V	2504 mV
3.3 V	3292 mV
9.0 V	8991 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2507 mV
3.3 V	3306 mV
9.0 V	8970 mV

SIB F13 3 status:

State	Online
Temperature	48 degrees C / 118 degrees F
Temperature (B)	44 degrees C / 111 degrees F
Power	
1.2 V_0	1205 mV
1.2 V_1	1202 mV
1.2 V_2	1202 mV
1.2 V_3	1202 mV
1.5 V_0	1508 mV
1.5 V_1	1504 mV
1.8 V	1798 mV
2.5 V	2520 mV
3.3 V	3300 mV
9.0 V	9009 mV
9.0 V bias	0 mV


```

Power (B)
  2.5 V          2504 mV
  3.3 V          3312 mV
  9.0 V          9006 mV
SIB F13 4 status:
State           Online
Temperature     44 degrees C / 111 degrees F
Temperature (B) 40 degrees C / 104 degrees F
Power
  1.2 V_0        1205 mV
  1.2 V_1        1205 mV
  1.2 V_2        1202 mV
  1.2 V_3        1205 mV
  1.5 V_0        1508 mV
  1.5 V_1        1508 mV
  1.8 V          1811 mV
  2.5 V          2510 mV
  3.3 V          3312 mV
  9.0 V          8970 mV
  9.0 V bias     0 mV
Power (B)
  2.5 V          2513 mV
  3.3 V          3318 mV
  9.0 V          9048 mV
SIB F13 6 status:
State           Online
Temperature     50 degrees C / 122 degrees F
Temperature (B) 46 degrees C / 114 degrees F
Power
  1.2 V_0        1195 mV
  1.2 V_1        1205 mV
  1.2 V_2        1202 mV
  1.2 V_3        1202 mV
  1.5 V_0        1495 mV
  1.5 V_1        1495 mV
  1.8 V          1801 mV
  2.5 V          2494 mV
  3.3 V          3300 mV
  9.0 V          8991 mV
  9.0 V bias     0 mV
Power (B)
  2.5 V          2500 mV
  3.3 V          3300 mV
  9.0 V          9006 mV
SIB F13 7 status:
State           Online
Temperature     52 degrees C / 125 degrees F
Temperature (B) 49 degrees C / 120 degrees F
Power
  1.2 V_0        1202 mV
  1.2 V_1        1202 mV
  1.2 V_2        1198 mV
  1.2 V_3        1185 mV
  1.5 V_0        1501 mV
  1.5 V_1        1492 mV
  1.8 V          1795 mV
  2.5 V          2491 mV
  3.3 V          3286 mV
  9.0 V          8892 mV
  9.0 V bias     0 mV
Power (B)

```

2.5 V	2507 mV
3.3 V	3306 mV
9.0 V	8952 mV
SIB F13 8 status:	
State	Online
Temperature	55 degrees C / 131 degrees F
Temperature (B)	50 degrees C / 122 degrees F
Power	
1.2 V_0	1208 mV
1.2 V_1	1205 mV
1.2 V_2	1205 mV
1.2 V_3	1211 mV
1.5 V_0	1514 mV
1.5 V_1	1508 mV
1.8 V	1807 mV
2.5 V	2516 mV
3.3 V	3324 mV
9.0 V	9027 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2520 mV
3.3 V	3318 mV
9.0 V	9066 mV
SIB F13 9 status:	
State	Online
Temperature	46 degrees C / 114 degrees F
Temperature (B)	41 degrees C / 105 degrees F
Power	
1.2 V_0	1208 mV
1.2 V_1	1202 mV
1.2 V_2	1208 mV
1.2 V_3	1202 mV
1.5 V_0	1504 mV
1.5 V_1	1504 mV
1.8 V	1817 mV
2.5 V	2516 mV
3.3 V	3312 mV
9.0 V	9009 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2510 mV
3.3 V	3312 mV
9.0 V	9024 mV
SIB F13 11 status:	
State	Online
Temperature	47 degrees C / 116 degrees F
Temperature (B)	42 degrees C / 107 degrees F
Power	
1.2 V_0	1202 mV
1.2 V_1	1205 mV
1.2 V_2	1202 mV
1.2 V_3	1202 mV
1.5 V_0	1501 mV
1.5 V_1	1501 mV
1.8 V	1801 mV
2.5 V	2510 mV
3.3 V	3312 mV
9.0 V	8979 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2252 mV

```

3.3 V          5014 mV
9.0 V          9954 mV
SIB F13 12 status:
State          Online
Temperature    45 degrees C / 113 degrees F
Temperature (B) 40 degrees C / 104 degrees F
Power
1.2 V_0        1211 mV
1.2 V_1        1208 mV
1.2 V_2        1205 mV
1.2 V_3        1205 mV
1.5 V_0        1511 mV
1.5 V_1        1501 mV
1.8 V          1817 mV
2.5 V          2504 mV
3.3 V          3318 mV
9.0 V          9027 mV
9.0 V bias     0 mV
Power (B)
2.5 V          2520 mV
3.3 V          3338 mV
9.0 V          9006 mV
SIB F2S 0/0 status:
State          Online - Standby
Temperature    40 degrees C / 104 degrees F
Power
1.2 V_1        0 mV
1.2 V_ASF      1198 mV
1.2 V_ASF_B    1198 mV
1.2 V_ASF_D    1202 mV
1.5 V          1498 mV
1.8 V          1814 mV
3.3 V          3300 mV
3.3 V bias     3300 mV
3.3 V ASF      3286 mV
9.0 V          8250 mV
SIB F2S 0/2 status:
State          Online - Standby
Temperature    40 degrees C / 104 degrees F
Power
1.2 V_1        0 mV
1.2 V_ASF      1198 mV
1.2 V_ASF_B    1195 mV
1.2 V_ASF_D    1202 mV
1.5 V          1498 mV
1.8 V          1807 mV
3.3 V          3300 mV
3.3 V bias     3300 mV
3.3 V ASF      3286 mV
9.0 V          8250 mV
SIB F2S 0/4 status:
State          Online - Standby
Temperature    40 degrees C / 104 degrees F
Power
1.2 V_1        0 mV
1.2 V_ASF      1202 mV
1.2 V_ASF_B    1198 mV
1.2 V_ASF_D    1202 mV
1.5 V          1504 mV
1.8 V          1817 mV
3.3 V          3300 mV

```

3.3 V bias	3300 mV
3.3 V ASF	3306 mV
9.0 V	8250 mV
SIB F2S 0/6 status:	
State	Online - Standby
Temperature	39 degrees C / 102 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1202 mV
1.2 V_ASF_B	1198 mV
1.2 V_ASF_D	1202 mV
1.5 V	1495 mV
1.8 V	1814 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3280 mV
9.0 V	8250 mV
SIB F2S 1/0 status:	
State	Online
Temperature	39 degrees C / 102 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1195 mV
1.2 V_ASF_B	1192 mV
1.2 V_ASF_D	1195 mV
1.5 V	1488 mV
1.8 V	1798 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3280 mV
9.0 V	8250 mV
SIB F2S 1/2 status:	
State	Online
Temperature	39 degrees C / 102 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1205 mV
1.2 V_ASF_B	1202 mV
1.2 V_ASF_D	1205 mV
1.5 V	1501 mV
1.8 V	1820 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3306 mV
9.0 V	8250 mV
SIB F2S 1/4 status:	
State	Online
Temperature	39 degrees C / 102 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1198 mV
1.2 V_ASF_B	1195 mV
1.2 V_ASF_D	1195 mV
1.5 V	1498 mV
1.8 V	1811 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3300 mV
9.0 V	8250 mV
SIB F2S 1/6 status:	
State	Online

```

Temperature          39 degrees C / 102 degrees F
Power
  1.2 V_1            0 mV
  1.2 V_ASF          1195 mV
  1.2 V_ASF_B        1195 mV
  1.2 V_ASF_D        1198 mV
  1.5 V              1498 mV
  1.8 V              1807 mV
  3.3 V              3306 mV
  3.3 V bias         3300 mV
  3.3 V ASF          3292 mV
  9.0 V              8250 mV
SIB F2S 2/0 status:
State                Online
Temperature          39 degrees C / 102 degrees F
Power
  1.2 V_1            0 mV
  1.2 V_ASF          1195 mV
  1.2 V_ASF_B        1195 mV
  1.2 V_ASF_D        1198 mV
  1.5 V              1498 mV
  1.8 V              1804 mV
  3.3 V              3300 mV
  3.3 V bias         3300 mV
  3.3 V ASF          3286 mV
  9.0 V              8250 mV
SIB F2S 2/2 status:
State                Online
Temperature          38 degrees C / 100 degrees F
Power
  1.2 V_1            0 mV
  1.2 V_ASF          1195 mV
  1.2 V_ASF_B        1195 mV
  1.2 V_ASF_D        1198 mV
  1.5 V              1495 mV
  1.8 V              1807 mV
  3.3 V              3300 mV
  3.3 V bias         3300 mV
  3.3 V ASF          3300 mV
  9.0 V              8250 mV
SIB F2S 2/4 status:
State                Online
Temperature          38 degrees C / 100 degrees F
Power
  1.2 V_1            0 mV
  1.2 V_ASF          1198 mV
  1.2 V_ASF_B        1195 mV
  1.2 V_ASF_D        1198 mV
  1.5 V              1501 mV
  1.8 V              1804 mV
  3.3 V              3286 mV
  3.3 V bias         3292 mV
  3.3 V ASF          3300 mV
  9.0 V              8230 mV
SIB F2S 2/6 status:
State                Online
Temperature          38 degrees C / 100 degrees F
Power
  1.2 V_1            0 mV
  1.2 V_ASF          1202 mV
  1.2 V_ASF_B        1198 mV

```

1.2 V_ASF_D	1202 mV
1.5 V	1501 mV
1.8 V	1817 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3318 mV
9.0 V	8250 mV

SIB F2S 3/0 status:

State	Online
Temperature	38 degrees C / 100 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1195 mV
1.2 V_ASF_B	1195 mV
1.2 V_ASF_D	1198 mV
1.5 V	1501 mV
1.8 V	1814 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3274 mV
9.0 V	8250 mV

SIB F2S 3/2 status:

State	Online
Temperature	37 degrees C / 98 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1202 mV
1.2 V_ASF_B	1195 mV
1.2 V_ASF_D	1195 mV
1.5 V	1495 mV
1.8 V	1804 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3286 mV
9.0 V	8250 mV

SIB F2S 3/4 status:

State	Online
Temperature	37 degrees C / 98 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1205 mV
1.2 V_ASF_B	1198 mV
1.2 V_ASF_D	1202 mV
1.5 V	1501 mV
1.8 V	1811 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3318 mV
9.0 V	8250 mV

SIB F2S 3/6 status:

State	Online
Temperature	37 degrees C / 98 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1205 mV
1.2 V_ASF_B	1202 mV
1.2 V_ASF_D	1202 mV
1.5 V	1511 mV
1.8 V	1820 mV
3.3 V	3306 mV
3.3 V bias	3306 mV

```

3.3 V ASF          3318 mV
9.0 V              8265 mV
SIB F2S 4/0 status:
State              Online
Temperature        36 degrees C / 96 degrees F
Power
  1.2 V_1          0 mV
  1.2 V_ASF        1198 mV
  1.2 V_ASF_B      1198 mV
  1.2 V_ASF_D      1198 mV
  1.5 V            1501 mV
  1.8 V            1814 mV
  3.3 V            3292 mV
  3.3 V bias       3292 mV
  3.3 V ASF        3312 mV
  9.0 V            8230 mV
SIB F2S 4/2 status:
State              Online
Temperature        37 degrees C / 98 degrees F
Power
  1.2 V_1          0 mV
  1.2 V_ASF        1198 mV
  1.2 V_ASF_B      1192 mV
  1.2 V_ASF_D      1195 mV
  1.5 V            1495 mV
  1.8 V            1807 mV
  3.3 V            3300 mV
  3.3 V bias       3300 mV
  3.3 V ASF        3300 mV
  9.0 V            8250 mV
SIB F2S 4/4 status:
State              Online
Temperature        36 degrees C / 96 degrees F
Power
  1.2 V_1          0 mV
  1.2 V_ASF        1202 mV
  1.2 V_ASF_B      1195 mV
  1.2 V_ASF_D      1202 mV
  1.5 V            1501 mV
  1.8 V            1814 mV
  3.3 V            3300 mV
  3.3 V bias       3300 mV
  3.3 V ASF        3312 mV
  9.0 V            8250 mV
SIB F2S 4/6 status:
State              Online
Temperature        36 degrees C / 96 degrees F
Power
  1.2 V_1          0 mV
  1.2 V_ASF        1198 mV
  1.2 V_ASF_B      1195 mV
  1.2 V_ASF_D      1198 mV
  1.5 V            1498 mV
  1.8 V            1820 mV
  3.3 V            3292 mV
  3.3 V bias       3292 mV
  3.3 V ASF        3286 mV
  9.0 V            8230 mV

```

```
lcc0-re0:
```

```
-----
```

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

SIB 1 status:
State           Online
Temperature     49 degrees C / 120 degrees F
Temperature (B) 42 degrees C / 107 degrees F
Power
  1.2 V         1202 mV
  1.5 V         1482 mV
  2.5 V         2500 mV
  3.3 V         3296 mV
  3.3 V bias    3288 mV
  5.0 V bias    4986 mV
  8.0 V bias    7800 mV
  9.0 V         8868 mV
Power (B)
  1.2 V         1206 mV
  2.5 V         2512 mV
  3.3 V         3312 mV
  9.0 V         8952 mV

SIB 2 status:
State           Online
Temperature     49 degrees C / 120 degrees F
Temperature (B) 42 degrees C / 107 degrees F
Power
  1.2 V         1202 mV
  1.5 V         1480 mV
  2.5 V         2476 mV
  3.3 V         3292 mV
  3.3 V bias    3308 mV
  5.0 V bias    5010 mV
  8.0 V bias    7800 mV
  9.0 V         8880 mV
Power (B)
  1.2 V         1204 mV
  2.5 V         2516 mV
  3.3 V         3308 mV
  9.0 V         8988 mV

SIB 3 status:
State           Online
Temperature     48 degrees C / 118 degrees F
Temperature (B) 42 degrees C / 107 degrees F
Power
  1.2 V         1204 mV
  1.5 V         1480 mV
```



```

2.5 V                2500 mV
3.3 V                3292 mV
3.3 V bias           3292 mV
5.0 V bias           4986 mV
8.0 V bias           7812 mV
9.0 V                8892 mV
Power (B)
1.2 V                1198 mV
2.5 V                2512 mV
3.3 V                3308 mV
9.0 V                8892 mV
SIB 4 status:
State                Online
Temperature           48 degrees C / 118 degrees F
Temperature (B)       42 degrees C / 107 degrees F
Power
1.2 V                1206 mV
1.5 V                1482 mV
2.5 V                2484 mV
3.3 V                3324 mV
3.3 V bias           3340 mV
5.0 V bias           4980 mV
8.0 V bias           7764 mV
9.0 V                8784 mV
Power (B)
1.2 V                1202 mV
2.5 V                2504 mV
3.3 V                3308 mV
9.0 V                8820 mV
lcc1-re0:
-----
SIB 0 status:
State                Online - Standby
Temperature           49 degrees C / 120 degrees F
Temperature (B)       43 degrees C / 109 degrees F
Power
1.2 V                1206 mV
1.5 V                1506 mV
2.5 V                2496 mV
3.3 V                3308 mV
3.3 V bias           3296 mV
5.0 V bias           4974 mV
8.0 V bias           7884 mV
9.0 V                8820 mV
Power (B)
1.2 V                1200 mV
2.5 V                2508 mV
3.3 V                3292 mV
9.0 V                8892 mV
...

```

show chassis environment sib sfc (TX Matrix Plus Router)

```

user@host> show chassis environment sib sfc
sfc0-re0:
-----
SIB F13 0 status:
State                Online - Standby
Temperature           54 degrees C / 129 degrees F
Temperature (B)       50 degrees C / 122 degrees F
Power

```

1.2 V_0	1205 mV
1.2 V_1	1205 mV
1.2 V_2	1208 mV
1.2 V_3	1208 mV
1.5 V_0	1501 mV
1.5 V_1	1508 mV
1.8 V	1804 mV
2.5 V	2504 mV
3.3 V	3312 mV
9.0 V	8991 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2516 mV
3.3 V	3318 mV
9.0 V	9048 mV
SIB F13 1 status:	
State	Online - Standby
Temperature	45 degrees C / 113 degrees F
Temperature (B)	42 degrees C / 107 degrees F
Power	
1.2 V_0	1202 mV
1.2 V_1	1205 mV
1.2 V_2	1198 mV
1.2 V_3	1205 mV
1.5 V_0	1498 mV
1.5 V_1	1495 mV
1.8 V	1801 mV
2.5 V	2507 mV
3.3 V	3306 mV
9.0 V	8970 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2507 mV
3.3 V	3306 mV
9.0 V	8970 mV
SIB F13 3 status:	
State	Online
Temperature	48 degrees C / 118 degrees F
Temperature (B)	43 degrees C / 109 degrees F
Power	
1.2 V_0	1208 mV
1.2 V_1	1195 mV
1.2 V_2	1202 mV
1.2 V_3	1198 mV
1.5 V_0	1504 mV
1.5 V_1	1504 mV
1.8 V	1801 mV
2.5 V	2510 mV
3.3 V	3312 mV
9.0 V	8970 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2500 mV
3.3 V	3332 mV
9.0 V	8970 mV
SIB F13 4 status:	
State	Online
Temperature	44 degrees C / 111 degrees F
Temperature (B)	40 degrees C / 104 degrees F
Power	
1.2 V_0	1205 mV

```

1.2 V_1                1202 mV
1.2 V_2                1205 mV
1.2 V_3                1202 mV
1.5 V_0                1508 mV
1.5 V_1                1511 mV
1.8 V                  1811 mV
2.5 V                  2510 mV
3.3 V                  3312 mV
9.0 V                  8952 mV
9.0 V bias              0 mV
Power (B)
2.5 V                  2510 mV
3.3 V                  3306 mV
9.0 V                  9024 mV
SIB F13 6 status:
State                  Online
Temperature             49 degrees C / 120 degrees F
Temperature (B)         46 degrees C / 114 degrees F
Power
1.2 V_0                1195 mV
1.2 V_1                1198 mV
1.2 V_2                1202 mV
1.2 V_3                1202 mV
1.5 V_0                1501 mV
1.5 V_1                1495 mV
1.8 V                  1801 mV
2.5 V                  2507 mV
3.3 V                  3306 mV
9.0 V                  8979 mV
9.0 V bias              0 mV
Power (B)
2.5 V                  2497 mV
3.3 V                  3318 mV
9.0 V                  9006 mV
SIB F13 7 status:
State                  Online
Temperature             52 degrees C / 125 degrees F
Temperature (B)         48 degrees C / 118 degrees F
Power
1.2 V_0                1198 mV
1.2 V_1                1198 mV
1.2 V_2                1202 mV
1.2 V_3                1189 mV
1.5 V_0                1498 mV
1.5 V_1                1498 mV
1.8 V                  1804 mV
2.5 V                  2491 mV
3.3 V                  3292 mV
9.0 V                  8904 mV
9.0 V bias              0 mV
Power (B)
2.5 V                  2500 mV
3.3 V                  3306 mV
9.0 V                  8952 mV
SIB F13 8 status:
State                  Online
Temperature             54 degrees C / 129 degrees F
Temperature (B)         49 degrees C / 120 degrees F
Power
1.2 V_0                1211 mV
1.2 V_1                1208 mV

```

1.2 V_2	1208 mV
1.2 V_3	1211 mV
1.5 V_0	1508 mV
1.5 V_1	1511 mV
1.8 V	1801 mV
2.5 V	2513 mV
3.3 V	3324 mV
9.0 V	9048 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2516 mV
3.3 V	3318 mV
9.0 V	9102 mV
SIB F13 9 status:	
State	Online
Temperature	46 degrees C / 114 degrees F
Temperature (B)	41 degrees C / 105 degrees F
Power	
1.2 V_0	1205 mV
1.2 V_1	1202 mV
1.2 V_2	1205 mV
1.2 V_3	1198 mV
1.5 V_0	1504 mV
1.5 V_1	1504 mV
1.8 V	1817 mV
2.5 V	2507 mV
3.3 V	3306 mV
9.0 V	8991 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2510 mV
3.3 V	3332 mV
9.0 V	9006 mV
SIB F13 11 status:	
State	Online
Temperature	47 degrees C / 116 degrees F
Temperature (B)	42 degrees C / 107 degrees F
Power	
1.2 V_0	1202 mV
1.2 V_1	1205 mV
1.2 V_2	1202 mV
1.2 V_3	1198 mV
1.5 V_0	1501 mV
1.5 V_1	1504 mV
1.8 V	1807 mV
2.5 V	2510 mV
3.3 V	3306 mV
9.0 V	8991 mV
9.0 V bias	0 mV
Power (B)	
2.5 V	2249 mV
3.3 V	4994 mV
9.0 V	9936 mV
SIB F13 12 status:	
State	Online
Temperature	44 degrees C / 111 degrees F
Temperature (B)	40 degrees C / 104 degrees F
Power	
1.2 V_0	1208 mV
1.2 V_1	1202 mV
1.2 V_2	1208 mV

```

1.2 V_3                1205 mV
1.5 V_0                1511 mV
1.5 V_1                1508 mV
1.8 V                  1814 mV
2.5 V                  2507 mV
3.3 V                  3318 mV
9.0 V                  9039 mV
9.0 V bias              0 mV
Power (B)
2.5 V                  2516 mV
3.3 V                  3344 mV
9.0 V                  9006 mV
SIB F2S 0/0 status:
State                  Online - Standby
Temperature             40 degrees C / 104 degrees F
Power
1.2 V_1                0 mV
1.2 V_ASF              1198 mV
1.2 V_ASF_B            1198 mV
1.2 V_ASF_D            1202 mV
1.5 V                  1498 mV
1.8 V                  1814 mV
3.3 V                  3300 mV
3.3 V bias              3300 mV
3.3 V ASF              3286 mV
9.0 V                  8250 mV
SIB F2S 0/2 status:
State                  Online - Standby
Temperature             40 degrees C / 104 degrees F
Power
1.2 V_1                0 mV
1.2 V_ASF              1198 mV
1.2 V_ASF_B            1195 mV
1.2 V_ASF_D            1202 mV
1.5 V                  1498 mV
1.8 V                  1807 mV
3.3 V                  3300 mV
3.3 V bias              3300 mV
3.3 V ASF              3292 mV
9.0 V                  8250 mV
SIB F2S 0/4 status:
State                  Online - Standby
Temperature             40 degrees C / 104 degrees F
Power
1.2 V_1                0 mV
1.2 V_ASF              1198 mV
1.2 V_ASF_B            1195 mV
1.2 V_ASF_D            1202 mV
1.5 V                  1501 mV
1.8 V                  1817 mV
3.3 V                  3300 mV
3.3 V bias              3300 mV
3.3 V ASF              3306 mV
9.0 V                  8250 mV
SIB F2S 0/6 status:
State                  Online - Standby
Temperature             39 degrees C / 102 degrees F
Power
1.2 V_1                0 mV
1.2 V_ASF              1202 mV
1.2 V_ASF_B            1198 mV

```

1.2 V_ASF_D	1198 mV
1.5 V	1495 mV
1.8 V	1814 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3280 mV
9.0 V	8250 mV

SIB F2S 1/0 status:

State	Online
Temperature	39 degrees C / 102 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1195 mV
1.2 V_ASF_B	1192 mV
1.2 V_ASF_D	1195 mV
1.5 V	1492 mV
1.8 V	1798 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3280 mV
9.0 V	8250 mV

SIB F2S 1/2 status:

State	Online
Temperature	39 degrees C / 102 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1205 mV
1.2 V_ASF_B	1202 mV
1.2 V_ASF_D	1205 mV
1.5 V	1504 mV
1.8 V	1820 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3306 mV
9.0 V	8250 mV

SIB F2S 1/4 status:

State	Online
Temperature	39 degrees C / 102 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1202 mV
1.2 V_ASF_B	1195 mV
1.2 V_ASF_D	1198 mV
1.5 V	1498 mV
1.8 V	1811 mV
3.3 V	3300 mV
3.3 V bias	3300 mV
3.3 V ASF	3300 mV
9.0 V	8250 mV

SIB F2S 1/6 status:

State	Online
Temperature	39 degrees C / 102 degrees F
Power	
1.2 V_1	0 mV
1.2 V_ASF	1195 mV
1.2 V_ASF_B	1192 mV
1.2 V_ASF_D	1198 mV
1.5 V	1498 mV
1.8 V	1807 mV
3.3 V	3306 mV
3.3 V bias	3300 mV

```

3.3 V ASF          3292 mV
9.0 V              8250 mV
SIB F2S 2/0 status:
State              Online
Temperature        38 degrees C / 100 degrees F
Power
  1.2 V_1          0 mV
  1.2 V_ASF        1195 mV
  1.2 V_ASF_B      1195 mV
  1.2 V_ASF_D      1198 mV
  1.5 V            1498 mV
  1.8 V            1804 mV
  3.3 V            3300 mV
  3.3 V bias       3300 mV
  3.3 V ASF        3292 mV
  9.0 V            8250 mV
...

```

show chassis environment sib f13 (TX Matrix Plus Router)

```

user@host> show chassis environment sib f13 0
SIB F13 0 status:
State              Online - Standby
Temperature        54 degrees C / 129 degrees F
Temperature (B)    50 degrees C / 122 degrees F
Power
  1.2 V_0          1202 mV
  1.2 V_1          1202 mV
  1.2 V_2          1208 mV
  1.2 V_3          1208 mV
  1.5 V_0          1501 mV
  1.5 V_1          1504 mV
  1.8 V            1801 mV
  2.5 V            2504 mV
  3.3 V            3318 mV
  9.0 V            8991 mV
  9.0 V bias       0 mV
Power (B)
  2.5 V            2510 mV
  3.3 V            3318 mV
  9.0 V            9024 mV

```

show chassis environment sib f2s (TX Matrix Plus Router)

```

user@host> show chassis environment sib f2s 0/2
SIB F2S 0/2 status:
State              Online - Standby
Temperature        40 degrees C / 104 degrees F
Power
  1.2 V_1          0 mV
  1.2 V_ASF        1198 mV
  1.2 V_ASF_B      1195 mV
  1.2 V_ASF_D      1202 mV
  1.5 V            1501 mV
  1.8 V            1807 mV
  3.3 V            3300 mV
  3.3 V bias       3300 mV
  3.3 V ASF        3286 mV
  9.0 V            8250 mV

```

show chassis environment sib (TX Matrix Plus router with 3D SIBs)

```

user@host> show chassis environment sib
sfc0-re0:
-----
SIB F13 0 status:
State                               Online
Board Temperature                   44 degrees C / 111 degrees F
XF Junction Temperature              62 degrees C / 143 degrees F
Power
  XF F1 LCC0 1.0 V                   999 mV
  PCIe Switch 1.0 V                  1000 mV
  XF F3 LCC0 1.0 V                    1000 mV
  XF F1/F3 LCC0 1.2 V                 1199 mV
  XF F1 LCC1 1.0 V                    1000 mV
  XF F1/F3 LCC1 1.2 V                 1199 mV
  XF F3 LCC1 1.0 V                    1000 mV
  XF F1/F3 1.5 V                      1499 mV
  XF RC LCC0 Base 1.0                 1000 mV
  XF RC Base 1.2 V                    1200 mV
  XF RC LCC1 Base 1.0                 1000 mV
  XF RC Base 1.5 V                    1499 mV
  3.3 V Base                          3300 mV
  VSC8248 Base 1.8V                   1796 mV
  FPGA Core 0.9 V                     899 mV
  2.5 V Base                          2500 mV
  ltc3880-3.3v-bias                   3343 mV
  CXP Base 4.0 V                      3999 mV
  XF RC LCC0 Mezz 1.0                 1000 mV
  XF RC Mezz 1.2 V                    1199 mV
  XF RC LCC1 Mezz 1.0                 999 mV
  XF RC Mezz 1.5 V                    1499 mV
  3.3 V Mezz                          3299 mV
  VSC8248 Mezz 1.8V                   1800 mV
  CXP Mezz 4.0 V                      3999 mV
[...Output Truncated...]
SIB F2S 0/0 status:
State                               Online
Board Temperature                   32 degrees C / 89 degrees F
XF Junction Temperature              41 degrees C / 105 degrees F
Power
  XF F2S 1.8 V LD0                    1775 mV
  XF F2S 1.0 V AN                      992 mV
  XF F2S 1.0 V                        1002 mV
  XF F2S 1.5 V                        1488 mV
  1.5 V Base                          2500 mV
  3.3 V bias                          3306 mV
  3.3 V Base                          3280 mV
  12.0 V Base                         11928 mV
[...Output Truncated...]
SIB F2S 2/6 status:
State                               Online
Board Temperature                   28 degrees C / 82 degrees F
XF Junction Temperature              40 degrees C / 104 degrees F
Power
  XF F2S 1.8 V LD0                    1782 mV
  XF F2S 1.0 V AN                      999 mV
  XF F2S 1.0 V                        1005 mV
  XF F2S 1.5 V                        1498 mV
  1.5 V Base                          2510 mV
  3.3 V bias                          3292 mV

```


3.3 V Base	3292 mV
12.0 V Base	12024 mV

lcc0-re0:

SIB 0 status:

State	Online
Temperature	41 degrees C / 105 degrees F
Temperature (B)	Absent
Max Jn Temperature	48 degrees C / 118 degrees F
Power	
8.0 V bias	8156 mV
3.3 V bias	3284 mV
FPGA 0.9 V bias	908 mV
FPGA 1.1 V bias	1086 mV
FPGA 1.5 V bias	1487 mV
FPGA 2.5 V bias	2525 mV
3.3 V	3282 mV
1.5 V	1487 mV
XF HSS 1.5 V	1501 mV
XF1 1.0 V	1001 mV
XF2 1.0 V	1003 mV
XF3 1.0 V	998 mV
XF1 1.8 V LDO	1782 mV
XF2 1.8 V LDO	1792 mV
XF3 1.8 V LDO	1782 mV
CLK BUF 2.5 V LDO	2493 mV
XF1 1.0 V LDO	991 mV
XF2 1.0 V LDO	991 mV
XF3 1.0 V LDO	991 mV
PCIe SW 3.3 V	3274 mV
PCIe 1.0 V	996 mV
RETIMER 1.2 V	1174 mV
RETIMER IO 1.8 V	1770 mV
	0 mV
Power (B)	
1.2 V	0 mV
2.5 V	0 mV
3.3 V	0 mV
9.0 V	0 mV

[...Output Truncated...]

lcc2-re0:

SIB 0 status:

State	Online
Temperature	42 degrees C / 107 degrees F
Temperature (B)	Absent
Max Jn Temperature	51 degrees C / 123 degrees F
Power	
8.0 V bias	8146 mV
3.3 V bias	3277 mV
FPGA 0.9 V bias	903 mV
FPGA 1.1 V bias	1089 mV
FPGA 1.5 V bias	1479 mV
FPGA 2.5 V bias	2515 mV
3.3 V	3277 mV
1.5 V	1482 mV
XF HSS 1.5 V	1501 mV
XF1 1.0 V	1001 mV
XF2 1.0 V	1003 mV
XF3 1.0 V	998 mV

```

XF1 1.8 V LDO          1787 mV
XF2 1.8 V LDO          1792 mV
XF3 1.8 V LDO          1792 mV
CLK BUF 2.5 V LDO     2481 mV
XF1 1.0 V LDO          986 mV
XF2 1.0 V LDO          993 mV
XF3 1.0 V LDO          991 mV
PCIE SW 3.3 V         3279 mV
PCIE 1.0 V             991 mV
RETIMER 1.2 V         1179 mV
RETIMER IO 1.8 V      1772 mV
                        0 mV
Power (B)
1.2 V                  0 mV
2.5 V                  0 mV
3.3 V                  0 mV
9.0 V                  0 mV
[...Output Truncated...]

```

show chassis environment sib (PTX5000 Packet Transport Router)

```

user@host> show chassis environment sib
SIB 0 status:
  State                Online
  Exhaust Temperature   37 degrees C / 98 degrees F
  Junction Temperature   43 degrees C / 109 degrees F
  Power
    1.0 V               1000 mV
    1.5 V               1499 mV
    1.2 V               1199 mV
    3.3 V               3300 mV
    0.9 V               900 mV
    2.5 V               2500 mV
    3.3 V bias          3298 mV
SIB 1 status:
  State                Online
  Exhaust Temperature   36 degrees C / 96 degrees F
  Junction Temperature   45 degrees C / 113 degrees F
  Power
    1.0 V               1000 mV
    1.5 V               1500 mV
    1.2 V               1200 mV
    3.3 V               3300 mV
    0.9 V               900 mV
    2.5 V               2499 mV
    3.3 V bias          3321 mV
SIB 2 status:
  State                Online
  Exhaust Temperature   37 degrees C / 98 degrees F
  Junction Temperature   41 degrees C / 105 degrees F
  Power
    1.0 V               999 mV
    1.5 V               1499 mV
    1.2 V               1199 mV
    3.3 V               3299 mV
    0.9 V               900 mV
    2.5 V               2500 mV
    3.3 V bias          3339 mV
SIB 3 status:
  State                Online
  Exhaust Temperature   40 degrees C / 104 degrees F

```

```

Junction Temperature      45 degrees C / 113 degrees F
Power
  1.0 V                  1000 mV
  1.5 V                  1500 mV
  1.2 V                  1199 mV
  3.3 V                  3299 mV
  0.9 V                  900 mV
  2.5 V                  2500 mV
  3.3 V bias             3328 mV
SIB 4 status:
State                    Online
Exhaust Temperature      45 degrees C / 113 degrees F
Junction Temperature     57 degrees C / 134 degrees F
Power
  1.0 V                  1000 mV
  1.5 V                  1500 mV
  1.2 V                  1199 mV
  3.3 V                  3299 mV
  0.9 V                  900 mV
  2.5 V                  2499 mV
  3.3 V bias             3333 mV
SIB 5 status:
State                    Online
Exhaust Temperature      43 degrees C / 109 degrees F
Junction Temperature     71 degrees C / 159 degrees F
Power
  1.0 V                  1000 mV
  1.5 V                  1499 mV
  1.2 V                  1199 mV
  3.3 V                  3300 mV
  0.9 V                  900 mV
  2.5 V                  2500 mV
  3.3 V bias             3307 mV
SIB 6 status:
State                    Online
Exhaust Temperature      42 degrees C / 107 degrees F
Junction Temperature     66 degrees C / 150 degrees F
Power
  1.0 V                  1000 mV
  1.5 V                  1499 mV
  1.2 V                  1200 mV
  3.3 V                  3300 mV
  0.9 V                  899 mV
  2.5 V                  2500 mV
  3.3 V bias             3311 mV
SIB 7 status:
State                    Online
Exhaust Temperature      42 degrees C / 107 degrees F
Junction Temperature     67 degrees C / 152 degrees F
Power
  1.0 V                  999 mV
  1.5 V                  1500 mV
  1.2 V                  1199 mV
  3.3 V                  3299 mV
  0.9 V                  900 mV
  2.5 V                  2499 mV
  3.3 V bias             3307 mV
SIB 8 status:
State                    Online
Exhaust Temperature      43 degrees C / 109 degrees F
Junction Temperature     71 degrees C / 159 degrees F

```

Power

1.0 V	1000 mV
1.5 V	1500 mV
1.2 V	1199 mV
3.3 V	3299 mV
0.9 V	900 mV
2.5 V	2500 mV
3.3 V bias	3332 mV

show chassis ethernet-switch

Syntax	show chassis ethernet-switch <errors <port>>
Syntax (EX8200 Switch)	show chassis ethernet-switch <statistics <port> switch <number>
Syntax (T4000 Router)	show chassis ethernet-switch <errors <port> statistics <port>>
Syntax (TX Matrix Router)	show chassis ethernet-switch <errors <port> statistics <port>> <lcc <number> scc>
Syntax (TX Matrix Plus Router)	show chassis ethernet-switch <errors <port> switch <number> <lcc number sfc number> <statistics <port> switch <number>
Syntax (MX Series Router)	show chassis ethernet-switch <all-members> <errors <port>> <local> <member member-id>
Syntax (MX2010 and MX2020 3D Universal Edge Routers)	show chassis ethernet-switch <errors <port> statistics <port>> <old-rom-packet-count>
Syntax (PTX Series Packet Transport Routers)	show chassis ethernet-switch <errors <port>> <statistics <port>> <port-state <port>>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.4 for EX Series switches. sfc option introduced in Junos OS Release 9.6 for the TX Matrix Plus router. Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.
Description	(M10i, M40e, M120, M160, M320, MX Series, and T Series routers and EX8200 and PTX Series routers only) Display information about the ports on the Control Board (CB) Ethernet switch.
Options	none —Display information about each connected port on the Ethernet switch. On a TX Matrix router, display information about each connected port on the Ethernet switch on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router,

display information about each connected port on the Ethernet switch on the TX Matrix Plus router and its attached routers.

all-members—(MX Series routers only) (Optional) Display information about the ports on the CB Ethernet switch on all the members of the Virtual Chassis configuration.

errors—(Optional) Display the numbers and types of errors accumulated on all ports of the Ethernet switch.

errors *port*—(Optional) Display the numbers and types of errors accumulated on the specified port (0 through 15) of the Ethernet switch. On the TX Matrix router, replace ***port*** with a value from 0 through 15. On the TX Matrix Plus router and EX8200 switch, replace ***port*** with a value from 0 through 27. On the PTX Series Packet Transport Routers, replace ***port*** with a value from 0 through 25. On the T4000 routers, MX2020 routers, and MX2010 routers, replace ***port*** with a value from 0 through 27.

errors switch *number*—(TX Matrix Plus router only) (Optional) Display the numbers and types of errors accumulated on the specified switch. Replace ***number*** with a value from 0 through 2.

lcc *number*—(TX Matrix router and TX Matrix Plus router 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—(MX Series routers only) (Optional) Display information about the ports on the CB Ethernet switch on the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display information about the ports on the CB Ethernet switch on the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

old-rom-packet-count—(MX 2020 Routers only) (Optional) Display information about installed linecards. A non-zero number indicates that the bootrom on that linecard needs to be updated.

port-state—(PTX Series only) (Optional) Display information about current port operation (**Blocking**, **Listening**, or **Disabled**).

scc—(TX Matrix router only) (Optional) Display information about the ports on the CB's Ethernet switch on the TX Matrix router (switch-card chassis).

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

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

statistics *port*—(Optional) Display traffic statistics for the specified port on the Ethernet switch. On the TX Matrix router, replace *port* with a value from 0 through 25. On the TX Matrix Plus router or EX8200 switch, replace *port* with a value from 0 through 27. On the PTX Series Packet Transport Routers, replace *port* with a value from 0 through 25. On the T4000 routers, MX2020 routers, and MX2010 routers, replace *port* with a value from 0 through 27.

statistics switch *number*—(TX Matrix Plus routers and EX8200 switch only) (Optional) Display traffic statistics for the specified Ethernet switch number. On the TX Matrix Plus router and EX8216 switch, replace *number* with a value from 0 through 2. On the EX8208 switch, replace *number* with a value from 0 through 1.

Required Privilege Level view

List of Sample Output

- [show chassis ethernet-switch on page 415](#)
- [show chassis ethernet-switch \(MX480 Router with MPC4E\) on page 416](#)
- [show chassis ethernet-switch \(MX2010 Router\) on page 417](#)
- [show chassis ethernet-switch statistics \(MX2010 Router\) on page 419](#)
- [show chassis ethernet-switch \(MX2020 Router\) on page 425](#)
- [show chassis ethernet-switch statistics \(MX2020 Router\) on page 428](#)
- [show chassis ethernet-switch \(MX2020 Router with MPC4E\) on page 436](#)
- [show chassis ethernet-switch \(TX Matrix Router\) on page 437](#)
- [show chassis ethernet-switch errors on page 438](#)
- [show chassis ethernet-switch statistics on page 439](#)
- [show chassis ethernet-switch errors \(TX Matrix Plus Router\) on page 440](#)
- [show chassis ethernet-switch sfc errors \(TX Matrix Plus Router\) on page 441](#)
- [show chassis ethernet-switch statistics \(TX Matrix Plus Router\) on page 442](#)
- [show chassis ethernet-switch \(T4000 Router\) on page 446](#)
- [show chassis ethernet-switch errors \(T4000 Router\) on page 447](#)
- [show chassis ethernet-switch \(PTX5000 Packet Transport Router\) on page 448](#)
- [show chassis ethernet-switch statistics \(PTX5000 Packet Transport Router\) on page 449](#)
- [show chassis ethernet-switch port-state \(PTX5000 Packet Transport Router\) on page 452](#)

Output Fields [Table 24 on page 412](#) lists the output fields for the **show chassis ethernet-switch** command. Output fields are listed in the approximate order in which they appear.

Table 24: show chassis ethernet-switch Output Fields

Field Name	Field Description
Link is good on port <i>n</i> connected to device	Information about the link between each port on the CB's Ethernet switch and one of the following devices: <ul style="list-style-type: none"> FPC0 (Flexible PIC Concentrator 0) through FPC7 Local controller Routing Engine Other Routing Engine (on a system with two Routing Engines) SPMB (Switch Processor Mezzanine Board) (TX Matrix router only) LCC0 (line-card chassis 0) through LCC3
or	
Link is good on Fast Ethernet port <i>n</i> connected to device	
or	
Link is good on Gigabit Ethernet port <i>n</i> connected to device	
or	
Link is down on Gigabit Ethernet port connected to device	
Speed is	Speed at which the Ethernet link is running: 10 Mb or 100 Mb . When the device is RE or Other RE on the TX Matrix router, the speed is 1000 Mb . NOTE: Irrespective of the device, the speed is 1000 Mb on the MX2010 and MX2020 routers.
Duplex is	Duplex type of the Ethernet link: full or half .
Autonegotiate is Enabled (or Disabled)	By default, built-in Fast Ethernet ports on a PIC autonegotiate whether to operate at 10 Mbps or 100 Mbps. All other interfaces automatically choose the correct speed based on the PIC type and whether the PIC is configured to operate in multiplexed mode (using the no-concatenate statement at the [edit chassis] hierarchy level, as described in the <i>Junos OS System Basics Configuration Guide</i>).
Flow Control TX is Enabled (or Disabled)	(MX2010 routers, MX2020 routers, and PTX Series) Flow control in the transmit direction is enabled (or disabled). Flow control regulates the flow of packets from the switch to the remote side of the connection.
Flow Control RX is Enabled (or Disabled)	(MX2010 routers, MX2020 routers, and PTX Series) Flow control in the receive direction is enabled (or disabled). Flow control regulates the flow of packets from the remote side of the connection to the switch.
MLT3	Number of multilevel threshold-3 (MLT-3) Fast Ethernet errors detected.
Accumulated error counts for port <i>n</i> connected to device FPC <i>n</i> : (error output only)	
Lock	Number of lock errors detected.
Xmit	Number of transmission errors detected.
ESD	Number of electrostatic discharge (ESD) errors detected.
False Carrier	Number of false carrier errors detected.

Table 24: show chassis ethernet-switch Output Fields (*continued*)

Field Name	Field Description
Disconnects	Number of disconnect errors detected.
FX mode	Number of errors detected on an Ethernet link over optical fiber.
Statistics for port <i>n</i> connected to device FPC <i>n</i> (statistics output only)	
TX Packets 64 Octets	(MX2010 and MX2020 routers) Number of packets of size 64 octets transmitted.
TX Packets 65 - 127 Octets	(MX2010 and MX2020 routers) Number of packets of size 65 through 127 octets transmitted.
TX Packets 128 - 255 Octets	(MX2010 and MX2020 routers) Number of packets of size 128 through 255 octets transmitted.
TX Packets 256 - 511 Octets	(MX2010 and MX2020 routers) Number of packets of size 256 through 511 octets transmitted.
TX Packets 512 - 1023 Octets	(MX2010 and MX2020 routers) Number of packets of size 512 through 1023 octets transmitted.
TX Packets 1024 - 1518 Octets	(MX2010 and MX2020 routers) Number of packets of size 1024 through 1518 octets transmitted.
TX Packets 1519 - 2047 Octets	(MX2010 and MX2020 routers) Number of packets of size 1519 through 2047 octets transmitted.
TX Packets 2048 - 4095 Octets	(MX2010 and MX2020 routers) Number of packets of size 2048 through 4095 octets transmitted.
TX Packets 4096 - 9216 Octets	(MX2010 and MX2020 routers) Number of packets of size 4096 through 9216 octets transmitted.
TX 1519 - 1522 Good Vlan frms	(MX2010 and MX2020 routers) Number of transmitted frames of size 1519 through 1522 octets that are good VLAN frames.
TX Octets	Number of octets sent.
TX Unicast packets	Number of unicast packets sent.
TX Multicast packets	Number of multicast packets sent.
TX Broadcast packets	Number of broadcast packets sent.
TX Single Collision frames	(MX2010 and MX2020 routers) Number of packets sent after one collision.
TX Mult. Collision frames	(MX2010 and MX2020 routers) Number of packets sent after multiple collisions.

Table 24: show chassis ethernet-switch Output Fields (*continued*)

Field Name	Field Description
TX Late collisions	Number of packets aborted during sending because of collisions after 64 bytes.
TX Excessive collisions	Number of packets not sent because of too many collisions.
TX Dropped packets	Number of transmitted packets that were dropped.
TX PAUSEMAC Ctrl Frames	Number of Media Access Control (MAC) frames containing PAUSE commands that were sent.
TX Oversize Packets	Number of oversize packets that were sent.
TX FCS Error Counter	Number of packets discarded because of frame check sequence errors.
TX Fragment Counter	Number of fragmented packets sent.
TX Byte Counter	Number of bytes sent.
TX Packet OK Counter	Number of viable packets sent.
TX Pause Packet Counter	Number of PAUSE packets sent.
RX Packets 64 Octets	(MX2010 and MX2020 routers) Number of packets of size 64 octets received.
RX Packets 65 - 127 Octets	(MX2010 and MX2020 routers) Number of packets of size 65 through 127 octets received.
RX Packets 128 - 255 Octets	(MX2010 and MX2020 routers) Number of packets of size 128 through 255 octets received.
RX Packets 256 - 511 Octets	(MX2010 and MX2020 routers) Number of packets of size 256 through 511 octets received.
RX Packets 512 - 1023 Octets	(MX2010 and MX2020 routers) Number of packets of size 512 through 1023 octets received.
RX Packets 1024 - 1518 Octets	(MX2010 and MX2020 routers) Number of packets of size 1024 through 1518 octets received.
RX Packets 1519 - 2047 Octets	(MX2010 and MX2020 routers) Number of packets of size 1519 through 2047 octets received.
RX Packets 2048 - 4095 Octets	(MX2010 and MX2020 routers) Number of packets of size 2048 through 4095 octets received.
RX Packets 4096 - 9216 Octets	(MX2010 and MX2020 routers) Number of packets of size 4096 through 9216 octets received.

Table 24: show chassis ethernet-switch Output Fields (*continued*)

Field Name	Field Description
RX Octets	Number of octets received.
RX Unicast packets	Number of unicast packets received.
RX Multicast packets	Number of multicast packets received.
RX Broadcast packets	Number of broadcast packets received.
RX FCS Errors	Number of packets discarded because of frame check sequence errors.
RX Alignment Errors	Number of incomplete octets received.
RX Dropped Packets	Number of incoming packets that were dropped.
RX Fragments	Number of fragmented packets received.
RX Symbol Errors	Number of symbols received that the router did not correctly decode.
RX MAC Control	Number of Media Access Control (MAC) packets received.
RX Oversize Packets	Number of oversize packets received.
RX Undersize Packets	Number of undersize packets received.
RX Jabbers	Total number of frames received that exceed the maximum byte count and contain CRC errors .
RX Control Frame Counter	Number of control frames received.
RX Pause Frame Counter	Number of pause frames received.
RX FCS Errors	Number of packets discarded because of frame check sequence errors.
RX Fragments	Number of fragmented packets received.
RX Byte Counter	Number of bytes received.
RX Packet OK Counter	Number of viable packets received.

Sample Output

show chassis ethernet-switch

```

user@host> show chassis ethernet-switch
Link is good on port 0 connected to device: FPC0
Speed is 100 MB
Duplex is full

```

```
Link is good on port 1 connected to device: FPC1
Speed is 100 MB
Duplex is full

Link is good on port 2 connected to device: FPC2
Speed is 100 MB
Duplex is full

Link is good on port 3 connected to device: FPC3
Speed is 100 MBb
Duplex is full

Link is good on port 7 connected to device: Local controller
Speed is 100 MB
Duplex is full

Link is good on port 9 connected to device: SPMB
Speed is 100 MB
Duplex is full

Link is good on port 13 connected to device: FPC5
Speed is 100 MB
Duplex is full
```

show chassis ethernet-switch (MX480 Router with MPC4E)

```
user@host > show chassis ethernet-switch
Displaying summary for switch 0
Link is down on GE port 0 connected to device: FPC0

Link is down on GE port 1 connected to device: FPC1

Link is good on GE port 2 connected to device: FPC2
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 3 connected to device: FPC3
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 4 connected to device: FPC4
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is down on GE port 5 connected to device: FPC5

Link is down on GE port 6 connected to device: FPC6

Link is down on GE port 7 connected to device: FPC7
```

```
Link is down on GE port 8 connected to device: FPC8

Link is down on GE port 9 connected to device: FPC9

Link is down on GE port 10 connected to device: FPC10

Link is down on GE port 11 connected to device: FPC11

Link is good on GE port 12 connected to device: Other RE
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 13 connected to device: RE-GigE
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 14 connected to device: Debug-GigE
```

show chassis ethernet-switch (MX2010 Router)

```
user@host > show chassis ethernet-switch
Displaying summary for switch 0
Link is good on GE port 0 connected to device: FPC0
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 1 connected to device: FPC1
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 2 connected to device: FPC3
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 3 connected to device: FPC2
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 4 connected to device: FPC5
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
```

Flow Control RX is Disabled

Link is good on GE port 5 connected to device: FPC4

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is good on GE port 6 connected to device: FPC6

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is good on GE port 7 connected to device: FPC7

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is good on GE port 8 connected to device: FPC8

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is good on GE port 9 connected to device: FPC9

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is good on GE port 20 connected to device: Other RE-GigE

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is good on GE port 21 connected to device: RE-GigE

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is down on GE port 22 connected to device: Debug-GigE

Link is good on GE port 23 connected to device: SPMB

Speed is 1000Mb

Duplex is full

Autonegotiate is Enabled

Flow Control TX is Disabled

Flow Control RX is Disabled

Link is down on XE port 24 connected to device: SFP+ 0

Link is down on XE port 25 connected to device: SFP+ 1

Link is down on XE port 26 connected to device: RE-10GigE

Link is down on XE port 27 connected to device: Other RE-10GigE

show chassis ethernet-switch statistics (MX2010 Router)

```

user@host > show chassis ethernet-switch statistics
Displaying port statistics for switch 0
Statistics for port 0 connected to device FPC0:
TX Packets 64 Octets          5088623
TX Packets 65-127 Octets     2637257
TX Packets 128-255 Octets    84829
TX Packets 256-511 Octets    120193
TX Packets 512-1023 Octets   252371
TX Packets 1024-1518 Octets  7189736
TX Packets 1519-2047 Octets  0
TX Packets 2048-4095 Octets  0
TX Packets 4096-9216 Octets  0
TX 1519-1522 Good Vlan frms 0
TX Octets                    15373009
TX Multicast Packets         14
TX Broadcast Packets         1679654
TX Single Collision frames   0
TX Mult. Collision frames   0
TX Late Collisions           0
TX Excessive Collisions     0
TX Collision frames          0
TX PAUSEMAC Ctrl Frames     0
TX MAC ctrl frames          0
TX Frame deferred Xmsns     0
TX Frame excessive deferl   0
TX Oversize Packets         0
TX Jabbers                   0
TX FCS Error Counter        0
TX Fragment Counter         0
TX Byte Counter             3041239292
RX Packets 64 Octets         874260
RX Packets 65-127 Octets     26066124
RX Packets 128-255 Octets    1386532
RX Packets 256-511 Octets    150539
RX Packets 512-1023 Octets   4636799
RX Packets 1024-1518 Octets  92601
RX Packets 1519-2047 Octets  0
RX Packets 2048-4095 Octets  0
RX Packets 4096-9216 Octets  0
RX Octets                   33206855
RX Multicast Packets         0
RX Broadcast Packets         279416
RX FCS Errors                0
RX Align Errors              0
RX Fragments                 0
RX Symbol errors             0
RX Unsupported opcodes       0
RX Out of Range Length       0
RX False Carrier Errors      0
RX Undersize Packets         0
RX Oversize Packets          0
RX Jabbers                   0

```

```
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter      0
RX Control Frame Counter   0
RX Pause Frame Counter     0
RX Byte Counter            958929187
Statistics for port 1 connected to device FPC1:
TX Packets 64 Octets       5109146
TX Packets 65-127 Octets   2779473
TX Packets 128-255 Octets  2441286
TX Packets 256-511 Octets  173102
TX Packets 512-1023 Octets 1547504
TX Packets 1024-1518 Octets 7190581
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets                  19241092
TX Multicast Packets       14
TX Broadcast Packets       1673369
TX Single Collision frames 0
TX Mult. Collision frames  0
TX Late Collisions         0
TX Excessive Collisions    0
TX Collision frames        0
TX PAUSEMAC Ctrl Frames    0
TX MAC ctrl frames        0
TX Frame deferred Xtns     0
TX Frame excessive deferl  0
TX Oversize Packets        0
TX Jabbers                 0
TX FCS Error Counter       0
TX Fragment Counter        0
TX Byte Counter            4213380187
RX Packets 64 Octets       865914
RX Packets 65-127 Octets   26612151
RX Packets 128-255 Octets  1090153
RX Packets 256-511 Octets  25126
RX Packets 512-1023 Octets 101158
RX Packets 1024-1518 Octets 78092
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets                  28772594
RX Multicast Packets       0
RX Broadcast Packets       285669
RX FCS Errors              0
RX Align Errors            0
RX Fragments               0
RX Symbol errors           0
RX Unsupported opcodes     0
RX Out of Range Length     0
RX False Carrier Errors    0
RX Undersize Packets       0
RX Oversize Packets        0
RX Jabbers                 0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter      0
RX Control Frame Counter   0
RX Pause Frame Counter     0
RX Byte Counter            2327283837
```


Link is down on GE port 2 connected to device: FPC3

Link is down on GE port 3 connected to device: FPC2

Link is down on GE port 4 connected to device: FPC5

Link is down on GE port 5 connected to device: FPC4

Link is down on GE port 6 connected to device: FPC6

Link is down on GE port 7 connected to device: FPC7

Statistics for port 8 connected to device FPC8:

TX Packets 64 Octets	5341094
TX Packets 65-127 Octets	2625310
TX Packets 128-255 Octets	3315158
TX Packets 256-511 Octets	174805
TX Packets 512-1023 Octets	976908
TX Packets 1024-1518 Octets	7181498
TX Packets 1519-2047 Octets	0
TX Packets 2048-4095 Octets	0
TX Packets 4096-9216 Octets	0
TX 1519-1522 Good Vlan frms	0
TX Octets	19614773
TX Multicast Packets	14
TX Broadcast Packets	1673831
TX Single Collision frames	0
TX Mult. Collision frames	0
TX Late Collisions	0
TX Excessive Collisions	0
TX Collision frames	0
TX PAUSEMAC Ctrl Frames	0
TX MAC ctrl frames	0
TX Frame deferred Xms	0
TX Frame excessive deferl	0
TX Oversize Packets	0
TX Jabbers	0
TX FCS Error Counter	0
TX Fragment Counter	0
TX Byte Counter	3946762991
RX Packets 64 Octets	955509
RX Packets 65-127 Octets	27568588
RX Packets 128-255 Octets	1460936
RX Packets 256-511 Octets	153248
RX Packets 512-1023 Octets	2856206
RX Packets 1024-1518 Octets	76419
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Octets	33070906
RX Multicast Packets	0
RX Broadcast Packets	285183
RX FCS Errors	0
RX Align Errors	0
RX Fragments	0
RX Symbol errors	0
RX Unsupported opcodes	0
RX Out of Range Length	0
RX False Carrier Errors	0
RX Undersize Packets	0
RX Oversize Packets	0

```
RX Jabbers 0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter 0
RX Control Frame Counter 0
RX Pause Frame Counter 0
RX Byte Counter 4256093824
```

Statistics for port 9 connected to device FPC9:

```
TX Packets 64 Octets 5237213
TX Packets 65-127 Octets 3268775
TX Packets 128-255 Octets 2320476
TX Packets 256-511 Octets 1789844
TX Packets 512-1023 Octets 501022
TX Packets 1024-1518 Octets 7800455
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets 20917785
TX Multicast Packets 14
TX Broadcast Packets 1673368
TX Single Collision frames 0
TX Mult. Collision frames 0
TX Late Collisions 0
TX Excessive Collisions 0
TX Collision frames 0
TX PAUSEMAC Ctrl Frames 0
TX MAC ctrl frames 0
TX Frame deferred Xmsns 0
TX Frame excessive deferl 0
TX Oversize Packets 0
TX Jabbers 0
TX FCS Error Counter 0
TX Fragment Counter 0
TX Byte Counter 747012161
RX Packets 64 Octets 1036527
RX Packets 65-127 Octets 27590367
RX Packets 128-255 Octets 1590059
RX Packets 256-511 Octets 328257
RX Packets 512-1023 Octets 75975
RX Packets 1024-1518 Octets 73556
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets 30694741
RX Multicast Packets 0
RX Broadcast Packets 285586
RX FCS Errors 0
RX Align Errors 0
RX Fragments 0
RX Symbol errors 0
RX Unsupported opcodes 0
RX Out of Range Length 0
RX False Carrier Errors 0
RX Undersize Packets 0
RX Oversize Packets 0
RX Jabbers 0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter 0
RX Control Frame Counter 0
RX Pause Frame Counter 0
```

RX Byte Counter 2727836941

Statistics for port 20 connected to device Other RE-GigE:

TX Packets 64 Octets	1682540
TX Packets 65-127 Octets	3454
TX Packets 128-255 Octets	659
TX Packets 256-511 Octets	0
TX Packets 512-1023 Octets	1
TX Packets 1024-1518 Octets	0
TX Packets 1519-2047 Octets	0
TX Packets 2048-4095 Octets	0
TX Packets 4096-9216 Octets	0
TX 1519-1522 Good Vlan frms	0
TX Octets	1686654
TX Multicast Packets	6
TX Broadcast Packets	1673798
TX Single Collision frames	0
TX Mult. Collision frames	0
TX Late Collisions	0
TX Excessive Collisions	0
TX Collision frames	0
TX PAUSEMAC Ctrl Frames	0
TX MAC ctrl frames	0
TX Frame deferred Xms	0
TX Frame excessive deferl	0
TX Oversize Packets	0
TX Jabbers	0
TX FCS Error Counter	0
TX Fragment Counter	0
TX Byte Counter	108042476
RX Packets 64 Octets	710214
RX Packets 65-127 Octets	35785510
RX Packets 128-255 Octets	4616
RX Packets 256-511 Octets	232
RX Packets 512-1023 Octets	565
RX Packets 1024-1518 Octets	28798
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Octets	36529935
RX Multicast Packets	8
RX Broadcast Packets	285546
RX FCS Errors	0
RX Align Errors	0
RX Fragments	0
RX Symbol errors	0
RX Unsupported opcodes	0
RX Out of Range Length	0
RX False Carrier Errors	0
RX Undersize Packets	0
RX Oversize Packets	0
RX Jabbers	0
RX 1519-1522 Good Vlan frms	0
RX MTU Exceed Counter	0
RX Control Frame Counter	0
RX Pause Frame Counter	0
RX Byte Counter	2676440958

Statistics for port 21 connected to device RE-GigE:

TX Packets 64 Octets	4805310
TX Packets 65-127 Octets	143798628

```
TX Packets 128-255 Octets 5532385
TX Packets 256-511 Octets 671059
TX Packets 512-1023 Octets 7684123
TX Packets 1024-1518 Octets 344021
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets 162835526
TX Multicast Packets 8
TX Broadcast Packets 1673409
TX Single Collision frames 0
TX Mult. Collision frames 0
TX Late Collisions 0
TX Excessive Collisions 0
TX Collision frames 0
TX PAUSEMAC Ctrl Frames 0
TX MAC ctrl frames 0
TX Frame deferred Xms 0
TX Frame excessive deferl 0
TX Oversize Packets 0
TX Jabbers 0
TX FCS Error Counter 0
TX Fragment Counter 0
TX Byte Counter 105857355
RX Packets 64 Octets 14537137
RX Packets 65-127 Octets 11445505
RX Packets 128-255 Octets 8161767
RX Packets 256-511 Octets 2257944
RX Packets 512-1023 Octets 3277807
RX Packets 1024-1518 Octets 29373209
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets 69053369
RX Multicast Packets 6
RX Broadcast Packets 285935
RX FCS Errors 0
RX Align Errors 0
RX Fragments 0
RX Symbol errors 0
RX Unsupported opcodes 0
RX Out of Range Length 0
RX False Carrier Errors 0
RX Undersize Packets 0
RX Oversize Packets 0
RX Jabbers 0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter 0
RX Control Frame Counter 0
RX Pause Frame Counter 0
RX Byte Counter 2980410755
```

Link is down on GE port 22 connected to device: Debug-GigE

Statistics for port 23 connected to device SPMB:

```
TX Packets 64 Octets 1885878
TX Packets 65-127 Octets 138845
TX Packets 128-255 Octets 18
TX Packets 256-511 Octets 1
TX Packets 512-1023 Octets 2
TX Packets 1024-1518 Octets 16391
```

```

TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets 2041135
TX Multicast Packets 14
TX Broadcast Packets 1707267
TX Single Collision frames 0
TX Mult. Collision frames 0
TX Late Collisions 0
TX Excessive Collisions 0
TX Collision frames 0
TX PAUSEMAC Ctrl Frames 0
TX MAC ctrl frames 0
TX Frame deferred Xtns 0
TX Frame excessive deferl 0
TX Oversize Packets 0
TX Jabbers 0
TX FCS Error Counter 0
TX Fragment Counter 0
TX Byte Counter 148066476
RX Packets 64 Octets 374994
RX Packets 65-127 Octets 183398
RX Packets 128-255 Octets 749
RX Packets 256-511 Octets 13658
RX Packets 512-1023 Octets 13421
RX Packets 1024-1518 Octets 9
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets 586229
RX Multicast Packets 0
RX Broadcast Packets 252034
RX FCS Errors 0
RX Align Errors 0
RX Fragments 0
RX Symbol errors 0
RX Unsupported opcodes 0
RX Out of Range Length 0
RX False Carrier Errors 0
RX Undersize Packets 0
RX Oversize Packets 0
RX Jabbers 0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter 0
RX Control Frame Counter 0
RX Pause Frame Counter 0
RX Byte Counter 51431942

```

Link is down on XE port 24 connected to device: SFP+ 0

Link is down on XE port 25 connected to device: SFP+ 1

Link is down on XE port 26 connected to device: RE-10GigE

Link is down on XE port 27 connected to device: Other RE-10GigE

show chassis ethernet-switch (MX2020 Router)

```
user@host > show chassis ethernet-switch
```

```
Displaying summary for switch 0
Link is good on GE port 0 connected to device: FPC0
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 1 connected to device: FPC1
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 2 connected to device: FPC3
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 3 connected to device: FPC2
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 4 connected to device: FPC5
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 5 connected to device: FPC4
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 6 connected to device: FPC6
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 7 connected to device: FPC7
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 8 connected to device: FPC8
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
```

Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 9 connected to device: FPC9
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 10 connected to device: FPC10
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 11 connected to device: FPC11
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 12 connected to device: FPC13
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 13 connected to device: FPC12
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 14 connected to device: FPC14
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 15 connected to device: FPC15
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 16 connected to device: FPC17
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 17 connected to device: FPC16
Speed is 1000Mb

```
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 18 connected to device: FPC18
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 19 connected to device: FPC19
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 20 connected to device: Other RE-GigE
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 21 connected to device: RE-GigE
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is down on GE port 22 connected to device: Debug-GigE

Link is good on GE port 23 connected to device: SPMB
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is down on XE port 24 connected to device: SFP+ 0

Link is down on XE port 25 connected to device: SFP+ 1

Link is down on XE port 26 connected to device: RE-10GigE

Link is down on XE port 27 connected to device: Other RE-10GigE
```

show chassis ethernet-switch statistics (MX2020 Router)

```
user@host > show chassis ethernet-switch statistics
Displaying port statistics for switch 0
Statistics for port 0 connected to device FPC0:
TX Packets 64 Octets      1468564
TX Packets 65-127 Octets  153896
TX Packets 128-255 Octets 237
TX Packets 256-511 Octets 286
TX Packets 512-1023 Octets 599
TX Packets 1024-1518 Octets 22803
```



```

TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets 1646385
TX Multicast Packets 6
TX Broadcast Packets 970939
TX Single Collision frames 0
TX Mult. Collision frames 0
TX Late Collisions 0
TX Excessive Collisions 0
TX Collision frames 0
TX PAUSEMAC Ctrl Frames 0
TX MAC ctrl frames 0
TX Frame deferred Xtns 0
TX Frame excessive deferl 0
TX Oversize Packets 0
TX Jabbers 0
TX FCS Error Counter 0
TX Fragment Counter 0
TX Byte Counter 130470290
RX Packets 64 Octets 180266
RX Packets 65-127 Octets 519030
RX Packets 128-255 Octets 1390
RX Packets 256-511 Octets 42857
RX Packets 512-1023 Octets 3482
RX Packets 1024-1518 Octets 8147
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets 755172
RX Multicast Packets 0
RX Broadcast Packets 42822
RX FCS Errors 0
RX Align Errors 0
RX Fragments 0
RX Symbol errors 0
RX Unsupported opcodes 0
RX Out of Range Length 0
RX False Carrier Errors 0
RX Undersize Packets 0
RX Oversize Packets 0
RX Jabbers 0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter 0
RX Control Frame Counter 0
RX Pause Frame Counter 0
RX Byte Counter 75374021
Statistics for port 1 connected to device FPC1:
TX Packets 64 Octets 1493739
TX Packets 65-127 Octets 126996
TX Packets 128-255 Octets 241
TX Packets 256-511 Octets 283
TX Packets 512-1023 Octets 604
TX Packets 1024-1518 Octets 33687
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets 1655550
TX Multicast Packets 6

```

TX Broadcast Packets	969032
TX Single Collision frames	0
TX Mult. Collision frames	0
TX Late Collisions	0
TX Excessive Collisions	0
TX Collision frames	0
TX PAUSEMAC Ctrl Frames	0
TX MAC ctrl frames	0
TX Frame deferred Xms	0
TX Frame excessive deferl	0
TX Oversize Packets	0
TX Jabbers	0
TX FCS Error Counter	0
TX Fragment Counter	0
TX Byte Counter	141832690
RX Packets 64 Octets	155655
RX Packets 65-127 Octets	545561
RX Packets 128-255 Octets	1394
RX Packets 256-511 Octets	42811
RX Packets 512-1023 Octets	3514
RX Packets 1024-1518 Octets	8171
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Octets	757106
RX Multicast Packets	0
RX Broadcast Packets	44509
RX FCS Errors	0
RX Align Errors	0
RX Fragments	0
RX Symbol errors	0
RX Unsupported opcodes	0
RX Out of Range Length	0
RX False Carrier Errors	0
RX Undersize Packets	0
RX Oversize Packets	0
RX Jabbers	0
RX 1519-1522 Good Vlan frms	0
RX MTU Exceed Counter	0
RX Control Frame Counter	0
RX Pause Frame Counter	0
RX Byte Counter	75691392

Statistics for port 2 connected to device FPC3:

TX Packets 64 Octets	1465749
TX Packets 65-127 Octets	152849
TX Packets 128-255 Octets	238
TX Packets 256-511 Octets	289
TX Packets 512-1023 Octets	602
TX Packets 1024-1518 Octets	38903
TX Packets 1519-2047 Octets	0
TX Packets 2048-4095 Octets	0
TX Packets 4096-9216 Octets	0
TX 1519-1522 Good Vlan frms	0
TX Octets	1658630
TX Multicast Packets	6
TX Broadcast Packets	968873
TX Single Collision frames	0
TX Mult. Collision frames	0
TX Late Collisions	0
TX Excessive Collisions	0
TX Collision frames	0

```

TX PAUSEMAC Ctrl Frames      0
TX MAC ctrl frames          0
TX Frame deferred Xtns      0
TX Frame excessive deferl    0
TX Oversize Packets         0
TX Jabbers                  0
TX FCS Error Counter        0
TX Fragment Counter         0
TX Byte Counter             147427010
RX Packets 64 Octets        181636
RX Packets 65-127 Octets    517526
RX Packets 128-255 Octets   1405
RX Packets 256-511 Octets   42806
RX Packets 512-1023 Octets  3515
RX Packets 1024-1518 Octets 8168
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets                   755056
RX Multicast Packets        0
RX Broadcast Packets        44490
RX FCS Errors               0
RX Align Errors             0
RX Fragments                0
RX Symbol errors            0
RX Unsupported opcodes      0
RX Out of Range Length      0
RX False Carrier Errors     0
RX Undersize Packets        0
RX Oversize Packets         0
RX Jabbers                  0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter       0
RX Control Frame Counter    0
RX Pause Frame Counter      0
RX Byte Counter             75381869
Statistics for port 3 connected to device FPC2:
TX Packets 64 Octets        1473828
TX Packets 65-127 Octets    145643
TX Packets 128-255 Octets   253
TX Packets 256-511 Octets   285
TX Packets 512-1023 Octets  612
TX Packets 1024-1518 Octets 26603
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets                   1647224
TX Multicast Packets        6
TX Broadcast Packets        968925
TX Single Collision frames  0
TX Mult. Collision frames   0
TX Late Collisions          0
TX Excessive Collisions     0
TX Collision frames         0
TX PAUSEMAC Ctrl Frames      0
TX MAC ctrl frames          0
TX Frame deferred Xtns      0
TX Frame excessive deferl    0
TX Oversize Packets         0
TX Jabbers                  0

```

```
TX FCS Error Counter      0
TX Fragment Counter      0
TX Byte Counter          134293832
RX Packets 64 Octets     174230
RX Packets 65-127 Octets 525756
RX Packets 128-255 Octets 1404
RX Packets 256-511 Octets 42815
RX Packets 512-1023 Octets 3530
RX Packets 1024-1518 Octets 8176
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets                755911
RX Multicast Packets     0
RX Broadcast Packets     44499
RX FCS Errors            0
RX Align Errors          0
RX Fragments             0
RX Symbol errors         0
RX Unsupported opcodes   0
RX Out of Range Length   0
RX False Carrier Errors  0
RX Undersize Packets     0
RX Oversize Packets      0
RX Jabbers               0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter    0
RX Control Frame Counter 0
RX Pause Frame Counter   0
RX Byte Counter          75517355
Statistics for port 4 connected to device FPC5:
TX Packets 64 Octets     1466664
TX Packets 65-127 Octets 151155
TX Packets 128-255 Octets 238
TX Packets 256-511 Octets 277
TX Packets 512-1023 Octets 615
TX Packets 1024-1518 Octets 54674
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets                1673623
TX Multicast Packets     6
TX Broadcast Packets     968610
TX Single Collision frames 0
TX Mult. Collision frames 0
TX Late Collisions       0
TX Excessive Collisions  0
TX Collision frames       0
TX PAUSEMAC Ctrl Frames  0
TX MAC ctrl frames       0
TX Frame deferred Xmsns   0
TX Frame excessive deferl 0
TX Oversize Packets      0
TX Jabbers               0
TX FCS Error Counter      0
TX Fragment Counter      0
TX Byte Counter          164247790
RX Packets 64 Octets     180006
RX Packets 65-127 Octets 518217
RX Packets 128-255 Octets 1406
```

```

RX Packets 256-511 Octets 42787
RX Packets 512-1023 Octets 3515
RX Packets 1024-1518 Octets 8164
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets 754095
RX Multicast Packets 0
RX Broadcast Packets 44457
RX FCS Errors 0
RX Align Errors 0
RX Fragments 0
RX Symbol errors 0
RX Unsupported opcodes 0
RX Out of Range Length 0
RX False Carrier Errors 0
RX Undersize Packets 0
RX Oversize Packets 0
RX Jabbers 0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter 0
RX Control Frame Counter 0
RX Pause Frame Counter 0
RX Byte Counter 75311970
Statistics for port 5 connected to device FPC4:
TX Packets 64 Octets 1464770
TX Packets 65-127 Octets 154498
TX Packets 128-255 Octets 225
TX Packets 256-511 Octets 280
TX Packets 512-1023 Octets 637
TX Packets 1024-1518 Octets 26355
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets 1646765
TX Multicast Packets 6
TX Broadcast Packets 968730
TX Single Collision frames 0
TX Mult. Collision frames 0
TX Late Collisions 0
TX Excessive Collisions 0
TX Collision frames 0
TX PAUSEMAC Ctrl Frames 0
TX MAC ctrl frames 0
TX Frame deferred Xms 0
TX Frame excessive deferl 0
TX Oversize Packets 0
TX Jabbers 0
TX FCS Error Counter 0
TX Fragment Counter 0
TX Byte Counter 134058606
RX Packets 64 Octets 169269
RX Packets 65-127 Octets 515285
RX Packets 128-255 Octets 1527
RX Packets 256-511 Octets 42804
RX Packets 512-1023 Octets 3521
RX Packets 1024-1518 Octets 9142
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0

```

RX Octets	741548
RX Multicast Packets	0
RX Broadcast Packets	44470
RX FCS Errors	0
RX Align Errors	0
RX Fragments	0
RX Symbol errors	0
RX Unsupported opcodes	0
RX Out of Range Length	0
RX False Carrier Errors	0
RX Undersize Packets	0
RX Oversize Packets	0
RX Jabbers	0
RX 1519-1522 Good Vlan frms	0
RX MTU Exceed Counter	0
RX Control Frame Counter	0
RX Pause Frame Counter	0
RX Byte Counter	75498393

Statistics for port 6 connected to device FPC6:

TX Packets 64 Octets	1475260
TX Packets 65-127 Octets	143324
TX Packets 128-255 Octets	260
TX Packets 256-511 Octets	274
TX Packets 512-1023 Octets	603
TX Packets 1024-1518 Octets	40631
TX Packets 1519-2047 Octets	0
TX Packets 2048-4095 Octets	0
TX Packets 4096-9216 Octets	0
TX 1519-1522 Good Vlan frms	0
TX Octets	1660352
TX Multicast Packets	6
TX Broadcast Packets	968466
TX Single Collision frames	0
TX Mult. Collision frames	0
TX Late Collisions	0
TX Excessive Collisions	0
TX Collision frames	0
TX PAUSEMAC Ctrl Frames	0
TX MAC ctrl frames	0
TX Frame deferred Xms	0
TX Frame excessive deferl	0
TX Oversize Packets	0
TX Jabbers	0
TX FCS Error Counter	0
TX Fragment Counter	0
TX Byte Counter	149212764
RX Packets 64 Octets	172275
RX Packets 65-127 Octets	526519
RX Packets 128-255 Octets	1394
RX Packets 256-511 Octets	42777
RX Packets 512-1023 Octets	3514
RX Packets 1024-1518 Octets	8161
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Octets	754640
RX Multicast Packets	0
RX Broadcast Packets	44443
RX FCS Errors	0
RX Align Errors	0
RX Fragments	0

```

RX Symbol errors          0
RX Unsupported opcodes    0
RX Out of Range Length    0
RX False Carrier Errors   0
RX Undersize Packets      0
RX Oversize Packets       0
RX Jabbers                0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter     0
RX Control Frame Counter  0
RX Pause Frame Counter    0
RX Byte Counter           75386517
Statistics for port 7 connected to device FPC7:
TX Packets 64 Octets      1472361
TX Packets 65-127 Octets  145646
TX Packets 128-255 Octets 251
TX Packets 256-511 Octets 250
TX Packets 512-1023 Octets 580
TX Packets 1024-1518 Octets 49530
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets                 1668618
TX Multicast Packets      6
TX Broadcast Packets      968317
TX Single Collision frames 0
TX Mult. Collision frames 0
TX Late Collisions        0
TX Excessive Collisions   0
TX Collision frames       0
TX PAUSEMAC Ctrl Frames   0
TX MAC ctrl frames        0
TX Frame deferred Xmsns   0
TX Frame excessive deferl 0
TX Oversize Packets       0
TX Jabbers                0
TX FCS Error Counter      0
TX Fragment Counter       0
TX Byte Counter           158689814
RX Packets 64 Octets      174618
RX Packets 65-127 Octets  523421
RX Packets 128-255 Octets 1393
RX Packets 256-511 Octets 42764
RX Packets 512-1023 Octets 3514
RX Packets 1024-1518 Octets 8158
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets                 753868
RX Multicast Packets      0
RX Broadcast Packets      44429
RX FCS Errors             0
RX Align Errors           0
RX Fragments              0
RX Symbol errors          0
RX Unsupported opcodes    0
RX Out of Range Length    0
RX False Carrier Errors   0
RX Undersize Packets      0
RX Oversize Packets       0

```

```
RX Jabbers                0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter      0
RX Control Frame Counter    0
RX Pause Frame Counter      0
RX Byte Counter             75309863
Statistics for port 8 connected to device FPC8:
...
```

show chassis ethernet-switch (MX2020 Router with MPC4E)

```
user@ host > show chassis ethernet-switch
Displaying summary for switch 0
Link is good on GE port 0 connected to device: FPC0
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 1 connected to device: FPC1

Link is down on GE port 2 connected to device: FPC3

Link is down on GE port 3 connected to device: FPC2

Link is down on GE port 4 connected to device: FPC5

Link is down on GE port 5 connected to device: FPC4

Link is down on GE port 6 connected to device: FPC6

Link is down on GE port 7 connected to device: FPC7

Link is down on GE port 8 connected to device: FPC8

Link is good on GE port 9 connected to device: FPC9
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on GE port 10 connected to device: FPC10
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is down on GE port 11 connected to device: FPC11

Link is down on GE port 12 connected to device: FPC13

Link is down on GE port 13 connected to device: FPC12

Link is good on GE port 14 connected to device: FPC14
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Enabled
  Flow Control TX is Disabled
```



```

Flow Control RX is Disabled

Link is down on GE port 15 connected to device: FPC15

Link is down on GE port 16 connected to device: FPC17

Link is down on GE port 17 connected to device: FPC16

Link is down on GE port 18 connected to device: FPC18

Link is good on GE port 19 connected to device: FPC19
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 20 connected to device: Other RE-GigE
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is good on GE port 21 connected to device: RE-GigE
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is down on GE port 22 connected to device: Debug-GigE

Link is good on GE port 23 connected to device: SPMB
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled
Flow Control TX is Disabled
Flow Control RX is Disabled

Link is down on XE port 24 connected to device: SFP+ 0

Link is down on XE port 25 connected to device: SFP+ 1

Link is down on XE port 26 connected to device: RE-10GigE

Link is down on XE port 27 connected to device: Other RE-10GigE

```

show chassis ethernet-switch (TX Matrix Router)

```

user@host> show chassis ethernet-switch
scc-re0:
-----
Link is good on FE port 4 connected to device: LCC0
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 6 connected to device: LCC2
Speed is 100 MB
Duplex is full

```

```
Autonegotiate is Enabled

Link is good on FE port 8 connected to device: SPMB
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

lcc0-re0:
-----
Link is good on FE port 1 connected to device: FPC1
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 2 connected to device: FPC2
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 8 connected to device: SPMB
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 10 connected to device: SCC
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled
```

```
lcc2-re0:
-----
Link is good on FE port 0 connected to device: FPC0
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 1 connected to device: FPC1
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 2 connected to device: FPC2
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 8 connected to device: SPMB
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled

Link is good on FE port 10 connected to device: SCC
Speed is 100 MB
Duplex is full
Autonegotiate is Enabled
```

show chassis ethernet-switch errors

```
user@host> show chassis ethernet-switch errors
Accumulated error counts for port 0 connected to device FPC0:
MLT3                2
```

```

Lock          0
Xmit          0
ESD           0
False carrier 2
Disconnects   0
FX mode       0
Accumulated error counts for port 1 connected to device FPC1:
MLT3          2
Lock          0
Xmit          0
ESD           0
False carrier 2
Disconnects   0
FX mode       0
Accumulated error counts for port 2 connected to device FPC2:
MLT3          2
Lock          0
Xmit          0
ESD           0
False carrier 3
Disconnects   0
FX mode       0
Accumulated error counts for port 3 connected to device FPC3:
MLT3          0
Lock          0
Xmit          0
ESD           0
False carrier 0
Disconnects   0
Accumulated error counts for port 4 connected to device Nothing:
MLT3          0
Lock          0
Xmit          0
ESD           0
False carrier 0
Disconnects   0
FX mode       0
...

```

show chassis ethernet-switch statistics

```

user@host> show chassis ethernet-switch statistics
Statistics for port 0 connected to device FPC0:
TX Unicast packets      68113
TX Multicast packets    0
TX Broadcast packets    20851
TX Late collisions      0
TX Excessive collisions 0
TX Dropped packets      0

RX Unicast packets      67410
RX Multicast packets    0
RX Broadcast packets    20852
RX FCS Errors           0
RX Alignment Errors     0
RX Dropped Packets      0
RX Fragments            0
RX Symbol Errors        0

Statistics for port 1 connected to device FPC1:
TX Unicast packets      66496

```

```
TX Multicast packets      0
TX Broadcast packets      20080
TX Late collisions        0
TX Excessive collisions   0
TX Dropped packets       0

RX Unicast packets       66037
RX Multicast packets      0
RX Broadcast packets      20080
RX FCS Errors             0
RX Alignment Errors       0
RX Dropped Packets        0
RX Fragments              0
RX Symbol Errors          0

Statistics for port 2 connected to device FPC2:
TX Unicast packets       64206
TX Multicast packets      0
TX Broadcast packets      21183
TX Late collisions        0
TX Excessive collisions   0
TX Dropped packets       0

RX Unicast packets       63671
RX Multicast packets      0
RX Broadcast packets      21183
RX FCS Errors             0
RX Alignment Errors       0
RX Dropped Packets        0
RX Fragments              0
RX Symbol Errors          0
Statistics for port 3 connected to device FPC3:
...
```

show chassis ethernet-switch errors (TX Matrix Plus Router)

```
user@host> show chassis ethernet-switch errors
sfc0-re0:
-----
Displaying error for switch 0

Displaying error for switch 1
Accumulated error counts for port 0 connected to device LCC0:
MLT3          0
Lock          0
Xmit          0
ESD           0
False carrier 0
Disconnects   0
FX mode       0

lcc0-re0:
-----
Displaying error for switch 0
Accumulated error counts for port 6 connected to device FPC0:
MLT3          0
Lock          0
Xmit          0
ESD           0
False carrier 5
Disconnects   0
```

```

FX mode          0
Accumulated error counts for port 7 connected to device FPC1:
MLT3             0
Lock             0
Xmit             0
ESD              0
False carrier    7
Disconnects      0
FX mode          0
Accumulated error counts for port 19 connected to device Other RE:
MLT3             0
Lock             0
Xmit             0
ESD              0
False carrier    0
Disconnects      0
FX mode          0
Accumulated error counts for port 20 connected to device SFC0:
MLT3             0
Lock             0
Xmit             0
ESD              0
False carrier    0
Disconnects      0
FX mode          0

```

show chassis ethernet-switch sfc errors (TX Matrix Plus Router)

```

user@host> show chassis ethernet-switch errors switch sfc
sfc0-re0:
-----
Displaying error for switch 1
Accumulated error counts for port 0 connected to device LCC0:
MLT3             0
Lock             0
Xmit             0
ESD              0
False carrier    0
Disconnects      0
FX mode          0
Accumulated error counts for port 2 connected to device LCC1:
MLT3             0
Lock             0
Xmit             0
ESD              0
False carrier    0
Disconnects      0
FX mode          0
Accumulated error counts for port 4 connected to device LCC2:
MLT3             0
Lock             0
Xmit             0
ESD              0
False carrier    0
Disconnects      0
FX mode          0
Accumulated error counts for port 6 connected to device LCC3:
MLT3             0
Lock             0
Xmit             0
ESD              0

```

```
False carrier 0
Disconnects   0
FX mode       0
```

```
lcc0-re0:
```

```
-----
error: command is not valid on the t1600
```

```
lcc1-re0:
```

```
-----
error: command is not valid on the t1600
```

```
lcc2-re0:
```

```
-----
error: command is not valid on the t1600
```

```
lcc3-re0:
```

```
-----
error: command is not valid on the t1600
```

show chassis ethernet-switch statistics (TX Matrix Plus Router)

```
user@host> show chassis ethernet-switch statistics
```

```
sfc0-re0:
```

```
-----
Displaying port statistics for switch 0
Statistics for port 1 connected to device 1GSW:
```

TX Packets 64 Octets	5183577
TX Packets 65-127 Octets	67820
TX Packets 128-255 Octets	772
TX Packets 256-511 Octets	136
TX Packets 512-1023 Octets	68
TX Packets 1024-1518 Octets	10881
TX Packets 1519-2047 Octets	0
TX Packets 2048-4095 Octets	0
TX Packets 4096-9216 Octets	0
TX Packets 9217-16383 Octets	0
TX Octets	5263254
TX Multicast Packets	16
TX Broadcast Packets	723403
TX PAUSEMAC Ctrl Frames	0
TX Oversize Packets	0
TX FCS Error Counter	0
TX Fragment Counter	0
TX Byte Counter	349922253
TX Packet OK Counter	5263254
TX Pause Packet Counter	0
TX Unicast Counter	4539835
RX Packets 64 Octets	6513629
RX Packets 65-127 Octets	88761
RX Packets 128-255 Octets	6382
RX Packets 256-511 Octets	22027
RX Packets 512-1023 Octets	4319
RX Packets 1024-1518 Octets	49922
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Packets 9217-16383 Octets	0
RX Octets	6685040
RX Multicast Packets	4
RX Broadcast Packets	2137376

```

RX FCS Errors          0
RX Fragments           0
RX MAC Control Packets 0
RX Out of Range Length 0
RX Undersize Packets   0
RX Oversize Packets    0
RX Jabbers             0
RX Control Frame Counter 0
RX Pause Frame Counter 0
RX Byte Counter        509224602
RX Unicast Frame Count 4547660
RX Packet OK Count     6685040
Statistics for port 9 connected to device RE1:
TX Packets 64 Octets    2500318
TX Packets 65-127 Octets 443
TX Packets 128-255 Octets 0
TX Packets 256-511 Octets 0
TX Packets 512-1023 Octets 0
TX Packets 1024-1518 Octets 0
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX Packets 9217-16383 Octets 0
TX Octets              2500761
TX Multicast Packets   4
TX Broadcast Packets   2500757
TX PAUSEMAC Ctrl Frames 0
TX Oversize Packets    0
TX FCS Error Counter   0
TX Fragment Counter    0
TX Byte Counter        160049670
TX Packet OK Counter   0
TX Pause Packet Counter 0
TX Unicast Counter     0
RX Packets 64 Octets   701191
RX Packets 65-127 Octets 5882
RX Packets 128-255 Octets 2
RX Packets 256-511 Octets 0
RX Packets 512-1023 Octets 17965
RX Packets 1024-1518 Octets 7
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Packets 9217-16383 Octets 0
RX Octets              725047
RX Multicast Packets   8
RX Broadcast Packets   2500757
RX FCS Errors          0
RX Fragments           0
RX MAC Control Packets 0
RX Out of Range Length 0
RX Undersize Packets   0
RX Oversize Packets    0
RX Jabbers             0
RX Control Frame Counter 0
RX Pause Frame Counter 0
RX Byte Counter        62402656
RX Unicast Frame Count 0
RX Packet OK Count     0
Statistics for port 17 connected to device RE0:
TX Packets 64 Octets    7214818

```

TX Packets 65-127 Octets	94640
TX Packets 128-255 Octets	6384
TX Packets 256-511 Octets	22027
TX Packets 512-1023 Octets	22284
TX Packets 1024-1518 Octets	49929
TX Packets 1519-2047 Octets	0
TX Packets 2048-4095 Octets	0
TX Packets 4096-9216 Octets	0
TX Packets 9217-16383 Octets	0
TX Octets	7410082
TX Multicast Packets	12
TX Broadcast Packets	2497247
TX PAUSEMAC Ctrl Frames	0
TX Oversize Packets	0
TX FCS Error Counter	0
TX Fragment Counter	0
TX Byte Counter	571626932
TX Packet OK Counter	0
TX Pause Packet Counter	0
TX Unicast Counter	0
RX Packets 64 Octets	4823701
RX Packets 65-127 Octets	67812
RX Packets 128-255 Octets	772
RX Packets 256-511 Octets	136
RX Packets 512-1023 Octets	68
RX Packets 1024-1518 Octets	10881
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Packets 9217-16383 Octets	0
RX Octets	4903370
RX Multicast Packets	8
RX Broadcast Packets	2497247
RX FCS Errors	0
RX Fragments	0
RX MAC Control Packets	0
RX Out of Range Length	0
RX Undersize Packets	0
RX Oversize Packets	0
RX Jabbers	0
RX Control Frame Counter	0
RX Pause Frame Counter	0
RX Byte Counter	326889517
RX Unicast Frame Count	0
RX Packet OK Count	0

Displaying port statistics for switch 1
Statistics for port 0 connected to device LCC0:

TX Packets 64 Octets	5053443
TX Packets 65-127 Octets	59737
TX Packets 128-255 Octets	768
TX Packets 256-511 Octets	87
TX Packets 512-1023 Octets	68
TX Packets 1024-1518 Octets	85
TX Packets 1519-2047 Octets	0
TX Packets 2048-4095 Octets	0
TX Packets 4096-9216 Octets	0
TX 1519-1522 Good Vlan frms	0
TX Octets	5114188
TX Multicast Packets	16
TX Broadcast Packets	1125742


```

TX Single Collision frames 0
TX Mult. Collision frames 0
TX Late Collisions 0
TX Excessive Collisions 0
TX Collision frames 0
TX PAUSEMAC Ctrl Frames 0
TX MAC ctrl frames 0
TX Frame deferred Xms 0
TX Frame excessive deferl 0
TX Oversize Packets 0
TX Jabbers 0
TX FCS Error Counter 0
TX Fragment Counter 0
TX Byte Counter 329291449
RX Packets 64 Octets 5640175
RX Packets 65-127 Octets 79875
RX Packets 128-255 Octets 6338
RX Packets 256-511 Octets 165
RX Packets 512-1023 Octets 4317
RX Packets 1024-1518 Octets 10
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets 5730880
RX Multicast Packets 4
RX Broadcast Packets 1735007
RX FCS Errors 0
RX Align Errors 0
RX Fragments 0
RX Symbol errors 0
RX Unsupported opcodes 0
RX Out of Range Length 0
RX False Carrier Errors 0
RX Undersize Packets 0
RX Oversize Packets 0
RX Jabbers 0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter 0
RX Control Frame Counter 0
RX Pause Frame Counter 0
RX Byte Counter 371282850
Statistics for port 18 connected to device SPMB:
TX Packets 64 Octets 2990326
TX Packets 65-127 Octets 8572
TX Packets 128-255 Octets 4
TX Packets 256-511 Octets 49
TX Packets 512-1023 Octets 0
TX Packets 1024-1518 Octets 10793
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX 1519-1522 Good Vlan frms 0
TX Octets 3009744
TX Multicast Packets 20
TX Broadcast Packets 2458322
TX Single Collision frames 0
TX Mult. Collision frames 0
TX Late Collisions 0
TX Excessive Collisions 0
TX Collision frames 0
TX PAUSEMAC Ctrl Frames 0

```

```
TX MAC ctrl frames      0
TX Frame deferred Xmsns 0
TX Frame excessive deferl 0
TX Oversize Packets     0
TX Jabbers              0
TX FCS Error Counter    0
TX Fragment Counter     0
TX Byte Counter         203712524
RX Packets 64 Octets    873454
RX Packets 65-127 Octets 8886
RX Packets 128-255 Octets 44
RX Packets 256-511 Octets 21862
RX Packets 512-1023 Octets 2
RX Packets 1024-1518 Octets 49912
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Octets               954160
RX Multicast Packets    0
RX Broadcast Packets    402369
RX FCS Errors           0
RX Align Errors         0
RX Fragments            0
RX Symbol errors        0
RX Unsupported opcodes  0
RX Out of Range Length  0
RX False Carrier Errors 0
RX Undersize Packets    0
RX Oversize Packets     0
RX Jabbers              0
RX 1519-1522 Good Vlan frms 0
RX MTU Exceed Counter   0
RX Control Frame Counter 0
RX Pause Frame Counter  0
RX Byte Counter         137941752
...
```

show chassis ethernet-switch (T4000 Router)

```
user@host> show chassis ethernet-switch
Displaying summary for switch 0
Link is good on GE port 6 connected to device: FPC0
  Speed is 100Mb
  Duplex is full
  Autonegotiate is Enabled
  False carrier sense count = 04

Link is good on GE port 9 connected to device: FPC3
  Speed is 100Mb
  Duplex is full
  Autonegotiate is Enabled
  False carrier sense count = 03

Link is good on GE port 11 connected to device: FPC5
  Speed is 100Mb
  Duplex is full
  Autonegotiate is Enabled
  False carrier sense count = 03

Link is good on GE port 12 connected to device: FPC6
  Speed is 100Mb
```

```

Duplex is full
Autonegotiate is Enabled
False carrier sense count = 03

Link is good on GE port 14 connected to device: SPMB
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled

Link is good on GE port 18 connected to device: RE
Speed is 1000Mb
Duplex is full
Autonegotiate is Disabled

Link is good on GE port 19 connected to device: Other RE
Speed is 1000Mb
Duplex is full
Autonegotiate is Enabled

```

show chassis ethernet-switch errors (T4000 Router)

```

user@host> show chassis ethernet-switch errors

Displaying error for switch 0
Accumulated error counts for port 6 connected to device FPC0:
MLT3          0
Lock          0
Xmit          0
ESD           0
False carrier 4
Disconnects   0
FX mode       0
Accumulated error counts for port 9 connected to device FPC3:
MLT3          0
Lock          0
Xmit          0
ESD           0
False carrier 3
Disconnects   0
FX mode       0
Accumulated error counts for port 11 connected to device FPC5:
MLT3          0
Lock          0
Xmit          0
ESD           0
False carrier 3
Disconnects   0
FX mode       0
Accumulated error counts for port 12 connected to device FPC6:
MLT3          0
Lock          0
Xmit          0
ESD           0
False carrier 3
Disconnects   0
FX mode       0
Accumulated error counts for port 19 connected to device Other RE:
MLT3          0
Lock          0
Xmit          0
ESD           0

```

```
False carrier 0
Disconnects    0
FX mode        0
```

show chassis ethernet-switch (PTX5000 Packet Transport Router)

```
user@host> show chassis ethernet-switch
Displaying summary for switch 0
Link is good on XE port 2 connected to device: SPMB
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 11 connected to device: FPC7
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 12 connected to device: FPC6
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 13 connected to device: FPC5
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 15 connected to device: FPC3
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 16 connected to device: FPC2
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 18 connected to device: FPC0
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
  Flow Control TX is Disabled
  Flow Control RX is Disabled

Link is good on XE port 19 connected to device: OTHER RE
  Speed is 1000Mb
  Duplex is full
  Autonegotiate is Disabled
```

```
Flow Control TX is Disabled
Flow Control RX is Disabled
```

```
Link is good on XE port 20 connected to device: RE
Speed is 1000Mb
Duplex is full
Autonegotiate is Disabled
Flow Control TX is Disabled
Flow Control RX is Disabled
```

show chassis ethernet-switch statistics (PTX5000 Packet Transport Router)

```
user@host> show chassis ethernet-switch statistics
Displaying port statistics for switch 0
Statistics for port 2 connected to device SPMB:
```

TX Packets 64 Octets	10942
TX Packets 65-127 Octets	843
TX Packets 128-255 Octets	2
TX Packets 256-511 Octets	2
TX Packets 512-1023 Octets	0
TX Packets 1024-1518 Octets	6862
TX Packets 1519-2047 Octets	0
TX Packets 2048-4095 Octets	0
TX Packets 4096-9216 Octets	0
TX Packets 9217-16383 Octets	0
TX Octets	18651
TX Multicast Packets	6
TX Broadcast Packets	10331
TX PAUSEMAC Ctrl Frames	0
TX Oversize Packets	0
TX FCS Error Counter	0
TX Fragment Counter	0
TX Byte Counter	8105166
TX Packet OK Counter	0
TX Pause Packet Counter	0
TX Unicast Counter	0
RX Packets 64 Octets	8679
RX Packets 65-127 Octets	2364
RX Packets 128-255 Octets	531
RX Packets 256-511 Octets	112
RX Packets 512-1023 Octets	26
RX Packets 1024-1518 Octets	8
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Packets 9217-16383 Octets	0
RX Octets	11720
RX Multicast Packets	0
RX Broadcast Packets	10331
RX FCS Errors	0
RX Fragments	0
RX MAC Control Packets	0
RX Out of Range Length	0
RX Undersize Packets	0
RX Oversize Packets	0
RX Jabbers	0
RX Control Frame Counter	0
RX Pause Frame Counter	0
RX Byte Counter	938105
RX Unicast Frame Count	0
RX Packet OK Count	0

Statistics for port 11 connected to device FPC7:

TX Packets 64 Octets	14492
TX Packets 65-127 Octets	3542
TX Packets 128-255 Octets	6
TX Packets 256-511 Octets	45
TX Packets 512-1023 Octets	60

Continued...

Statistics for port 18 connected to device FPC0:

TX Packets 64 Octets	15212
TX Packets 65-127 Octets	3810
TX Packets 128-255 Octets	6
TX Packets 256-511 Octets	43
TX Packets 512-1023 Octets	66
TX Packets 1024-1518 Octets	169
TX Packets 1519-2047 Octets	0
TX Packets 2048-4095 Octets	0
TX Packets 4096-9216 Octets	0
TX Packets 9217-16383 Octets	0
TX Octets	19306
TX Multicast Packets	0
TX Broadcast Packets	10886
TX PAUSEMAC Ctrl Frames	0
TX Oversize Packets	0
TX FCS Error Counter	0
TX Fragment Counter	0
TX Byte Counter	1569412
TX Packet OK Counter	0
TX Pause Packet Counter	0
TX Unicast Counter	0
RX Packets 64 Octets	17994
RX Packets 65-127 Octets	8006
RX Packets 128-255 Octets	230
RX Packets 256-511 Octets	19
RX Packets 512-1023 Octets	53
RX Packets 1024-1518 Octets	11
RX Packets 1519-2047 Octets	0
RX Packets 2048-4095 Octets	0
RX Packets 4096-9216 Octets	0
RX Packets 9217-16383 Octets	0
RX Octets	26313
RX Multicast Packets	0
RX Broadcast Packets	10886
RX FCS Errors	0
RX Fragments	0
RX MAC Control Packets	0
RX Out of Range Length	0
RX Undersize Packets	0
RX Oversize Packets	0
RX Jabbers	0
RX Control Frame Counter	2
RX Pause Frame Counter	2
RX Byte Counter	1836287
RX Unicast Frame Count	0
RX Packet OK Count	0

Statistics for port 19 connected to device OTHER RE:

TX Packets 64 Octets	10234
TX Packets 65-127 Octets	162
TX Packets 128-255 Octets	0
TX Packets 256-511 Octets	0

```

TX Packets 512-1023 Octets 0
TX Packets 1024-1518 Octets 0
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX Packets 9217-16383 Octets 0
TX Octets 10396
TX Multicast Packets 8
TX Broadcast Packets 10317
TX PAUSEMAC Ctrl Frames 0
TX Oversize Packets 0
TX FCS Error Counter 0
TX Fragment Counter 0
TX Byte Counter 666260
TX Packet OK Counter 0
TX Pause Packet Counter 0
TX Unicast Counter 0
RX Packets 64 Octets 4073
RX Packets 65-127 Octets 325
RX Packets 128-255 Octets 1
RX Packets 256-511 Octets 0
RX Packets 512-1023 Octets 0
RX Packets 1024-1518 Octets 72
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Packets 9217-16383 Octets 0
RX Octets 4471
RX Multicast Packets 0
RX Broadcast Packets 10317
RX FCS Errors 0
RX Fragments 0
RX MAC Control Packets 0
RX Out of Range Length 0
RX Undersize Packets 0
RX Oversize Packets 0
RX Jabbers 0
RX Control Frame Counter 0
RX Pause Frame Counter 0
RX Byte Counter 387333
RX Unicast Frame Count 0
RX Packet OK Count 0
Statistics for port 20 connected to device RE:
TX Packets 64 Octets 658856
TX Packets 65-127 Octets 45535
TX Packets 128-255 Octets 1900
TX Packets 256-511 Octets 532
TX Packets 512-1023 Octets 372
TX Packets 1024-1518 Octets 191
TX Packets 1519-2047 Octets 0
TX Packets 2048-4095 Octets 0
TX Packets 4096-9216 Octets 0
TX Packets 9217-16383 Octets 0
TX Octets 707386
TX Multicast Packets 0
TX Broadcast Packets 10421
TX PAUSEMAC Ctrl Frames 0
TX Oversize Packets 0
TX FCS Error Counter 0
TX Fragment Counter 0
TX Byte Counter 46608676

```

```
TX Packet OK Counter      0
TX Pause Packet Counter   0
TX Unicast Counter        0
RX Packets 64 Octets      27394
RX Packets 65-127 Octets  20271
RX Packets 128-255 Octets  78
RX Packets 256-511 Octets 215
RX Packets 512-1023 Octets 269
RX Packets 1024-1518 Octets 253370
RX Packets 1519-2047 Octets 0
RX Packets 2048-4095 Octets 0
RX Packets 4096-9216 Octets 0
RX Packets 9217-16383 Octets 0
RX Octets                  301597
RX Multicast Packets       8
RX Broadcast Packets       10421
RX FCS Errors              0
RX Fragments               0
RX MAC Control Packets     0
RX Out of Range Length     0
RX Undersize Packets       0
RX Oversize Packets        0
RX Jabbers                 0
RX Control Frame Counter   0
RX Pause Frame Counter     0
RX Byte Counter            275043436
RX Unicast Frame Count     0
RX Packet OK Count        0
```

Continued ...

show chassis ethernet-switch port-state (PTX5000 Packet Transport Router)

```
user@host> show chassis ethernet-switch port-state
Displaying port state for switch 0
Port      : 02
Target    : SPMB

Error reading port 2 connected to device: SPMB
```


show chassis fabric degraded-fabric-reachability

Syntax	show chassis fabric degraded-fabric-reachability
Release Information	Command introduced in Junos OS Release 12.1X48R4 for PTX Series Packet Transport Routers.
Description	Display the current state of reachability between the Packet Forwarding Engines in the system.
Additional Information	
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show chassis fabric errors on page 455 • show chassis fabric reachability • degraded on page 146
List of Sample Output	show chassis fabric degraded-fabric-reachability on page 453
Output Fields	Table 25 on page 453 lists the output fields for the show chassis fabric degraded-fabric-reachability command. Output fields are listed in the approximate order in which they appear.

Table 25: show chassis fabric degraded-fabric-reachability Output Fields

Field Name	Field Description
FPC	Display fabric reachability for the displayed FPC slot.
PFE	Display fabric reachability for the displayed PFE slot on a per SIB and plane basis.
SIBx_Plane y	Display the SIB (x) and plane (y) where link errors occurred.
Link errors FPC/PFEs	Display the list of FPC and PFE slots that are unreachable for the displayed SIB and plane due to link errors.

Sample Output

show chassis fabric degraded-fabric-reachability

```

user@host> show chassis fabric degraded-fabric-reachability
Degraded Fabric reachability Information:
FPC #0
  PFE #0
    SIB0_Plane 0
      Link errors   FPC/PFEs   2/0 5/0 5/1 5/2 5/3
    SIB0_Plane 1
      Link errors   FPC/PFEs   2/0 5/0
  PFE #1
    SIB0_Plane 0

```

```
Link errors FPC/PFEs 2/0 5/0 5/1 5/2 5/3
SIB0_Plane 1
Link errors FPC/PFEs 2/0 5/0
```

show chassis fabric errors

Syntax	show chassis fabric errors <autoheal> <fpc slot-number lcc number> <sib (slot f13 sib-slot f2s sib-slot/sib-f2s-slot-number lcc number)>
Syntax (PTX Series Packet Transport Routers)	show chassis fabric errors (autoheal fpc slot-number sib sib-slot)
Release Information	Command introduced in Junos OS Release 10.0. Command introduced in Junos OS Release 12.1X48 for the PTX Series Packet Transport Routers.
Description	Display the first ten and last ten fabric errors for the FPC or Switch Interface Boards (SIBs).



NOTE: This command can only be issued on a master Routing Engine.

- Options**
- autoheal**—(TX Matrix Plus routers and PTX Series Packet Transport Routers only) Show an error log of the first 100 autoheal actions taken on the system.
 - fpc slot-number**—Show error log of the first ten and last ten errors for the specified FPC. (PTX5000 Packet Transport Routers only)—Replace **slot-number** with a value from 0 through 7.

(TX Matrix Plus routers only)—Replace **fpc slot-number** with the following values depending on the LCC configuration:
 - On a TX Matrix Plus router with the TXP-T1600 configuration, if you specify the number of a T1600 LCC by using the **lcc number** option (the recommended method), replace **fpc slot-number** with a value from 0 through 7. Otherwise, use a value from 0 through 31.
 - On a TX Matrix Plus router with the TXP-T1600-3D, TXP-T4000-3D, or TXP-Mixed-LCC-3D configuration, if you specify the number of a T1600 or T4000 LCC by using the **lcc number** option (the recommended method), replace **fpc slot-number** with a value from 0 through 7. Otherwise, use a value from 0 through 63.
 - lcc number**—Show error log of the first ten and last ten errors for the specified FPC on a specific network device (line-card chassis) that is part of the routing matrix.

Replace **lcc 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.

If you specify the number of the network device by using only the **lcc number** option (the recommended method), replace *slot-number* with a value from 0 through 7. Otherwise, replace *slot-number* with a value from 0 through 31. For example, the following commands have the same result:

```
user@host> show chassis fabric errors fpc 1 lcc 1
user@host> show chassis fabric errors fpc 9
```

sib—Show error log of the first ten and last ten errors for the specified SIB. This option has the following suboptions:

- (TX Matrix Plus routers only) *sib-slot*—Specify a value ranging from 0 through 4.
- (PTX Series Packet Transport Routers) *sib-slot*—Specify a value ranging from 0 through 8.
- **f13 sib-slot**—(Optional) Show SIB F13 errors. Specify a valid SIB value number: 0, 1, 3, 4, 6, 7, 8, 9, 11, or 12.
- **f2s sib-slot/sib-f2s-slot-number**—(Optional) Show SIB F2S errors. Replace *sib-slot* with a value from 0 through 4, followed by a *sib-f2s-slot-number* value 0, 2, 4 or 6.
- **lcc number**—(Optional) Show error log of the first ten and last ten SIB errors for the specified network device (line-card chassis).

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.



NOTE: The `lcc number` suboption is mandatory when using the following format for the command: `show chassis fabric errors sib lcc number sib slot-number`. For instance, issuing `show chassis fabric errors sib lcc 2 3` displays errors detected on LCC 2, SIB 3.

This suboption is not required when the `f13` or `f2s` suboptions are used with the `sib slot-number` option.

Required Privilege Level view

List of Sample Output

- [show chassis fabric errors \(F13 SIB Errors on a TX Matrix Plus Router\) on page 458](#)
- [show chassis fabric errors \(F2S SIB Errors on a TX Matrix Plus Router\) on page 458](#)
- [show chassis fabric errors \(SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router\) on page 458](#)
- [show chassis fabric errors \(FPC Errors Specific to an LCC Connected to a TX Matrix Plus Router\) on page 459](#)
- [show chassis fabric errors \(SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router with 3D SIBs\) on page 459](#)
- [show chassis fabric errors fpc or sib \(PTX Series Packet Transport Routers\) on page 459](#)
- [show chassis fabric errors autoheal \(PTX Series Packet Transport Routers\) on page 459](#)
- [show chassis fabric errors autoheal \(TX Matrix Plus Router with 3D SIBs\) on page 459](#)

Output Fields Table 26 on page 457 lists the output fields for the `show chassis fabric errors` command. Output fields are listed in the approximate order in which they appear.

Table 26: show chassis fabric errors Output Fields

Field Name	Field Description
Time	Time the error was logged. (TX Matrix Plus routers and PTX Series Packet Transport Routers only) For the autoheal option, shows the timestamp when autoheal was attempted on a SIB that was in fault state.
Error log of first 10 errors	List of the first ten errors.
Error log of last 10 errors	List of the last ten errors.

Table 26: show chassis fabric errors Output Fields (*continued*)

Field Name	Field Description
Error log of first 100 errors	<p>Indicates the autoheal action taken on the SIB. The following actions can occur:</p> <ul style="list-style-type: none"> • Req—A SIB autoheal request was made on a faulty SIB. • Action—Autohealing (taking the SIB offline and then online) is initiated. • Denied—Autohealing (taking the SIB offline and then online) is denied because the SIB went to a fault state before the autoheal configuration period completed. • Set info—Setting information to force skipping autoheal on the SIB so that no further attempts to autoheal the faulty SIB are made. • Clear info—If a user takes a SIB offline and then online, then the autoheal information of the SIB is cleared. If the SIB goes to a fault state, autoheal is attempted on the SIB.
fpc slot number	(PTX5000 Packet Transport Router only)—Range is 0 through 7.
sib slot number	(PTX Series Packet Transport Routers only)—Range is 0 through 8.
lcc number	Not supported on PTX Series Packet Transport Routers.

Sample Output

show chassis fabric errors (F13 SIB Errors on a TX Matrix Plus Router)

```
user@host> show chassis fabric errors sib f13 11
```

```
Time                               Error log of first 10 errors
2009-10-06 02:21:17 PDT           LOS on Cable-D(1,0)
```

show chassis fabric errors (F2S SIB Errors on a TX Matrix Plus Router)

```
user@host> show chassis fabric errors sib f2s 0/0
```

```
Time                               Error log of first 10 errors
2009-10-06 13:51:42 PDT           Cell drop errors on CLOS F2 SF 0 Port 0 link
```

show chassis fabric errors (SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router)

```
user@host> show chassis fabric errors sib 1 lcc 0
lcc0-re0:
```

```
-----
Time                               Error log of first 10 errors
2009-10-06 02:23:16 PDT           Cell drop errors on FPC7_T link
2009-10-06 02:23:16 PDT           Cell drop errors on FPC7_B link
```

show chassis fabric errors (FPC Errors Specific to an LCC Connected to a TX Matrix Plus Router)

```
user@host> show chassis fabric errors fpc 5 lcc 0
lcc0-re0:
```

```
-----
Time                               Error log of first 10 errors
2009-10-06 13:56:59 PDT           PFE_T has link error on plane 1
```

show chassis fabric errors (SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router with 3D SIBs)

```
user@host> show chassis fabric errors sib 1 lcc 0
lcc0-re0:
```

```
-----
Time                               Error log of first 10 errors
2013-02-11 04:46:42 PST           CRC errors on XC link SIB01_XF3#11,0
```

show chassis fabric errors fpc or sib (PTX Series Packet Transport Routers)

```
user@host> show chassis fabric errors fpc 1
Time                               Error log of first 10 errors
2012-01-06 16:27:03 PST           Link errs on PFE 2, SIB 0, Plane 0
```

```
user@host> show chassis fabric errors sib 1
Time                               Error log of first 10 errors
2012-01-06 15:34:33 PST           Link errs on PFE 0, FPC 0, Plane 2
```

show chassis fabric errors autoheal (PTX Series Packet Transport Routers)

```
user@host> show chassis fabric errors autoheal
```

show chassis fabric errors autoheal (TX Matrix Plus Router with 3D SIBs)

```
user@host> show chassis fabric errors autoheal
Time                               Error log of first 100 errors
2013-03-25 00:16:10 PDT           Req: Plane 3 F13 8 Cbl 4 (tx) LCC0-SIB3 Cbl 4 (rx)
2013-03-25 00:16:12 PDT           Action: Plane 3 F13 8 Cbl 4 (autohealing)
2013-03-25 00:17:24 PDT           Req: Plane 3 F13 8 Cbl 4 (tx) LCC0-SIB3 Cbl 4 (rx)
2013-03-25 00:17:24 PDT           Denied: Plane 3 F13 8 Cbl 4 (time < configured)
2013-03-25 00:17:24 PDT           Set info: Plane 3 F13 8 Cbl 4 (skip autoheal)
2013-03-25 01:20:17 PDT           Clear info: Plane 3
```

show chassis fabric fpcs

Syntax	show chassis fabric fpcs <lcc <i>number</i> >
Syntax (MX Series Routers)	show chassis fabric fpcs <all-members> <local> <member <i>member-id</i> >
Syntax (MX2010 and MX2020 3D Universal Edge Routers)	show chassis fabric fpcs
Syntax (T4000 Core Router)	show chassis fabric fpcs
Syntax (PTX Series Packet Transport Routers)	show chassis fabric fpcs <slot <i>fpc-slot</i> >
Syntax (TX Matrix Plus Router)	show chassis fabric fpcs <lcc <i>number</i> >
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.4 for EX Series switches. Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.
Description	(M320, MX Series, and T Series routers, EX8200 switches, and PTX Series Packet Transport Routers only) Display the state of the electrical switch fabric links between the Flexible PIC Concentrators (FPCs) and the Switch Interface Boards (SIBs).
Options	none —Display the switch fabric link state. On a TX Matrix router, display the switching fabric link states for the FPCs in all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display the switching fabric link states for the FPCs in all routers connected to the TX Matrix Plus router. all-members —(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in all members of the Virtual Chassis configuration. lcc <i>number</i> —(TX Matrix router and TX Matrix Plus router only) (Optional) On a TX Matrix router, display the switch fabric link state for the FPCs in the specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display the switch fabric link state for the FPCs in the specified router (line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a following value depending on the LCC configurations:

- From **0** through **3** on a T640 router on the routing matrix with TX Matirx routers.
- From **0** through **3** on a T1600 router on the routing matrix with TX Matirx Plus routers.
- From **0** through **7** on a T1600 router in a routing matrix with TX Matrix Plus router with 3D SIBs.
- **0, 2, 4, 6** on a T4000 router in a routing matrix with TX Matrix Plus router with 3D SIBs.

local—(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

slot *fpc-slot*—(PTX Series Packet Transport Routers only) (Optional) Display the fabric state of the specified FPC slot. If no value is provided, display the status of all FPCs.

Required Privilege Level view

List of Sample Output

[show chassis fabric fpcs \(M320 Router\) on page 462](#)
[show chassis fabric fpcs \(MX240 Router\) on page 463](#)
[show chassis fabric fpcs \(MX480 Router\) on page 463](#)
[show chassis fabric fpcs \(MX960 Router\) on page 464](#)
[show chassis fabric fpcs \(MX240 with AS MLC Modular Carrier Card\) on page 466](#)
[show chassis fabric fpcs \(MX480 with AS MLC Modular Carrier Card\) on page 466](#)
[show chassis fabric fpcs \(MX480 Router with MPC4E\) on page 467](#)
[show chassis fabric fpcs \(MX960 with AS MLC Modular Carrier Card on page 468](#)
[show chassis fabric fpcs \(MX2010 Router\) on page 470](#)
[show chassis fabric fpcs \(MX2020 Router\) on page 473](#)
[show chassis fabric fpcs \(MX2020 Router with MPC4E\) on page 476](#)
[show chassis fabric fpcs \(T320 Router\) on page 477](#)
[show chassis fabric fpcs \(T640 Router\) on page 478](#)
[show chassis fabric fpcs \(TX Matrix Router\) on page 478](#)
[show chassis fabric fpcs \(TX Matrix Router with 3D SIBs\) on page 480](#)
[show chassis fabric fpcs lcc \(TX Matrix Router with 3D SIBs\) on page 483](#)
[show chassis fabric fpcs \(T1600 Router\) on page 483](#)
[show chassis fabric fpcs \(T4000 Core Router\) on page 485](#)
[show chassis fabric fpcs \(TX Matrix Plus Router\) on page 486](#)
[show chassis fabric fpcs lcc \(TX Matrix Plus Router\) on page 494](#)
[show chassis fabric fpcs \(EX8200 Switch\) on page 494](#)
[show chassis fabric fpcs \(PTX Series Packet Transport Routers\) on page 495](#)

Output Fields [Table 27 on page 462](#) lists the output fields for the **show chassis fabric fpcs** command. Output fields are listed in the approximate order in which they appear.

Table 27: show chassis fabric fpcs Output Fields

Field Name	Field Description
Fabric management FPC state	<p>Switching fabric link (link from SIB to FPC) state for each FPC:</p> <ul style="list-style-type: none"> • Unused—FPC is not present. (On MX240 and MX480 routers with AS- MLC modular carrier card or MPC4E only) the fabric plane from the pair that share physical links (1 and 5, and 3 and 7) is inactive. • Destination error on PFEs <i>list of PFE numbers</i>—Destination errors to the listed Packet Forwarding Engines. Indicates that the link is not carrying traffic to the listed Packet Forwarding Engines. <p>NOTE: In Junos OS Release 9.6 and later, the list of Packet Forwarding Engines with destination errors is displayed in the output.</p> <p>In Junos OS Releases before 9.6, the output only indicates that there are destination errors. However, the list of Packet Forwarding Engines with destination errors is not displayed.</p> <ul style="list-style-type: none"> • Links ok—Link between the spare SIB and FPC is eligible to carry traffic. • Link error—Link between the SIB and FPC has CRC errors. However, the link is still eligible to carry traffic. • Plane disabled—Fabric plane has been disabled for the following reasons: <ul style="list-style-type: none"> • Destination errors have exceeded the thresholds. • Run-time link errors have exceeded the thresholds. • Initialization time link errors detected, and link training was unsuccessful. • Plane Disabled, Links Error (PTX Series Packet Transport Routers only)—The plane is disabled because of link errors detected at the FPC RX. • Plane Disabled, Links Down (PTX Series Packet Transport Routers only)—The plane is disabled because of link errors detected at the SIB RX. • Plane enabled—Link between the active SIB and FPC is eligible to carry traffic. <p>NOTE: On the Enhanced MX SCB with MPC, a maximum of 4 planes are operational and running. On all the other SCBs with MPC, all the planes are operational and running.</p> <ul style="list-style-type: none"> • Plane Enabled, Links OK (PTX Series Packet Transport Routers only)—The FPC CCL RX link is eligible to carry traffic. • Plane Enabled, Links OK (TX Matrix and TX Matrix Plus routers only)—The FPC HSL RX link is eligible to carry traffic.

Sample Output

show chassis fabric fpcs (M320 Router)

```

user@host> show chassis fabric fpcs
Fabric management FPC state:
FPC #2
PFE #1

```

```

SIB #0
    Plane enabled
SIB #1
    Plane enabled
SIB #2
    Plane enabled
SIB #3
    Plane enabled

```

show chassis fabric fpcs (MX240 Router)

```

user@host> show chassis fabric fpcs
Fabric management FPC state:
FPC 2
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
    Plane 6: Links ok
    Plane 7: Links ok
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
    Plane 6: Links ok
    Plane 7: Links ok
  PFE #2
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
    Plane 6: Links ok
    Plane 7: Links ok
  PFE #3
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
    Plane 6: Links ok
    Plane 7: Links ok

```

show chassis fabric fpcs (MX480 Router)

```

user@host> show chassis fabric fpcs

FPC 0
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled

```

```
Plane 4: Links ok
Plane 5: Links ok
Plane 6: Links ok
Plane 7: Links ok
PFE #1
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Links ok
Plane 5: Links ok
Plane 6: Links ok
Plane 7: Links ok
PFE #2
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Links ok
Plane 5: Links ok
Plane 6: Links ok
Plane 7: Links ok
PFE #3
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Links ok
Plane 5: Links ok
Plane 6: Links ok
Plane 7: Links ok
FPC 1
PFE #0
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #1
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
```

show chassis fabric fpcs (MX960 Router)

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

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

show chassis fabric fpcs (MX240 with AS MLC Modular Carrier Card)

In the following output, FPC 1 is the AS MLC modular carrier card (AS MCC).

```
user@host>show chassis fabric fpcs
FPC 1
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Unused
    Plane 6: Plane enabled
    Plane 7: Unused
FPC 2
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
```

show chassis fabric fpcs (MX480 with AS MLC Modular Carrier Card)

In the following output, FPC 5 is the AS MLC modular carrier card (AS MCC).

```
user@host>show chassis fabric fpcs
FPC 2
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 4
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
    Plane 6: Links ok
    Plane 7: Links ok
  PFE #2
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
    Plane 6: Links ok
    Plane 7: Links ok
FPC 5
```

```

PFE #0
  Plane 0: Plane enabled
  Plane 1: Plane enabled
  Plane 2: Plane enabled
  Plane 3: Plane enabled
  Plane 4: Plane enabled
  Plane 5: Unused
  Plane 6: Plane enabled
  Plane 7: Unused

```

show chassis fabric fpcs (MX480 Router with MPC4E)

In the following output, **FPC4** is the MPC4E (MPC4E-3D-32XGE-SFPP) card.

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

```
Fabric management FPC state:
```

```

FPC 0
  PFE #0
    Plane 0: Links ok
    Plane 1: Links ok
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Links ok
    Plane 6: Plane enabled
    Plane 7: Links ok
  PFE #1
    Plane 0: Links ok
    Plane 1: Links ok
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Links ok
    Plane 6: Plane enabled
    Plane 7: Links ok
FPC 1
  PFE #0
    Plane 0: Links ok
    Plane 1: Links ok
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Links ok
    Plane 6: Plane enabled
    Plane 7: Links ok
  PFE #1
    Plane 0: Links ok
    Plane 1: Links ok
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Links ok
    Plane 6: Plane enabled
    Plane 7: Links ok
  PFE #2
    Plane 0: Links ok
    Plane 1: Links ok
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Links ok

```

```
Plane 6: Plane enabled
Plane 7: Links ok
PFE #3
Plane 0: Links ok
Plane 1: Links ok
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Links ok
Plane 6: Plane enabled

FPC 3
PFE #0
Plane 0: Links ok
Plane 1: Links ok
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Links ok
Plane 6: Plane enabled
Plane 7: Links ok

FPC 4
PFE #0
Plane 0: Links ok
Plane 1: Links ok
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Unused
Plane 6: Plane enabled
Plane 7: Unused

PFE #1
Plane 0: Links ok
Plane 1: Links ok
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Unused
Plane 6: Plane enabled
Plane 7: Unused
```

show chassis fabric fpcs (MX960 with AS MLC Modular Carrier Card)

In the following output, FPC 5 is the AS MLC modular carrier card (AS MCC).

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



```
Plane 5: Links ok
FPC 1
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
FPC 4
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
  PFE #2
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
  PFE #3
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
FPC 5
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
FPC 8
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Links ok
    Plane 5: Links ok
```

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

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

show chassis fabric fpcs (MX2010 Router)

```
user@host> show chassis fabric fpcs
Fabric management FPC state:
FPC 0
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 1
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 2
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
```

```
Plane 2: Plane enabled
Plane 3: Plane disabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
FPC 3
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #2
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #3
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 4
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 5
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
```

```
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #1
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane disabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
FPC 6
PFE #0
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane disabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #1
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane disabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #2
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane disabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #3
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane disabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
FPC 7
PFE #0
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane disabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #1
Plane 0: Plane enabled
Plane 1: Plane enabled
```

```

        Plane 2: Plane enabled
        Plane 3: Plane disabled
        Plane 4: Plane enabled
    Plane 5: Plane enabled
        Plane 6: Plane enabled
        Plane 7: Plane enabled
FPC 8
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 9
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane disabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled

```

show chassis fabric fpcs (MX2020 Router)

```

user@host> show chassis fabric fpcs
Fabric management FPC state:
FPC 0
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #2
    Plane 0: Plane enabled

```

```
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #3
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
FPC 1
PFE #0
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #1
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #2
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #3
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
FPC 2
PFE #0
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
```

```
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #1
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #2
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #3
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
FPC 3
PFE #0
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #1
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #2
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
PFE #3
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
```

```
Plane 3: Plane enabled
Plane 4: Plane enabled
Plane 5: Plane enabled
Plane 6: Plane enabled
Plane 7: Plane enabled
FPC 4
...
```

show chassis fabric fpcs (MX2020 Router with MPC4E)

```
user@host > show chassis fabric fpcs
Fabric management FPC state:
FPC 0
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 9
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 10
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
FPC 14
```



```
PFE #0
  Plane 0: Plane enabled
  Plane 1: Plane enabled
  Plane 2: Plane enabled
  Plane 3: Plane enabled
  Plane 4: Plane enabled
  Plane 5: Plane enabled
  Plane 6: Plane enabled
  Plane 7: Plane enabled
PFE #1
  Plane 0: Plane enabled
  Plane 1: Plane enabled
  Plane 2: Plane enabled
  Plane 3: Plane enabled
  Plane 4: Plane enabled
  Plane 5: Plane enabled
  Plane 6: Plane enabled
  Plane 7: Plane enabled
FPC 19
  PFE #0
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #1
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #2
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
  PFE #3
    Plane 0: Plane enabled
    Plane 1: Plane enabled
    Plane 2: Plane enabled
    Plane 3: Plane enabled
    Plane 4: Plane enabled
    Plane 5: Plane enabled
    Plane 6: Plane enabled
    Plane 7: Plane enabled
```

show chassis fabric fpcs (T320 Router)

```
user@host> show chassis fabric fpcs
FPC #3
  PFE #1
```

```
SIB #0
    Links ok
SIB #1
    Plane enabled
SIB #2
    Plane enabled
FPC #5
  PFE #1
    SIB #0
      Links ok
    SIB #1
      Plane enabled
    SIB #2
      Plane enabled
FPC #7
  PFE #1
    SIB #0
      Links ok
    SIB #1
      Plane enabled
    SIB #2
      Plane enabled
```

show chassis fabric fpcs (T640 Router)

```
user@host> show chassis fabric fpcs
Fabric management FPC state:
```

```
FPC #2
  PFE #1
    SIB #0
      Links ok
    SIB #1
      Plane enabled
    SIB #2
      Plane enabled
    SIB #3
      Plane enabled
    SIB #4
      Plane enabled
FPC #3
  PFE #1
    SIB #2
      Plane enabled
    SIB #3
      Link error
      Destination error on PFES
      8   9   10   11   12   13   14   15   16   17   18   19   20   21
    SIB #4
      Destination error on PFES
      8   9   10   11   12   13   14   15   16   17   18   19   20   21
...
```

show chassis fabric fpcs (TX Matrix Router)

```
user@host> show chassis fabric fpcs
1cc0-re0:
-----
Fabric management FPC state:
FPC #0
  PFE #1
```

```

SIB #0
    Links ok
SIB #2
    Links ok
SIB #3
    Links ok
SIB #4
    Links ok
FPC #2
    PFE #1
        SIB #0
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
FPC #3
    PFE #1
        SIB #2
            Plane enabled
        SIB #3
            Link error
            Destination error on PFes
            0 1 2 3 4 5 6 7
            8 9 10 11 12 13 14 15 16 17 18 19 20 21
        SIB #4
            Destination error on PFes
            0 1 2 3 4 5 6 7
            8 9 10 11 12 13 14 15 16 17 18 19 20 21
...
FPC #4
    PFE #0
        SIB #4 Links ok
    PFE #1
        SIB #4 Links ok
FPC #5
    PFE #1
        SIB #4 Links ok
FPC #6
    PFE #1
        SIB #4 Links ok

lcc2-re0:
-----
Fabric management FPC state:
FPC #0
    PFE #1
        SIB #4 Links ok
FPC #1
    PFE #1
        SIB #4 Links ok
FPC #2
    PFE #0
        SIB #4 Links ok
    PFE #1
        SIB #4 Links ok
FPC #4
    PFE #0
        SIB #4 Links ok
    PFE #1
        SIB #4 Links ok
FPC #5

```

```
PFE #1
SIB #4 Links ok
```

show chassis fabric fpcs (TX Matrix Router with 3D SIBs)

```
user@host> show chassis fabric fpcs
1cc0-re0:
```

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

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

```
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
PFE #1
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
FPC #5
PFE #0
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
PFE #1
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
FPC #6
PFE #0
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
PFE #1
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
```

```

    SIB #4
        Links ok

1cc2-re0:
-----

1cc4-re0:
-----
Fabric management FPC state:
FPC #2
  PFE #0
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
  PFE #1
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #3
  PFE #0
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
  PFE #1
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok

1cc6-re0:
-----
```

show chassis fabric fpcs lcc (TX Matrix Router with 3D SIBs)

```
user@host> show chassis fabric fpcs lcc 4
lcc4-re0:
```

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

```
FPC #2
```

```
  PFE #0
```

```
    SIB #0
```

```
      Links ok
```

```
    SIB #1
```

```
      Links ok
```

```
    SIB #2
```

```
      Links ok
```

```
    SIB #3
```

```
      Links ok
```

```
    SIB #4
```

```
      Links ok
```

```
  PFE #1
```

```
    SIB #0
```

```
      Links ok
```

```
    SIB #1
```

```
      Links ok
```

```
    SIB #2
```

```
      Links ok
```

```
    SIB #3
```

```
      Links ok
```

```
    SIB #4
```

```
      Links ok
```

```
FPC #3
```

```
  PFE #0
```

```
    SIB #0
```

```
      Links ok
```

```
    SIB #1
```

```
      Links ok
```

```
    SIB #2
```

```
      Links ok
```

```
    SIB #3
```

```
      Links ok
```

```
    SIB #4
```

```
      Links ok
```

```
  PFE #1
```

```
    SIB #0
```

```
      Links ok
```

```
    SIB #1
```

```
      Links ok
```

```
    SIB #2
```

```
      Links ok
```

```
    SIB #3
```

```
      Links ok
```

```
    SIB #4
```

```
      Links ok
```

show chassis fabric fpcs (T1600 Router)

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

```
Fabric management FPC state:
```

```
FPC #0
```

```
  PFE #0
```

```
    SIB #0
```

```
      Links ok
```

```
SIB #1
    Plane enabled
SIB #2
    Plane enabled
SIB #3
    Plane enabled
SIB #4
    Plane enabled
PFE #1
    SIB #0
        Links ok
    SIB #1
        Plane enabled
    SIB #2
        Plane enabled
    SIB #3
        Plane enabled
    SIB #4
        Plane enabled
FPC #1
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3
            Plane enabled
        SIB #4
            Plane enabled
    PFE #1
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3
            Plane enabled
        SIB #4
            Plane enabled
FPC #2
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3
            Plane enabled
        SIB #4
            Plane enabled
FPC #4
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
```



```

        Plane enabled
SIB #3      Plane enabled
SIB #4      Plane enabled
PFE #1
SIB #0      Links ok
SIB #1      Plane enabled
SIB #2      Plane enabled
SIB #3      Plane enabled
SIB #4      Plane enabled
FPC #3
PFE #1
SIB #2      Plane enabled
SIB #3      Link error
              Destination error on PFEs      0   1   2   3   4   5   6   7
              8   9  10  11  12  13  14  15  16  17  18  19  20  21
SIB #4      Destination error on PFEs      0   1   2   3   4   5   6   7
              8   9  10  11  12  13  14  15  16  17  18  19  20  21

```

show chassis fabric fpcs (T4000 Core Router)

```

Fabric management FPC state:
FPC #2
PFE #0
SIB #0      Links ok
SIB #1      Plane enabled
SIB #2      Plane enabled
SIB #3      Plane enabled
SIB #4      Plane enabled
FPC #3
PFE #0
SIB #0      Links ok
SIB #1      Plane enabled
SIB #2      Plane enabled
SIB #3      Plane enabled
SIB #4      Plane enabled
FPC #5
PFE #0
SIB #0      Links ok
SIB #1      Plane enabled

```

```
SIB #2
    Plane enabled
SIB #3
    Plane enabled
SIB #4
    Plane enabled
PFE #1
    SIB #0
        Links ok
    SIB #1
        Plane enabled
    SIB #2
        Plane enabled
    SIB #3
        Plane enabled
    SIB #4
        Plane enabled
FPC #6
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3
            Plane enabled
        SIB #4
            Plane enabled
    PFE #1
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3
            Plane enabled
        SIB #4
            Plane enabled
```

show chassis fabric fpcs (TX Matrix Plus Router)

```
user@host> show chassis fabric fpcs
lcc0-re0:
```

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

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

```

SIB #0
    Unused
SIB #1
    Links ok
SIB #2
    Links ok
SIB #3
    Links ok
SIB #4
    Links ok
PFE #1
    SIB #0
        Unused
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #3
    PFE #1
        SIB #2
            Plane enabled
        SIB #3
            Link error
            Destination error on PFEs
                0  1  2  3  4  5  6  7
                8  9 10 11 12 13 14 15 16 17 18 19 20 21
        SIB #4
            Destination error on PFEs
                0  1  2  3  4  5  6  7
                8  9 10 11 12 13 14 15 16 17 18 19 20 21
FPC #4
    PFE #0
        SIB #0
            Unused
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
    PFE #1
        SIB #0
            Unused
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
FPC #6
    PFE #0
        SIB #0
            Unused
        SIB #1
            Links ok

```

```
SIB #2
    Links ok
SIB #3
    Links ok
SIB #4
    Links ok
PFE #1
    SIB #0
        Unused
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #7
    PFE #0
        SIB #0
            Unused
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
```

lcc1-re0:

Fabric management FPC state:

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

```

        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
PFE #1
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Destination error on PFES      1      8      9     29     40     65     72     73
                                         93    104
    SIB #4
        Links ok
FPC #6
PFE #0
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
PFE #1
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #7
PFE #0
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok

lcc2-re0:
-----
Fabric management FPC state:
FPC #0
    PFE #0

```

```
SIB #0
    Links ok
SIB #1
    Links ok
SIB #2
    Links ok
SIB #3
    Links ok
SIB #4
    Links ok
PFE #1
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #2
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
    PFE #1
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
FPC #4
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
FPC #5
    PFE #0
        SIB #0
            Links ok
        SIB #1
```

```

        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
PFE #1
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #6
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
    PFE #1
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
FPC #7
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
```

lcc3-re0:

Fabric management FPC state:

```
FPC #0
    PFE #0
        SIB #0
            Links ok
```

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



```
SIB #3
Links ok
SIB #4
Links ok
FPC #5
PFE #0
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
PFE #1
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
FPC #6
PFE #0
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
PFE #1
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
FPC #7
PFE #0
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
```

```
SIB #4
    Links ok
```

show chassis fabric fpcs lcc (TX Matrix Plus Router)

```
user@host> show chassis fabric fpcs lcc 0
lcc0-re1:
-----
Fabric management FPC state:
FPC #3
  PFE #1
    SIB #2
      Plane enabled
    SIB #3
      Link error
      Destination error on PFes
      8   9   10  11  12  13  14  15  16  17  18  19  20  21
    SIB #4
      Destination error on PFes
      8   9   10  11  12  13  14  15  16  17  18  19  20  21
FPC #4
  PFE #0
    SIB #0 Links ok
    SIB #1 Links ok
    SIB #2 Links ok
    SIB #3 Links ok
    SIB #4 Links ok
  PFE #1
    SIB #0 Links ok
    SIB #1 Links ok
    SIB #2 Links ok
    SIB #3 Links ok
    SIB #4 Links ok
FPC #6
  PFE #0
    SIB #0 Links ok
    SIB #1 Links ok
    SIB #2 Links ok
    SIB #3 Links ok
    SIB #4 Links ok
  PFE #1
    SIB #0 Links ok
    SIB #1 Links ok
    SIB #2 Links ok
    SIB #3 Links ok
    SIB #4 Links ok
FPC #7
  PFE #0
    SIB #0 Links ok
    SIB #1 Links ok
    SIB #2 Links ok
    SIB #3 Links ok
    SIB #4 Links ok
```

show chassis fabric fpcs (EX8200 Switch)

```
user@host> show chassis fabric fpcs
Fabric management FPC state
FPC 6
  PFE #0
    Plane 0: Plane enabled
```

```

Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Links ok
Plane 5: Links ok
Plane 6: Links ok
Plane 7: Links ok
Plane 8: Plane enabled
Plane 9: Plane enabled
Plane 10: Plane enabled
Plane 11: Plane enabled
PFE #1
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Links ok
Plane 5: Links ok
Plane 6: Links ok
Plane 7: Links ok
Plane 8: Plane enabled
Plane 9: Plane enabled
Plane 10: Plane enabled
Plane 11: Plane enabled
FPC 7
PFE #0
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Links ok
Plane 5: Links ok
Plane 6: Links ok
Plane 7: Links ok
Plane 8: Plane enabled
Plane 9: Plane enabled
Plane 10: Plane enabled
Plane 11: Plane enabled
PFE #1
Plane 0: Plane enabled
Plane 1: Plane enabled
Plane 2: Plane enabled
Plane 3: Plane enabled
Plane 4: Links ok
Plane 5: Links ok
Plane 6: Links ok
Plane 7: Links ok
Plane 8: Plane enabled
Plane 9: Plane enabled
Plane 10: Plane enabled
Plane 11: Plane enabled

```

show chassis fabric fpcs (PTX Series Packet Transport Routers)

```

user@host> show chassis fabric fpcs slot 0
Fabric management FPC state:
FPC #0
PFE #0
SIB0_Fcore0 (plane 0)  Plane Enabled, Links OK
SIB0_Fcore1 (plane 1)  Plane Enabled, Links OK
SIB1_Fcore0 (plane 2)  Plane Disabled, Links Down

```

SIB1_Fcore1 (plane 3)	Plane Enabled, Links OK
SIB2_Fcore0 (plane 4)	Plane Enabled, Links OK
SIB2_Fcore1 (plane 5)	Plane Enabled, Links OK
SIB3_Fcore0 (plane 6)	Plane Enabled, Links OK
SIB3_Fcore1 (plane 7)	Plane Enabled, Links OK
SIB5_Fcore0 (plane 10)	Plane Enabled, Links OK
SIB5_Fcore1 (plane 11)	Plane Enabled, Links OK
SIB6_Fcore0 (plane 12)	Plane Enabled, Links OK
SIB6_Fcore1 (plane 13)	Plane Enabled, Links OK
SIB7_Fcore0 (plane 14)	Plane Enabled, Links OK
SIB7_Fcore1 (plane 15)	Plane Enabled, Links OK
SIB8_Fcore0 (plane 16)	Plane Enabled, Links OK
SIB8_Fcore1 (plane 17)	Plane Enabled, Links OK

show chassis fabric plane-location

Syntax	show chassis fabric plane-location
Syntax (MX Series Routers)	show chassis fabric plane-location <all-members> <local> <member <i>member-id</i> >
Syntax (MX2010 3D Universal Edge Routers)	show chassis fabric plane-location
Syntax (MX2020 3D Universal Edge Routers)	show chassis fabric plane-location
Syntax (TX Matrix Plus Router)	show chassis fabric plane-location
Release Information	<p>Command introduced in Junos OS Release 8.0.</p> <p>Command introduced in Junos OS Release 9.4 for EX Series switches.</p> <p>Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p>
Description	<p>(M120, MX Series routers, and EX8200 switches only) Display the Control Board (CB) location of each plane. This command can be used on the master Routing Engine or the backup Routing Engine. For information about the meaning of “CBs” and “fabric plane” on the switches, see <i>EX Series Switches Hardware and CLI Terminology Mapping</i>.</p> <p>(TX Matrix Plus routers only) Display the SIB location of each fabric plane.</p> <p>(PTX Series Packet Transport Routers only) Display the fabric plane location of each SIB.</p> <p>(MX2010 and MX2020 Routers only) Display the fabric plane location of each Switch Fabric Board (SFB).</p>
Options	<p>all-members—(MX Series routers only) (Optional) Display the CB location of each fabric plane on the Routing Engines in all member routers in the Virtual Chassis configuration.</p> <p>local—(MX Series routers only) (Optional) Display the CB location of each fabric plane on the Routing Engines in the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(MX Series routers only) (Optional) Display the CB location of each fabric plane on the Routing Engines in the specified member in the Virtual Chassis configuration. Replace <i>member-id</i> with a value of 0 or 1.</p>

Required Privilege Level view

List of Sample Output

- [show chassis fabric plane-location \(M120 Router\) on page 499](#)
- [show chassis fabric plane-location \(MX240 and MX480 Routers\) on page 499](#)
- [show chassis fabric plane-location \(MX960 Router\) on page 499](#)
- [show chassis fabric plane-location \(MX2010 Router\) on page 499](#)
- [show chassis fabric plane-location \(MX2020 Router\) on page 499](#)
- [show chassis fabric plane-location \(TX Matrix Plus Router\) on page 500](#)
- [show chassis fabric plane-location \(TX Matrix Plus Router with 3D SIBs\) on page 500](#)
- [show chassis fabric plane-location \(EX8200 Switch\) on page 500](#)
- [show chassis fabric plane-location \(PTX Series Packet Transport Routers\) on page 500](#)

Output Fields Table 28 on page 498 lists the output fields for the **show chassis fabric plane-location** command. Output fields are listed in the approximate order in which they appear.

Table 28: show chassis fabric plane-location Output Fields

Field Name	Field Description
Plane <i>n</i>	Plane number. (PTX Series Packet Transport Routers only) Plane numbers associated with the SIB. (MX2010 and MX2020 Routers only) Plane numbers associated with the SFB.
Control Board <i>n</i>	Control board number.
SFC ABS-SIB-F13	(TX Matrix Plus routers only) Switch Interface Board (SIB) slot number on the F13 SIB.
SFC ABS-SIB-F2S	(TX Matrix Plus routers only) SIB slot number on the F2S SIB.
LCC ST-SIB-L	(TX Matrix Plus routers only) Line-card chassis (LCC) SIB slot number.
SFC SIB F13	(TX Matrix Plus routers with 3D SIBs only) Switch Interface Board (SIB) slot number on the F13 SIB.
SFC SIB F2S	(TX Matrix Plus routers with 3D SIBs only) SIB slot number on the F2S SIB.
LCC SIB	(TX Matrix Plus routers with 3D SIBs only) Line-card chassis (LCC) SIB slot number.
SIB	(PTX Series Packet Transport Routers only) SIB number.
Switch Fabric Board <i>n</i>	(MX2010 and MX2020 Routers only) SFB number.

Sample Output

show chassis fabric plane-location (M120 Router)

```
user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
Plane 0                      Control Board 0
Plane 1                      Control Board 0
Plane 2                      Control Board 1
Plane 3                      Control Board 1
```

show chassis fabric plane-location (MX240 and MX480 Routers)

```
user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
Plane 0                      Control Board 0
Plane 1                      Control Board 0
Plane 2                      Control Board 0
Plane 3                      Control Board 0
Plane 4                      Control Board 1
Plane 5                      Control Board 1
Plane 6                      Control Board 1
Plane 7                      Control Board 1
```

show chassis fabric plane-location (MX960 Router)

```
user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
Plane 0                      Control Board 0
Plane 1                      Control Board 0
Plane 2                      Control Board 1
Plane 3                      Control Board 1
Plane 4                      Control Board 2
Plane 5                      Control Board 2
```

show chassis fabric plane-location (MX2010 Router)

```
user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
Plane 0                      Switch Fabric Board 0
Plane 1                      Switch Fabric Board 1
Plane 2                      Switch Fabric Board 2
Plane 3                      Switch Fabric Board 3
Plane 4                      Switch Fabric Board 4
Plane 5                      Switch Fabric Board 5
Plane 6                      Switch Fabric Board 6
Plane 7                      Switch Fabric Board 7
```

show chassis fabric plane-location (MX2020 Router)

```
user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
Plane 0                      Switch Fabric Board 0
Plane 1                      Switch Fabric Board 1
Plane 2                      Switch Fabric Board 2
Plane 3                      Switch Fabric Board 3
Plane 4                      Switch Fabric Board 4
Plane 5                      Switch Fabric Board 5
Plane 6                      Switch Fabric Board 6
Plane 7                      Switch Fabric Board 7
```

show chassis fabric plane-location (TX Matrix Plus Router)

```

user@host> show chassis fabric plane-location
Fabric Plane Locations :
Plane      SFC ABS-SIB-F13      SFC ABS-SIB-F2      LCC ST-SIB-L
0          0, 1                0/0, 0/2, 0/4, 0/6      0
1          3, 4                1/0, 1/2, 1/4, 1/6      1
2          6, 7                2/0, 2/2, 2/4, 2/6      2
3          8, 9                3/0, 3/2, 3/4, 3/6      3
4          11, 12             4/0, 4/2, 4/4, 4/6      4

```

show chassis fabric plane-location (TX Matrix Plus Router with 3D SIBs)

```

user@host> show chassis fabric plane-location
sfc0-re0
-----
-----Fabric Plane Locations-----
Plane      SFC SIB F13      SFC SIB F2      LCC SIB
0          0, 1                0/0, 0/2, 0/4, 0/6      0
1          3, 4                1/0, 1/2, 1/4, 1/6      1
2          6, 7                2/0, 2/2, 2/4, 2/6      2
3          8, 9                3/0, 3/2, 3/4, 3/6      3
4          11, 12             4/0, 4/2, 4/4, 4/6      4

```

show chassis fabric plane-location (EX8200 Switch)

```

user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
Plane 0      Control Board 0
Plane 1      Control Board 0
Plane 2      Control Board 0
Plane 3      Control Board 0
Plane 4      Control Board 1
Plane 5      Control Board 1
Plane 6      Control Board 1
Plane 7      Control Board 1
Plane 8      Control Board 2
Plane 9      Control Board 2
Plane 10     Control Board 2
Plane 11     Control Board 2

```

show chassis fabric plane-location (PTX Series Packet Transport Routers)

```

user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
SIB      Planes
0        0 1
1        2 3
2        4 5
3        6 7
4        8 9
5       10 11
6       12 13
7       14 15
8       16 17

```


show chassis fabric summary

Syntax	show chassis fabric summary
Release Information	<p>Command introduced in Junos OS Release 8.4.</p> <p>Command introduced in Junos OS Release 9.4 for EX Series switches.</p> <p>Command introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p>
Description	(MX Series routers and EX8200 switches only) Display the state of all fabric planes and the elapsed uptime.
Options	This command has no options.
Required Privilege Level	view
List of Sample Output	<p>show chassis fabric summary (MX240 Router) on page 503</p> <p>show chassis fabric summary (MX480 Router) on page 503</p> <p>show chassis fabric summary (MX480 Router with MPC4E) on page 503</p> <p>show chassis fabric summary (MX960 Router) on page 503</p> <p>show chassis fabric summary (MX2010 Router) on page 504</p> <p>show chassis fabric summary (MX2020 Router) on page 504</p> <p>show chassis fabric summary (MX2020 Router with MPC4E) on page 504</p> <p>show chassis fabric summary (EX8200 Switch) on page 504</p> <p>show chassis fabric summary (PTX Series Packet Transport Router) on page 505</p>
Output Fields	<p>Table 29 on page 501 lists the output fields for the show chassis fabric summary command. Output fields are listed in the approximate order in which they appear.</p>

Table 29: show chassis fabric summary Output Fields

Field Name	Field Description
Plane	(MX Series, MX2020 and MX2010 Routers only) Plane number.

Table 29: show chassis fabric summary Output Fields (*continued*)

Field Name	Field Description
State	<p>(MX Series) State of the SIB or FPC:</p> <ul style="list-style-type: none"> • Online—Switch Interface Board (SIB) is operational and running. <p>NOTE: On the Enhanced MX SCB with Trio MPC, a maximum of 4 planes are operational and running. On all the other SCBs with Trio MPC, all the planes are operational and running.</p> <ul style="list-style-type: none"> • Empty—SIB is powered down. • Check—SIB is in the Check state because of the following reasons: <ul style="list-style-type: none"> • SIB is not inserted properly. • Some destination errors are detected on the SIB. In this case, the Packet Forwarding Engine stops using the SIB to send traffic to the affected destination Packet Forwarding Engine. • Some link errors are detected on the channel between the SIB and a Packet Forwarding Engine. Link errors can be detected at initialization time or runtime: <ul style="list-style-type: none"> • Link errors caused by a link training failure at initialization time—The Packet Forwarding Engine does not use the SIB to send traffic. The show chassis fabric fpcs command shows Plane disabled as status for this link. • Link errors caused by CRC errors detected at runtime—The Packet Forwarding Engine continues to use the SIB to send traffic. The show chassis fabric fpcs command shows Link error as the status for this link. <p>NOTE: The Check state does not apply to PTX Series Packet Transport Routers because there are no SIBs in the Check state.</p> <p>For information about link and destination errors, issue the show chassis fabric fpcs commands.</p> <ul style="list-style-type: none"> • Spare—SIB is redundant and will move to active state if one of the working SIBs fails. <p>NOTE: Spare does not apply to PTX Series Packet Transport Routers because there are no spare SIBs in the device.</p> <p>(MX2010 and MX2020 Routers) State of the SFB.</p> <ul style="list-style-type: none"> • Online—Switch Fabric Board (SFB) is operational and running. • Offline—Switch Fabric Board (SFB) is powered down. • Check—Switch Fabric Board (SFB) is in the check state.
Errors	<p>(PTX Series only) Indicates whether there is any error on the SIB.</p> <ul style="list-style-type: none"> • None—No errors • Link Errors—Fabric link errors were found on the SIB RX link. • Cell drops—Fabric cell drops were found on the SIB ASIC. • Link, Cell drops—Both Link errors and cell drops were detected on at least one of the FPC's fabric links. <p>NOTE: The Errors column is empty only when the FPC or SIB is offline.</p>

Table 29: show chassis fabric summary Output Fields (*continued*)

Field Name	Field Description
Uptime	(MX Series, MX2010 and MX2020 Routers) Elapsed time the plane has been online.

Sample Output

show chassis fabric summary (MX240 Router)

```
user@host> show chassis fabric summary
Plane  State  Uptime
0      Online 23 hours, 26 minutes, 54 seconds
1      Online 23 hours, 26 minutes, 54 seconds
2      Check 18 hours, 33 minutes, 42 seconds
3      Online 23 hours, 26 minutes, 54 seconds
4      Spare 23 hours, 26 minutes, 54 seconds
5      Spare 23 hours, 26 minutes, 54 seconds
6      Spare 23 hours, 26 minutes, 54 seconds
7      Spare 23 hours, 26 minutes, 54 seconds
```

show chassis fabric summary (MX480 Router)

```
user@host> show chassis fabric summary
Plane  State  Uptime
0      Online 8 hours, 45 minutes, 29 seconds
1      Online 8 hours, 45 minutes, 28 seconds
2      Online 8 hours, 45 minutes, 28 seconds
3      Online 8 hours, 45 minutes, 28 seconds
4      Spare 8 hours, 45 minutes, 28 seconds
5      Spare 8 hours, 45 minutes, 28 seconds
6      Spare 8 hours, 45 minutes, 28 seconds
7      Check 6 hours, 10 minutes, 12 seconds
```

show chassis fabric summary (MX480 Router with MPC4E)

```
user@host > show chassis fabric summary
Plane  State  Uptime
0      Online 6 hours, 57 minutes, 44 seconds
1      Online 6 hours, 57 minutes, 40 seconds
2      Online 6 hours, 57 minutes, 39 seconds
3      Online 6 hours, 57 minutes, 34 seconds
4      Spare 6 hours, 57 minutes, 34 seconds
5      Spare 6 hours, 57 minutes, 29 seconds
6      Spare 6 hours, 57 minutes, 29 seconds
7      Spare 6 hours, 57 minutes, 24 seconds
Note:
For FPC slots with MPC Type 4 or MCC:
Fabric planes 1 and 5, 3 and 7 use shared physical links.
Those slots may run in a reduced bandwidth in case both
plane 1 and 5, or both 3 and 7 are active.
```

show chassis fabric summary (MX960 Router)

```
user@host> show chassis fabric summary
Plane  State  Uptime
0      Online 3 hours, 7 minutes, 9 seconds
1      Online 3 hours, 7 minutes, 4 seconds
```

2	Online	3 hours, 6 minutes, 59 seconds
3	Online	3 hours, 6 minutes, 54 seconds
4	Empty	
5	Empty	

show chassis fabric summary (MX2010 Router)

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

Plane	State	Uptime
0	Online	1 day, 13 hours, 20 minutes, 10 seconds
1	Online	1 day, 13 hours, 19 minutes, 59 seconds
2	Online	1 day, 13 hours, 19 minutes, 49 seconds
3	Offline	
4	Online	1 day, 13 hours, 19 minutes, 28 seconds
5	Check	1 day, 13 hours, 19 minutes, 17 seconds
6	Online	1 day, 13 hours, 19 minutes, 6 seconds
7	Online	1 hour, 43 minutes, 5 seconds

show chassis fabric summary (MX2020 Router)

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

Plane	State	Uptime
0	Online	8 hours, 24 minutes, 1 second
1	Online	8 hours, 47 minutes, 54 seconds
2	Online	8 hours, 47 minutes, 44 seconds
3	Online	8 hours, 47 minutes, 33 seconds
4	Online	8 hours, 47 minutes, 22 seconds
5	Online	8 hours, 47 minutes, 12 seconds
6	Online	8 hours, 47 minutes, 1 second
7	Online	8 hours, 46 minutes, 50 seconds

show chassis fabric summary (MX2020 Router with MPC4E)

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

Plane	State	Uptime
0	Online	3 days, 6 hours, 58 minutes, 29 seconds
1	Online	3 days, 6 hours, 58 minutes, 18 seconds
2	Online	3 days, 6 hours, 58 minutes, 8 seconds
3	Online	3 days, 6 hours, 57 minutes, 57 seconds
4	Online	3 days, 6 hours, 57 minutes, 46 seconds
5	Online	3 days, 6 hours, 57 minutes, 36 seconds
6	Online	3 days, 6 hours, 57 minutes, 25 seconds
7	Online	3 days, 6 hours, 57 minutes, 14 seconds

show chassis fabric summary (EX8200 Switch)

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

Plane	State	Uptime
0	Online	12 days, 50 minutes, 54 seconds
1	Online	12 days, 50 minutes, 53 seconds
2	Online	12 days, 50 minutes, 53 seconds
3	Online	12 days, 50 minutes, 52 seconds
4	Spare	12 days, 50 minutes, 49 seconds
5	Spare	12 days, 50 minutes, 47 seconds
6	Spare	12 days, 50 minutes, 47 seconds
7	Spare	12 days, 50 minutes, 46 seconds
8	Online	12 days, 50 minutes, 52 seconds
9	Online	12 days, 50 minutes, 50 seconds
10	Online	12 days, 50 minutes, 50 seconds
11	Online	12 days, 50 minutes, 49 seconds

show chassis fabric summary (PTX Series Packet Transport Router)

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

FRU	State	Errors
SIB0	Online	None
SIB1	Online	Link Errors
SIB2	Online	None
SIB3	Online	Cell drops
SIB4	Offline	
SIB5	Online	None
SIB6	Online	Link, Cell drops
SIB7	Online	None
SIB8	Online	Link, Cell drops
FPC0	Online	None
FPC1	Online	Link Errors
FPC2	Online	None
FPC3	Offline	
FPC4	Online	None
FPC5	Online	None
FPC6	Empty	
FPC7	Empty	

show chassis fabric topology

Syntax	show chassis fabric topology <fcc <i>number</i> scc> <sib-slot>
Syntax (TX Matrix Router)	show chassis fabric topology <fcc <i>number</i> scc> <sib-slot>
Syntax (TX Matrix Plus Router)	show chassis fabric topology <fcc <i>number</i> sfc <i>number</i> > <sib-slot>
Syntax (T4000 Core Router)	show chassis fabric topology <sib-slot>
Syntax (PTX Series Packet Transport Routers)	show chassis fabric topology
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 introduced in Junos OS Release 12.1 for PTX Series Packet Transport Routers.
Description	<p>(TX Matrix routers only) Display the state of the switching fabric topology for the Switch Interface Board (SIB) connection between the TX Matrix router and the T640 routers.</p> <p>(TX Matrix Plus routers only) Display the state of the switching fabric topology for the SIB connection between the TX Matrix Plus router and the connected routers.</p> <p>(T320, T640, T1600, and T4000 routers only) Display the state of the switching fabric topology for the connection between the Switch Interface Board (SIB) and the FPCs.</p> <p>(PTX Series Packet Transport Routers only) Display the input-output link topology.</p>
Options	<p>none—(TX Matrix routers only) Display the state of the switching fabric topology for the Switch Interface Board (SIB) connection between the TX Matrix router and the T640 routers.</p> <p>(TX Matrix Plus routers only) Display the state of the switching fabric topology for the SIB connection between the TX Matrix Plus router and the connected routers.</p> <p>(T320, T640, T1600, and T4000 routers only) Display the state of the switching fabric topology for the connection between the Switch Interface Board (SIB) and the FPCs.</p> <p>fcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the fabric topology state for a specified T640 router (line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display the fabric topology state for a specified router (line-card chassis) that is connected to the TX Matrix Plus router.</p>

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

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

scc—(TX Matrix routers only) (Optional) Display the fabric topology state for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display the fabric topology for the switch-fabric chassis. Replace *number* with 0.

sib-slot—(Optional) Display the fabric topology state for a specified SIB slot. Replace *sib-slot* with a value from 0 through 4. On a TX Matrix Plus router, replace *sib-slot* with a value from 0 through 15.

Required Privilege Level view

Related Documentation • [Layer 2 Wholesale Network Topology Overview](#)

List of Sample Output [show chassis fabric topology scc \(TX Matrix Router\) on page 510](#)
[show chassis fabric topology lcc on page 512](#)
[show chassis fabric topology \(TX Matrix Plus Router\) on page 514](#)
[show chassis fabric topology sfc \(TX Matrix Plus Router\) on page 515](#)
[show chassis fabric topology lcc \(TX Matrix Plus Router\) on page 516](#)
[show chassis fabric topology \(T4000 Core Router\) on page 517](#)
[show chassis fabric topology lcc \(TX Matrix Plus Router with 3D SIBs\) on page 518](#)
[show chassis fabric topology sfc \(TX Matrix Plus Router with 3D SIBs\) on page 520](#)
[show chassis fabric topology \(PTX Series Packet Transport Routers\) on page 525](#)

Output Fields [Table 30 on page 507](#) lists the output fields for the **show chassis fabric topology** command. Output fields are listed in the approximate order in which they appear.

Table 30: show chassis fabric topology Output Fields

Field Name	Field Description
in-links	Fabric topology for receive side links.
out-links	Fabric topology for transmit side links.

Table 30: show chassis fabric topology Output Fields (*continued*)

Field Name	Field Description
state	<p>State of the fabric link:</p> <ul style="list-style-type: none"> • RESET—Link between the SIB and the FPC/DPC is powered down on purpose. This is done in all non-dual Packet Forwarding Engine–based boards. • UP—Link between the SIB and the FPC/DCP is up and running. • DOWN—Link between the SIB and the FPC/DCP is powered down. • FAULT—The SIB is in the alarmed state, in which the SIB's plane is not operational for one or more of the following reasons: <ul style="list-style-type: none"> • On-board F-chip is not operational. • Fiber-optic connector faults. • FPC connector faults. • SIB midplane connector faults. <p>NOTE: The following state descriptions are applicable only to PTX Series Packet Transport Routers.</p> <ul style="list-style-type: none"> • OK—The link between the SIB and the FPC is operational. • Down—The link between the SIB and the FPC is powered down. • Error—The CCL link between the SIB and FPC is not operational for one or more of the following reasons: <ul style="list-style-type: none"> • FPC midplane connector failure. • SIB midplane connector failure. • CCL link CRC error.

LCC0_SIB-L0_F0,07->SIB-S0_F0,08	UP	SIB-S0_F0,08->LCC0_SIB-L0_F1,04	UP
LCC1_SIB-L0_F0,07->SIB-S0_F0,09	UP	SIB-S0_F0,09->LCC1_SIB-L0_F1,12	UP
LCC2_SIB-L0_F0,07->SIB-S0_F0,10	RESET	SIB-S0_F0,10->LCC2_SIB-L0_F1,12	UP
LCC3_SIB-L0_F0,07->SIB-S0_F0,11	RESET	SIB-S0_F0,11->LCC3_SIB-L0_F1,04	UP
LCC0_SIB-L0_F0,06->SIB-S0_F0,12	UP	SIB-S0_F0,12->LCC0_SIB-L0_F1,05	UP
LCC1_SIB-L0_F0,06->SIB-S0_F0,13	UP	SIB-S0_F0,13->LCC1_SIB-L0_F1,13	UP
LCC2_SIB-L0_F0,06->SIB-S0_F0,14	RESET	SIB-S0_F0,14->LCC2_SIB-L0_F1,13	UP
LCC3_SIB-L0_F0,06->SIB-S0_F0,15	RESET	SIB-S0_F0,15->LCC3_SIB-L0_F1,05	UP
SIB0_F1 (F2):			
LCC0_SIB-L0_F0,11->SIB-S0_F1,00	UP	SIB-S0_F1,00->LCC0_SIB-L0_F1,08	UP
LCC1_SIB-L0_F0,11->SIB-S0_F1,01	UP	SIB-S0_F1,01->LCC1_SIB-L0_F1,00	UP
LCC2_SIB-L0_F0,11->SIB-S0_F1,02	RESET	SIB-S0_F1,02->LCC2_SIB-L0_F1,00	UP
LCC3_SIB-L0_F0,11->SIB-S0_F1,03	RESET	SIB-S0_F1,03->LCC3_SIB-L0_F1,08	UP
LCC0_SIB-L0_F0,10->SIB-S0_F1,04	UP	SIB-S0_F1,04->LCC0_SIB-L0_F1,09	UP
LCC1_SIB-L0_F0,10->SIB-S0_F1,05	UP	SIB-S0_F1,05->LCC1_SIB-L0_F1,01	UP
LCC2_SIB-L0_F0,10->SIB-S0_F1,06	RESET	SIB-S0_F1,06->LCC2_SIB-L0_F1,01	UP
LCC3_SIB-L0_F0,10->SIB-S0_F1,07	RESET	SIB-S0_F1,07->LCC3_SIB-L0_F1,09	UP
LCC0_SIB-L0_F0,15->SIB-S0_F1,08	UP	SIB-S0_F1,08->LCC0_SIB-L0_F1,12	UP
LCC1_SIB-L0_F0,15->SIB-S0_F1,09	UP	SIB-S0_F1,09->LCC1_SIB-L0_F1,04	UP
LCC2_SIB-L0_F0,15->SIB-S0_F1,10	RESET	SIB-S0_F1,10->LCC2_SIB-L0_F1,04	UP
LCC3_SIB-L0_F0,15->SIB-S0_F1,11	RESET	SIB-S0_F1,11->LCC3_SIB-L0_F1,12	UP
LCC0_SIB-L0_F0,14->SIB-S0_F1,12	UP	SIB-S0_F1,12->LCC0_SIB-L0_F1,13	UP
LCC1_SIB-L0_F0,14->SIB-S0_F1,13	UP	SIB-S0_F1,13->LCC1_SIB-L0_F1,05	UP
LCC2_SIB-L0_F0,14->SIB-S0_F1,14	RESET	SIB-S0_F1,14->LCC2_SIB-L0_F1,05	
UP			
LCC3_SIB-L0_F0,14->SIB-S0_F1,15	RESET	SIB-S0_F1,15->LCC3_SIB-L0_F1,13	
UP			
SIB0_F2 (F2):			
LCC3_SIB-L0_F0,13->SIB-S0_F2,00	RESET	SIB-S0_F2,00->LCC3_SIB-L0_F1,14	UP
LCC2_SIB-L0_F0,13->SIB-S0_F2,01	RESET	SIB-S0_F2,01->LCC2_SIB-L0_F1,06	
UP			
LCC1_SIB-L0_F0,13->SIB-S0_F2,02	UP	SIB-S0_F2,02->LCC1_SIB-L0_F1,06	UP
LCC0_SIB-L0_F0,13->SIB-S0_F2,03	UP	SIB-S0_F2,03->LCC0_SIB-L0_F1,14	UP
LCC3_SIB-L0_F0,12->SIB-S0_F2,04	RESET	SIB-S0_F2,04->LCC3_SIB-L0_F1,15	
UP			
LCC2_SIB-L0_F0,12->SIB-S0_F2,05	RESET	SIB-S0_F2,05->LCC2_SIB-L0_F1,07	UP
LCC1_SIB-L0_F0,12->SIB-S0_F2,06	UP	SIB-S0_F2,06->LCC1_SIB-L0_F1,07	UP
LCC0_SIB-L0_F0,12->SIB-S0_F2,07	UP	SIB-S0_F2,07->LCC0_SIB-L0_F1,15	UP
LCC3_SIB-L0_F0,09->SIB-S0_F2,08	RESET	SIB-S0_F2,08->LCC3_SIB-L0_F1,10	
UP			
LCC2_SIB-L0_F0,09->SIB-S0_F2,09	RESET	SIB-S0_F2,09->LCC2_SIB-L0_F1,02	
UP			
LCC1_SIB-L0_F0,09->SIB-S0_F2,10	UP	SIB-S0_F2,10->LCC1_SIB-L0_F1,02	UP
LCC0_SIB-L0_F0,09->SIB-S0_F2,11	UP	SIB-S0_F2,11->LCC0_SIB-L0_F1,10	UP
LCC3_SIB-L0_F0,08->SIB-S0_F2,12	RESET	SIB-S0_F2,12->LCC3_SIB-L0_F1,11	
UP			
LCC2_SIB-L0_F0,08->SIB-S0_F2,13	RESET	SIB-S0_F2,13->LCC2_SIB-L0_F1,03	
UP			
LCC1_SIB-L0_F0,08->SIB-S0_F2,14	UP	SIB-S0_F2,14->LCC1_SIB-L0_F1,03	UP
LCC0_SIB-L0_F0,08->SIB-S0_F2,15	UP	SIB-S0_F2,15->LCC0_SIB-L0_F1,11	UP
SIB0_F3 (F2):			
LCC3_SIB-L0_F0,05->SIB-S0_F3,00	RESET	SIB-S0_F3,00->LCC3_SIB-L0_F1,06	
UP			
LCC2_SIB-L0_F0,05->SIB-S0_F3,01	RESET	SIB-S0_F3,01->LCC2_SIB-L0_F1,14	
UP			
LCC1_SIB-L0_F0,05->SIB-S0_F3,02	UP	SIB-S0_F3,02->LCC1_SIB-L0_F1,14	UP
LCC0_SIB-L0_F0,05->SIB-S0_F3,03	UP	SIB-S0_F3,03->LCC0_SIB-L0_F1,06	UP
LCC3_SIB-L0_F0,04->SIB-S0_F3,04	RESET	SIB-S0_F3,04->LCC3_SIB-L0_F1,07	
UP			
LCC2_SIB-L0_F0,04->SIB-S0_F3,05	RESET	SIB-S0_F3,05->LCC2_SIB-L0_F1,15	
UP			

```

LCC1_SIB-L0_F0,04->SIB-S0_F3,06  UP
LCC0_SIB-L0_F0,04->SIB-S0_F3,07  UP
LCC3_SIB-L0_F0,01->SIB-S0_F3,08  RESET
UP
LCC2_SIB-L0_F0,01->SIB-S0_F3,09  RESET
UP
LCC1_SIB-L0_F0,01->SIB-S0_F3,10  UP
LCC0_SIB-L0_F0,01->SIB-S0_F3,11  UP
LCC3_SIB-L0_F0,00->SIB-S0_F3,12  RESET
UP
LCC2_SIB-L0_F0,00->SIB-S0_F3,13  RESET
UP
LCC1_SIB-L0_F0,00->SIB-S0_F3,14  UP
LCC0_SIB-L0_F0,00->SIB-S0_F3,15  UP
Sib #1 :
-----
SIB1_F0 (F2 ):
LCC0_SIB-L1_F0,03->SIB-S1_F0,00  RESET
LCC1_SIB-L1_F0,03->SIB-S1_F0,01  RESET
LCC2_SIB-L1_F0,03->SIB-S1_F0,02  RESET
LCC3_SIB-L1_F0,03->SIB-S1_F0,03  RESET
LCC0_SIB-L1_F0,02->SIB-S1_F0,04  RESET
LCC1_SIB-L1_F0,02->SIB-S1_F0,05  RESET
LCC2_SIB-L1_F0,02->SIB-S1_F0,06  RESET
LCC3_SIB-L1_F0,02->SIB-S1_F0,07  RESET
LCC0_SIB-L1_F0,07->SIB-S1_F0,08  RESET
LCC1_SIB-L1_F0,07->SIB-S1_F0,09  RESET
LCC2_SIB-L1_F0,07->SIB-S1_F0,10  RESET
LCC3_SIB-L1_F0,07->SIB-S1_F0,11  RESET
LCC0_SIB-L1_F0,06->SIB-S1_F0,12  RESET
LCC1_SIB-L1_F0,06->SIB-S1_F0,13  RESET
LCC2_SIB-L1_F0,06->SIB-S1_F0,14  RESET
LCC3_SIB-L1_F0,06->SIB-S1_F0,15  RESET
SIB1_F1 (F2 ):
LCC0_SIB-L1_F0,11->SIB-S1_F1,00  RESET
LCC1_SIB-L1_F0,11->SIB-S1_F1,01  RESET
LCC2_SIB-L1_F0,11->SIB-S1_F1,02  RESET
LCC3_SIB-L1_F0,11->SIB-S1_F1,03  RESET
LCC0_SIB-L1_F0,10->SIB-S1_F1,04  RESET
LCC1_SIB-L1_F0,10->SIB-S1_F1,05  RESET
LCC2_SIB-L1_F0,10->SIB-S1_F1,06  RESET
LCC3_SIB-L1_F0,10->SIB-S1_F1,07  RESET
LCC0_SIB-L1_F0,15->SIB-S1_F1,08  RESET
LCC1_SIB-L1_F0,15->SIB-S1_F1,09  RESET
LCC2_SIB-L1_F0,15->SIB-S1_F1,10  RESET
LCC3_SIB-L1_F0,15->SIB-S1_F1,11  RESET
LCC0_SIB-L1_F0,14->SIB-S1_F1,12  RESET
LCC1_SIB-L1_F0,14->SIB-S1_F1,13  RESET
LCC2_SIB-L1_F0,14->SIB-S1_F1,14  RESET
SIB-S0_F3,06->LCC1_SIB-L0_F1,15  UP
SIB-S0_F3,07->LCC0_SIB-L0_F1,07  UP
SIB-S0_F3,08->LCC3_SIB-L0_F1,02
SIB-S0_F3,09->LCC2_SIB-L0_F1,10
SIB-S0_F3,10->LCC1_SIB-L0_F1,10  UP
SIB-S0_F3,11->LCC0_SIB-L0_F1,02  UP
SIB-S0_F3,12->LCC3_SIB-L0_F1,03
SIB-S0_F3,13->LCC2_SIB-L0_F1,11
SIB-S0_F3,14->LCC1_SIB-L0_F1,11  UP
SIB-S0_F3,15->LCC0_SIB-L0_F1,03  UP
SIB-S1_F0,00->LCC0_SIB-L1_F1,00  UP
SIB-S1_F0,01->LCC1_SIB-L1_F1,08  UP
SIB-S1_F0,02->LCC2_SIB-L1_F1,08  UP
SIB-S1_F0,03->LCC3_SIB-L1_F1,00  UP
SIB-S1_F0,04->LCC0_SIB-L1_F1,01  UP
SIB-S1_F0,05->LCC1_SIB-L1_F1,09  UP
SIB-S1_F0,06->LCC2_SIB-L1_F1,09  UP
SIB-S1_F0,07->LCC3_SIB-L1_F1,01  UP
SIB-S1_F0,08->LCC0_SIB-L1_F1,04  UP
SIB-S1_F0,09->LCC1_SIB-L1_F1,12  UP
SIB-S1_F0,10->LCC2_SIB-L1_F1,12  UP
SIB-S1_F0,11->LCC3_SIB-L1_F1,04  UP
SIB-S1_F0,12->LCC0_SIB-L1_F1,05  UP
SIB-S1_F0,13->LCC1_SIB-L1_F1,13  UP
SIB-S1_F0,14->LCC2_SIB-L1_F1,13  UP
SIB-S1_F0,15->LCC3_SIB-L1_F1,05  UP
SIB-S1_F1,00->LCC0_SIB-L1_F1,08  UP
SIB-S1_F1,01->LCC1_SIB-L1_F1,00  UP
SIB-S1_F1,02->LCC2_SIB-L1_F1,00  UP
SIB-S1_F1,03->LCC3_SIB-L1_F1,08  UP
SIB-S1_F1,04->LCC0_SIB-L1_F1,09  UP
SIB-S1_F1,05->LCC1_SIB-L1_F1,01  UP
SIB-S1_F1,06->LCC2_SIB-L1_F1,01  UP
SIB-S1_F1,07->LCC3_SIB-L1_F1,09  UP
SIB-S1_F1,08->LCC0_SIB-L1_F1,12  UP
SIB-S1_F1,09->LCC1_SIB-L1_F1,04  UP
SIB-S1_F1,10->LCC2_SIB-L1_F1,04  UP
SIB-S1_F1,11->LCC3_SIB-L1_F1,12,05  UP
SIB-S1_F1,12->LCC0_SIB-L1_F1,13  UP
SIB-S1_F1,13->LCC1_SIB-L1_F1,05  UP
SIB-S1_F1,14->LCC2_SIB-L1_F1,05  UP

```

show chassis fabric topology lcc

```

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

```

```

-----
      fchip (mode)
in-links          state      out-links          state
-----
Sib #2 :
-----
SIB2_F0 (F1 ):

```

```

FPC0_T->SIB-L2_F0,00    DOWN    SIB-L2_F0,00->SIB-S2_F3,15  DOWN
FPC0_B->SIB-L2_F0,01    UP       SIB-L2_F0,01->SIB-S2_F3,11  DOWN
FPC1_T->SIB-L2_F0,02    DOWN     SIB-L2_F0,02->SIB-S2_F0,04  DOWN
FPC1_B->SIB-L2_F0,03    DOWN     SIB-L2_F0,03->SIB-S2_F0,00  DOWN
FPC2_T->SIB-L2_F0,04    DOWN     SIB-L2_F0,04->SIB-S2_F3,07  DOWN
FPC2_B->SIB-L2_F0,05    DOWN     SIB-L2_F0,05->SIB-S2_F3,03  DOWN
FPC3_T->SIB-L2_F0,06    DOWN     SIB-L2_F0,06->SIB-S2_F0,12  DOWN
FPC3_B->SIB-L2_F0,07    DOWN     SIB-L2_F0,07->SIB-S2_F0,08  DOWN
FPC4_T->SIB-L2_F0,08    DOWN     SIB-L2_F0,08->SIB-S2_F2,15  DOWN
FPC4_B->SIB-L2_F0,09    DOWN     SIB-L2_F0,09->SIB-S2_F2,11  DOWN
FPC5_T->SIB-L2_F0,10    DOWN     SIB-L2_F0,10->SIB-S2_F1,04  DOWN
FPC5_B->SIB-L2_F0,11    DOWN     SIB-L2_F0,11->SIB-S2_F1,00  DOWN
FPC6_T->SIB-L2_F0,12    DOWN     SIB-L2_F0,12->SIB-S2_F2,07  DOWN
FPC6_B->SIB-L2_F0,13    UP       SIB-L2_F0,13->SIB-S2_F2,03  DOWN
FPC7_T->SIB-L2_F0,14    DOWN     SIB-L2_F0,14->SIB-S2_F1,12  DOWN
FPC7_B->SIB-L2_F0,15    DOWN     SIB-L2_F0,15->SIB-S2_F1,08  DOWN

SIB2_F1 (F3 ):
SIB-S2_F0,00->SIB-L2_F1,00  UP    SIB-L2_F1,00->FPC7_B      DOWN
SIB-S2_F0,04->SIB-L2_F1,01  UP    SIB-L2_F1,01->FPC7_T      DOWN
SIB-S2_F3,11->SIB-L2_F1,02  UP    SIB-L2_F1,02->FPC6_B      DOWN
SIB-S2_F3,15->SIB-L2_F1,03  UP    SIB-L2_F1,03->FPC6_T      DOWN
SIB-S2_F0,08->SIB-L2_F1,04  UP    SIB-L2_F1,04->FPC5_B      DOWN
SIB-S2_F0,12->SIB-L2_F1,05  UP    SIB-L2_F1,05->FPC5_T      DOWN
SIB-S2_F3,03->SIB-L2_F1,06  UP    SIB-L2_F1,06->FPC4_B      DOWN
SIB-S2_F3,07->SIB-L2_F1,07  UP    SIB-L2_F1,07->FPC4_T      DOWN
SIB-S2_F1,00->SIB-L2_F1,08  UP    SIB-L2_F1,08->FPC3_B      DOWN
SIB-S2_F1,04->SIB-L2_F1,09  UP    SIB-L2_F1,09->FPC3_T      DOWN
SIB-S2_F2,11->SIB-L2_F1,10  UP    SIB-L2_F1,10->FPC2_B      DOWN
SIB-S2_F2,15->SIB-L2_F1,11  UP    SIB-L2_F1,11->FPC2_T      DOWN
SIB-S2_F1,08->SIB-L2_F1,12  UP    SIB-L2_F1,12->FPC1_B      DOWN
SIB-S2_F1,12->SIB-L2_F1,13  UP    SIB-L2_F1,13->FPC1_T      DOWN
SIB-S2_F2,03->SIB-L2_F1,14  UP    SIB-L2_F1,14->FPC0_B      DOWN
SIB-S2_F2,07->SIB-L2_F1,15  UP    SIB-L2_F1,15->FPC0_T      DOWN

Sib #4 :
-----
SIB4_F0 (F1 ):
FPC0_T->SIB-L4_F0,00    RESET    SIB-L4_F0,00->SIB-S4_F3,15  UP
FPC0_B->SIB-L4_F0,01    UP        SIB-L4_F0,01->SIB-S4_F3,11  UP
FPC1_T->SIB-L4_F0,02    RESET    SIB-L4_F0,02->SIB-S4_F0,04  UP
FPC1_B->SIB-L4_F0,03    RESET    SIB-L4_F0,03->SIB-S4_F0,00  UP
FPC2_T->SIB-L4_F0,04    RESET    SIB-L4_F0,04->SIB-S4_F3,07  UP
FPC2_B->SIB-L4_F0,05    RESET    SIB-L4_F0,05->SIB-S4_F3,03  UP
FPC3_T->SIB-L4_F0,06    RESET    SIB-L4_F0,06->SIB-S4_F0,12  UP
FPC3_B->SIB-L4_F0,07    RESET    SIB-L4_F0,07->SIB-S4_F0,08  UP
FPC4_T->SIB-L4_F0,08    RESET    SIB-L4_F0,08->SIB-S4_F2,15  UP
FPC4_B->SIB-L4_F0,09    RESET    SIB-L4_F0,09->SIB-S4_F2,11  UP
FPC5_T->SIB-L4_F0,10    RESET    SIB-L4_F0,10->SIB-S4_F1,04  UP
FPC5_B->SIB-L4_F0,11    RESET    SIB-L4_F0,11->SIB-S4_F1,00  UP
FPC6_T->SIB-L4_F0,12    RESET    SIB-L4_F0,12->SIB-S4_F2,07  UP
FPC6_B->SIB-L4_F0,13    UP        SIB-L4_F0,13->SIB-S4_F2,03  UP
FPC7_T->SIB-L4_F0,14    RESET    SIB-L4_F0,14->SIB-S4_F1,12  UP
FPC7_B->SIB-L4_F0,15    RESET    SIB-L4_F0,15->SIB-S4_F1,08  UP

SIB4_F1 (F3 ):
SIB-S4_F0,00->SIB-L4_F1,00  UP    SIB-L4_F1,00->FPC7_B      UP
SIB-S4_F0,04->SIB-L4_F1,01  UP    SIB-L4_F1,01->FPC7_T      UP
SIB-S4_F3,11->SIB-L4_F1,02  UP    SIB-L4_F1,02->FPC6_B      UP
SIB-S4_F3,15->SIB-L4_F1,03  UP    SIB-L4_F1,03->FPC6_T      UP
SIB-S4_F0,08->SIB-L4_F1,04  UP    SIB-L4_F1,04->FPC5_B      UP
SIB-S4_F0,12->SIB-L4_F1,05  UP    SIB-L4_F1,05->FPC5_T      UP
SIB-S4_F3,03->SIB-L4_F1,06  UP    SIB-L4_F1,06->FPC4_B      UP
SIB-S4_F3,07->SIB-L4_F1,07  UP    SIB-L4_F1,07->FPC4_T      UP

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SIB-S4_F1,00->SIB-L4_F1,08 UP      SIB-L4_F1,08->FPC3_B    UP
SIB-S4_F1,04->SIB-L4_F1,09 UP      SIB-L4_F1,09->FPC3_T    UP
SIB-S4_F2,11->SIB-L4_F1,10 UP      SIB-L4_F1,10->FPC2_B    UP
SIB-S4_F2,15->SIB-L4_F1,11 UP      SIB-L4_F1,11->FPC2_T    UP
SIB-S4_F1,08->SIB-L4_F1,12 UP      SIB-L4_F1,12->FPC1_B    UP
SIB-S4_F1,12->SIB-L4_F1,13 UP      SIB-L4_F1,13->FPC1_T    UP
SIB-S4_F2,03->SIB-L4_F1,14 UP      SIB-L4_F1,14->FPC0_B    UP
SIB-S4_F2,07->SIB-L4_F1,15 UP      SIB-L4_F1,15->FPC0_T    UP

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show chassis fabric topology (TX Matrix Plus Router)

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

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F13_SIB0
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Out-Links:
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SFC0_F13_SIB_00	-> LCC00_ST_SIB_L00	VCSEL Status	HSL2 Channel	HSL2 Status
SF_30_00_FB_D(04,11)	-> FPC0_T_SG(0,0,0)_FB_D(01,11)	OK	112	Up
SF_30_00_FB_D(04,10)	-> FPC0_T_SG(0,0,1)_FB_D(01,10)	OK	112	Up
SF_30_00_FB_D(04,09)	-> FPC0_T_SG(0,0,2)_FB_D(01,09)	OK	112	Up
SF_30_00_FB_D(04,08)	-> FPC0_T_SG(0,0,3)_FB_D(01,08)	OK	112	Up
SF_30_00_FB_D(04,07)	-> FPC0_T_SG(0,0,4)_FB_D(01,07)	OK	112	Up
SF_30_00_FB_D(04,06)	-> FPC0_T_SG(0,0,5)_FB_D(01,06)	OK	112	Up
SF_30_00_FB_D(04,05)	-> FPC0_T_SG(0,0,6)_FB_D(01,05)	OK	112	Up
SF_30_00_FB_D(04,04)	-> FPC0_T_SG(0,0,7)_FB_D(01,04)	OK	112	Up
SF_30_01_FB_B(16,11)	-> FPC4_T_SG(2,0,0)_FB_B(13,11)	OK	119	Up
SF_30_01_FB_B(16,10)	-> FPC4_T_SG(2,0,1)_FB_B(13,10)	OK	119	Up
SF_30_01_FB_B(16,09)	-> FPC4_T_SG(2,0,2)_FB_B(13,09)	OK	119	Up
SF_30_01_FB_B(16,08)	-> FPC4_T_SG(2,0,3)_FB_B(13,08)	OK	119	Up
SF_30_01_FB_B(16,07)	-> FPC4_T_SG(2,0,4)_FB_B(13,07)	OK	119	Up
SF_30_01_FB_B(16,06)	-> FPC4_T_SG(2,0,5)_FB_B(13,06)	OK	119	Up
SF_30_01_FB_B(16,05)	-> FPC4_T_SG(2,0,6)_FB_B(13,05)	OK	119	Up
SF_30_01_FB_B(16,04)	-> FPC4_T_SG(2,0,7)_FB_B(13,04)	OK	119	Up
SF_30_02_FB_D(05,08)	-> FPC1_T_SG(0,2,0)_FB_D(02,08)	OK	126	Up
SF_30_02_FB_D(05,07)	-> FPC1_T_SG(0,2,1)_FB_D(02,07)	OK	126	Up
SF_30_02_FB_D(05,06)	-> FPC1_T_SG(0,2,2)_FB_D(02,06)	OK	126	Up
SF_30_02_FB_D(05,05)	-> FPC1_T_SG(0,2,3)_FB_D(02,05)	OK	126	Up
SF_30_02_FB_D(05,03)	-> FPC1_T_SG(0,2,4)_FB_D(02,03)	OK	126	Up
SF_30_02_FB_D(05,02)	-> FPC1_T_SG(0,2,5)_FB_D(02,02)	OK	126	Up
SF_30_02_FB_D(05,01)	-> FPC1_T_SG(0,2,6)_FB_D(02,01)	OK	126	Up
SF_30_02_FB_D(05,00)	-> FPC1_T_SG(0,2,7)_FB_D(02,00)	OK	126	Up
SF_30_03_FB_B(17,08)	-> FPC5_T_SG(2,2,0)_FB_B(14,08)	OK	133	Up
SF_30_03_FB_B(17,07)	-> FPC5_T_SG(2,2,1)_FB_B(14,07)	OK	133	Up
SF_30_03_FB_B(17,06)	-> FPC5_T_SG(2,2,2)_FB_B(14,06)	OK	133	Up
SF_30_03_FB_B(17,05)	-> FPC5_T_SG(2,2,3)_FB_B(14,05)	OK	133	Up
SF_30_03_FB_B(17,03)	-> FPC5_T_SG(2,2,4)_FB_B(14,03)	OK	133	Up
SF_30_03_FB_B(17,02)	-> FPC5_T_SG(2,2,5)_FB_B(14,02)	OK	133	Up
SF_30_03_FB_B(17,01)	-> FPC5_T_SG(2,2,6)_FB_B(14,01)	OK	133	Up
SF_30_03_FB_B(17,00)	-> FPC5_T_SG(2,2,7)_FB_B(14,00)	OK	133	Up
SF_30_04_FB_C(10,11)	-> FPC2_T_SG(1,0,0)_FB_C(07,11)	OK	140	Up
SF_30_04_FB_C(10,10)	-> FPC2_T_SG(1,0,1)_FB_C(07,10)	OK	140	Up
SF_30_04_FB_C(10,09)	-> FPC2_T_SG(1,0,2)_FB_C(07,09)	OK	140	Up
SF_30_04_FB_C(10,08)	-> FPC2_T_SG(1,0,3)_FB_C(07,08)	OK	140	Up
SF_30_04_FB_C(10,07)	-> FPC2_T_SG(1,0,4)_FB_C(07,07)	OK	140	Up
SF_30_04_FB_C(10,06)	-> FPC2_T_SG(1,0,5)_FB_C(07,06)	OK	140	Up

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SF_30_04_FB_C(10,05) -> FPC2_T_SG(1,0,6)_FB_C(07,05)    OK      140    Up
SF_30_04_FB_C(10,04) -> FPC2_T_SG(1,0,7)_FB_C(07,04)    OK      140    Up
SF_30_05_FB_A(22,11) -> FPC6_T_SG(3,0,0)_FB_A(19,11)    OK      147    Up
SF_30_05_FB_A(22,10) -> FPC6_T_SG(3,0,1)_FB_A(19,10)    OK      147    Up
SF_30_05_FB_A(22,09) -> FPC6_T_SG(3,0,2)_FB_A(19,09)    OK      147    Up
SF_30_05_FB_A(22,08) -> FPC6_T_SG(3,0,3)_FB_A(19,08)    OK      147    Up
SF_30_05_FB_A(22,07) -> FPC6_T_SG(3,0,4)_FB_A(19,07)    OK      147    Up
SF_30_05_FB_A(22,06) -> FPC6_T_SG(3,0,5)_FB_A(19,06)    OK      147    Up
SF_30_05_FB_A(22,05) -> FPC6_T_SG(3,0,6)_FB_A(19,05)    OK      147    Up
SF_30_05_FB_A(22,04) -> FPC6_T_SG(3,0,7)_FB_A(19,04)    OK      147    Up
SF_30_06_FB_C(11,08) -> FPC3_T_SG(1,2,0)_FB_C(08,08)    OK      154    Up
SF_30_06_FB_C(11,07) -> FPC3_T_SG(1,2,1)_FB_C(08,07)    OK      154    Up
SF_30_06_FB_C(11,06) -> FPC3_T_SG(1,2,2)_FB_C(08,06)    OK      154    Up
SF_30_06_FB_C(11,05) -> FPC3_T_SG(1,2,3)_FB_C(08,05)    OK      154    Up
SF_30_06_FB_C(11,03) -> FPC3_T_SG(1,2,4)_FB_C(08,03)    OK      154    Up
SF_30_06_FB_C(11,02) -> FPC3_T_SG(1,2,5)_FB_C(08,02)    OK      154    Up
SF_30_06_FB_C(11,01) -> FPC3_T_SG(1,2,6)_FB_C(08,01)    OK      154    Up
SF_30_06_FB_C(11,00) -> FPC3_T_SG(1,2,7)_FB_C(08,00)    OK      154    Up
...

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show chassis fabric topology sfc (TX Matrix Plus Router)

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

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F13_SIB0

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Out-Links:

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SFC0_F13_SIB_00	-> LCC00_ST_SIB_L00	VCSEL Status	HSL2 Channel	HSL2 Status
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SF_30_00_FB_D(04,11)	-> FPC0_T_SG(0,0,0)_FB_D(01,11)	OK	112	Up
SF_30_00_FB_D(04,10)	-> FPC0_T_SG(0,0,1)_FB_D(01,10)	OK	112	Up
SF_30_00_FB_D(04,09)	-> FPC0_T_SG(0,0,2)_FB_D(01,09)	OK	112	Up
SF_30_00_FB_D(04,08)	-> FPC0_T_SG(0,0,3)_FB_D(01,08)	OK	112	Up
SF_30_00_FB_D(04,07)	-> FPC0_T_SG(0,0,4)_FB_D(01,07)	OK	112	Up
SF_30_00_FB_D(04,06)	-> FPC0_T_SG(0,0,5)_FB_D(01,06)	OK	112	Up
SF_30_00_FB_D(04,05)	-> FPC0_T_SG(0,0,6)_FB_D(01,05)	OK	112	Up
SF_30_00_FB_D(04,04)	-> FPC0_T_SG(0,0,7)_FB_D(01,04)	OK	112	Up
SF_30_01_FB_B(16,11)	-> FPC4_T_SG(2,0,0)_FB_B(13,11)	OK	119	Up
SF_30_01_FB_B(16,10)	-> FPC4_T_SG(2,0,1)_FB_B(13,10)	OK	119	Up
SF_30_01_FB_B(16,09)	-> FPC4_T_SG(2,0,2)_FB_B(13,09)	OK	119	Up
SF_30_01_FB_B(16,08)	-> FPC4_T_SG(2,0,3)_FB_B(13,08)	OK	119	Up
SF_30_01_FB_B(16,07)	-> FPC4_T_SG(2,0,4)_FB_B(13,07)	OK	119	Up
SF_30_01_FB_B(16,06)	-> FPC4_T_SG(2,0,5)_FB_B(13,06)	OK	119	Up
SF_30_01_FB_B(16,05)	-> FPC4_T_SG(2,0,6)_FB_B(13,05)	OK	119	Up
SF_30_01_FB_B(16,04)	-> FPC4_T_SG(2,0,7)_FB_B(13,04)	OK	119	Up
SF_30_02_FB_D(05,08)	-> FPC1_T_SG(0,2,0)_FB_D(02,08)	OK	126	Up
SF_30_02_FB_D(05,07)	-> FPC1_T_SG(0,2,1)_FB_D(02,07)	OK	126	Up
SF_30_02_FB_D(05,06)	-> FPC1_T_SG(0,2,2)_FB_D(02,06)	OK	126	Up
SF_30_02_FB_D(05,05)	-> FPC1_T_SG(0,2,3)_FB_D(02,05)	OK	126	Up
SF_30_02_FB_D(05,03)	-> FPC1_T_SG(0,2,4)_FB_D(02,03)	OK	126	Up
SF_30_02_FB_D(05,02)	-> FPC1_T_SG(0,2,5)_FB_D(02,02)	OK	126	Up
SF_30_02_FB_D(05,01)	-> FPC1_T_SG(0,2,6)_FB_D(02,01)	OK	126	Up
SF_30_02_FB_D(05,00)	-> FPC1_T_SG(0,2,7)_FB_D(02,00)	OK	126	Up
SF_30_03_FB_B(17,08)	-> FPC5_T_SG(2,2,0)_FB_B(14,08)	OK	133	Up
SF_30_03_FB_B(17,07)	-> FPC5_T_SG(2,2,1)_FB_B(14,07)	OK	133	Up
SF_30_03_FB_B(17,06)	-> FPC5_T_SG(2,2,2)_FB_B(14,06)	OK	133	Up

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SF_30_03_FB_B(17,05) -> FPC5_T_SG(2,2,3)_FB_B(14,05)    OK      133    Up
SF_30_03_FB_B(17,03) -> FPC5_T_SG(2,2,4)_FB_B(14,03)    OK      133    Up
SF_30_03_FB_B(17,02) -> FPC5_T_SG(2,2,5)_FB_B(14,02)    OK      133    Up
SF_30_03_FB_B(17,01) -> FPC5_T_SG(2,2,6)_FB_B(14,01)    OK      133    Up
SF_30_03_FB_B(17,00) -> FPC5_T_SG(2,2,7)_FB_B(14,00)    OK      133    Up
SF_30_04_FB_C(10,11) -> FPC2_T_SG(1,0,0)_FB_C(07,11)    OK      140    Up
SF_30_04_FB_C(10,10) -> FPC2_T_SG(1,0,1)_FB_C(07,10)    OK      140    Up
SF_30_04_FB_C(10,09) -> FPC2_T_SG(1,0,2)_FB_C(07,09)    OK      140    Up
SF_30_04_FB_C(10,08) -> FPC2_T_SG(1,0,3)_FB_C(07,08)    OK      140    Up
SF_30_04_FB_C(10,07) -> FPC2_T_SG(1,0,4)_FB_C(07,07)    OK      140    Up
SF_30_04_FB_C(10,06) -> FPC2_T_SG(1,0,5)_FB_C(07,06)    OK      140    Up
SF_30_04_FB_C(10,05) -> FPC2_T_SG(1,0,6)_FB_C(07,05)    OK      140    Up
SF_30_04_FB_C(10,04) -> FPC2_T_SG(1,0,7)_FB_C(07,04)    OK      140    Up
SF_30_05_FB_A(22,11) -> FPC6_T_SG(3,0,0)_FB_A(19,11)    OK      147    Up
SF_30_05_FB_A(22,10) -> FPC6_T_SG(3,0,1)_FB_A(19,10)    OK      147    Up
SF_30_05_FB_A(22,09) -> FPC6_T_SG(3,0,2)_FB_A(19,09)    OK      147    Up
SF_30_05_FB_A(22,08) -> FPC6_T_SG(3,0,3)_FB_A(19,08)    OK      147    Up
SF_30_05_FB_A(22,07) -> FPC6_T_SG(3,0,4)_FB_A(19,07)    OK      147    Up
SF_30_05_FB_A(22,06) -> FPC6_T_SG(3,0,5)_FB_A(19,06)    OK      147    Up
SF_30_05_FB_A(22,05) -> FPC6_T_SG(3,0,6)_FB_A(19,05)    OK      147    Up
SF_30_05_FB_A(22,04) -> FPC6_T_SG(3,0,7)_FB_A(19,04)    OK      147    Up
SF_30_06_FB_C(11,08) -> FPC3_T_SG(1,2,0)_FB_C(08,08)    OK      154    Up
SF_30_06_FB_C(11,07) -> FPC3_T_SG(1,2,1)_FB_C(08,07)    OK      154    Up
SF_30_06_FB_C(11,06) -> FPC3_T_SG(1,2,2)_FB_C(08,06)    OK      154    Up
SF_30_06_FB_C(11,05) -> FPC3_T_SG(1,2,3)_FB_C(08,05)    OK      154    Up
SF_30_06_FB_C(11,03) -> FPC3_T_SG(1,2,4)_FB_C(08,03)    OK      154    Up
SF_30_06_FB_C(11,02) -> FPC3_T_SG(1,2,5)_FB_C(08,02)    OK      154    Up
SF_30_06_FB_C(11,01) -> FPC3_T_SG(1,2,6)_FB_C(08,01)    OK      154    Up
SF_30_06_FB_C(11,00) -> FPC3_T_SG(1,2,7)_FB_C(08,00)    OK      154    Up
...

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show chassis fabric topology lcc (TX Matrix Plus Router)

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

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SIB0

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Out-Links:

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LCC00_ST_SIB_L00	-> SFC0_F13_SIB_00	VCSEL Status	HSL2 Channel	HSL2 Status
=====				
FPC0_T_SG(0,0,0)_FB_D(04,11)	-> SF_10_00_FB_D(01,11)	OK	12	Up
FPC0_T_SG(0,0,1)_FB_D(04,10)	-> SF_10_00_FB_D(01,10)	OK	12	Up
FPC0_T_SG(0,0,2)_FB_D(04,09)	-> SF_10_00_FB_D(01,09)	OK	12	Up
FPC0_T_SG(0,0,3)_FB_D(04,08)	-> SF_10_00_FB_D(01,08)	OK	12	Up
FPC0_T_SG(0,0,4)_FB_D(04,07)	-> SF_10_00_FB_D(01,07)	OK	12	Up
FPC0_T_SG(0,0,5)_FB_D(04,06)	-> SF_10_00_FB_D(01,06)	OK	12	Up
FPC0_T_SG(0,0,6)_FB_D(04,05)	-> SF_10_00_FB_D(01,05)	OK	12	Up
FPC0_T_SG(0,0,7)_FB_D(04,04)	-> SF_10_00_FB_D(01,04)	OK	12	Up
FPC0_B_SG(0,1,0)_FB_D(03,07)	-> SF_10_10_FB_D(00,07)	OK	15	Up
FPC0_B_SG(0,1,1)_FB_D(03,06)	-> SF_10_10_FB_D(00,06)	OK	15	Up
FPC0_B_SG(0,1,2)_FB_D(03,05)	-> SF_10_10_FB_D(00,05)	OK	15	Up
FPC0_B_SG(0,1,3)_FB_D(03,04)	-> SF_10_10_FB_D(00,04)	OK	15	Up
FPC0_B_SG(0,1,4)_FB_D(03,03)	-> SF_10_10_FB_D(00,03)	OK	15	Up
FPC0_B_SG(0,1,5)_FB_D(03,02)	-> SF_10_10_FB_D(00,02)	OK	15	Up
FPC0_B_SG(0,1,6)_FB_D(03,01)	-> SF_10_10_FB_D(00,01)	OK	15	Up
FPC0_B_SG(0,1,7)_FB_D(03,00)	-> SF_10_10_FB_D(00,00)	OK	15	Up


```

FPC1_T_SG(0,2,0)_FB_D(05,08) -> SF_10_02_FB_D(02,08)    OK      18      Up
FPC1_T_SG(0,2,1)_FB_D(05,07) -> SF_10_02_FB_D(02,07)    OK      18      Up
FPC1_T_SG(0,2,2)_FB_D(05,06) -> SF_10_02_FB_D(02,06)    OK      18      Up
FPC1_T_SG(0,2,3)_FB_D(05,05) -> SF_10_02_FB_D(02,05)    OK      18      Up
FPC1_T_SG(0,2,4)_FB_D(05,03) -> SF_10_02_FB_D(02,03)    OK      18      Up
FPC1_T_SG(0,2,5)_FB_D(05,02) -> SF_10_02_FB_D(02,02)    OK      18      Up
FPC1_T_SG(0,2,6)_FB_D(05,01) -> SF_10_02_FB_D(02,01)    OK      18      Up
FPC1_T_SG(0,2,7)_FB_D(05,00) -> SF_10_02_FB_D(02,00)    OK      18      Up
FPC1_B_SG(0,3,0)_FB_D(04,03) -> SF_10_11_FB_D(01,03)    OK      21      Up
FPC1_B_SG(0,3,1)_FB_D(04,02) -> SF_10_11_FB_D(01,02)    OK      21      Up
FPC1_B_SG(0,3,2)_FB_D(04,01) -> SF_10_11_FB_D(01,01)    OK      21      Up
FPC1_B_SG(0,3,3)_FB_D(04,00) -> SF_10_11_FB_D(01,00)    OK      21      Up
FPC1_B_SG(0,3,4)_FB_D(03,11) -> SF_10_11_FB_D(00,11)    OK      21      Up
FPC1_B_SG(0,3,5)_FB_D(03,10) -> SF_10_11_FB_D(00,10)    OK      21      Up
FPC1_B_SG(0,3,6)_FB_D(03,09) -> SF_10_11_FB_D(00,09)    OK      21      Up
FPC1_B_SG(0,3,7)_FB_D(03,08) -> SF_10_11_FB_D(00,08)    OK      21      Up
FPC2_T_SG(1,0,0)_FB_C(10,11) -> SF_10_04_FB_C(07,11)    OK      12      Up
FPC2_T_SG(1,0,1)_FB_C(10,10) -> SF_10_04_FB_C(07,10)    OK      12      Up
FPC2_T_SG(1,0,2)_FB_C(10,09) -> SF_10_04_FB_C(07,09)    OK      12      Up
FPC2_T_SG(1,0,3)_FB_C(10,08) -> SF_10_04_FB_C(07,08)    OK      12      Up
FPC2_T_SG(1,0,4)_FB_C(10,07) -> SF_10_04_FB_C(07,07)    OK      12      Up
FPC2_T_SG(1,0,5)_FB_C(10,06) -> SF_10_04_FB_C(07,06)    OK      12      Up
FPC2_T_SG(1,0,6)_FB_C(10,05) -> SF_10_04_FB_C(07,05)    OK      12      Up
FPC2_T_SG(1,0,7)_FB_C(10,04) -> SF_10_04_FB_C(07,04)    OK      12      Up
FPC2_B_SG(1,1,0)_FB_C(09,07) -> SF_10_14_FB_C(06,07)    OK      15      Up
FPC2_B_SG(1,1,1)_FB_C(09,06) -> SF_10_14_FB_C(06,06)    OK      15      Up
FPC2_B_SG(1,1,2)_FB_C(09,05) -> SF_10_14_FB_C(06,05)    OK      15      Up
FPC2_B_SG(1,1,3)_FB_C(09,04) -> SF_10_14_FB_C(06,04)    OK      15      Up
FPC2_B_SG(1,1,4)_FB_C(09,03) -> SF_10_14_FB_C(06,03)    OK      15      Up
FPC2_B_SG(1,1,5)_FB_C(09,02) -> SF_10_14_FB_C(06,02)    OK      15      Up
FPC2_B_SG(1,1,6)_FB_C(09,01) -> SF_10_14_FB_C(06,01)    OK      15      Up
FPC2_B_SG(1,1,7)_FB_C(09,00) -> SF_10_14_FB_C(06,00)    OK      15      Up
FPC3_T_SG(1,2,0)_FB_C(11,08) -> SF_10_06_FB_C(08,08)    OK      18      Up
FPC3_T_SG(1,2,1)_FB_C(11,07) -> SF_10_06_FB_C(08,07)    OK      18      Up
FPC3_T_SG(1,2,2)_FB_C(11,06) -> SF_10_06_FB_C(08,06)    OK      18      Up
FPC3_T_SG(1,2,3)_FB_C(11,05) -> SF_10_06_FB_C(08,05)    OK      18      Up
FPC3_T_SG(1,2,4)_FB_C(11,03) -> SF_10_06_FB_C(08,03)    OK      18      Up
FPC3_T_SG(1,2,5)_FB_C(11,02) -> SF_10_06_FB_C(08,02)    OK      18      Up
FPC3_T_SG(1,2,6)_FB_C(11,01) -> SF_10_06_FB_C(08,01)    OK      18      Up
...

```

show chassis fabric topology (T4000 Core Router)

```

user@host> show chassis fabric topology 0
fchip (mode)

```

In-links	State	Out-links	State
----------	-------	-----------	-------

```

SIB0 :
-----

```

Onboard Links

SIB0_XF1,14_0->SIB0_XF,00_0	Up	SIB0_XF,00_0->SIB0_XF1,14_0	Up
SIB0_XF,00_0->SIB0_XF1,14_0	Up	SIB0_XF1,14_0->SIB0_XF,00_0	Up
SIB0_XF1,13_0->SIB0_XF,01_0	Up	SIB0_XF,01_0->SIB0_XF1,13_0	Up
SIB0_XF,01_0->SIB0_XF1,13_0	Up	SIB0_XF1,13_0->SIB0_XF,01_0	Up
SIB0_XF1,12_0->SIB0_XF,02_0	Up	SIB0_XF,02_0->SIB0_XF1,12_0	Up
SIB0_XF,02_0->SIB0_XF1,12_0	Up	SIB0_XF1,12_0->SIB0_XF,02_0	Up
SIB0_XF1,11_0->SIB0_XF,03_0	Up	SIB0_XF,03_0->SIB0_XF1,11_0	Up

SIB0_XF,03_0->SIB0_XF1,11_0	Up	SIB0_XF1,11_0->SIB0_XF,03_0	Up
SIB0_XF1,10_0->SIB0_XF,04_0	Up	SIB0_XF,04_0->SIB0_XF1,10_0	Up
SIB0_XF,04_0->SIB0_XF1,10_0	Up	SIB0_XF1,10_0->SIB0_XF,04_0	Up
SIB0_XF1,09_0->SIB0_XF,05_0	Up	SIB0_XF,05_0->SIB0_XF1,09_0	Up
SIB0_XF,05_0->SIB0_XF1,09_0	Up	SIB0_XF1,09_0->SIB0_XF,05_0	Up
SIB0_XF2,14_0->SIB0_XF,06_0	Up	SIB0_XF,06_0->SIB0_XF2,14_0	Up
SIB0_XF,06_0->SIB0_XF2,14_0	Up	SIB0_XF2,14_0->SIB0_XF,06_0	Up
SIB0_XF2,13_0->SIB0_XF,07_0	Up	SIB0_XF,07_0->SIB0_XF2,13_0	Up
SIB0_XF,07_0->SIB0_XF2,13_0	Up	SIB0_XF2,13_0->SIB0_XF,07_0	Up
SIB0_XF2,12_0->SIB0_XF,08_0	Up	SIB0_XF,08_0->SIB0_XF2,12_0	Up
SIB0_XF,08_0->SIB0_XF2,12_0	Up	SIB0_XF2,12_0->SIB0_XF,08_0	Up
SIB0_XF2,11_0->SIB0_XF,09_0	Up	SIB0_XF,09_0->SIB0_XF2,11_0	Up
SIB0_XF,09_0->SIB0_XF2,11_0	Up	SIB0_XF2,11_0->SIB0_XF,09_0	Up
SIB0_XF2,10_0->SIB0_XF,10_0	Up	SIB0_XF,10_0->SIB0_XF2,10_0	Up
SIB0_XF,10_0->SIB0_XF2,10_0	Up	SIB0_XF2,10_0->SIB0_XF,10_0	Up
SIB0_XF2,09_0->SIB0_XF,11_0	Up	SIB0_XF,11_0->SIB0_XF2,09_0	Up
SIB0_XF,11_0->SIB0_XF2,09_0	Up	SIB0_XF2,09_0->SIB0_XF,11_0	Up
SIB0_XF3,13_0->SIB0_XF,12_0	Up	SIB0_XF,12_0->SIB0_XF3,13_0	Up
SIB0_XF,12_0->SIB0_XF3,13_0	Up	SIB0_XF3,13_0->SIB0_XF,12_0	Up
SIB0_XF3,12_0->SIB0_XF,13_0	Up	SIB0_XF,13_0->SIB0_XF3,12_0	Up
SIB0_XF,13_0->SIB0_XF3,12_0	Up	SIB0_XF3,12_0->SIB0_XF,13_0	Up
SIB0_XF3,11_0->SIB0_XF,14_0	Up	SIB0_XF,14_0->SIB0_XF3,11_0	Up
SIB0_XF,14_0->SIB0_XF3,11_0	Up	SIB0_XF3,11_0->SIB0_XF,14_0	Up
SIB0_XF3,10_0->SIB0_XF,15_0	Up	SIB0_XF,15_0->SIB0_XF3,10_0	Up
SIB0_XF,15_0->SIB0_XF3,10_0	Up	SIB0_XF3,10_0->SIB0_XF,15_0	Up

PFE Links

FPC2PFE0->SIB0_XF1,05_0	Up	SIB0_XF1,05_0->FPC2PFE0	Up
FPC3PFE0->SIB0_XF2,15_0	Up	SIB0_XF2,15_0->FPC3PFE0	Up
FPC5PFE0->SIB0_XF2,05_0	Up	SIB0_XF2,05_0->FPC5PFE0	Up
FPC5PFE1->SIB0_XF2,07_0	Up	SIB0_XF2,07_0->FPC5PFE1	Up
FPC6PFE0->SIB0_XF3,01_0	Up	SIB0_XF3,01_0->FPC6PFE0	Up
FPC6PFE0->SIB0_XF3,01_1	Up	SIB0_XF3,01_1->FPC6PFE0	Up
FPC6PFE0->SIB0_XF3,02_0	Up	SIB0_XF3,02_0->FPC6PFE0	Up
FPC6PFE1->SIB0_XF3,03_0	Up	SIB0_XF3,03_0->FPC6PFE1	Up
FPC6PFE1->SIB0_XF3,03_1	Up	SIB0_XF3,03_1->FPC6PFE1	Up
FPC6PFE1->SIB0_XF3,02_1	Up	SIB0_XF3,02_1->FPC6PFE1	Up

show chassis fabric topology lcc (TX Matrix Plus Router with 3D SIBs)

```
user@host> show chassis fabric topology lcc 6
lcc6-re0:
```

fchip (mode)	In-links	State	Out-links	State
SIB0 :				

EXP0_Evn->LCC_SIB0_XF3,10_0	Up	LCC_SIB0_XF3,10_0->EXP0_Evn	Up	
EXP0_Odd->LCC_SIB0_XF3,11_0	Up	LCC_SIB0_XF3,11_0->EXP0_Odd	Up	
EXP1_Evn->LCC_SIB0_XF3,12_0	Up	LCC_SIB0_XF3,12_0->EXP1_Evn	Up	
EXP1_Odd->LCC_SIB0_XF3,13_0	Up	LCC_SIB0_XF3,13_0->EXP1_Odd	Up	
EXP2_Evn->LCC_SIB0_XF2,09_0	Up	LCC_SIB0_XF2,09_0->EXP2_Evn	Up	
EXP2_Odd->LCC_SIB0_XF2,10_0	Up	LCC_SIB0_XF2,10_0->EXP2_Odd	Up	
EXP3_Evn->LCC_SIB0_XF2,11_0	Up	LCC_SIB0_XF2,11_0->EXP3_Evn	Up	
EXP3_Odd->LCC_SIB0_XF2,12_0	Up	LCC_SIB0_XF2,12_0->EXP3_Odd	Up	
EXP4_Evn->LCC_SIB0_XF2,13_0	Up	LCC_SIB0_XF2,13_0->EXP4_Evn	Up	
EXP4_Odd->LCC_SIB0_XF1,09_0	Up	LCC_SIB0_XF1,09_0->EXP4_Odd	Up	
EXP5_Evn->LCC_SIB0_XF2,14_0	Up	LCC_SIB0_XF2,14_0->EXP5_Evn	Up	
EXP5_Odd->LCC_SIB0_XF1,10_0	Up	LCC_SIB0_XF1,10_0->EXP5_Odd	Up	

```

CXP6_Evn->LCC_SIB0_XF1,11_0      Up      LCC_SIB0_XF1,11_0->CXP6_Evn      Up
CXP6_Odd->LCC_SIB0_XF1,12_0      Up      LCC_SIB0_XF1,12_0->CXP6_Odd      Up
CXP7_Evn->LCC_SIB0_XF1,13_0      Up      LCC_SIB0_XF1,13_0->CXP7_Evn      Up
CXP7_Odd->LCC_SIB0_XF1,14_0      Up      LCC_SIB0_XF1,14_0->CXP7_Odd      Up
SIB1 :
-----
SIB2 :
-----
CXP0_Evn->LCC_SIB2_XF3,10_0      Up      LCC_SIB2_XF3,10_0->CXP0_Evn      Up
CXP0_Odd->LCC_SIB2_XF3,11_0      Up      LCC_SIB2_XF3,11_0->CXP0_Odd      Up
CXP1_Evn->LCC_SIB2_XF3,12_0      Up      LCC_SIB2_XF3,12_0->CXP1_Evn      Up
CXP1_Odd->LCC_SIB2_XF3,13_0      Up      LCC_SIB2_XF3,13_0->CXP1_Odd      Up
CXP2_Evn->LCC_SIB2_XF2,09_0      Up      LCC_SIB2_XF2,09_0->CXP2_Evn      Up
CXP2_Odd->LCC_SIB2_XF2,10_0      Up      LCC_SIB2_XF2,10_0->CXP2_Odd      Up
CXP3_Evn->LCC_SIB2_XF2,11_0      Up      LCC_SIB2_XF2,11_0->CXP3_Evn      Up
CXP3_Odd->LCC_SIB2_XF2,12_0      Up      LCC_SIB2_XF2,12_0->CXP3_Odd      Up
CXP4_Evn->LCC_SIB2_XF2,13_0      Up      LCC_SIB2_XF2,13_0->CXP4_Evn      Up
CXP4_Odd->LCC_SIB2_XF1,09_0      Up      LCC_SIB2_XF1,09_0->CXP4_Odd      Up
CXP5_Evn->LCC_SIB2_XF2,14_0      Up      LCC_SIB2_XF2,14_0->CXP5_Evn      Up
CXP5_Odd->LCC_SIB2_XF1,10_0      Up      LCC_SIB2_XF1,10_0->CXP5_Odd      Up
CXP6_Evn->LCC_SIB2_XF1,11_0      Up      LCC_SIB2_XF1,11_0->CXP6_Evn      Up
CXP6_Odd->LCC_SIB2_XF1,12_0      Up      LCC_SIB2_XF1,12_0->CXP6_Odd      Up
CXP7_Evn->LCC_SIB2_XF1,13_0      Up      LCC_SIB2_XF1,13_0->CXP7_Evn      Up
CXP7_Odd->LCC_SIB2_XF1,14_0      Up      LCC_SIB2_XF1,14_0->CXP7_Odd      Up
SIB3 :
-----
CXP0_Evn->LCC_SIB3_XF3,10_0      Up      LCC_SIB3_XF3,10_0->CXP0_Evn      Up
CXP0_Odd->LCC_SIB3_XF3,11_0      Up      LCC_SIB3_XF3,11_0->CXP0_Odd      Up
CXP1_Evn->LCC_SIB3_XF3,12_0      Up      LCC_SIB3_XF3,12_0->CXP1_Evn      Up
CXP1_Odd->LCC_SIB3_XF3,13_0      Up      LCC_SIB3_XF3,13_0->CXP1_Odd      Up
CXP2_Evn->LCC_SIB3_XF2,09_0      Up      LCC_SIB3_XF2,09_0->CXP2_Evn      Up
CXP2_Odd->LCC_SIB3_XF2,10_0      Up      LCC_SIB3_XF2,10_0->CXP2_Odd      Up
CXP3_Evn->LCC_SIB3_XF2,11_0      Up      LCC_SIB3_XF2,11_0->CXP3_Evn      Up
CXP3_Odd->LCC_SIB3_XF2,12_0      Up      LCC_SIB3_XF2,12_0->CXP3_Odd      Up
CXP4_Evn->LCC_SIB3_XF2,13_0      Up      LCC_SIB3_XF2,13_0->CXP4_Evn      Up
CXP4_Odd->LCC_SIB3_XF1,09_0      Up      LCC_SIB3_XF1,09_0->CXP4_Odd      Up
CXP5_Evn->LCC_SIB3_XF2,14_0      Up      LCC_SIB3_XF2,14_0->CXP5_Evn      Up
CXP5_Odd->LCC_SIB3_XF1,10_0      Up      LCC_SIB3_XF1,10_0->CXP5_Odd      Up
CXP6_Evn->LCC_SIB3_XF1,11_0      Up      LCC_SIB3_XF1,11_0->CXP6_Evn      Up
CXP6_Odd->LCC_SIB3_XF1,12_0      Up      LCC_SIB3_XF1,12_0->CXP6_Odd      Up
CXP7_Evn->LCC_SIB3_XF1,13_0      Up      LCC_SIB3_XF1,13_0->CXP7_Evn      Up
CXP7_Odd->LCC_SIB3_XF1,14_0      Up      LCC_SIB3_XF1,14_0->CXP7_Odd      Up
SIB4 :
-----
CXP0_Evn->LCC_SIB4_XF3,10_0      Up      LCC_SIB4_XF3,10_0->CXP0_Evn      Up
CXP0_Odd->LCC_SIB4_XF3,11_0      Up      LCC_SIB4_XF3,11_0->CXP0_Odd      Up
CXP1_Evn->LCC_SIB4_XF3,12_0      Up      LCC_SIB4_XF3,12_0->CXP1_Evn      Up
CXP1_Odd->LCC_SIB4_XF3,13_0      Up      LCC_SIB4_XF3,13_0->CXP1_Odd      Up
CXP2_Evn->LCC_SIB4_XF2,09_0      Up      LCC_SIB4_XF2,09_0->CXP2_Evn      Up
CXP2_Odd->LCC_SIB4_XF2,10_0      Up      LCC_SIB4_XF2,10_0->CXP2_Odd      Up
CXP3_Evn->LCC_SIB4_XF2,11_0      Up      LCC_SIB4_XF2,11_0->CXP3_Evn      Up
CXP3_Odd->LCC_SIB4_XF2,12_0      Up      LCC_SIB4_XF2,12_0->CXP3_Odd      Up
CXP4_Evn->LCC_SIB4_XF2,13_0      Up      LCC_SIB4_XF2,13_0->CXP4_Evn      Up
CXP4_Odd->LCC_SIB4_XF1,09_0      Up      LCC_SIB4_XF1,09_0->CXP4_Odd      Up
CXP5_Evn->LCC_SIB4_XF2,14_0      Up      LCC_SIB4_XF2,14_0->CXP5_Evn      Up
CXP5_Odd->LCC_SIB4_XF1,10_0      Up      LCC_SIB4_XF1,10_0->CXP5_Odd      Up
CXP6_Evn->LCC_SIB4_XF1,11_0      Up      LCC_SIB4_XF1,11_0->CXP6_Evn      Up
CXP6_Odd->LCC_SIB4_XF1,12_0      Up      LCC_SIB4_XF1,12_0->CXP6_Odd      Up

```

```

CXP7_Evn->LCC_SIB4_XF1,13_0      Up      LCC_SIB4_XF1,13_0->CXP7_Evn      Up
CXP7_Odd->LCC_SIB4_XF1,14_0      Up      LCC_SIB4_XF1,14_0->CXP7_Odd      Up

```

show chassis fabric topology sfc (TX Matrix Plus Router with 3D SIBs)

```

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

```

```

-----
fchip (mode)
In-links          State          Out-links          State
-----
F13_SIB0 :
-----
CXP0_Evn->F13_SIB0_XF2,04_0      Up      F13_SIB0_XF2,04_0->CXP0_Evn      Up
CXP0_Odd->F13_SIB0_XF2,03_0      Up      F13_SIB0_XF2,03_0->CXP0_Odd      Up
CXP1_Evn->F13_SIB0_XF2,06_0      Up      F13_SIB0_XF2,06_0->CXP1_Evn      Up
CXP1_Odd->F13_SIB0_XF2,05_0      Up      F13_SIB0_XF2,05_0->CXP1_Odd      Up
CXP2_Evn->F13_SIB0_XF2,08_0      Up      F13_SIB0_XF2,08_0->CXP2_Evn      Up
CXP2_Odd->F13_SIB0_XF2,07_0      Up      F13_SIB0_XF2,07_0->CXP2_Odd      Up
CXP3_Evn->F13_SIB0_XF2,10_0      Up      F13_SIB0_XF2,10_0->CXP3_Evn      Up
CXP3_Odd->F13_SIB0_XF2,09_0      Up      F13_SIB0_XF2,09_0->CXP3_Odd      Up
CXP4_Evn->F13_SIB0_XF0,04_0      Up      F13_SIB0_XF0,04_0->CXP4_Evn      Up
CXP4_Odd->F13_SIB0_XF0,03_0      Up      F13_SIB0_XF0,03_0->CXP4_Odd      Up
CXP5_Evn->F13_SIB0_XF0,06_0      Up      F13_SIB0_XF0,06_0->CXP5_Evn      Up
CXP5_Odd->F13_SIB0_XF0,05_0      Up      F13_SIB0_XF0,05_0->CXP5_Odd      Up
CXP6_Evn->F13_SIB0_XF0,08_0      Up      F13_SIB0_XF0,08_0->CXP6_Evn      Up
CXP6_Odd->F13_SIB0_XF0,07_0      Up      F13_SIB0_XF0,07_0->CXP6_Odd      Up
CXP7_Evn->F13_SIB0_XF0,10_0      Up      F13_SIB0_XF0,10_0->CXP7_Evn      Up
CXP7_Odd->F13_SIB0_XF0,09_0      Up      F13_SIB0_XF0,09_0->CXP7_Odd      Up
CXP8_Evn->F13_SIB0_XF3,04_0      Up      F13_SIB0_XF3,04_0->CXP8_Evn      Up
CXP8_Odd->F13_SIB0_XF3,03_0      Up      F13_SIB0_XF3,03_0->CXP8_Odd      Up
CXP9_Evn->F13_SIB0_XF3,06_0      Up      F13_SIB0_XF3,06_0->CXP9_Evn      Up
CXP9_Odd->F13_SIB0_XF3,05_0      Up      F13_SIB0_XF3,05_0->CXP9_Odd      Up
CXP10_Evn->F13_SIB0_XF3,08_0      Up      F13_SIB0_XF3,08_0->CXP10_Evn      Up
CXP10_Odd->F13_SIB0_XF3,07_0      Up      F13_SIB0_XF3,07_0->CXP10_Odd      Up
CXP11_Evn->F13_SIB0_XF3,10_0      Up      F13_SIB0_XF3,10_0->CXP11_Evn      Up
CXP11_Odd->F13_SIB0_XF3,09_0      Up      F13_SIB0_XF3,09_0->CXP11_Odd      Up
CXP12_Evn->F13_SIB0_XF1,04_0      Up      F13_SIB0_XF1,04_0->CXP12_Evn      Up
CXP12_Odd->F13_SIB0_XF1,03_0      Up      F13_SIB0_XF1,03_0->CXP12_Odd      Up
CXP13_Evn->F13_SIB0_XF1,06_0      Up      F13_SIB0_XF1,06_0->CXP13_Evn      Up
CXP13_Odd->F13_SIB0_XF1,05_0      Up      F13_SIB0_XF1,05_0->CXP13_Odd      Up
CXP14_Evn->F13_SIB0_XF1,08_0      Up      F13_SIB0_XF1,08_0->CXP14_Evn      Up
CXP14_Odd->F13_SIB0_XF1,07_0      Up      F13_SIB0_XF1,07_0->CXP14_Odd      Up
CXP15_Evn->F13_SIB0_XF1,10_0      Up      F13_SIB0_XF1,10_0->CXP15_Evn      Up
CXP15_Odd->F13_SIB0_XF1,09_0      Up      F13_SIB0_XF1,09_0->CXP15_Odd      Up
F13_SIB0_XF4,00_0->F13_SIB0_XF2,02_0 Up      F13_SIB0_XF2,02_0->F13_SIB0_XF4,00_0 Up
F13_SIB0_XF4,01_0->F13_SIB0_XF2,01_0 Up      F13_SIB0_XF2,01_0->F13_SIB0_XF4,01_0 Up
F13_SIB0_XF4,02_0->F13_SIB0_XF2,00_0 Up      F13_SIB0_XF2,00_0->F13_SIB0_XF4,02_0 Up
F13_SIB0_XF4,03_0->F13_SIB0_XF2,15_0 Up      F13_SIB0_XF2,15_0->F13_SIB0_XF4,03_0 Up
F13_SIB0_XF4,04_0->F13_SIB0_XF2,14_0 Up      F13_SIB0_XF2,14_0->F13_SIB0_XF4,04_0 Up
F13_SIB0_XF4,05_0->F13_SIB0_XF2,13_0 Up      F13_SIB0_XF2,13_0->F13_SIB0_XF4,05_0 Up
F13_SIB0_XF4,06_0->F13_SIB0_XF2,12_0 Up      F13_SIB0_XF2,12_0->F13_SIB0_XF4,06_0 Up
F13_SIB0_XF4,07_0->F13_SIB0_XF2,11_0 Up      F13_SIB0_XF2,11_0->F13_SIB0_XF4,07_0 Up

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F13_SIB0_XF4,08_0->F13_SIB0_XF0,02_0 Up  F13_SIB0_XF0,02_0->F13_SIB0_XF4,08_0 Up
F13_SIB0_XF4,09_0->F13_SIB0_XF0,01_0 Up  F13_SIB0_XF0,01_0->F13_SIB0_XF4,09_0 Up
F13_SIB0_XF4,10_0->F13_SIB0_XF0,00_0 Up  F13_SIB0_XF0,00_0->F13_SIB0_XF4,10_0 Up
F13_SIB0_XF4,11_0->F13_SIB0_XF0,15_0 Up  F13_SIB0_XF0,15_0->F13_SIB0_XF4,11_0 Up
F13_SIB0_XF4,12_0->F13_SIB0_XF0,14_0 Up  F13_SIB0_XF0,14_0->F13_SIB0_XF4,12_0 Up
F13_SIB0_XF4,13_0->F13_SIB0_XF0,13_0 Up  F13_SIB0_XF0,13_0->F13_SIB0_XF4,13_0 Up
F13_SIB0_XF4,14_0->F13_SIB0_XF0,12_0 Up  F13_SIB0_XF0,12_0->F13_SIB0_XF4,14_0 Up
F13_SIB0_XF4,15_0->F13_SIB0_XF0,11_0 Up  F13_SIB0_XF0,11_0->F13_SIB0_XF4,15_0 Up
F13_SIB0_XF6,08_0->F13_SIB0_XF3,02_0 Up  F13_SIB0_XF3,02_0->F13_SIB0_XF6,08_0 Up
F13_SIB0_XF6,09_0->F13_SIB0_XF3,01_0 Up  F13_SIB0_XF3,01_0->F13_SIB0_XF6,09_0 Up
F13_SIB0_XF6,10_0->F13_SIB0_XF3,00_0 Up  F13_SIB0_XF3,00_0->F13_SIB0_XF6,10_0 Up
F13_SIB0_XF6,11_0->F13_SIB0_XF3,15_0 Up  F13_SIB0_XF3,15_0->F13_SIB0_XF6,11_0 Up
F13_SIB0_XF6,12_0->F13_SIB0_XF3,14_0 Up  F13_SIB0_XF3,14_0->F13_SIB0_XF6,12_0 Up
F13_SIB0_XF6,13_0->F13_SIB0_XF3,13_0 Up  F13_SIB0_XF3,13_0->F13_SIB0_XF6,13_0 Up
F13_SIB0_XF6,14_0->F13_SIB0_XF3,12_0 Up  F13_SIB0_XF3,12_0->F13_SIB0_XF6,14_0 Up
F13_SIB0_XF6,15_0->F13_SIB0_XF3,11_0 Up  F13_SIB0_XF3,11_0->F13_SIB0_XF6,15_0 Up
F13_SIB0_XF6,00_0->F13_SIB0_XF1,02_0 Up  F13_SIB0_XF1,02_0->F13_SIB0_XF6,00_0 Up
F13_SIB0_XF6,01_0->F13_SIB0_XF1,01_0 Up  F13_SIB0_XF1,01_0->F13_SIB0_XF6,01_0 Up
F13_SIB0_XF6,02_0->F13_SIB0_XF1,00_0 Up  F13_SIB0_XF1,00_0->F13_SIB0_XF6,02_0 Up
F13_SIB0_XF6,03_0->F13_SIB0_XF1,15_0 Up  F13_SIB0_XF1,15_0->F13_SIB0_XF6,03_0 Up
F13_SIB0_XF6,04_0->F13_SIB0_XF1,14_0 Up  F13_SIB0_XF1,14_0->F13_SIB0_XF6,04_0 Up
F13_SIB0_XF6,05_0->F13_SIB0_XF1,13_0 Up  F13_SIB0_XF1,13_0->F13_SIB0_XF6,05_0 Up
F13_SIB0_XF6,06_0->F13_SIB0_XF1,12_0 Up  F13_SIB0_XF1,12_0->F13_SIB0_XF6,06_0 Up
F13_SIB0_XF6,07_0->F13_SIB0_XF1,11_0 Up  F13_SIB0_XF1,11_0->F13_SIB0_XF6,07_0 Up
F13_SIB0_XF2,02_0->F13_SIB0_XF5,00_0 Up  F13_SIB0_XF5,00_0->F13_SIB0_XF2,02_0 Up
F13_SIB0_XF2,01_0->F13_SIB0_XF5,01_0 Up  F13_SIB0_XF5,01_0->F13_SIB0_XF2,01_0 Up
F13_SIB0_XF2,00_0->F13_SIB0_XF5,02_0 Up  F13_SIB0_XF5,02_0->F13_SIB0_XF2,00_0 Up
F13_SIB0_XF2,15_0->F13_SIB0_XF5,03_0 Up  F13_SIB0_XF5,03_0->F13_SIB0_XF2,15_0 Up
F13_SIB0_XF2,14_0->F13_SIB0_XF5,04_0 Up  F13_SIB0_XF5,04_0->F13_SIB0_XF2,14_0 Up
F13_SIB0_XF2,13_0->F13_SIB0_XF5,05_0 Up  F13_SIB0_XF5,05_0->F13_SIB0_XF2,13_0 Up
F13_SIB0_XF2,12_0->F13_SIB0_XF5,06_0 Up  F13_SIB0_XF5,06_0->F13_SIB0_XF2,12_0 Up

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F13_SIB0_XF2,11_0->F13_SIB0_XF5,07_0 Up F13_SIB0_XF5,07_0->F13_SIB0_XF2,11_0 Up
F13_SIB0_XF0,02_0->F13_SIB0_XF5,08_0 Up F13_SIB0_XF5,08_0->F13_SIB0_XF0,02_0 Up
F13_SIB0_XF0,01_0->F13_SIB0_XF5,09_0 Up F13_SIB0_XF5,09_0->F13_SIB0_XF0,01_0 Up
F13_SIB0_XF0,00_0->F13_SIB0_XF5,10_0 Up F13_SIB0_XF5,10_0->F13_SIB0_XF0,00_0 Up
F13_SIB0_XF0,15_0->F13_SIB0_XF5,11_0 Up F13_SIB0_XF5,11_0->F13_SIB0_XF0,15_0 Up
F13_SIB0_XF0,14_0->F13_SIB0_XF5,12_0 Up F13_SIB0_XF5,12_0->F13_SIB0_XF0,14_0 Up
F13_SIB0_XF0,13_0->F13_SIB0_XF5,13_0 Up F13_SIB0_XF5,13_0->F13_SIB0_XF0,13_0 Up
F13_SIB0_XF0,12_0->F13_SIB0_XF5,14_0 Up F13_SIB0_XF5,14_0->F13_SIB0_XF0,12_0 Up
F13_SIB0_XF0,11_0->F13_SIB0_XF5,15_0 Up F13_SIB0_XF5,15_0->F13_SIB0_XF0,11_0 Up
F13_SIB0_XF3,02_0->F13_SIB0_XF7,08_0 Up F13_SIB0_XF7,08_0->F13_SIB0_XF3,02_0 Up
F13_SIB0_XF3,01_0->F13_SIB0_XF7,09_0 Up F13_SIB0_XF7,09_0->F13_SIB0_XF3,01_0 Up
F13_SIB0_XF3,00_0->F13_SIB0_XF7,10_0 Up F13_SIB0_XF7,10_0->F13_SIB0_XF3,00_0 Up
F13_SIB0_XF3,15_0->F13_SIB0_XF7,11_0 Up F13_SIB0_XF7,11_0->F13_SIB0_XF3,15_0 Up
F13_SIB0_XF3,14_0->F13_SIB0_XF7,12_0 Up F13_SIB0_XF7,12_0->F13_SIB0_XF3,14_0 Up
F13_SIB0_XF3,13_0->F13_SIB0_XF7,13_0 Up F13_SIB0_XF7,13_0->F13_SIB0_XF3,13_0 Up
F13_SIB0_XF3,12_0->F13_SIB0_XF7,14_0 Up F13_SIB0_XF7,14_0->F13_SIB0_XF3,12_0 Up
F13_SIB0_XF3,11_0->F13_SIB0_XF7,15_0 Up F13_SIB0_XF7,15_0->F13_SIB0_XF3,11_0 Up
F13_SIB0_XF1,02_0->F13_SIB0_XF7,00_0 Up F13_SIB0_XF7,00_0->F13_SIB0_XF1,02_0 Up
F13_SIB0_XF1,01_0->F13_SIB0_XF7,01_0 Up F13_SIB0_XF7,01_0->F13_SIB0_XF1,01_0 Up
F13_SIB0_XF1,00_0->F13_SIB0_XF7,02_0 Up F13_SIB0_XF7,02_0->F13_SIB0_XF1,00_0 Up
F13_SIB0_XF1,15_0->F13_SIB0_XF7,03_0 Up F13_SIB0_XF7,03_0->F13_SIB0_XF1,15_0 Up
F13_SIB0_XF1,14_0->F13_SIB0_XF7,04_0 Up F13_SIB0_XF7,04_0->F13_SIB0_XF1,14_0 Up
F13_SIB0_XF1,13_0->F13_SIB0_XF7,05_0 Up F13_SIB0_XF7,05_0->F13_SIB0_XF1,13_0 Up
F13_SIB0_XF1,12_0->F13_SIB0_XF7,06_0 Up F13_SIB0_XF7,06_0->F13_SIB0_XF1,12_0 Up
F13_SIB0_XF1,11_0->F13_SIB0_XF7,07_0 Up F13_SIB0_XF7,07_0->F13_SIB0_XF1,11_0 Up
F2S_SIB2_XF,12_0->F13_SIB0_XF4,00_0 Up F13_SIB0_XF4,00_0->F2S_SIB2_XF,12_0 Up
F2S_SIB2_XF,08_0->F13_SIB0_XF4,01_0 Up F13_SIB0_XF4,01_0->F2S_SIB2_XF,08_0 Up
F2S_SIB2_XF,14_0->F13_SIB0_XF4,02_0 Up F13_SIB0_XF4,02_0->F2S_SIB2_XF,14_0 Up
F2S_SIB2_XF,10_0->F13_SIB0_XF4,03_0 Up F13_SIB0_XF4,03_0->F2S_SIB2_XF,10_0 Up
F2S_SIB3_XF,12_0->F13_SIB0_XF4,04_0 Up F13_SIB0_XF4,04_0->F2S_SIB3_XF,12_0 Up

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F2S_SIB3_XF,08_0->F13_SIB0_XF4,05_0 Up   F13_SIB0_XF4,05_0->F2S_SIB3_XF,08_0 Up
F2S_SIB3_XF,14_0->F13_SIB0_XF4,06_0 Up   F13_SIB0_XF4,06_0->F2S_SIB3_XF,14_0 Up
F2S_SIB3_XF,10_0->F13_SIB0_XF4,07_0 Up   F13_SIB0_XF4,07_0->F2S_SIB3_XF,10_0 Up
F2S_SIB0_XF,12_0->F13_SIB0_XF4,08_0 Up   F13_SIB0_XF4,08_0->F2S_SIB0_XF,12_0 Up
F2S_SIB0_XF,08_0->F13_SIB0_XF4,09_0 Up   F13_SIB0_XF4,09_0->F2S_SIB0_XF,08_0 Up
F2S_SIB0_XF,14_0->F13_SIB0_XF4,10_0 Up   F13_SIB0_XF4,10_0->F2S_SIB0_XF,14_0 Up
F2S_SIB0_XF,10_0->F13_SIB0_XF4,11_0 Up   F13_SIB0_XF4,11_0->F2S_SIB0_XF,10_0 Up
F2S_SIB1_XF,12_0->F13_SIB0_XF4,12_0 Up   F13_SIB0_XF4,12_0->F2S_SIB1_XF,12_0 Up
F2S_SIB1_XF,08_0->F13_SIB0_XF4,13_0 Up   F13_SIB0_XF4,13_0->F2S_SIB1_XF,08_0 Up
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F2S_SIB2_XF,15_0->F13_SIB0_XF6,02_0 Up   F13_SIB0_XF6,02_0->F2S_SIB2_XF,15_0 Up
F2S_SIB2_XF,11_0->F13_SIB0_XF6,03_0 Up   F13_SIB0_XF6,03_0->F2S_SIB2_XF,11_0 Up
F2S_SIB3_XF,13_0->F13_SIB0_XF6,04_0 Up   F13_SIB0_XF6,04_0->F2S_SIB3_XF,13_0 Up
F2S_SIB3_XF,09_0->F13_SIB0_XF6,05_0 Up   F13_SIB0_XF6,05_0->F2S_SIB3_XF,09_0 Up
F2S_SIB3_XF,15_0->F13_SIB0_XF6,06_0 Up   F13_SIB0_XF6,06_0->F2S_SIB3_XF,15_0 Up
F2S_SIB3_XF,11_0->F13_SIB0_XF6,07_0 Up   F13_SIB0_XF6,07_0->F2S_SIB3_XF,11_0 Up
F2S_SIB0_XF,13_0->F13_SIB0_XF6,08_0 Up   F13_SIB0_XF6,08_0->F2S_SIB0_XF,13_0 Up
F2S_SIB0_XF,09_0->F13_SIB0_XF6,09_0 Up   F13_SIB0_XF6,09_0->F2S_SIB0_XF,09_0 Up
F2S_SIB0_XF,15_0->F13_SIB0_XF6,10_0 Up   F13_SIB0_XF6,10_0->F2S_SIB0_XF,15_0 Up
F2S_SIB0_XF,11_0->F13_SIB0_XF6,11_0 Up   F13_SIB0_XF6,11_0->F2S_SIB0_XF,11_0 Up
F2S_SIB1_XF,13_0->F13_SIB0_XF6,12_0 Up   F13_SIB0_XF6,12_0->F2S_SIB1_XF,13_0 Up
F2S_SIB1_XF,09_0->F13_SIB0_XF6,13_0 Up   F13_SIB0_XF6,13_0->F2S_SIB1_XF,09_0 Up
F2S_SIB1_XF,15_0->F13_SIB0_XF6,14_0 Up   F13_SIB0_XF6,14_0->F2S_SIB1_XF,15_0 Up
F2S_SIB1_XF,11_0->F13_SIB0_XF6,15_0 Up   F13_SIB0_XF6,15_0->F2S_SIB1_XF,11_0 Up
F13_SIB0_XF5,00_0->F2S_SIB2_XF,12_0 Up   F2S_SIB2_XF,12_0->F13_SIB0_XF5,00_0 Up
F13_SIB0_XF5,01_0->F2S_SIB2_XF,08_0 Up   F2S_SIB2_XF,08_0->F13_SIB0_XF5,01_0 Up
F13_SIB0_XF5,02_0->F2S_SIB2_XF,14_0 Up   F2S_SIB2_XF,14_0->F13_SIB0_XF5,02_0 Up
F13_SIB0_XF5,03_0->F2S_SIB2_XF,10_0 Up   F2S_SIB2_XF,10_0->F13_SIB0_XF5,03_0 Up

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F13_SIB0_XF5,04_0->F2S_SIB3_XF,12_0 Up	F2S_SIB3_XF,12_0->F13_SIB0_XF5,04_0 Up
F13_SIB0_XF5,05_0->F2S_SIB3_XF,08_0 Up	F2S_SIB3_XF,08_0->F13_SIB0_XF5,05_0 Up
F13_SIB0_XF5,06_0->F2S_SIB3_XF,14_0 Up	F2S_SIB3_XF,14_0->F13_SIB0_XF5,06_0 Up
F13_SIB0_XF5,07_0->F2S_SIB3_XF,10_0 Up	F2S_SIB3_XF,10_0->F13_SIB0_XF5,07_0 Up
F13_SIB0_XF5,08_0->F2S_SIB0_XF,12_0 Up	F2S_SIB0_XF,12_0->F13_SIB0_XF5,08_0 Up
F13_SIB0_XF5,09_0->F2S_SIB0_XF,08_0 Up	F2S_SIB0_XF,08_0->F13_SIB0_XF5,09_0 Up
F13_SIB0_XF5,10_0->F2S_SIB0_XF,14_0 Up	F2S_SIB0_XF,14_0->F13_SIB0_XF5,10_0 Up
F13_SIB0_XF5,11_0->F2S_SIB0_XF,10_0 Up	F2S_SIB0_XF,10_0->F13_SIB0_XF5,11_0 Up
F13_SIB0_XF5,12_0->F2S_SIB1_XF,12_0 Up	F2S_SIB1_XF,12_0->F13_SIB0_XF5,12_0 Up
F13_SIB0_XF5,13_0->F2S_SIB1_XF,08_0 Up	F2S_SIB1_XF,08_0->F13_SIB0_XF5,13_0 Up
F13_SIB0_XF5,14_0->F2S_SIB1_XF,14_0 Up	F2S_SIB1_XF,14_0->F13_SIB0_XF5,14_0 Up
F13_SIB0_XF5,15_0->F2S_SIB1_XF,10_0 Up	F2S_SIB1_XF,10_0->F13_SIB0_XF5,15_0 Up
F13_SIB0_XF7,00_0->F2S_SIB2_XF,13_0 Up	F2S_SIB2_XF,13_0->F13_SIB0_XF7,00_0 Up
F13_SIB0_XF7,01_0->F2S_SIB2_XF,09_0 Up	F2S_SIB2_XF,09_0->F13_SIB0_XF7,01_0 Up
F13_SIB0_XF7,02_0->F2S_SIB2_XF,15_0 Up	F2S_SIB2_XF,15_0->F13_SIB0_XF7,02_0 Up
F13_SIB0_XF7,03_0->F2S_SIB2_XF,11_0 Up	F2S_SIB2_XF,11_0->F13_SIB0_XF7,03_0 Up
F13_SIB0_XF7,04_0->F2S_SIB3_XF,13_0 Up	F2S_SIB3_XF,13_0->F13_SIB0_XF7,04_0 Up
F13_SIB0_XF7,05_0->F2S_SIB3_XF,09_0 Up	F2S_SIB3_XF,09_0->F13_SIB0_XF7,05_0 Up
F13_SIB0_XF7,06_0->F2S_SIB3_XF,15_0 Up	F2S_SIB3_XF,15_0->F13_SIB0_XF7,06_0 Up
F13_SIB0_XF7,07_0->F2S_SIB3_XF,11_0 Up	F2S_SIB3_XF,11_0->F13_SIB0_XF7,07_0 Up
F13_SIB0_XF7,08_0->F2S_SIB0_XF,13_0 Up	F2S_SIB0_XF,13_0->F13_SIB0_XF7,08_0 Up
F13_SIB0_XF7,09_0->F2S_SIB0_XF,09_0 Up	F2S_SIB0_XF,09_0->F13_SIB0_XF7,09_0 Up
F13_SIB0_XF7,10_0->F2S_SIB0_XF,15_0 Up	F2S_SIB0_XF,15_0->F13_SIB0_XF7,10_0 Up
F13_SIB0_XF7,11_0->F2S_SIB0_XF,11_0 Up	F2S_SIB0_XF,11_0->F13_SIB0_XF7,11_0 Up
F13_SIB0_XF7,12_0->F2S_SIB1_XF,13_0 Up	F2S_SIB1_XF,13_0->F13_SIB0_XF7,12_0 Up
F13_SIB0_XF7,13_0->F2S_SIB1_XF,09_0 Up	F2S_SIB1_XF,09_0->F13_SIB0_XF7,13_0 Up
F13_SIB0_XF7,14_0->F2S_SIB1_XF,15_0 Up	F2S_SIB1_XF,15_0->F13_SIB0_XF7,14_0 Up
F13_SIB0_XF7,15_0->F2S_SIB1_XF,11_0 Up	F2S_SIB1_XF,11_0->F13_SIB0_XF7,15_0 Up
...	

show chassis fabric topology (PTX Series Packet Transport Routers)

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

```
In-link : FPC# FE# TQ# (TQ-TX sub-chnl #) ->
```

```
SIB# TF#_FCORE# (TF-RX port#, TF-RX sub-chn#, TF-RX inst#)
```

```
Out-link : SIB# TF#_FCORE# (TF-TX port#, TF-TX sub-chn#, TF-TX inst#) ->
```

```
FPC# FE# TQ# (TQ-RX sub-chnl #)
```

```
(6, 4, 06) in FPC02FE0TQ0(02)->S01F0_0(6,4,06) will be TF Rx Port 6, TF CCL Rx Sub-Channel 4, TF CCL Rx Instance 6.
```

```
(2, 7, 10) in S01F0_0(2,7,10)->FPC02FE0TQ0(02) will be TF-Tx Port 2, TF CCL Tx Sub-channel 7, TF CCL Tx Instance 10.
```

```
SIB 0 FCHIP 0 FCORE 0 :
```

In-links	State	Out-links	State
FPC00FE0TQ0(00)->S00F0_0(7,4,07)	OK	S00F0_0(3,7,11)->FPC00FE0TQ0(00)	OK
FPC00FE1TQ1(00)->S00F0_0(7,6,07)	OK	S00F0_0(3,5,11)->FPC00FE1TQ1(00)	OK
FPC00FE2TQ2(00)->S00F0_0(7,5,07)	OK	S00F0_0(3,6,11)->FPC00FE2TQ2(00)	OK
FPC00FE3TQ3(00)->S00F0_0(7,7,07)	OK	S00F0_0(3,4,11)->FPC00FE3TQ3(00)	OK
FPC01FE0TQ0(00)->S00F0_0(7,0,07)	OK	S00F0_0(3,3,11)->FPC01FE0TQ0(00)	OK
FPC01FE1TQ1(00)->S00F0_0(7,1,07)	OK	S00F0_0(3,1,11)->FPC01FE1TQ1(00)	OK
FPC01FE2TQ2(00)->S00F0_0(7,2,07)	OK	S00F0_0(3,2,11)->FPC01FE2TQ2(00)	Error
FPC01FE3TQ3(00)->S00F0_0(7,3,07)	OK	S00F0_0(3,0,11)->FPC01FE3TQ3(00)	OK
FPC02FE0TQ0(00)->S00F0_0(6,4,06)	OK	S00F0_0(2,7,10)->FPC02FE0TQ0(00)	OK
FPC02FE1TQ1(00)->S00F0_0(6,5,06)	OK	S00F0_0(2,5,10)->FPC02FE1TQ1(00)	OK
FPC02FE2TQ2(00)->S00F0_0(6,6,06)	OK	S00F0_0(2,6,10)->FPC02FE2TQ2(00)	OK
FPC02FE3TQ3(00)->S00F0_0(6,7,06)	OK	S00F0_0(2,4,10)->FPC02FE3TQ3(00)	OK
FPC03FE0TQ0(00)->S00F0_0(6,0,06)	Down	S00F0_0(2,3,10)->FPC03FE0TQ0(00)	Down
FPC03FE1TQ1(00)->S00F0_0(6,1,06)	Down	S00F0_0(2,0,10)->FPC03FE1TQ1(00)	Down
FPC03FE2TQ2(00)->S00F0_0(6,2,06)	Down	S00F0_0(2,2,10)->FPC03FE2TQ2(00)	Down
FPC03FE3TQ3(00)->S00F0_0(6,3,06)	Down	S00F0_0(2,1,10)->FPC03FE3TQ3(00)	Down
FPC04FE0TQ0(00)->S00F0_0(5,4,05)	OK	S00F0_0(1,7,09)->FPC04FE0TQ0(00)	OK
FPC04FE1TQ1(00)->S00F0_0(5,5,05)	OK	S00F0_0(1,6,09)->FPC04FE1TQ1(00)	OK
FPC04FE2TQ2(00)->S00F0_0(5,6,05)	OK	S00F0_0(1,4,09)->FPC04FE2TQ2(00)	OK
FPC04FE3TQ3(00)->S00F0_0(5,7,05)	OK	S00F0_0(1,5,09)->FPC04FE3TQ3(00)	OK
FPC05FE0TQ0(00)->S00F0_0(5,0,05)	OK	S00F0_0(1,3,09)->FPC05FE0TQ0(00)	OK
FPC05FE1TQ1(00)->S00F0_0(5,1,05)	OK	S00F0_0(1,0,09)->FPC05FE1TQ1(00)	OK
FPC05FE2TQ2(00)->S00F0_0(5,2,05)	OK	S00F0_0(1,2,09)->FPC05FE2TQ2(00)	OK
FPC05FE3TQ3(00)->S00F0_0(5,3,05)	OK	S00F0_0(1,1,09)->FPC05FE3TQ3(00)	OK
FPC06FE0TQ0(00)->S00F0_0(4,4,04)	Down	S00F0_0(0,7,08)->FPC06FE0TQ0(00)	Down
FPC06FE1TQ1(00)->S00F0_0(4,5,04)	Down	S00F0_0(0,5,08)->FPC06FE1TQ1(00)	Down
FPC06FE2TQ2(00)->S00F0_0(4,6,04)	Down	S00F0_0(0,6,08)->FPC06FE2TQ2(00)	Down
FPC06FE3TQ3(00)->S00F0_0(4,7,04)	Down	S00F0_0(0,4,08)->FPC06FE3TQ3(00)	Down
FPC07FE0TQ0(00)->S00F0_0(4,2,04)	Down	S00F0_0(0,3,08)->FPC07FE0TQ0(00)	Down
FPC07FE1TQ1(00)->S00F0_0(4,0,04)	Down	S00F0_0(0,0,08)->FPC07FE1TQ1(00)	Down
FPC07FE2TQ2(00)->S00F0_0(4,1,04)	Down	S00F0_0(0,1,08)->FPC07FE2TQ2(00)	Down
FPC07FE3TQ3(00)->S00F0_0(4,3,04)	Down	S00F0_0(0,2,08)->FPC07FE3TQ3(00)	Down

```
SIB 0 FCHIP 0 FCORE 1 :
```

In-links	State	Out-links	State
FPC00FE0TQ0(01)->S00F0_1(3,4,11)	OK	S00F0_1(7,6,07)->FPC00FE0TQ0(01)	OK
FPC00FE1TQ1(01)->S00F0_1(3,5,11)	OK	S00F0_1(7,4,07)->FPC00FE1TQ1(01)	OK
FPC00FE2TQ2(01)->S00F0_1(3,6,11)	OK	S00F0_1(7,7,07)->FPC00FE2TQ2(01)	OK
FPC00FE3TQ3(01)->S00F0_1(3,7,11)	OK	S00F0_1(7,5,07)->FPC00FE3TQ3(01)	OK
FPC01FE0TQ0(01)->S00F0_1(3,0,11)	OK	S00F0_1(7,2,07)->FPC01FE0TQ0(01)	OK
FPC01FE1TQ1(01)->S00F0_1(3,1,11)	OK	S00F0_1(7,0,07)->FPC01FE1TQ1(01)	OK
FPC01FE2TQ2(01)->S00F0_1(3,2,11)	OK	S00F0_1(7,3,07)->FPC01FE2TQ2(01)	OK
FPC01FE3TQ3(01)->S00F0_1(3,3,11)	OK	S00F0_1(7,1,07)->FPC01FE3TQ3(01)	OK

```

FPC02FE0TQ0(01)->S00F0_1(2,4,10) OK      S00F0_1(6,5,06)->FPC02FE0TQ0(01) OK
FPC02FE1TQ1(01)->S00F0_1(2,5,10) OK      S00F0_1(6,4,06)->FPC02FE1TQ1(01) OK
FPC02FE2TQ2(01)->S00F0_1(2,6,10) OK      S00F0_1(6,7,06)->FPC02FE2TQ2(01) OK
FPC02FE3TQ3(01)->S00F0_1(2,7,10) OK      S00F0_1(6,6,06)->FPC02FE3TQ3(01) OK
FPC03FE0TQ0(01)->S00F0_1(2,0,10) Down    S00F0_1(6,1,06)->FPC03FE0TQ0(01) Down
FPC03FE1TQ1(01)->S00F0_1(2,1,10) Down    S00F0_1(6,0,06)->FPC03FE1TQ1(01) Down
FPC03FE2TQ2(01)->S00F0_1(2,2,10) Down    S00F0_1(6,3,06)->FPC03FE2TQ2(01) Down
FPC03FE3TQ3(01)->S00F0_1(2,3,10) Down    S00F0_1(6,2,06)->FPC03FE3TQ3(01) Down
FPC04FE0TQ0(01)->S00F0_1(1,4,09) OK      S00F0_1(5,5,05)->FPC04FE0TQ0(01) OK
FPC04FE1TQ1(01)->S00F0_1(1,5,09) OK      S00F0_1(5,4,05)->FPC04FE1TQ1(01) OK
FPC04FE2TQ2(01)->S00F0_1(1,6,09) OK      S00F0_1(5,7,05)->FPC04FE2TQ2(01) OK
FPC04FE3TQ3(01)->S00F0_1(1,7,09) OK      S00F0_1(5,6,05)->FPC04FE3TQ3(01) OK
FPC05FE0TQ0(01)->S00F0_1(1,0,09) OK      S00F0_1(5,1,05)->FPC05FE0TQ0(01) OK
FPC05FE1TQ1(01)->S00F0_1(1,1,09) OK      S00F0_1(5,0,05)->FPC05FE1TQ1(01) OK
FPC05FE2TQ2(01)->S00F0_1(1,2,09) OK      S00F0_1(5,3,05)->FPC05FE2TQ2(01) OK
FPC05FE3TQ3(01)->S00F0_1(1,3,09) OK      S00F0_1(5,2,05)->FPC05FE3TQ3(01) OK
FPC06FE0TQ0(01)->S00F0_1(0,4,08) Down    S00F0_1(4,7,04)->FPC06FE0TQ0(01) Down
FPC06FE1TQ1(01)->S00F0_1(0,5,08) Down    S00F0_1(4,0,04)->FPC06FE1TQ1(01) Down
FPC06FE2TQ2(01)->S00F0_1(0,6,08) Down    S00F0_1(4,6,04)->FPC06FE2TQ2(01) Down
FPC06FE3TQ3(01)->S00F0_1(0,7,08) Down    S00F0_1(4,1,04)->FPC06FE3TQ3(01) Down
FPC07FE0TQ0(01)->S00F0_1(0,0,08) Down    S00F0_1(4,3,04)->FPC07FE0TQ0(01) Down
FPC07FE1TQ1(01)->S00F0_1(0,1,08) Down    S00F0_1(4,4,04)->FPC07FE1TQ1(01) Down
FPC07FE2TQ2(01)->S00F0_1(0,2,08) Down    S00F0_1(4,2,04)->FPC07FE2TQ2(01) Down
FPC07FE3TQ3(01)->S00F0_1(0,3,08) Down    S00F0_1(4,5,04)->FPC07FE3TQ3(01) Down

```

SIB 1 FCHIP 0 FCORE 0 :

In-links	State	Out-links	State
FPC00FE0TQ0(02)->S01F0_0(7,4,07)	Error	S01F0_0(3,7,11)->FPC00FE0TQ0(02)	Down
FPC00FE1TQ1(02)->S01F0_0(7,6,07)	OK	S01F0_0(3,5,11)->FPC00FE1TQ1(02)	OK
FPC00FE2TQ2(02)->S01F0_0(7,5,07)	OK	S01F0_0(3,6,11)->FPC00FE2TQ2(02)	OK
FPC00FE3TQ3(02)->S01F0_0(7,7,07)	OK	S01F0_0(3,4,11)->FPC00FE3TQ3(02)	OK
FPC01FE0TQ0(02)->S01F0_0(7,0,07)	OK	S01F0_0(3,3,11)->FPC01FE0TQ0(02)	OK
FPC01FE1TQ1(02)->S01F0_0(7,1,07)	OK	S01F0_0(3,1,11)->FPC01FE1TQ1(02)	OK
FPC01FE2TQ2(02)->S01F0_0(7,2,07)	OK	S01F0_0(3,2,11)->FPC01FE2TQ2(02)	OK
FPC01FE3TQ3(02)->S01F0_0(7,3,07)	OK	S01F0_0(3,0,11)->FPC01FE3TQ3(02)	OK
FPC02FE0TQ0(02)->S01F0_0(6,4,06)	OK	S01F0_0(2,7,10)->FPC02FE0TQ0(02)	OK
FPC02FE1TQ1(02)->S01F0_0(6,5,06)	OK	S01F0_0(2,5,10)->FPC02FE1TQ1(02)	OK
FPC02FE2TQ2(02)->S01F0_0(6,6,06)	OK	S01F0_0(2,6,10)->FPC02FE2TQ2(02)	OK
FPC02FE3TQ3(02)->S01F0_0(6,7,06)	OK	S01F0_0(2,4,10)->FPC02FE3TQ3(02)	OK
FPC03FE0TQ0(02)->S01F0_0(6,0,06)	Down	S01F0_0(2,3,10)->FPC03FE0TQ0(02)	Down
FPC03FE1TQ1(02)->S01F0_0(6,1,06)	Down	S01F0_0(2,0,10)->FPC03FE1TQ1(02)	Down
FPC03FE2TQ2(02)->S01F0_0(6,2,06)	Down	S01F0_0(2,2,10)->FPC03FE2TQ2(02)	Down
FPC03FE3TQ3(02)->S01F0_0(6,3,06)	Down	S01F0_0(2,1,10)->FPC03FE3TQ3(02)	Down
FPC04FE0TQ0(02)->S01F0_0(5,4,05)	OK	S01F0_0(1,7,09)->FPC04FE0TQ0(02)	OK
FPC04FE1TQ1(02)->S01F0_0(5,5,05)	OK	S01F0_0(1,6,09)->FPC04FE1TQ1(02)	OK
FPC04FE2TQ2(02)->S01F0_0(5,6,05)	OK	S01F0_0(1,4,09)->FPC04FE2TQ2(02)	OK
FPC04FE3TQ3(02)->S01F0_0(5,7,05)	OK	S01F0_0(1,5,09)->FPC04FE3TQ3(02)	OK
FPC05FE0TQ0(02)->S01F0_0(5,0,05)	OK	S01F0_0(1,3,09)->FPC05FE0TQ0(02)	OK
FPC05FE1TQ1(02)->S01F0_0(5,1,05)	OK	S01F0_0(1,0,09)->FPC05FE1TQ1(02)	OK
FPC05FE2TQ2(02)->S01F0_0(5,2,05)	OK	S01F0_0(1,2,09)->FPC05FE2TQ2(02)	OK
FPC05FE3TQ3(02)->S01F0_0(5,3,05)	OK	S01F0_0(1,1,09)->FPC05FE3TQ3(02)	OK
FPC06FE0TQ0(02)->S01F0_0(4,4,04)	Down	S01F0_0(0,7,08)->FPC06FE0TQ0(02)	Down
FPC06FE1TQ1(02)->S01F0_0(4,5,04)	Down	S01F0_0(0,5,08)->FPC06FE1TQ1(02)	Down
FPC06FE2TQ2(02)->S01F0_0(4,6,04)	Down	S01F0_0(0,6,08)->FPC06FE2TQ2(02)	Down
FPC06FE3TQ3(02)->S01F0_0(4,7,04)	Down	S01F0_0(0,4,08)->FPC06FE3TQ3(02)	Down
FPC07FE0TQ0(02)->S01F0_0(4,2,04)	Down	S01F0_0(0,3,08)->FPC07FE0TQ0(02)	Down
FPC07FE1TQ1(02)->S01F0_0(4,0,04)	Down	S01F0_0(0,0,08)->FPC07FE1TQ1(02)	Down
FPC07FE2TQ2(02)->S01F0_0(4,1,04)	Down	S01F0_0(0,1,08)->FPC07FE2TQ2(02)	Down
FPC07FE3TQ3(02)->S01F0_0(4,3,04)	Down	S01F0_0(0,2,08)->FPC07FE3TQ3(02)	Down

SIB 1 FCHIP 0 FCORE 1 :

In-links	State	Out-links	State
FPC00FE0TQ0(03)->S01F0_1(3,4,11)	OK	S01F0_1(7,6,07)->FPC00FE0TQ0(03)	OK
FPC00FE1TQ1(03)->S01F0_1(3,5,11)	OK	S01F0_1(7,4,07)->FPC00FE1TQ1(03)	OK
FPC00FE2TQ2(03)->S01F0_1(3,6,11)	OK	S01F0_1(7,7,07)->FPC00FE2TQ2(03)	OK
FPC00FE3TQ3(03)->S01F0_1(3,7,11)	OK	S01F0_1(7,5,07)->FPC00FE3TQ3(03)	OK
FPC01FE0TQ0(03)->S01F0_1(3,0,11)	OK	S01F0_1(7,2,07)->FPC01FE0TQ0(03)	OK
FPC01FE1TQ1(03)->S01F0_1(3,1,11)	OK	S01F0_1(7,0,07)->FPC01FE1TQ1(03)	OK
FPC01FE2TQ2(03)->S01F0_1(3,2,11)	OK	S01F0_1(7,3,07)->FPC01FE2TQ2(03)	OK
FPC01FE3TQ3(03)->S01F0_1(3,3,11)	OK	S01F0_1(7,1,07)->FPC01FE3TQ3(03)	OK
FPC02FE0TQ0(03)->S01F0_1(2,4,10)	OK	S01F0_1(6,5,06)->FPC02FE0TQ0(03)	OK
FPC02FE1TQ1(03)->S01F0_1(2,5,10)	OK	S01F0_1(6,4,06)->FPC02FE1TQ1(03)	OK
FPC02FE2TQ2(03)->S01F0_1(2,6,10)	OK	S01F0_1(6,7,06)->FPC02FE2TQ2(03)	OK
FPC02FE3TQ3(03)->S01F0_1(2,7,10)	OK	S01F0_1(6,6,06)->FPC02FE3TQ3(03)	OK
FPC03FE0TQ0(03)->S01F0_1(2,0,10)	Down	S01F0_1(6,1,06)->FPC03FE0TQ0(03)	Down
FPC03FE1TQ1(03)->S01F0_1(2,1,10)	Down	S01F0_1(6,0,06)->FPC03FE1TQ1(03)	Down
FPC03FE2TQ2(03)->S01F0_1(2,2,10)	Down	S01F0_1(6,3,06)->FPC03FE2TQ2(03)	Down
FPC03FE3TQ3(03)->S01F0_1(2,3,10)	Down	S01F0_1(6,2,06)->FPC03FE3TQ3(03)	Down
FPC04FE0TQ0(03)->S01F0_1(1,4,09)	OK	S01F0_1(5,5,05)->FPC04FE0TQ0(03)	OK
FPC04FE1TQ1(03)->S01F0_1(1,5,09)	OK	S01F0_1(5,4,05)->FPC04FE1TQ1(03)	OK
FPC04FE2TQ2(03)->S01F0_1(1,6,09)	OK	S01F0_1(5,7,05)->FPC04FE2TQ2(03)	OK
FPC04FE3TQ3(03)->S01F0_1(1,7,09)	OK	S01F0_1(5,6,05)->FPC04FE3TQ3(03)	OK
FPC05FE0TQ0(03)->S01F0_1(1,0,09)	OK	S01F0_1(5,1,05)->FPC05FE0TQ0(03)	OK
FPC05FE1TQ1(03)->S01F0_1(1,1,09)	OK	S01F0_1(5,0,05)->FPC05FE1TQ1(03)	OK
FPC05FE2TQ2(03)->S01F0_1(1,2,09)	OK	S01F0_1(5,3,05)->FPC05FE2TQ2(03)	OK
FPC05FE3TQ3(03)->S01F0_1(1,3,09)	OK	S01F0_1(5,2,05)->FPC05FE3TQ3(03)	OK
FPC06FE0TQ0(03)->S01F0_1(0,4,08)	Down	S01F0_1(4,7,04)->FPC06FE0TQ0(03)	Down
FPC06FE1TQ1(03)->S01F0_1(0,5,08)	Down	S01F0_1(4,0,04)->FPC06FE1TQ1(03)	Down
FPC06FE2TQ2(03)->S01F0_1(0,6,08)	Down	S01F0_1(4,6,04)->FPC06FE2TQ2(03)	Down
FPC06FE3TQ3(03)->S01F0_1(0,7,08)	Down	S01F0_1(4,1,04)->FPC06FE3TQ3(03)	Down
FPC07FE0TQ0(03)->S01F0_1(0,0,08)	Down	S01F0_1(4,3,04)->FPC07FE0TQ0(03)	Down
FPC07FE1TQ1(03)->S01F0_1(0,1,08)	Down	S01F0_1(4,4,04)->FPC07FE1TQ1(03)	Down
FPC07FE2TQ2(03)->S01F0_1(0,2,08)	Down	S01F0_1(4,2,04)->FPC07FE2TQ2(03)	Down
FPC07FE3TQ3(03)->S01F0_1(0,3,08)	Down	S01F0_1(4,5,04)->FPC07FE3TQ3(03)	Down

show chassis fan

Syntax	show chassis fan
Syntax (ACX4000 Series Router)	show chassis fan
Syntax (MX Series Router)	show chassis fan <all-members> <local> <member <i>member-id</i> >
Syntax (T Series Routers)	show chassis fan
Syntax (MX104, MX2010, and MX2020 3D Universal Edge Router)	show chassis fan
Syntax (QFabric Systems)	show chassis fan <interconnect-device <i>name</i> >
Syntax (TX Matrix Router)	show chassis fan <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis fan <lcc <i>number</i> sfc <i>number</i> >
Release Information	<p>Command introduced in Junos OS Release 10.0 on MX Series 3D Universal Edge Routers, M120 routers, and M320 routers, T320 routers, T640 routers, T1600 routers, TX Matrix Routers, and TX Matrix Plus routers.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 11.4 for EX Series switches.</p> <p>Command introduced in Junos OS Release 12.3 for PTX5000 Packet Transport Routers.</p> <p>Command introduced in Junos OS Release 12.1 for T4000 routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for ACX Series Routers.</p> <p>Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.</p>
Description	<p>(T Series routers, TX Matrix routers, TX Matrix Plus routers, M120 routers, M320 routers, MX104 routers, MX2010 routers, MX2020 routers, MX Series 3D Universal Edge Routers, QFX3008-I Interconnect devices, EX Series switches, and PTX Series Packet Transport Routers only) Show information about the fan tray and fans.</p>
Options	<p>all-members—(MX Series routers only) (Optional) Display information about the fan tray and fans for all members of the Virtual Chassis configuration.</p> <p>local—(MX Series routers only) (Optional) Display information about the fan tray and fans for the local Virtual Chassis member.</p>

member *member-id*—(MX Series routers only) (Optional) Display information about the fan tray and fans for the specified member of the Virtual Chassis configuration. For an MX Series Virtual Chassis, replace *member-id* variable with a value 0 or 1.

interconnect-device *name*—(QFX3000-G QFabric systems only) (Optional) Display information about the fan tray and fans for the specified QFX3008-I Interconnect device.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display information about the fan tray and fans for the specified T640 router (line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display information about the fan tray and fans for the specified 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.

scc—(TX Matrix routers only) (Optional) Display information about the fan tray and fans for the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display information about the fan tray and fans for the TX Matrix Plus router (switch-fabric chassis). Replace *number* variable with 0.

Required Privilege Level

view

List of Sample Output

[show chassis fan on page 530](#)
[show chassis fan \(QFabric Systems\) on page 531](#)
[show chassis fan \(EX Series Switches\) on page 532](#)
[show chassis fan \(T320 Router\) on page 532](#)
[show chassis fan \(T640 Router\) on page 533](#)
[show chassis fan \(T1600 Router\) on page 533](#)
[show chassis fan \(T4000 Core Router\) on page 534](#)
[show chassis fan \(TX Matrix Router\) on page 534](#)
[show chassis fan \(TX Matrix Plus Router\) on page 535](#)
[show chassis fan \(TX Matrix Plus Router with 3D SIBs\) on page 536](#)
[show chassis fan \(PTX5000 Packet Transport Router\) on page 538](#)
[show chassis fan \(MX104 Router\) on page 539](#)
[show chassis fan \(MX2010 Router\) on page 539](#)
[show chassis fan \(MX2020 Router\) on page 539](#)

[show chassis fan \(ACX4000 Router\) on page 540](#)

Output Fields [Table 31 on page 530](#) lists the output fields for the **show chassis fan** command. Output fields are listed in the approximate order in which they appear.

Table 31: show chassis fan Output Fields

Field Name	Field Description
Item	Fan item identifier.
Status	Status of the fan: <ul style="list-style-type: none"> • OK—Fan is running properly and within the normal range. • Check—Fan is in Check state because of some fault or alarm condition.
RPM	(T Series routers, TX Matrix routers, TX Matrix Plus routers, MX Series 3D Universal Edge Routers, QFX3108 Interconnect devices, and EX Series switches only) Fan speed in revolutions per minute (RPM).
% RPM	(MX2010 routers, MX2020 routers, and PTX Series Packet Transport Routers only) Percentage of the fan speed being used.
Measurement	(T Series routers, TX Matrix routers, TX Matrix Plus routers, MX Series 3D Universal Edge Routers, QFX3108 Interconnect devices, and EX Series switches only) Fan speed status based on different chassis cooling requirements: <ul style="list-style-type: none"> • Spinning at high speed • Spinning at intermediate speed • Spinning at normal speed • Spinning at low speed (except EX Series switches) (MX2010 routers, MX2020 routers, and PTX Series Packet Transport Routers only) Fan speed in revolutions per minute (RPM) for each fan in the fan tray.

Sample Output

show chassis fan

```
user@host> show chassis fan
```

Item	Status	RPM	Measurement
Top Tray Fan 1	OK	3790	Spinning at normal speed
Top Tray Fan 2	OK	3769	Spinning at normal speed
Top Tray Fan 3	OK	3769	Spinning at normal speed
Top Tray Fan 4	OK	3790	Spinning at normal speed
Top Tray Fan 5	OK	3790	Spinning at normal speed
Top Tray Fan 6	OK	3769	Spinning at normal speed
Top Tray Fan 7	OK	3790	Spinning at normal speed
Top Tray Fan 8	OK	3769	Spinning at normal speed
Top Tray Fan 9	OK	3769	Spinning at normal speed
Top Tray Fan 10	OK	3790	Spinning at normal speed
Top Tray Fan 11	OK	3790	Spinning at normal speed

Top Tray Fan 12	OK	3769	Spinning at normal speed
Bottom Tray Fan 1	OK	2880	Spinning at normal speed
Bottom Tray Fan 2	OK	2912	Spinning at normal speed
Bottom Tray Fan 3	OK	2928	Spinning at normal speed
Bottom Tray Fan 4	OK	2896	Spinning at normal speed
Bottom Tray Fan 5	OK	2896	Spinning at normal speed
Bottom Tray Fan 6	OK	2928	Spinning at normal speed

show chassis fan (QFabric Systems)

```
user@host> show chassis fan interconnect-device interconnect1
```

Item	Status	RPM	Measurement
TFT 0 Fan 0	OK	2849	Spinning at normal speed
TFT 0 Fan 1	OK	2821	Spinning at normal speed
TFT 0 Fan 2	OK	2735	Spinning at normal speed
TFT 0 Fan 3	OK	2815	Spinning at normal speed
TFT 0 Fan 4	OK	2828	Spinning at normal speed
TFT 0 Fan 5	OK	2863	Spinning at normal speed
BFT 1 Fan 0	OK	2941	Spinning at normal speed
BFT 1 Fan 1	OK	3008	Spinning at normal speed
BFT 1 Fan 2	OK	3073	Spinning at normal speed
BFT 1 Fan 3	OK	2925	Spinning at normal speed
BFT 1 Fan 4	OK	2863	Spinning at normal speed
BFT 1 Fan 5	OK	2933	Spinning at normal speed
SFT 0 Fan 0 Rotor 0	OK	15472	Spinning at normal speed
SFT 0 Fan 0 Rotor 1	OK	14477	Spinning at normal speed
SFT 0 Fan 1 Rotor 0	OK	15561	Spinning at normal speed
SFT 0 Fan 1 Rotor 1	OK	14210	Spinning at normal speed
SFT 0 Fan 2 Rotor 0	OK	16167	Spinning at normal speed
SFT 0 Fan 2 Rotor 1	OK	14248	Spinning at normal speed
SFT 0 Fan 3 Rotor 0	OK	16463	Spinning at normal speed
SFT 0 Fan 3 Rotor 1	OK	14099	Spinning at normal speed
SFT 1 Fan 0 Rotor 0	OK	15083	Spinning at normal speed
SFT 1 Fan 0 Rotor 1	OK	13533	Spinning at normal speed
SFT 1 Fan 1 Rotor 0	OK	16071	Spinning at normal speed
SFT 1 Fan 1 Rotor 1	OK	14400	Spinning at normal speed
SFT 1 Fan 2 Rotor 0	OK	15517	Spinning at normal speed
SFT 1 Fan 2 Rotor 1	OK	14210	Spinning at normal speed
SFT 1 Fan 3 Rotor 0	OK	16413	Spinning at normal speed
SFT 1 Fan 3 Rotor 1	OK	14400	Spinning at normal speed
SFT 2 Fan 0 Rotor 0	OK	15297	Spinning at normal speed
SFT 2 Fan 0 Rotor 1	OK	14634	Spinning at normal speed
SFT 2 Fan 1 Rotor 0	OK	15561	Spinning at normal speed
SFT 2 Fan 1 Rotor 1	OK	14285	Spinning at normal speed
SFT 2 Fan 2 Rotor 0	OK	15835	Spinning at normal speed
SFT 2 Fan 2 Rotor 1	OK	14400	Spinning at normal speed
SFT 2 Fan 3 Rotor 0	OK	15789	Spinning at normal speed
SFT 2 Fan 3 Rotor 1	OK	14323	Spinning at normal speed
SFT 3 Fan 0 Rotor 0	OK	16314	Spinning at normal speed
SFT 3 Fan 0 Rotor 1	OK	14876	Spinning at normal speed
SFT 3 Fan 1 Rotor 0	OK	15835	Spinning at normal speed
SFT 3 Fan 1 Rotor 1	OK	14323	Spinning at normal speed
SFT 3 Fan 2 Rotor 0	OK	16265	Spinning at normal speed
SFT 3 Fan 2 Rotor 1	OK	14594	Spinning at normal speed
SFT 3 Fan 3 Rotor 0	OK	16071	Spinning at normal speed
SFT 3 Fan 3 Rotor 1	OK	14323	Spinning at normal speed
SFT 4 Fan 0 Rotor 0	OK	15652	Spinning at normal speed
SFT 4 Fan 0 Rotor 1	OK	14438	Spinning at normal speed
SFT 4 Fan 1 Rotor 0	OK	16167	Spinning at normal speed
SFT 4 Fan 1 Rotor 1	OK	14555	Spinning at normal speed

SFT 4 Fan 2 Rotor 0	OK	16023	Spinning at normal speed
SFT 4 Fan 2 Rotor 1	OK	14361	Spinning at normal speed
SFT 4 Fan 3 Rotor 0	OK	16216	Spinning at normal speed
SFT 4 Fan 3 Rotor 1	OK	14438	Spinning at normal speed
SFT 5 Fan 0 Rotor 0	OK	15297	Spinning at normal speed
SFT 5 Fan 0 Rotor 1	OK	14173	Spinning at normal speed
SFT 5 Fan 1 Rotor 0	OK	15472	Spinning at normal speed
SFT 5 Fan 1 Rotor 1	OK	13846	Spinning at normal speed
SFT 5 Fan 2 Rotor 0	OK	15340	Spinning at normal speed
SFT 5 Fan 2 Rotor 1	OK	13917	Spinning at normal speed
SFT 5 Fan 3 Rotor 0	OK	15835	Spinning at normal speed
SFT 5 Fan 3 Rotor 1	OK	13917	Spinning at normal speed
SFT 6 Fan 0 Rotor 0	OK	15743	Spinning at normal speed
SFT 6 Fan 0 Rotor 1	OK	14594	Spinning at normal speed
SFT 6 Fan 1 Rotor 0	OK	16167	Spinning at normal speed
SFT 6 Fan 1 Rotor 1	OK	14634	Spinning at normal speed
SFT 6 Fan 2 Rotor 0	OK	16167	Spinning at normal speed
SFT 6 Fan 2 Rotor 1	OK	14516	Spinning at normal speed
SFT 6 Fan 3 Rotor 0	OK	16666	Spinning at normal speed
SFT 6 Fan 3 Rotor 1	OK	14438	Spinning at normal speed
SFT 7 Fan 0 Rotor 0	OK	15517	Spinning at normal speed
SFT 7 Fan 0 Rotor 1	OK	14438	Spinning at normal speed
SFT 7 Fan 1 Rotor 0	OK	15517	Spinning at normal speed
SFT 7 Fan 1 Rotor 1	OK	14361	Spinning at normal speed
SFT 7 Fan 2 Rotor 0	OK	16167	Spinning at normal speed
SFT 7 Fan 2 Rotor 1	OK	14555	Spinning at normal speed
SFT 7 Fan 3 Rotor 0	OK	15697	Spinning at normal speed
SFT 7 Fan 3 Rotor 1	OK	14361	Spinning at normal speed

show chassis fan (EX Series Switches)

```
user@host> show chassis fan
```

Item	Status	RPM	Measurement
Fan 1	OK	3477	Spinning at normal speed
Fan 2	OK	3477	Spinning at normal speed
Fan 3	OK	3479	Spinning at normal speed
Fan 4	OK	3508	Spinning at normal speed
Fan 5	OK	3517	Spinning at normal speed
Fan 6	OK	3531	Spinning at normal speed
Fan 7	OK	3439	Spinning at normal speed
Fan 8	OK	3424	Spinning at normal speed
Fan 9	OK	3413	Spinning at normal speed
Fan 10	OK	3439	Spinning at normal speed
Fan 11	OK	3446	Spinning at normal speed
Fan 12	OK	3432	Spinning at normal speed

show chassis fan (T320 Router)

```
user@host> show chassis fan
```

Item	Status	RPM	Measurement
Top Left Front fan	OK	2850	Spinning at normal speed
Top Left Middle fan	OK	2820	Spinning at normal speed
Top Left Rear fan	OK	2970	Spinning at normal speed
Top Right Front fan	OK	2790	Spinning at normal speed
Top Right Middle fan	OK	2640	Spinning at normal speed
Top Right Rear fan	OK	2790	Spinning at normal speed
Bottom Left Front fan	OK	2520	Spinning at normal speed
Bottom Left Middle fan	OK	2610	Spinning at normal speed
Bottom Left Rear fan	OK	2550	Spinning at normal speed

Bottom Right Front fan	OK	2610	Spinning at normal speed
Bottom Right Middle fan	OK	2880	Spinning at normal speed
Bottom Right Rear fan	OK	2790	Spinning at normal speed
Rear Tray Top fan	OK	2130	Spinning at normal speed
Rear Tray Second fan	OK	2190	Spinning at normal speed
Rear Tray Middle fan	OK	2250	Spinning at normal speed
Rear Tray Fourth fan	OK	2220	Spinning at normal speed
Rear Tray Bottom fan	OK	2280	Spinning at normal speed

show chassis fan (T640 Router)

```
user@host> show chassis fan
```

Item	Status	RPM	Measurement
Top Left Front fan	OK	3420	Spinning at normal speed
Top Left Middle fan	OK	3420	Spinning at normal speed
Top Left Rear fan	OK	3420	Spinning at normal speed
Top Right Front fan	OK	3420	Spinning at normal speed
Top Right Middle fan	OK	3420	Spinning at normal speed
Top Right Rear fan	OK	3450	Spinning at normal speed
Bottom Left Front fan	OK	3390	Spinning at normal speed
Bottom Left Middle fan	OK	3420	Spinning at normal speed
Bottom Left Rear fan	OK	3390	Spinning at normal speed
Bottom Right Front fan	OK	3390	Spinning at normal speed
Bottom Right Middle fan	OK	3390	Spinning at normal speed
Bottom Right Rear fan	OK	3390	Spinning at normal speed
Rear Tray Top fan	OK	5220	Spinning at normal speed
Rear Tray Second fan	OK	5220	Spinning at normal speed
Rear Tray Third fan	OK	5220	Spinning at normal speed
Rear Tray Fourth fan	OK	5220	Spinning at normal speed
Rear Tray Fifth fan	OK	5220	Spinning at normal speed
Rear Tray Sixth fan	OK	5220	Spinning at normal speed
Rear Tray Seventh fan	OK	5220	Spinning at normal speed
Rear Tray Bottom fan	OK	5220	Spinning at normal speed

show chassis fan (T1600 Router)

```
user@host> show chassis fan
```

Item	Status	RPM	Measurement
Top Left Front fan	OK	3420	Spinning at normal speed
Top Left Middle fan	OK	3420	Spinning at normal speed
Top Left Rear fan	OK	3450	Spinning at normal speed
Top Right Front fan	OK	3420	Spinning at normal speed
Top Right Middle fan	OK	3420	Spinning at normal speed
Top Right Rear fan	OK	3390	Spinning at normal speed
Bottom Left Front fan	OK	3420	Spinning at normal speed
Bottom Left Middle fan	OK	3420	Spinning at normal speed
Bottom Left Rear fan	OK	3390	Spinning at normal speed
Bottom Right Front fan	OK	3390	Spinning at normal speed
Bottom Right Middle fan	OK	3420	Spinning at normal speed
Bottom Right Rear fan	OK	3390	Spinning at normal speed
Rear Tray Top fan	OK	5190	Spinning at normal speed
Rear Tray Second fan	OK	5190	Spinning at normal speed
Rear Tray Third fan	OK	5190	Spinning at normal speed
Rear Tray Fourth fan	OK	5190	Spinning at normal speed
Rear Tray Fifth fan	OK	5190	Spinning at normal speed
Rear Tray Sixth fan	OK	5190	Spinning at normal speed
Rear Tray Seventh fan	OK	5190	Spinning at normal speed
Rear Tray Bottom fan	OK	5190	Spinning at normal speed

show chassis fan (T4000 Core Router)

```
user@host> show chassis fan
```

Item	Status	RPM	Measurement
Top Left Front fan	OK	5190	Spinning at high speed
Top Left Middle fan	OK	5220	Spinning at high speed
Top Left Rear fan	OK	5190	Spinning at high speed
Top Right Front fan	OK	5160	Spinning at high speed
Top Right Middle fan	OK	5190	Spinning at high speed
Top Right Rear fan	OK	5160	Spinning at high speed
Bottom Left Front fan	OK	6030	Spinning at high speed
Bottom Left Middle fan	OK	6090	Spinning at high speed
Bottom Left Rear fan	OK	6090	Spinning at high speed
Bottom Right Front fan	OK	6030	Spinning at high speed
Bottom Right Middle fan	OK	6060	Spinning at high speed
Bottom Right Rear fan	OK	6060	Spinning at high speed
Rear Tray Top fan	OK	10000	Spinning at high speed
Rear Tray Second fan	OK	10000	Spinning at high speed
Rear Tray Third fan	OK	10000	Spinning at high speed
Rear Tray Fourth fan	OK	10000	Spinning at high speed
Rear Tray Fifth fan	OK	10000	Spinning at high speed
Rear Tray Sixth fan	OK	10000	Spinning at high speed
Rear Tray Seventh fan	OK	10000	Spinning at high speed
Rear Tray Bottom fan	OK	10000	Spinning at high speed

show chassis fan (TX Matrix Router)

```
user@host> show chassis fan
```

```
scc-re0:
```

Item	Status	RPM	Measurement
Top Left Front fan	OK	3420	Spinning at normal speed
Top Left Middle fan	OK	3390	Spinning at normal speed
Top Left Rear fan	OK	3420	Spinning at normal speed
Top Right Front fan	OK	3390	Spinning at normal speed
Top Right Middle fan	OK	3420	Spinning at normal speed
Top Right Rear fan	OK	3390	Spinning at normal speed
Bottom Left Front fan	OK	3420	Spinning at normal speed
Bottom Left Middle fan	OK	3450	Spinning at normal speed
Bottom Left Rear fan	OK	3420	Spinning at normal speed
Bottom Right Front fan	OK	3420	Spinning at normal speed
Bottom Right Middle fan	OK	3420	Spinning at normal speed
Bottom Right Rear fan	OK	3420	Spinning at normal speed
Rear Tray Top fan	OK	3420	Spinning at normal speed
Rear Tray Second fan	OK	5190	Spinning at normal speed
Rear Tray Third fan	OK	5190	Spinning at normal speed
Rear Tray Fourth fan	OK	5190	Spinning at normal speed
Rear Tray Fifth fan	OK	3420	Spinning at normal speed
Rear Tray Sixth fan	OK	3420	Spinning at normal speed
Rear Tray Seventh fan	OK	3420	Spinning at normal speed
Rear Tray Bottom fan	OK	3420	Spinning at normal speed

```
lcc2-re0:
```

Item	Status	RPM	Measurement
Top Left Front fan	OK	3420	Spinning at normal speed
Top Left Middle fan	OK	3420	Spinning at normal speed
Top Left Rear fan	OK	3450	Spinning at normal speed
Top Right Front fan	OK	3420	Spinning at normal speed
Top Right Middle fan	OK	3450	Spinning at normal speed

Top Right Rear fan	OK	3360	Spinning at normal speed
Bottom Left Front fan	OK	3420	Spinning at normal speed
Bottom Left Middle fan	OK	3480	Spinning at normal speed
Bottom Left Rear fan	OK	3420	Spinning at normal speed
Bottom Right Front fan	OK	3420	Spinning at normal speed
Bottom Right Middle fan	OK	3390	Spinning at normal speed
Bottom Right Rear fan	OK	3420	Spinning at normal speed
Rear Tray Top fan	OK	3420	Spinning at normal speed
Rear Tray Second fan	OK	3420	Spinning at normal speed
Rear Tray Third fan	OK	3420	Spinning at normal speed
Rear Tray Fourth fan	OK	3420	Spinning at normal speed
Rear Tray Fifth fan	OK	3420	Spinning at normal speed
Rear Tray Sixth fan	OK	3420	Spinning at normal speed
Rear Tray Seventh fan	OK	3420	Spinning at normal speed
Rear Tray Bottom fan	OK	3420	Spinning at normal speed

show chassis fan (TX Matrix Plus Router)

```
user@host> show chassis fan
sfc0-re0:
```

Item	Status	RPM	Measurement
Fan Tray 0 Fan 1	OK	4350	Spinning at normal speed
Fan Tray 0 Fan 2	OK	4380	Spinning at normal speed
Fan Tray 0 Fan 3	OK	4410	Spinning at normal speed
Fan Tray 0 Fan 4	OK	4380	Spinning at normal speed
Fan Tray 0 Fan 5	OK	4350	Spinning at normal speed
Fan Tray 0 Fan 6	OK	4380	Spinning at normal speed
Fan Tray 1 Fan 1	OK	4410	Spinning at normal speed
Fan Tray 1 Fan 2	OK	4380	Spinning at normal speed
Fan Tray 1 Fan 3	OK	4410	Spinning at normal speed
Fan Tray 1 Fan 4	OK	4380	Spinning at normal speed
Fan Tray 1 Fan 5	OK	4410	Spinning at normal speed
Fan Tray 1 Fan 6	OK	4410	Spinning at normal speed
Fan Tray 2 Fan 1	OK	4380	Spinning at normal speed
Fan Tray 2 Fan 2	OK	4380	Spinning at normal speed
Fan Tray 2 Fan 3	OK	4380	Spinning at normal speed
Fan Tray 2 Fan 4	OK	4410	Spinning at normal speed
Fan Tray 2 Fan 5	OK	4380	Spinning at normal speed
Fan Tray 2 Fan 6	OK	4410	Spinning at normal speed
Fan Tray 2 Fan 7	OK	4410	Spinning at normal speed
Fan Tray 2 Fan 8	OK	4380	Spinning at normal speed
Fan Tray 2 Fan 9	OK	4380	Spinning at normal speed
Fan Tray 3 Fan 1	OK	4350	Spinning at normal speed
Fan Tray 3 Fan 2	OK	4380	Spinning at normal speed
Fan Tray 3 Fan 3	OK	4410	Spinning at normal speed
Fan Tray 3 Fan 4	OK	4440	Spinning at normal speed
Fan Tray 3 Fan 5	OK	4380	Spinning at normal speed
Fan Tray 3 Fan 6	OK	4410	Spinning at normal speed
Fan Tray 3 Fan 7	OK	4410	Spinning at normal speed
Fan Tray 3 Fan 8	OK	4380	Spinning at normal speed
Fan Tray 3 Fan 9	OK	4410	Spinning at normal speed
Fan Tray 4 Fan 1	OK	4410	Spinning at normal speed
Fan Tray 4 Fan 2	OK	4410	Spinning at normal speed
Fan Tray 4 Fan 3	OK	4380	Spinning at normal speed
Fan Tray 4 Fan 4	OK	4380	Spinning at normal speed
Fan Tray 4 Fan 5	OK	4410	Spinning at normal speed
Fan Tray 4 Fan 6	OK	4410	Spinning at normal speed
Fan Tray 4 Fan 7	OK	4410	Spinning at normal speed
Fan Tray 4 Fan 8	OK	4410	Spinning at normal speed
Fan Tray 4 Fan 9	OK	4410	Spinning at normal speed

Fan Tray 5 Fan 1	OK	4350	Spinning at normal speed
Fan Tray 5 Fan 2	OK	4380	Spinning at normal speed
Fan Tray 5 Fan 3	OK	4380	Spinning at normal speed
Fan Tray 5 Fan 4	OK	4350	Spinning at normal speed
Fan Tray 5 Fan 5	OK	4380	Spinning at normal speed
Fan Tray 5 Fan 6	OK	4410	Spinning at normal speed
Fan Tray 5 Fan 7	OK	4410	Spinning at normal speed
Fan Tray 5 Fan 8	OK	4380	Spinning at normal speed
Fan Tray 5 Fan 9	OK	4410	Spinning at normal speed

1cc0-re0:

Item	Status	RPM	Measurement
Top Left Front fan	OK	3420	Spinning at normal speed
Top Left Middle fan	OK	3420	Spinning at normal speed
Top Left Rear fan	OK	3420	Spinning at normal speed
Top Right Front fan	OK	3450	Spinning at normal speed
Top Right Middle fan	OK	3420	Spinning at normal speed
Top Right Rear fan	OK	3420	Spinning at normal speed
Bottom Left Front fan	OK	3420	Spinning at normal speed
Bottom Left Middle fan	OK	3420	Spinning at normal speed
Bottom Left Rear fan	OK	3390	Spinning at normal speed
Bottom Right Front fan	OK	3420	Spinning at normal speed
Bottom Right Middle fan	OK	3390	Spinning at normal speed
Bottom Right Rear fan	OK	3390	Spinning at normal speed
Rear Tray Top fan	OK	7050	Spinning at normal speed
Rear Tray Second fan	OK	7050	Spinning at normal speed
Rear Tray Third fan	OK	7050	Spinning at normal speed
Rear Tray Fourth fan	OK	7050	Spinning at normal speed
Rear Tray Fifth fan	OK	7050	Spinning at normal speed
Rear Tray Sixth fan	OK	7050	Spinning at normal speed
Rear Tray Seventh fan	OK	7050	Spinning at normal speed
Rear Tray Bottom fan	OK	7050	Spinning at normal speed

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

```
user@host> show chassis fan
sfc0-re0:
```

Item	Status	RPM	Measurement
Fan Tray 0 Fan 1	OK	4830	Spinning at normal speed
Fan Tray 0 Fan 2	OK	4860	Spinning at normal speed
Fan Tray 0 Fan 3	OK	4830	Spinning at normal speed
Fan Tray 0 Fan 4	OK	4800	Spinning at normal speed
Fan Tray 0 Fan 5	OK	4830	Spinning at normal speed
Fan Tray 0 Fan 6	OK	4770	Spinning at normal speed
Fan Tray 1 Fan 1	OK	4800	Spinning at normal speed
Fan Tray 1 Fan 2	OK	4770	Spinning at normal speed
Fan Tray 1 Fan 3	OK	4800	Spinning at normal speed
Fan Tray 1 Fan 4	OK	4770	Spinning at normal speed
Fan Tray 1 Fan 5	OK	4770	Spinning at normal speed
Fan Tray 1 Fan 6	OK	4800	Spinning at normal speed
Fan Tray 2 Fan 1	OK	4800	Spinning at normal speed
Fan Tray 2 Fan 2	OK	4800	Spinning at normal speed
Fan Tray 2 Fan 3	OK	4830	Spinning at normal speed
Fan Tray 2 Fan 4	OK	4830	Spinning at normal speed
Fan Tray 2 Fan 5	OK	4830	Spinning at normal speed
Fan Tray 2 Fan 6	OK	4830	Spinning at normal speed
Fan Tray 2 Fan 7	OK	4800	Spinning at normal speed
Fan Tray 2 Fan 8	OK	4830	Spinning at normal speed
Fan Tray 2 Fan 9	OK	4800	Spinning at normal speed

Fan Tray 3 Fan 1	OK	4860	Spinning at normal speed
Fan Tray 3 Fan 2	OK	4860	Spinning at normal speed
Fan Tray 3 Fan 3	OK	4800	Spinning at normal speed
Fan Tray 3 Fan 4	OK	4830	Spinning at normal speed
Fan Tray 3 Fan 5	OK	4830	Spinning at normal speed
Fan Tray 3 Fan 6	OK	4830	Spinning at normal speed
Fan Tray 3 Fan 7	OK	4830	Spinning at normal speed
Fan Tray 3 Fan 8	OK	4800	Spinning at normal speed
Fan Tray 3 Fan 9	OK	4800	Spinning at normal speed
Fan Tray 4 Fan 1	OK	4830	Spinning at normal speed
Fan Tray 4 Fan 2	OK	4830	Spinning at normal speed
Fan Tray 4 Fan 3	OK	4830	Spinning at normal speed
Fan Tray 4 Fan 4	OK	4830	Spinning at normal speed
Fan Tray 4 Fan 5	OK	4830	Spinning at normal speed
Fan Tray 4 Fan 6	OK	4860	Spinning at normal speed
Fan Tray 4 Fan 7	OK	4800	Spinning at normal speed
Fan Tray 4 Fan 8	OK	4860	Spinning at normal speed
Fan Tray 4 Fan 9	OK	4770	Spinning at normal speed
Fan Tray 5 Fan 1	OK	4830	Spinning at normal speed
Fan Tray 5 Fan 2	OK	4830	Spinning at normal speed
Fan Tray 5 Fan 3	OK	4830	Spinning at normal speed
Fan Tray 5 Fan 4	OK	4800	Spinning at normal speed
Fan Tray 5 Fan 5	OK	4800	Spinning at normal speed
Fan Tray 5 Fan 6	OK	4800	Spinning at normal speed
Fan Tray 5 Fan 7	OK	4830	Spinning at normal speed
Fan Tray 5 Fan 8	OK	4830	Spinning at normal speed
Fan Tray 5 Fan 9	Check	2010	

1cc0-re0:

Item	Status	RPM	Measurement
Top Left Front fan	OK	3420	Spinning at normal speed
Top Left Middle fan	OK	3390	Spinning at normal speed
Top Left Rear fan	OK	3390	Spinning at normal speed
Top Right Front fan	OK	3420	Spinning at normal speed
Top Right Middle fan	OK	3420	Spinning at normal speed
Top Right Rear fan	OK	3450	Spinning at normal speed
Bottom Left Front fan	OK	3420	Spinning at normal speed
Bottom Left Middle fan	OK	3390	Spinning at normal speed
Bottom Left Rear fan	OK	3420	Spinning at normal speed
Bottom Right Front fan	OK	3420	Spinning at normal speed
Bottom Right Middle fan	OK	3390	Spinning at normal speed
Bottom Right Rear fan	OK	3420	Spinning at normal speed
Rear Tray fan 1 (Top)	OK	7740	Spinning at normal speed
Rear Tray fan 2	OK	7740	Spinning at normal speed
Rear Tray fan 3	OK	7740	Spinning at normal speed
Rear Tray fan 4	OK	7740	Spinning at normal speed
Rear Tray fan 5	OK	7740	Spinning at normal speed
Rear Tray fan 6	OK	7740	Spinning at normal speed
Rear Tray fan 7	OK	7740	Spinning at normal speed
Rear Tray fan 8	OK	7740	Spinning at normal speed
Rear Tray fan 9	OK	7740	Spinning at normal speed
Rear Tray fan 10	OK	7740	Spinning at normal speed
Rear Tray fan 11	OK	7740	Spinning at normal speed
Rear Tray fan 12	OK	7740	Spinning at normal speed
Rear Tray fan 13	OK	7740	Spinning at normal speed
Rear Tray fan 14	OK	7740	Spinning at normal speed
Rear Tray fan 15	OK	7740	Spinning at normal speed
Rear Tray fan 16 (Bottom)	OK	7740	Spinning at normal speed

1cc2-re0:

Item	Status	RPM	Measurement
Top Left Front fan	OK	3420	Spinning at normal speed
Top Left Middle fan	OK	3390	Spinning at normal speed
Top Left Rear fan	OK	3420	Spinning at normal speed
Top Right Front fan	OK	3420	Spinning at normal speed
Top Right Middle fan	OK	3420	Spinning at normal speed
Top Right Rear fan	OK	3450	Spinning at normal speed
Bottom Left Front fan	OK	3420	Spinning at normal speed
Bottom Left Middle fan	OK	3390	Spinning at normal speed
Bottom Left Rear fan	OK	3420	Spinning at normal speed
Bottom Right Front fan	OK	3420	Spinning at normal speed
Bottom Right Middle fan	OK	3390	Spinning at normal speed
Bottom Right Rear fan	OK	3420	Spinning at normal speed
Rear Tray fan 1 (Top)	OK	7740	Spinning at normal speed
Rear Tray fan 2	OK	7740	Spinning at normal speed
Rear Tray fan 3	OK	7740	Spinning at normal speed
Rear Tray fan 4	OK	7740	Spinning at normal speed
Rear Tray fan 5	OK	7740	Spinning at normal speed
Rear Tray fan 6	OK	7740	Spinning at normal speed
Rear Tray fan 7	OK	7740	Spinning at normal speed
Rear Tray fan 8	OK	7740	Spinning at normal speed
Rear Tray fan 9	OK	7740	Spinning at normal speed
Rear Tray fan 10	OK	7740	Spinning at normal speed
Rear Tray fan 11	OK	7740	Spinning at normal speed
Rear Tray fan 12	OK	7740	Spinning at normal speed
Rear Tray fan 13	OK	7740	Spinning at normal speed
Rear Tray fan 14	OK	7740	Spinning at normal speed
Rear Tray fan 15	OK	7740	Spinning at normal speed
Rear Tray fan 16 (Bottom)	OK	7740	Spinning at normal speed

show chassis fan (PTX5000 Packet Transport Router)

```

user@host> show chassis fan
user@host> show chassis fan

```

Item	Status	% RPM	Measurement
Fan Tray 0 Fan 1	OK	29%	2700 RPM
Fan Tray 0 Fan 2	OK	29%	2700 RPM
Fan Tray 0 Fan 3	OK	29%	2742 RPM
Fan Tray 0 Fan 4	OK	29%	2700 RPM
Fan Tray 0 Fan 5	OK	30%	2828 RPM
Fan Tray 0 Fan 6	OK	30%	2828 RPM
Fan Tray 0 Fan 7	OK	29%	2700 RPM
Fan Tray 0 Fan 8	OK	30%	2785 RPM
Fan Tray 0 Fan 9	OK	30%	2828 RPM
Fan Tray 0 Fan 10	OK	30%	2828 RPM
Fan Tray 0 Fan 11	OK	30%	2785 RPM
Fan Tray 0 Fan 12	OK	30%	2828 RPM
Fan Tray 0 Fan 13	OK	31%	2871 RPM
Fan Tray 0 Fan 14	OK	30%	2828 RPM
Fan Tray 1 Fan 1	OK	42%	3033 RPM
Fan Tray 1 Fan 2	OK	42%	3066 RPM
Fan Tray 1 Fan 3	OK	43%	3099 RPM
Fan Tray 1 Fan 4	OK	43%	3166 RPM
Fan Tray 1 Fan 5	OK	45%	3266 RPM
Fan Tray 1 Fan 6	OK	43%	3133 RPM
Fan Tray 2 Fan 1	OK	29%	2099 RPM
Fan Tray 2 Fan 2	OK	30%	2199 RPM
Fan Tray 2 Fan 3	OK	30%	2166 RPM
Fan Tray 2 Fan 4	OK	33%	2399 RPM

Fan Tray 2 Fan 5	OK	29%	2133 RPM
Fan Tray 2 Fan 6	OK	32%	2366 RPM

show chassis fan (MX104 Router)

```
user@host > show chassis fan
```

Item	Status	RPM	Measurement
Fan 1	OK	5640	Spinning at normal speed
Fan 2	OK	5640	Spinning at normal speed
Fan 3	OK	5760	Spinning at normal speed
Fan 4	OK	5640	Spinning at normal speed
Fan 5	OK	5640	Spinning at normal speed

show chassis fan (MX2010 Router)

```
user@host > show chassis fan
```

Item	Status	% RPM	Measurement
Fan Tray 0 Fan 1	OK	37%	3360 RPM
Fan Tray 0 Fan 2	OK	38%	3480 RPM
Fan Tray 0 Fan 3	OK	37%	3360 RPM
Fan Tray 0 Fan 4	OK	37%	3360 RPM
Fan Tray 0 Fan 5	OK	38%	3480 RPM
Fan Tray 0 Fan 6	OK	37%	3360 RPM
Fan Tray 1 Fan 1	OK	38%	3480 RPM
Fan Tray 1 Fan 2	OK	40%	3600 RPM
Fan Tray 1 Fan 3	OK	38%	3480 RPM
Fan Tray 1 Fan 4	OK	38%	3480 RPM
Fan Tray 1 Fan 5	OK	38%	3480 RPM
Fan Tray 1 Fan 6	OK	38%	3480 RPM
Fan Tray 2 Fan 1	OK	38%	3480 RPM
Fan Tray 2 Fan 2	OK	41%	3720 RPM
Fan Tray 2 Fan 3	OK	38%	3480 RPM
Fan Tray 2 Fan 4	OK	38%	3480 RPM
Fan Tray 2 Fan 5	OK	38%	3480 RPM
Fan Tray 2 Fan 6	OK	38%	3480 RPM
Fan Tray 3 Fan 1	OK	38%	3480 RPM
Fan Tray 3 Fan 2	OK	40%	3600 RPM
Fan Tray 3 Fan 3	OK	40%	3600 RPM
Fan Tray 3 Fan 4	OK	40%	3600 RPM
Fan Tray 3 Fan 5	OK	40%	3600 RPM
Fan Tray 3 Fan 6	OK	38%	3480 RPM

show chassis fan (MX2020 Router)

```
user@host > show chassis fan
```

Item	Status	% RPM	Measurement
Fan Tray 0 Fan 1	OK	37%	3360 RPM
Fan Tray 0 Fan 2	OK	37%	3360 RPM
Fan Tray 0 Fan 3	OK	36%	3240 RPM
Fan Tray 0 Fan 4	OK	37%	3360 RPM
Fan Tray 0 Fan 5	OK	37%	3360 RPM
Fan Tray 0 Fan 6	OK	37%	3360 RPM
Fan Tray 1 Fan 1	OK	37%	3360 RPM
Fan Tray 1 Fan 2	OK	37%	3360 RPM
Fan Tray 1 Fan 3	OK	37%	3360 RPM
Fan Tray 1 Fan 4	OK	37%	3360 RPM
Fan Tray 1 Fan 5	OK	37%	3360 RPM
Fan Tray 1 Fan 6	OK	36%	3240 RPM
Fan Tray 2 Fan 1	OK	37%	3360 RPM
Fan Tray 2 Fan 2	OK	37%	3360 RPM
Fan Tray 2 Fan 3	OK	37%	3360 RPM
Fan Tray 2 Fan 4	OK	37%	3360 RPM

Fan Tray 2 Fan 5	OK	37%	3360 RPM
Fan Tray 2 Fan 6	OK	38%	3480 RPM
Fan Tray 3 Fan 1	OK	38%	3480 RPM
Fan Tray 3 Fan 2	OK	38%	3480 RPM
Fan Tray 3 Fan 3	OK	38%	3480 RPM
Fan Tray 3 Fan 4	OK	37%	3360 RPM
Fan Tray 3 Fan 5	OK	37%	3360 RPM
Fan Tray 3 Fan 6	OK	37%	3360 RPM

show chassis fan (ACX4000 Router)

```
user@host > show chassis fan
```

Item	Status	RPM	Measurement
Fan 1	OK	4140	Spinning at normal speed
Fan 2	OK	4200	Spinning at normal speed

show chassis fpc

Syntax	show chassis fpc <detail <slot>> <pic-status <slot>>
Syntax (EX Series Switches)	show chassis fpc <detail <fpc-slot>> <pic-status <fpc-slot>> <fpc-slot>
Syntax (T4000 Routers)	show chassis fpc <detail <fpc-slot>> <pic-status <fpc-slot>>
Syntax (TX Matrix and TX Matrix Plus Routers)	show chassis fpc <detail <fpc-slot>> <pic-status <fpc-slot>> <slot>
Syntax (MX Series Routers and EX Series switches)	show chassis fpc <detail <slot>> <pic-status <slot>> <all-members> <local> <member <i>member-id</i> >
Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)	show chassis fpc <slot> detail <detail <slot>> <pic-status <slot>> <fpc-slot>
Syntax (QFX Series)	show chassis fpc <detail> <interconnect-device <i>name</i> <fpc-slot fpc-slot>> <node-device <i>name</i> >
Syntax (PTX Series Packet Transport Routers)	show chassis fpc <detail <fpc-slot>> <pic-status <fpc-slot>> <fpc-slot>
Syntax (ACX Series Universal Access Routers)	show chassis fpc <detail <fpc-slot>> <pic-status <fpc-slot>> <fpc-slot>
Release Information	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for QFX Series.</p> <p>Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.</p> <p>Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.</p>

Description Display status information about the installed Flexible PIC Concentrators (FPCs) and PICs.

Options **none**—Display status information for all FPCs. On a TX Matrix router, display status information for all FPCs on the attached T640 routers in the routing matrix. On a TX Matrix Plus router, display status information for all FPCs on the attached routers in the routing matrix.



NOTE: In EX8200 switches, line cards initialize Packet Forwarding Engine during startup. If an error occurs during hardware initialization, the FPCs with bad hardware parts power down after transferring the debug information to the Routing Engine. The Routing Engine marks the FPC offline, logs the error in system log messages (/var/log/messages), and generates an alarm to inform the user.

See the following sample output:

```
user@host> show chassis fpc
```

Utilization (%)		Temp	CPU Utilization (%)		Memory	
Slot	State	(C)	Total	Interrupt	DRAM (MB)	Heap
	Buffer					
0	Empty					
1	Empty					
2	Empty					
3	Empty					
4	Empty					
5	Offline	---Hard FPC error---				
6	Empty					
7	Online	26	4	0	1024	0
	32					

The following sample output shows the alarm raised for the failed FPCs.

```
user@host > show chassis alarms
4 alarms currently active
```

Alarm time	Class	Description
2011-03-24 00:52:51 UTC	Major	FPC 5 Hard errors
2011-03-24 00:52:31 UTC	Major	Fan Tray Failure
2011-03-24 00:52:31 UTC	Major	Fan Tray Failure
2011-03-24 00:51:26 UTC	Minor	Loss of communication with Backup RE



NOTE: On T4000 routers, when you include the enhanced-mode statement at the [edit chassis network-services] hierarchy level and reboot the system, only the T4000 Type 5 FPCs present on the router become online while the remaining FPCs are offline, and FPC misconfiguration alarms are generated. The show chassis alarm command output displays FPC misconfiguration (FPC *fpc-slot* misconfig) as the reason for the generation the alarms.

The following sample output shows the FPC status after the enhanced-mode statement is configured on the T4000 router. The T4000 Type 5 FPC present in slot 5 becomes online while the remaining FPCs are offline.

```
user@host> show chassis fpc
```

	Temp	CPU Utilization (%)		Memory	
Utilization (%)					
Slot State	(C)	Total	Interrupt	DRAM (MB)	Heap
Buffer					
0 offline	---	FPC misconfiguration---			
1 offline	---	FPC misconfiguration---			
2 offline	---	FPC misconfiguration---			
3 Empty					
4 Empty					
5 Online	66	50	0	2816	29
27					

The following sample output shows FPC misconfiguration alarms.

```
user@host > show chassis alarms
3 alarms currently active
Alarm time      Class  Description
2011-03-24 00:52:51 PST Major  FPC 1 misconfig
2011-03-24 00:52:31 PST Major  FPC 2 misconfig
2011-03-24 00:52:31 PST Major  FPC 3 misconfig
```

detail—(Optional) Display detailed status information for all FPCs or for the FPC in the specified slot (see *fpc-slot* or *slot*).

all-members—(MX Series routers and EX Series switches only) (Optional) Display status information for all FPCs on all members of the Virtual Chassis configuration.

interconnect-device *name*—(QFabric systems only) (Optional) Display status information for all FPCs on the Interconnect device.

fpc-slot—(Optional) FPC slot number:

- (TX Matrix and TX Matrix Plus router only)—On a TX Matrix router, if you specify the number of the T640 router (line-card chassis) by using the **lcc *number*** option (the recommended method), replace *fpc-slot* with a value from 0 through 7. Otherwise, replace *fpc-slot* with a value from 0 through 31. Likewise, on a TX Matrix Plus router, if you specify the number of the specified router (line-card chassis)

by using the **lcc number** option (the recommended method), replace **fpc-slot** with a value from 0 through 7. Otherwise, replace **fpc-slot** with a value from 0 through 31. For example, the following commands have the same result:

```
user@host> show chassis fpc detail 1 lcc 1
user@host> show chassis fpc detail 9
```

- M120 router—Replace **fpc-slot** with a value from 0 through 5.
- MX80 router—Replace **fpc-slot** with a value from 0 through 1.
- MX104 router—Replace **fpc-slot** with a value from 0 through 2.
- MX240 router—Replace **fpc-slot** with a value from 0 through 2.
- MX480 router—Replace **fpc-slot** with a value from 0 through 5.
- MX-960 router—Replace **fpc-slot** with a value from 0 through 11.
- MX2010 router—Replace **fpc-slot-number** with a value from 0 through 9.
- MX2020 router—Replace **fpc-slot-number** with a value from 0 through 19.
- Other routers—Replace **fpc-slot** with a value from 0 through 7.
- EX Series switches:
 - EX3200 switches and EX4200 standalone switches—Replace **fpc-slot** with 0.
 - EX4200 switches in a Virtual Chassis configuration—Replace **fpc-slot** with a value from 0 through 9.
 - EX6210 switches—Replace **fpc-slot** with a value from 0 through 9.
 - EX8208 switches—Replace **fpc-slot** with a value from 0 through 7.
 - EX8216 switches—Replace **fpc-slot** with a value from 0 through 15.
- QFX Series:
 - QFX3500 switches—Replace **fpc-slot** with 0.
 - QFabric systems—Replace **fpc-slot** with 0 through 31 on the Interconnect device.
- PTX Series Packet Transport Routers:
 - PTX5000 Packet Transport Router—Replace **fpc-slot** with a value from 0 through 7.
- ACX Series Universal Access Routers:
 - ACX1000 and ACX2000 Universal Access Routers—Replace **fpc-slot** with 0.

local—(MX Series routers and EX Series switches only) (Optional) Display status information for all FPCs on the local Virtual Chassis member.

member member-id—(MX Series routers and EX Series switches only) (Optional) Display status information for all FPCs on the specified member of the Virtual Chassis configuration. Replace **member-id** with a value of 0 or 1.

node-device *name*—(QFabric systems only) (Optional) Display status information for each Node device. Each Node device is equivalent to an FPC.

pic-status—(Optional) Display status information for all PICs or for the PIC in the specified slot (see *fpc-slot*).



NOTE: On T1600 routers, Type 4 FPCs with ASICs based on the SL2.0 chipset do not support the 10-Gigabit Ethernet LAN/WAN PIC with SFP+ (10x10GE [LAN/WAN] SFPP). If you issue the `show chassis fpc` command with the `pic-status` option, the CLI displays the string “Not Supported” for 10x10GE (LAN/WAN) SFPP PICs installed on such FPCs. The following is a sample output:

```
user@host> show chassis fpc pic-status
Slot 0  Online      E2-FPC Type 1
        PIC 0  Online      1x G/E SFP, 1000 BASE
        PIC 1  Online      Adaptive Services-II
        PIC 2  Online      1x G/E IQ, 1000 BASE
        PIC 3  Online      1x G/E IQ, 1000 BASE
Slot 1  Online      FPC Type 3-ES
        PIC 0  Present     UNUSED- Not Supported
Slot 2  Online      FPC Type 4-ES
        PIC 0  Offline     4x OC-192 SONET XFP
        PIC 1  Present     10x10GE(LAN/WAN) SFPP- Not Supported
<<<<<<
Slot 4  Offline     FPC Type 1-ES
Slot 5  Offline     FPC Type 2-ES
Slot 6  Online      E2-FPC Type 3
        PIC 0  Online      1x OC-192 SONET XFP
        PIC 1  Online      4x OC-48 SONET
        PIC 2  Online      4x OC-48 SONET
        PIC 3  Online      MultiServices 500
Slot 7  Online      FPC Type 4-ES
        PIC 0  Online      4x 10GE (LAN/WAN) XFP
        PIC 1  Online      4x 10GE (LAN/WAN) XFP
```

In addition, an entry is logged in the system log messages (/var/log/messages) that the PIC is not supported. The following is a sample message logged in the system log:

```
Apr  5 08:47:36 router1 chassisd[2770]: CHASSISD_UNSUPPORTED_PIC:
PIC 1 in FPC 2 (type 763, version 257) is not supported
```

If you see this issue, contact Juniper Networks Technical Assistance Center (JTAC) for a possible fix. For more information about this issue and a possible solution, see [PSN-2010-03-696](#).



NOTE: When there is a double-bit ECC error in a network processor's memory, the Channelized OC3/STM1 (Multi-Rate) Circuit Emulation MIC with SFP or Channelized E1/T1 Circuit Emulation MIC is switched to the offline state.

```
user@host> show chassis fpc pic-status
Slot 1   Online      MPC Type 2 3D Q
PIC 0    Offline     1xC0C12/4xC0C3 CH-CE- ECC error detected
```

lcc *number*—(TX Matrix router and TX Matrix Plus router 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.

Required Privilege Level

view

Related Documentation

- [request chassis fpc on page 234](#)
- *show chassis fpc-feb-connectivity*
- [show chassis fabric fpcs on page 460](#)
- *Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online*
- *MX960 Flexible PIC Concentrator Description*
- *ACX2000 and ACX2100 Routers Hardware and CLI Terminology Mapping*
- *enhanced-mode*

List of Sample Output

[show chassis fpc \(EX6210 Switch\) on page 550](#)
[show chassis fpc \(M10 Router\) on page 550](#)
[show chassis fpc \(M20 Router\) on page 550](#)
[show chassis fpc detail \(M Series Routers\) on page 550](#)
[show chassis fpc detail \(MX80 Router\) on page 551](#)
[show chassis fpc \(MX104 Router\) on page 551](#)
[show chassis fpc detail \(MX104 Router\) on page 551](#)
[show chassis fpc pic-status \(MX104 Router\) on page 552](#)

[show chassis fpc \(MX240 Router\) on page 552](#)
[show chassis fpc \(EX Series Switch\) on page 552](#)
[show chassis fpc \(MX480 Router\) on page 552](#)
[show chassis fpc \(MX480 Router with 100-Gigabit Ethernet CFP\) on page 552](#)
[show chassis fpc pic-status \(MX480 Router with 100-Gigabit Ethernet CFP\) on page 552](#)
[show chassis fpc pic-status \(EX Series Switch\) on page 553](#)
[show chassis fpc \(MX480 Router with MPC4E\) on page 553](#)
[show chassis fpc detail \(MX480 Router with MPC4E\) on page 553](#)
[show chassis fpc \(MX480 Router with MPC4E\) on page 554](#)
[show chassis fpc detail \(MX480 Router with MPC4E\) on page 554](#)
[show chassis fpc \(MX960 Router\) on page 554](#)
[show chassis fpc \(MX240, MX480, MX960 Routers with Application Services Modular Line Card\) on page 555](#)
[show chassis fpc \(MX240, MX480, MX960 with Application Services Modular Line Card\) on page 555](#)
[show chassis fpc \(MX2010 Routers\) on page 555](#)
[show chassis fpc \(MX2020 Routers\) on page 555](#)
[show chassis fpc \(MX2020 Router with MPC4E\) on page 556](#)
[show chassis fpc detail \(MX2020 Router with MPC4E\) on page 556](#)
[show chassis fpc detail \(MX Series Routers\) on page 557](#)
[show chassis fpc detail \(EX Series Switches\) on page 557](#)
[show chassis fpc \(Hardware Not Supported\) on page 557](#)
[show chassis fpc detail \(Hardware Not Supported\) on page 558](#)
[show chassis fpc pic-status on page 558](#)
[show chassis fpc pic-status \(M Series Routers\) on page 558](#)
[show chassis fpc pic-status \(M120 Router\) on page 559](#)
[show chassis fpc pic-status \(MX240, MX480, and MX960 Routers with Application Services Modular Line Card\) on page 559](#)
[show chassis fpc lcc \(TX Matrix Router\) on page 559](#)
[show chassis fpc pic-status \(TX Matrix Router\) on page 559](#)
[show chassis fpc pic-status lcc \(TX Matrix Router\) on page 560](#)
[show chassis fpc \(TX Matrix Plus Router\) on page 560](#)
[show chassis fpc lcc \(TX Matrix Plus Router\) on page 561](#)
[show chassis fpc detail \(TX Matrix Plus Router\) on page 561](#)
[show chassis fpc pic-status \(TX Matrix Plus Router\) on page 563](#)
[show chassis fpc \(T1600 Router\) on page 564](#)
[show chassis fpc detail \(T1600 Router\) on page 564](#)
[show chassis fpc <fpc-slot> \(EX Series Switch\) on page 565](#)
[show chassis fpc slot \(T1600 Router\) on page 565](#)
[show chassis fpc pic-status \(T1600 Router\) on page 565](#)
[show chassis fpc \(T4000 Router\) on page 566](#)
[show chassis fpc detail \(T4000 Router\) on page 566](#)
[show chassis fpc pic-status \(T4000 Router\) on page 567](#)
[show chassis fpc \(QFX Series\) on page 567](#)
[show chassis fpc detail \(QFX3500 Switches\) on page 567](#)
[show chassis fpc pic-status \(QFX3500 Switches\) on page 567](#)
[show chassis fpc interconnect-device \(QFabric System\) on page 567](#)
[show chassis fpc interconnect-device \(QFabric System\) on page 568](#)
[show chassis fpc interconnect-device detail \(QFabric System\) on page 568](#)

[show chassis fpc pic-status interconnect-device \(QFabric System\) on page 568](#)
[show chassis fpc pic-status node-device \(QFabric System\) on page 569](#)
[show chassis fpc \(PTX5000 Packet Transport Router\) on page 569](#)
[show chassis fpc detail \(PTX5000 Packet Transport Router\) on page 569](#)
[show chassis fpc pic-status \(PTX5000 Packet Transport Router\) on page 570](#)
[show chassis fpc \(ACX2000 Universal Access Router\) on page 570](#)
[show chassis fpc 0 \(ACX2000 Universal Access Router\) on page 570](#)
[show chassis fpc detail \(ACX2000 Universal Access Router\) on page 570](#)
[show chassis fpc pic-status \(ACX2000 Universal Access Router\) on page 571](#)
[show chassis FPC 1 \(MX Routers with Media Services Blade \[MSB\]\) on page 571](#)
[show chassis FPC 1 detail \(MX Routers with Media Services Blade \[MSB\]\) on page 571](#)

Output Fields Table 32 on page 548 lists the output fields for the **show chassis fpc** command. Output fields are listed in the approximate order in which they appear.

Table 32: show chassis fpc Output Fields

Field Name	Field Description	Level of Output
Slot or Slot State	<p>Slot number and state. The state can be one of the following conditions:</p> <ul style="list-style-type: none"> • Dead—Held in reset because of errors. • Diag—Slot is being ignored while the FPC is running diagnostics. • Dormant—Held in reset. • Empty—No FPC is present. • Offline—(PTX Series Packet Transport Routers only) One of the following two states is displayed: <ul style="list-style-type: none"> • FPC offlined due to unreachable destinations • FPC Offlined due to degraded FPC action • Online—FPC is online and running. • Present—FPC is detected by the chassis daemon but either is not supported by the current version of Junos OS or is inserted in the wrong slot. The output also states either Hardware Not Supported or Hardware Not In Right Slot. The FPC is coming up but not yet online. • Probed—Probe is complete; awaiting restart of the Packet Forwarding Engine. • Probe-wait—Waiting to be probed. 	all levels
Logical slot	Slot number.	all levels
Temp (C) or Temperature	Temperature of the air passing by the FPC, in degrees Celsius or in both Celsius and Fahrenheit.	all levels all levels

Table 32: show chassis fpc Output Fields (*continued*)

Field Name	Field Description	Level of Output
Temperature (PTX Series)	<p>On PTX Series Packet Transport Routers, temperature details are provided in degrees Celsius and Fahrenheit. Output includes:</p> <ul style="list-style-type: none"> • Temperature (PMB)—Temperature of the air passing by the Processor Mezzanine Board (PMB) at the bottom of the FPC. • Temperature (Intake)—Temperature of the air flowing into the chassis. • Temperature (Exhaust)—Exhaust temperatures for multiple zones (Exhaust A and Exhaust B). • Temperature (TLn)—Temperature of the specified Lookup ASIC (TL) of the packet forwarding engine on the FPC. • Temperature (TQn)—Temperature of the specified Queuing and Memory Interface ASIC (TQ) of the packet forwarding engine on the FPC. 	detail
Total CPU Utilization (%)	Total percentage of CPU being used by the FPC's processor.	all levels
Interrupt CPU Utilization (%)	Of the total CPU being used by the FPC's processor, the percentage being used for interrupts.	none specified
Memory DRAM (MB)	Total DRAM, in megabytes, available to the FPC's processor.	none specified
Heap Utilization (%)	<p>Percentage of heap space (dynamic memory) being used by the FPC's processor. If this number exceeds 80 percent, there may be a software problem (memory leak).</p> <p>NOTE: On MX Series routers and EX Series switches in a broadband edge environment, heap utilization levels higher than 70 percent can affect unified ISSU, router stability, or scaling capability.</p>	none specified
Buffer Utilization (%)	Percentage of buffer space being used by the FPC's processor for buffering internal messages.	none specified
Total CPU DRAM	Amount of DRAM available to the FPC's CPU.	detail
Total RLDRAM	Amount of reduced latency dynamic random access memory (RLDRAM) available to the FPC CPU.	detail
Total DDR DRAM	Amount of double data rate dynamic random access memory (DDR DRAM) available to the FPC CPU.	detail
Total SRAM	Amount of static RAM (SRAM) used by the FPC's CPU.	detail
Total SDRAM	Total amount of memory used for storing packets and notifications.	detail
I/O Manager ASICs information	I/O Manager version number, manufacturer, and part number.	detail
Start time	Time when the Routing Engine detected that the FPC was running.	detail

Table 32: show chassis fpc Output Fields (*continued*)

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

Sample Output

show chassis fpc (EX6210 Switch)

```

user@switch> show chassis fpc

```

Slot	State	Temp (C)	CPU Total	Utilization (%) Interrupt	Memory DRAM (MB)	Utilization (%) Heap	Utilization (%) Buffer
0	Empty						
1	Online	7	5	0	1024	0	32
2	Empty						
3	Empty						
4	Online	25	17	2	2048	0	30
5	Online	25	3	0	2048	0	24
6	Online	6	5	0	1024	0	32
7	Empty						
8	Empty						
9	Online	8	7	0	1024	0	32

show chassis fpc (M10 Router)

```

user@host> show chassis fpc
FPC status:

```

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

show chassis fpc (M20 Router)

```

user@host> show chassis fpc
FPC status:

```

Slot	State	Temp (C)	CPU Total	Utilization (%) Interrupt	Memory DRAM (MB)	Utilization (%) Heap	Utilization (%) Buffer
0	Empty	0	0	0	0	0	0
1	Online	38	0	0	8	0	4
2	Online	35	0	0	8	0	3
3	Empty	0	0	0	0	0	0

show chassis fpc detail (M Series Routers)

```

user@host> show chassis fpc detail 1
Slot 1 information:
State Online
Temperature 48 degrees C
Total CPU DRAM 32 MB
Total SRAM 4 MB
Total SDRAM 256 MB
I/O Manager ASICs information Version 2.0, Foundry IBM, Part number 0
I/O Manager ASICs information Version 2.0, Foundry IBM, Part number 0

```

```

Start time          2000-02-08 02:18:49 UTC
Uptime              14 hours, 41 minutes, 41 seconds

```

show chassis fpc detail (MX80 Router)

```

user@host> show chassis fpc detail
Slot 0 information:
  State              Online
  Temperature        47 degrees C / 116 degrees F
  Total CPU DRAM     1024 MB
  Total SRAM         331 MB
  Total SDRAM        1280 MB
  Start time         2010-02-08 12:25:33 PST
  Uptime              2 hours, 13 minutes, 19 seconds
Slot 1 information:
  State              Online
  Temperature        47 degrees C / 116 degrees F
  Total CPU DRAM     1024 MB
  Total SRAM         331 MB
  Total SDRAM        1280 MB
  Start time         2010-02-08 12:25:33 PST
  Uptime              2 hours, 13 minutes, 19 seconds

```

show chassis fpc (MX104 Router)

```

user@host> show chassis fpc
Temp  CPU Utilization (%)  Memory  Utilization (%)
Slot State      (C)   Total  Interrupt  DRAM (MB)  Heap  Buffer
0  Online        32    15      5        2048      22    13
1  Online        32    15      5        2048      22    13
2  Online        32    15      5        2048      22    13

```

show chassis fpc detail (MX104 Router)

```

user@host> show chassis fpc detail
Slot 0 information:
  State              Online
  Temperature        32 (C)
  Total CPU DRAM     2048 MB
  Total SRAM         403 MB
  Total SDRAM        1316 MB
  Start time         2013-05-23 14:39:18 IST
  Uptime              1 hour, 20 minutes, 22 seconds
Slot 1 information:
  State              Online
  Temperature        32 (C)
  Total CPU DRAM     2048 MB
  Total SRAM         403 MB
  Total SDRAM        1316 MB
  Start time         2013-05-23 14:39:18 IST
  Uptime              1 hour, 20 minutes, 22 seconds
Slot 2 information:
  State              Online
  Temperature        32 (C)
  Total CPU DRAM     2048 MB
  Total SRAM         403 MB
  Total SDRAM        1316 MB
  Start time         2013-05-23 14:39:18 IST
  Uptime              1 hour, 20 minutes, 22 seconds

```

show chassis fpc pic-status (MX104 Router)

```
user@host> show chassis fpc pic-status
Slot 0   Online
Slot 1   Online
  PIC 0   Online      10x 1GE(LAN) -E SFP
  PIC 1   Online      10x 1GE(LAN) -E SFP
Slot 2   Online
  PIC 0   Online      4x 10GE(LAN) SFP+
```

show chassis fpc (MX240 Router)

```
user@host> show chassis fpc
Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
0 Empty
1 Online 34 6 0 1024 18 30
2 Online 33 9 0 1024 24 30
```

show chassis fpc (EX Series Switch)

```
user@host> show chassis fpc
Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
0 Empty
1 Online 41 13 0 2048 19 14
2 Online 42 12 0 2048 19 14
```

show chassis fpc (MX480 Router)

```
user@host> show chassis fpc
Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
0 Empty
1 Online 36 9 0 1024 17 57
2 Empty
3 Empty
4 Empty
5 Empty
```

show chassis fpc (MX480 Router with 100-Gigabit Ethernet CFP)

```
user@host> show chassis fpc
Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
0 Online 33 4 0 2048 10 13
1 Online 36 7 0 2048 16 13
2 Online 29 6 0 1024 27 29
3 Online 33 0 0 0 0 0
4 Online 36 7 0 2048 19 13
5 Online 34 31 11 2048 14 13
```

show chassis fpc pic-status (MX480 Router with 100-Gigabit Ethernet CFP)

```
user@host> show chassis fpc pic-status
Slot 1   Online      MPC Type 3
  PIC 2   Online      1X100GE CFP
Slot 2   Online      DPCE 40x 1GE R EQ
  PIC 0   Online      10x 1GE(LAN) EQ
  PIC 1   Online      10x 1GE(LAN) EQ
  PIC 2   Online      10x 1GE(LAN) EQ
```

```

PIC 3 Online      10x 1GE(LAN) EQ
Slot 3 Online     MPC Type 3
PIC 0 Online      1X100GE CFP
PIC 2 Online      1X100GE CFP
Slot 4 Online     MPC Type 3
PIC 0 Online      1X100GE CFP
PIC 2 Online      1X100GE CFP
Slot 5 Online     MPC Type 2 3D EQ
PIC 0 Online      2x 10GE XFP
PIC 1 Online      2x 10GE XFP
PIC 2 Online      10x 1GE(LAN) SFP
PIC 3 Online      10x 1GE(LAN) SFP

```

show chassis fpc pic-status (EX Series Switch)

```

user@host> show chassis fpc pic-status
Slot 1 Online     EX9200 32x10G SFP
PIC 0 Online      8X10GE SFPP
PIC 1 Online      8X10GE SFPP
PIC 2 Online      8X10GE SFPP
PIC 3 Online      8X10GE SFPP
Slot 2 Online     EX9200 32x10G SFP
PIC 0 Online      8X10GE SFPP
PIC 1 Online      8X10GE SFPP
PIC 2 Online      8X10GE SFPP
PIC 3 Online      8X10GE SFPP

```

show chassis fpc (MX480 Router with MPC4E)

```

user@host> show chassis fpc
      Temp CPU Utilization (%) Memory Utilization (%)
Slot State      (C) Total Interrupt   DRAM (MB) Heap   Buffer
0 Empty
1 Empty
2 Online        38    7         0      2048    19    14
3 Online        39    8         0      2048    18    14
4 Online        39    7         0      2048    17    14
5 Empty

```

show chassis fpc detail (MX480 Router with MPC4E)

```

user@host> show chassis fpc detail
Slot 2 information:
  State Online
  Temperature 38
  Total CPU DRAM 2048 MB
  Total RLDRAM 1036 MB
  Total DDR DRAM 11264 MB
  Start time: 2013-02-18 05:06:57 PST
  Uptime: 17 hours, 41 minutes, 9 seconds
  Max Power Consumption 610 Watts
Slot 3 information:
  State Online
  Temperature 38
  Total CPU DRAM 2048 MB
  Total RLDRAM 1036 MB
  Total DDR DRAM 11264 MB
  Start time: 2013-02-18 05:07:00 PST
  Uptime: 17 hours, 41 minutes, 6 seconds
  Max Power Consumption 610 Watts
Slot 4 information:
  State Diagnostics

```

```

Temperature                37
Total CPU DRAM              0 MB
Total RLD RAM              0 MB
Total DDR DRAM              0 MB
Max Power Consumption       520 Watts

```

show chassis fpc (MX480 Router with MPC4E)

```

user@host> show chassis fpc

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory Utilization (%)	DRAM (MB)	Heap	Buffer
0	Empty						
1	Empty						
2	Online	38	7	0	2048	19	14
3	Online	39	8	0	2048	18	14
4	Online	39	7	0	2048	17	14
5	Empty						

show chassis fpc detail (MX480 Router with MPC4E)

```

user@host> show chassis fpc detail

```

Slot 2 information:

```

State                Online
Temperature           38
Total CPU DRAM        2048 MB
Total RLD RAM         1036 MB
Total DDR DRAM        11264 MB
Start time:           2013-02-18 05:06:57 PST
Uptime:               17 hours, 41 minutes, 9 seconds
Max Power Consumption 610 Watts

```

Slot 3 information:

```

State                Online
Temperature           38
Total CPU DRAM        2048 MB
Total RLD RAM         1036 MB
Total DDR DRAM        11264 MB
Start time:           2013-02-18 05:07:00 PST
Uptime:               17 hours, 41 minutes, 6 seconds
Max Power Consumption 610 Watts

```

Slot 4 information:

```

State                Diagnostics
Temperature           37
Total CPU DRAM        0 MB
Total RLD RAM         0 MB
Total DDR DRAM        0 MB
Max Power Consumption 520 Watts

```

show chassis fpc (MX960 Router)

```

user@host> show chassis fpc

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory Utilization (%)	DRAM (MB)	Heap	Buffer
0	Empty						
1	Empty						
2	Empty						
3	Online	25	19	0	1024	15	57
4	Empty						
5	Online	26	27	0	1024	15	57
6	Empty						
7	Empty						
8	Empty						
9	Empty						

```

10 Empty
11 Empty

```

show chassis fpc (MX240, MX480, MX960 Routers with Application Services Modular Line Card)

```

user@host> show chassis fpc 1
      Temp CPU Utilization (%)  Memory  Utilization (%)
Slot State      (C) Total  Interrupt    DRAM (MB) Heap    Buffer
  1 Online           34     5         0      3072     5     13

```

show chassis fpc (MX240, MX480, MX960 with Application Services Modular Line Card)

```

user@host> show chassis fpc 1 detail
Slot 1 information:
State                               Online
Temperature                         34
Total CPU DRAM                      3072 MB
Total RLD RAM                       259 MB
Total DDR DRAM                      4864 MB
Start time:                         2012-06-19 10:51:43 PDT
Uptime:                             16 minutes, 48 seconds
Max Power Consumption               550 Watts

```

show chassis fpc (MX2010 Routers)

```

user@host> show chassis fpc
      Temp CPU Utilization (%)  Memory  Utilization (%)
Slot State      (C) Total  Interrupt    DRAM (MB) Heap    Buffer
  0 Online           34     9         0      2048    18    13
  1 Online           32     9         0      2048    15    13
  2 Empty
  3 Empty
  4 Empty
  5 Empty
  6 Empty
  7 Empty
  8 Online           31    13         0      2048    11    13
  9 Online           33    10         0      2048    18    13

```

show chassis fpc (MX2020 Routers)

```

user@host> show chassis fpc
      Temp CPU Utilization (%)  Memory  Utilization (%)
Slot State      (C) Total  Interrupt    DRAM (MB) Heap    Buffer
  0 Online          10    12         0      2048    18    13
  1 Online           8     9         0      2048    18    13
  2 Online           7     9         0      2048    18    13
  3 Online           8    10         0      2048    18    13
  4 Online           9    10         0      2048    18    13
  5 Online           8     9         0      2048    18    13
  6 Online           8    10         0      2048    18    13
  7 Online           9     9         0      2048    18    13
  8 Online           9    10         0      2048    18    13
  9 Online          10     9         0      2048    18    13
 10 Online          16     8         0      2048    18    13
 11 Online          11    10         0      2048    18    13
 12 Online          10    10         0      2048    18    13
 13 Online          11     9         0      2048    18    13
 14 Online          12    10         0      2048    18    13
 15 Online          13     9         0      2048    18    13
 16 Online          13     9         0      2048    18    13
 17 Online          12     9         0      2048    18    13

```

18	Online	12	8	0	2048	18	13
19	Online	14	10	0	2048	18	13

show chassis fpc (MX2020 Router with MPC4E)

```

user@host> show chassis fpc
      Temp CPU Utilization (%) Memory      Utilization (%)
Slot State      (C) Total Interrupt      DRAM (MB) Heap      Buffer
  0 Online           33    12         2      2048     11      13
  1 Empty
  2 Empty
  3 Empty
  4 Empty
  5 Empty
  6 Empty
  7 Empty
  8 Empty
  9 Online           31    10         0      2048     11      13
10 Online           32     7         0      2048     14      13
11 Empty
12 Empty
13 Empty
14 Online           28    12         0      2048     15      14
15 Empty
16 Empty
17 Empty
18 Empty
19 Online           38     8         0      2048     18      13

```

show chassis fpc detail (MX2020 Router with MPC4E)

```

user@host> show chassis fpc detail
Slot 0 information:
  State Online
  Temperature 34
  Total CPU DRAM 2048 MB
  Total RLDRAM 806 MB
  Total DDR DRAM 2632 MB
  Start time: 2013-02-17 08:17:35 PST
  Uptime: 1 day, 14 hours, 50 minutes, 39 seconds
  Max Power Consumption 368 Watts
Slot 9 information:
  State Online
  Temperature 32
  Total CPU DRAM 2048 MB
  Total RLDRAM 806 MB
  Total DDR DRAM 2632 MB
  Start time: 2013-02-17 08:17:43 PST
  Uptime: 1 day, 14 hours, 50 minutes, 31 seconds
  Max Power Consumption 368 Watts
Slot 10 information:
  State Online
  Temperature 37
  Total CPU DRAM 2048 MB
  Total RLDRAM 1036 MB
  Total DDR DRAM 6656 MB
  Start time: 2013-02-17 08:17:54 PST
  Uptime: 1 day, 14 hours, 50 minutes, 20 seconds
  Max Power Consumption 520 Watts
Slot 14 information:
  State Online

```



```

Temperature                32
Total CPU DRAM              2048 MB
Total RLD RAM              1036 MB
Total DDR DRAM             11264 MB
Start time:                 2013-02-17 08:18:01 PST
Uptime:                     1 day, 14 hours, 50 minutes, 13 seconds
Max Power Consumption       610 Watts
Slot 19 information:
State                       Online
Temperature                 38
Total CPU DRAM              2048 MB
Total RLD RAM              1324 MB
Total DDR DRAM             5120 MB
Start time:                 2013-02-17 08:18:08 PST
Uptime:                     1 day, 14 hours, 50 minutes, 6 seconds
Max Power Consumption       440 Watts

```

show chassis fpc detail (MX Series Routers)

```

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

```

show chassis fpc detail (EX Series Switches)

```

user@host> show chassis fpc detail 2
Slot 1 information:
State                       Online
Temperature                 41
Total CPU DRAM              2048 MB
Total RLD RAM              1036 MB
Total DDR DRAM             11264 MB
Start time:                 2013-04-02 00:04:52 PDT
Uptime:                     7 days, 9 hours, 47 minutes, 46 seconds
Max Power Consumption       610 Watts
Slot 2 information:
State                       Online
Temperature                 41
Total CPU DRAM              2048 MB
Total RLD RAM              1036 MB
Total DDR DRAM             11264 MB
Start time:                 2013-04-02 00:04:56 PDT
Uptime:                     7 days, 9 hours, 47 minutes, 42 seconds
Max Power Consumption       610 Watts

```

show chassis fpc (Hardware Not Supported)

```

user@host> show chassis fpc
show chassis fpc

```

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

```

4 Empty
5 Empty
6 Online          0          0          0          0          0

```

show chassis fpc detail (Hardware Not Supported)

```

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

```

show chassis fpc pic-status

```

user@host> show chassis fpc pic-status
Slot 0 Online
  PIC 1  1x OC-12 ATM, MM
  PIC 2  1x OC-12 ATM, MM
  PIC 3  1x OC-12 ATM, MM
Slot 1 Online
  PIC 0  1x OC-48 SONET, SMIR
Slot 2 Online
  PIC 0  1x OC-192 SONET, SMSR

```

show chassis fpc pic-status (M Series Routers)

```

user@host> show chassis fpc pic-status
Slot 1 Online      FPC Type 1
  PIC 0 Present    2x OC-3 ATM, MM- Hardware Error
  PIC 1 Online     4x OC-3 SONET, SMIR
Slot 2 Online      E-FPC Type 2
  PIC 0 Online     4x G/E, 1000 BASE-SX
  PIC 1 Online     2x G/E SFP, 1000 BASE
  PIC 3 Online     1x Tunnel
Slot 3 Online      E-FPC Type 1
  PIC 0 Online     1x G/E IQ, 1000 BASE
  PIC 2 Online     1x G/E SFP, 1000 BASE
Slot 4 Online      E-FPC Type 2
  PIC 0 Online     4x G/E SFP, 1000 BASE
  PIC 1 Online     4x G/E SFP, 1000 BASE
  PIC 2 Online     4x G/E SFP, 1000 BASE
  PIC 3 Online     4x G/E SFP, 1000 BASE

```

```
Slot 5   Online       FPC Type 2
...
```

show chassis fpc pic-status (M120 Router)

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

show chassis fpc pic-status (MX240, MX480, and MX960 Routers with Application Services Modular Line Card)

In the following output **Slot 1** and **Slot 5** are the Application Services Modular Carrier Cards (AS MCC), **PIC 0** is the Application Services Modular Storage Card (AS MSC), and **PIC 2** is the Application Services Modular Processing Card (AS MXC).

```
user@host> show chassis fpc pic-status
Slot 2   Online       MPC Type 1 3D Q
  Slot 1   Online       AS-MCC
  PIC 0   Online       AS-MSC
  PIC 2   Online       AS-MXC
Slot 4   Offline      MPC 3D 16x 10GE
Slot 5   Offline      AS-MCC
```

show chassis fpc lcc (TX Matrix Router)

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

show chassis fpc pic-status (TX Matrix Router)

```
user@host> show chassis fpc pic-status
lcc0-re0:
-----
Slot 0   Online       FPC Type 3
  PIC 0   Online       1x OC-192 SM SR1
  PIC 1   Online       1x OC-192 SM SR2
  PIC 2   Online       1x OC-192 SM SR1
  PIC 3   Online       1x Tunnel
```

```

Slot 1  Online      FPC Type 2
PIC 0   Online      1x OC-48 SONET, SMSR
PIC 1   Online      1x OC-48 SONET, SMSR

```

```
lcc1-re0:
```

```
lcc2-re0:
```

```

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

```

```
lcc3-re0:
```

show chassis fpc pic-status lcc (TX Matrix Router)

```

user@host> show chassis fpc pic-status lcc 0
lcc0-re0:

```

```

Slot 0  Online      FPC Type 3
PIC 0   Online      1x OC-192 SM SR2
Slot 1  Online      FPC Type 2
PIC 0   Online      2x OC-12 ATM2 IQ, MM
PIC 1   Online      1x OC-48 SONET, SMSR
PIC 2   Online      1x OC-48 SONET, SMSR
PIC 3   Online      4x G/E, 1000 BASE-SX

```

show chassis fpc (TX Matrix Plus Router)

```

user@host> show chassis fpc
lcc0-re0:

```

Slot	State	Temp (C)	CPU Utilization (%) Total Interrupt	Memory DRAM (MB)	Utilization (%) Heap Buffer
0	Empty				
1	Online	38	4 0	2048	3 24
2	Online	43	8 0	2048	6 24
3	Empty				
4	Online	43	6 0	2048	6 24
5	Empty				
6	Online	42	13 0	2048	6 24
7	Online	45	7 0	2048	3 24

```
lcc2-re0:
```

Slot	State	Temp (C)	CPU Utilization (%) Total Interrupt	Memory DRAM (MB)	Utilization (%) Heap Buffer
0	Online	42	10 0	2048	6 24
1	Empty				
2	Online	42	11 0	2048	6 24
3	Online	40	5 0	2048	3 24
4	Online	33	26 0	1024	8 49
5	Empty				
6	Online	43	8 0	2048	6 24
7	Online	46	6 0	2048	3 24

lcc3-re0:

Slot	State	Temp (C)	CPU Total	Utilization (%) Interrupt	Memory DRAM (MB)	Utilization (%) Heap	Utilization (%) Buffer
0	Empty						
1	Empty						
2	Online	39	30	0	2048	7	24
3	Empty						
4	Online	41	8	0	2048	6	24
5	Online	41	12	0	2048	6	24
6	Online	40	8	0	2048	6	24
7	Online	42	4	0	2048	3	24

show chassis fpc lcc (TX Matrix Plus Router)

user@host> show chassis fpc lcc 0

lcc0-re0:

Slot	State	Temp (C)	CPU Total	Utilization (%) Interrupt	Memory DRAM (MB)	Utilization (%) Heap	Utilization (%) Buffer
0	Empty						
1	Online	38	4	0	2048	3	24
2	Online	43	8	0	2048	6	24
3	Empty						
4	Online	43	6	0	2048	6	24
5	Empty						
6	Online	42	14	0	2048	6	24
7	Online	45	6	0	2048	3	24

show chassis fpc detail (TX Matrix Plus Router)

user@host> show chassis fpc details

lcc0-re0:

Slot 1 information:

State Online
 Temperature 38 degrees C / 100 degrees F
 Total CPU DRAM 2048 MB
 Total SRAM 64 MB
 Total SDRAM 1280 MB
 Start time 2010-10-04 20:06:22 PDT
 Uptime 1 hour, 32 minutes, 51 seconds

Slot 2 information:

State Online
 Temperature 43 degrees C / 109 degrees F
 Total CPU DRAM 2048 MB
 Total SRAM 128 MB
 Total SDRAM 2560 MB
 Start time 2010-10-04 20:06:37 PDT
 Uptime 1 hour, 32 minutes, 36 seconds

Slot 4 information:

State Online
 Temperature 43 degrees C / 109 degrees F
 Total CPU DRAM 2048 MB
 Total SRAM 128 MB
 Total SDRAM 2560 MB
 Start time 2010-10-04 20:06:40 PDT
 Uptime 1 hour, 32 minutes, 33 seconds

Slot 6 information:

State	Online
Temperature	42 degrees C / 107 degrees F
Total CPU DRAM	2048 MB
Total SRAM	128 MB
Total SDRAM	2560 MB
Start time	2010-10-04 20:06:42 PDT
Uptime	1 hour, 32 minutes, 31 seconds

Slot 7 information:

State	Online
Temperature	45 degrees C / 113 degrees F
Total CPU DRAM	2048 MB
Total SRAM	64 MB
Total SDRAM	1280 MB
Start time	2010-10-04 20:06:43 PDT
Uptime	1 hour, 32 minutes, 30 seconds

lcc2-re0:

Slot 0 information:

State	Online
Temperature	42 degrees C / 107 degrees F
Total CPU DRAM	2048 MB
Total SRAM	128 MB
Total SDRAM	2560 MB
Start time	2010-10-04 20:06:35 PDT
Uptime	1 hour, 32 minutes, 38 seconds

Slot 2 information:

State	Online
Temperature	42 degrees C / 107 degrees F
Total CPU DRAM	2048 MB
Total SRAM	128 MB
Total SDRAM	2560 MB
Start time	2010-10-04 20:06:37 PDT
Uptime	1 hour, 32 minutes, 36 seconds

Slot 3 information:

State	Online
Temperature	40 degrees C / 104 degrees F
Total CPU DRAM	2048 MB
Total SRAM	64 MB
Total SDRAM	1280 MB
Start time	2010-10-04 20:06:28 PDT
Uptime	1 hour, 32 minutes, 45 seconds

Slot 4 information:

State	Online
Temperature	33 degrees C / 91 degrees F
Total CPU DRAM	1024 MB
Total SRAM	64 MB
Total SDRAM	1280 MB
Start time	2010-10-04 20:08:03 PDT
Uptime	1 hour, 31 minutes, 10 seconds

Slot 6 information:

State	Online
Temperature	43 degrees C / 109 degrees F
Total CPU DRAM	2048 MB
Total SRAM	128 MB
Total SDRAM	2560 MB
Start time	2010-10-04 20:06:44 PDT
Uptime	1 hour, 32 minutes, 29 seconds

Slot 7 information:

State	Online
Temperature	46 degrees C / 114 degrees F

```

Total CPU DRAM          2048 MB
Total SRAM              64 MB
Total SDRAM            1280 MB
Start time              2010-10-04 20:06:46 PDT
Uptime                  1 hour, 32 minutes, 27 seconds

```

lcc3-re0:

Slot 2 information:

```

State                  Online
Temperature            38 degrees C / 100 degrees F
Total CPU DRAM        2048 MB
Total SRAM            128 MB
Total SDRAM           2560 MB
Start time            2010-10-04 20:17:31 PDT
Uptime                1 hour, 21 minutes, 42 seconds

```

Slot 4 information:

```

State                  Online
Temperature            41 degrees C / 105 degrees F
Total CPU DRAM        2048 MB
Total SRAM            128 MB
Total SDRAM           2560 MB
Start time            2010-10-04 20:17:34 PDT
Uptime                1 hour, 21 minutes, 39 seconds

```

Slot 5 information:

```

State                  Online
Temperature            41 degrees C / 105 degrees F
Total CPU DRAM        2048 MB
Total SRAM            128 MB
Total SDRAM           2560 MB
Start time            2010-10-04 20:17:36 PDT
Uptime                1 hour, 21 minutes, 37 seconds

```

Slot 6 information:

```

State                  Online
Temperature            40 degrees C / 104 degrees F
Total CPU DRAM        2048 MB
Total SRAM            128 MB
Total SDRAM           2560 MB
Start time            2010-10-04 20:17:39 PDT
Uptime                1 hour, 21 minutes, 34 seconds

```

Slot 7 information:

```

State                  Online
Temperature            42 degrees C / 107 degrees F
Total CPU DRAM        2048 MB
Total SRAM            64 MB
Total SDRAM           1280 MB
Start time            2010-10-04 20:17:41 PDT
Uptime                1 hour, 21 minutes, 32 seconds

```

show chassis fpc pic-status (TX Matrix Plus Router)

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

lcc0-re0:

```

-----
Slot 1  Online      FPC Type 2-ES
PIC 0   Online      8x 1GE(LAN), IQ2
Slot 2  Online      FPC Type 4-ES
PIC 0   Online      4x 10GE (LAN/WAN) XFP
Slot 4  Online      FPC Type 4-ES
PIC 0   Online      4x 10GE (LAN/WAN) XFP

```

```

Slot 6  Online      FPC Type 4-ES
      PIC 0  Online      4x 10GE (LAN/WAN) XFP
      PIC 1  Online      4x 10GE (LAN/WAN) XFP
Slot 7  Online      FPC Type 3-ES
      PIC 0  Online      10x 1GE(LAN), 1000 BASE
      PIC 2  Online      1x OC-192 SM SR2
      PIC 3  Online      10x 1GE(LAN), 1000 BASE

```

lcc2-re0:

```

-----
Slot 0  Online      FPC Type 4-ES
      PIC 0  Online      4x 10GE (LAN/WAN) XFP
Slot 2  Online      FPC Type 4-ES
      PIC 0  Online      4x 10GE (LAN/WAN) XFP
      PIC 1  Online      4x 10GE (LAN/WAN) XFP
Slot 3  Online      FPC Type 2-ES
      PIC 0  Online      8x 1GE(LAN), IQ2
Slot 4  Online      FPC Type 4
      PIC 0  Online      10x10GE(LAN/WAN) SFPP
Slot 6  Online      FPC Type 4-ES
      PIC 0  Online      4x OC-192 SONET XFP
Slot 7  Online      FPC Type 3-ES
      PIC 0  Online      10x 1GE(LAN), 1000 BASE
      PIC 1  Offline     1x 10GE(LAN/WAN) IQ2E
      PIC 2  Online      1x OC-192 SM SR2
      PIC 3  Online      1x Tunnel

```

lcc3-re0:

```

-----
Slot 2  Online      FPC Type 4-ES
      PIC 0  Online      10x10GE(LAN/WAN) SFPP
Slot 4  Online      FPC Type 4-ES
      PIC 0  Online      4x OC-192 SONET XFP
Slot 5  Online      FPC Type 4-ES
      PIC 0  Online      4x OC-192 SONET XFP
      PIC 1  Online      4x 10GE (LAN/WAN) XFP
Slot 6  Online      FPC Type 4-ES
      PIC 1  Online      4x 10GE (LAN/WAN) XFP
Slot 7  Online      FPC Type 3-ES
      PIC 0  Online      10x 1GE(LAN), 1000 BASE
      PIC 1  Online      8x 1GE(TYPE3), IQ2E
      PIC 2  Online      4x OC-48 SONET

```

show chassis fpc (T1600 Router)

```

user@host> show chassis fpc

```

Slot	State	Temp (C)	CPU Utilization (%)		Memory DRAM (MB)	Utilization (%)	
			Total	Interrupt		Heap	Buffer
0	Empty						
1	Empty						
2	Online	49	3	0	2048	3	24
3	Online	46	6	0	2048	6	24
4	Empty						
5	Online	46	5	0	2048	3	24
6	Empty						
7	Online	44	8	0	1024	7	49

show chassis fpc detail (T1600 Router)

```

user@host> show chassis fpc detail

```



```

show chassis fpc detail
Slot 2 information:
  State                Online
  Temperature          49 degrees C / 120 degrees F
  Total CPU DRAM       2048 MB
  Total SRAM           64 MB
  Total SDRAM          1280 MB
  Start time           2010-10-04 21:12:52 PDT
  Uptime               32 minutes, 9 seconds
Slot 3 information:
  State                Online
  Temperature          47 degrees C / 116 degrees F
  Total CPU DRAM       2048 MB
  Total SRAM           128 MB
  Total SDRAM          2560 MB
  Start time           2010-10-04 21:13:06 PDT
  Uptime               31 minutes, 55 seconds
Slot 5 information:
  State                Online
  Temperature          46 degrees C / 114 degrees F
  Total CPU DRAM       2048 MB
  Total SRAM           64 MB
  Total SDRAM          1280 MB
  Start time           2010-10-04 21:12:56 PDT
  Uptime               32 minutes, 5 seconds
Slot 7 information:
  State                Online
  Temperature          44 degrees C / 111 degrees F
  Total CPU DRAM       1024 MB
  Total SRAM           64 MB
  Total SDRAM          1280 MB
  Start time           2010-10-04 21:14:34 PDT
  Uptime               30 minutes, 27 seconds

```

show chassis fpc <fpc-slot> (EX Series Switch)

```
user@host> show chassis fpc 2
```

Slot	State	Temp (C)	CPU Utilization (%)	Memory DRAM (MB)	Utilization (%)
			Total Interrupt	Heap	Buffer
2	Online	40	12 0	2048 19	14

show chassis fpc slot (T1600 Router)

```
user@host> show chassis fpc slot 2
```

Slot	State	Temp (C)	CPU Utilization (%)	Memory DRAM (MB)	Utilization (%)
			Total Interrupt	Heap	Buffer
2	Online	49	3 0	2048 3	24

show chassis fpc pic-status (T1600 Router)

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

```

Slot 2  Online  FPC Type 1-ES
PIC 0   Online  Load Type 1
PIC 1   Online  4x 1GE(LAN), IQ2E
PIC 3   Online  1x OC-12-3 SFP
Slot 3  Online  FPC Type 4-ES
PIC 0   Online  4x 10GE (LAN/WAN) XFP
PIC 1   Online  4x OC-192 SONET XFP

```

```

Slot 5   Online      FPC Type 2-ES
PIC 0    Online      Load Type 2
PIC 1    Online      8x 1GE(LAN), IQ2E
PIC 2    Online      8x 1GE(LAN), IQ2E
PIC 3    Online      1x OC-48-12-3 SFP
Slot 7   Online      FPC Type 4
PIC 0    Online      4x 10GE (LAN/WAN) XFP

```

show chassis fpc (T4000 Router)

```
user@host> show chassis fpc
```

```

regress@stymphalian# run show chassis fpc

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory DRAM (MB)	Utilization (%)
			Total Interrupt	Heap	Buffer
0	Online	48	15 0	2816	21 27
1	Empty				
2	Empty				
3	Online	51	15 0	2816	21 27
4	Empty				
5	Online	39	8 0	2048	6 23
6	Online	49	15 0	2816	21 27
7	Empty				

show chassis fpc detail (T4000 Router)

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

```
Slot 0 information:
```

```

State                Online
Temperature           48 degrees C / 118 degrees F
Total CPU DRAM        2816 MB
Total SRAM             1554 MB
Total SDRAM           10752 MB
Start time            2012-02-09 22:56:25 PST
Uptime                2 hours, 40 minutes, 52 seconds

```

```
Slot 3 information:
```

```

State                Online
Temperature           51 degrees C / 123 degrees F
Total CPU DRAM        2816 MB
Total SRAM             1554 MB
Total SDRAM           10752 MB
Start time            2012-02-09 22:56:22 PST
Uptime                2 hours, 40 minutes, 55 seconds

```

```
Slot 5 information:
```

```

State                Online
Temperature           39 degrees C / 102 degrees F
Total CPU DRAM        2048 MB
Total SRAM             128 MB
Total SDRAM           2560 MB
Start time            2012-02-09 22:51:27 PST
Uptime                2 hours, 45 minutes, 50 seconds

```

```
Slot 6 information:
```

```

State                Online
Temperature           49 degrees C / 120 degrees F
Total CPU DRAM        2816 MB
Total SRAM             1554 MB
Total SDRAM           10752 MB
Start time            2012-02-09 22:56:29 PST
Uptime                2 hours, 40 minutes, 48 seconds

```

show chassis fpc pic-status (T4000 Router)

```

user@host> show chassis fpc pic-status
Slot 0  Online      FPC Type 5-3D
  PIC 0  Online      12x10GE (LAN/WAN) SFPP
  PIC 1  Online      12x10GE (LAN/WAN) SFPP
Slot 3  Online      FPC Type 5-3D
  PIC 0  Online      1x100GE
  PIC 1  Online      12x10GE (LAN/WAN) SFPP
Slot 5  Online      FPC Type 4-ES
  PIC 0  Online      100GE
  PIC 1  Online      100GE CFP
Slot 6  Online      FPC Type 5-3D
  PIC 0  Online      12x10GE (LAN/WAN) SFPP
  PIC 1  Online      12x10GE (LAN/WAN) SFPP

```

show chassis fpc (QFX Series)

```

user@switch> show chassis fpc
Temp CPU Utilization (%) Memory      Utilization (%)
Slot State              (C) Total Interrupt    DRAM (MB) Heap      Buffer
0 Online                26      2          0        2820      0        49

```

show chassis fpc detail (QFX3500 Switches)

```

user@switch> show chassis fpc detail
Slot 0 information:
  State                      Online
  Temperature                28 degrees C / 82 degrees F
  Total CPU DRAM              2820 MB
  Total SRAM                  0 MB
  Total SDRAM                 0 MB
  Start time                  2010-09-20 01:34:13 PDT
  Uptime                      3 days, 3 hours, 31 minutes, 48 seconds

```

show chassis fpc pic-status (QFX3500 Switches)

```

user@switch> show chassis fpc pic-status
Slot 0  Online      QFX 48x10G 4x40G Switch
  PIC 0  Online      48x 10G-SFP+
  PIC 1  Online      15x 10G-SFP+

```

show chassis fpc interconnect-device (QFabric System)

```

user@switch> show chassis fpc interconnect-device interconnect1
FPC status:
Temp
Slot State      (C)
0 Online        0
1 Online        0
2 Online        0
3 Online        0
4 Online        0
5 Online        0
6 Online        0
7 Online        0
8 Online        0
9 Online        0
10 Online       0
11 Online       0
12 Online       0

```

13	Online	0
14	Online	0
15	Online	0

show chassis fpc interconnect-device (QFabric System)

```
user@switch> show chassis fpc interconnect-device interconnect1 3
FPC status:

Slot State      Temp
          (C)
  3  Online      0
```

show chassis fpc interconnect-device detail (QFabric System)

```
user@switch> show chassis fpc interconnect-device interconnect1 3 detail
Slot 3 information:
State      Online
Temperature 0 degrees C / 32 degrees F
Start time 2011-08-18 10:45:04 PDT
Uptime     1 minute, 49 seconds
```

show chassis fpc pic-status interconnect-device (QFabric System)

```
user@switch> show chassis fpc pic-status interconnect-device interconnect1
Slot 0  Online      QFX 16-port QSFP+ Front Card
PIC 0   Online      16x 40G-QSFP+
PIC 1   Online      16x 40G-GE
Slot 1  Online      QFX 16-port QSFP+ Front Card
PIC 0   Online      16x 40G-QSFP+
PIC 1   Online      16x 40G-GE
Slot 2  Online      QFX 16-port QSFP+ Front Card
PIC 0   Online      16x 40G-QSFP+
PIC 1   Online      16x 40G-GE
Slot 3  Online      QFX 16-port QSFP+ Front Card
PIC 0   Online      16x 40G-QSFP+
PIC 1   Online      16x 40G-GE
Slot 4  Online      QFX 16-port QSFP+ Front Card
PIC 0   Online      16x 40G-QSFP+
PIC 1   Online      16x 40G-GE
Slot 5  Online      QFX 16-port QSFP+ Front Card
PIC 0   Online      16x 40G-QSFP+
PIC 1   Online      16x 40G-GE
Slot 6  Online      QFX 16-port QSFP+ Front Card
PIC 0   Online      16x 40G-QSFP+
PIC 1   Online      16x 40G-GE
Slot 7  Online      QFX 16-port QSFP+ Front Card
PIC 0   Online      16x 40G-QSFP+
PIC 1   Online      16x 40G-GE
Slot 8  Online      QFX Fabric Rear Card
PIC 0   Online      16x 40G-GE
Slot 9  Online      QFX Fabric Rear Card
PIC 0   Online      16x 40G-GE
Slot 10 Online      QFX Fabric Rear Card
PIC 0   Online      16x 40G-GE
Slot 11 Online      QFX Fabric Rear Card
PIC 0   Online      16x 40G-GE
Slot 12 Online      QFX Fabric Rear Card
PIC 0   Online      16x 40G-GE
Slot 13 Online      QFX Fabric Rear Card
PIC 0   Online      16x 40G-GE
Slot 14 Online      QFX Fabric Rear Card
PIC 0   Online      16x 40G-GE
```

```
Slot 15 Online      QFX Fabric Rear Card
PIC 0 Online       16x 40G-GE
```

show chassis fpc pic-status node-device (QFabric System)

```
user@switch> show chassis fpc pic-status node-device node1
Slot node1 Online      QFX 48x10G 4x40G Switch
PIC 0 Online          48x 10G-SFP+
PIC 1 Online          4x 40G-QSFP+
```

show chassis fpc (PTX5000 Packet Transport Router)

```
user@host> show chassis fpc
```

Slot	State	Temp (C)	CPU Utilization (%) Total	Interrupt	Memory DRAM (MB)	Utilization (%) Heap	Buffer
0	Empty						
1	Empty						
2	Online	50	6	0	2816	5	27
3	Empty						
4	Empty						
5	Online	48	9	0	2816	5	27
6	Empty						
7	Online	49	8	0	2816	5	27

show chassis fpc detail (PTX5000 Packet Transport Router)

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

Slot 2 information:

```
State Online
Temperature 35 degrees C / 95 degrees F (PMB)
Temperature 35 degrees C / 95 degrees F (Intake)
Temperature 50 degrees C / 122 degrees F (Exhaust A)
Temperature 54 degrees C / 129 degrees F (Exhaust B)
Temperature 54 degrees C / 129 degrees F (TL0)
Temperature 52 degrees C / 125 degrees F (TQ0)
Temperature 61 degrees C / 141 degrees F (TL1)
Temperature 58 degrees C / 136 degrees F (TQ1)
Temperature 57 degrees C / 134 degrees F (TL2)
Temperature 58 degrees C / 136 degrees F (TQ2)
Temperature 62 degrees C / 143 degrees F (TL3)
Temperature 61 degrees C / 141 degrees F (TQ3)
Total CPU DRAM 2816 MB
Total SRAM 0 MB
Total SDRAM 0 MB
Start time 2012-01-12 12:05:42 PST
Uptime 3 hours, 14 minutes, 7 seconds
```

Slot 5 information:

```
State Online
Temperature 35 degrees C / 95 degrees F (PMB)
Temperature 34 degrees C / 93 degrees F (Intake)
Temperature 48 degrees C / 118 degrees F (Exhaust A)
Temperature 53 degrees C / 127 degrees F (Exhaust B)
Temperature 54 degrees C / 129 degrees F (TL0)
Temperature 52 degrees C / 125 degrees F (TQ0)
Temperature 69 degrees C / 156 degrees F (TL1)
Temperature 56 degrees C / 132 degrees F (TQ1)
Temperature 54 degrees C / 129 degrees F (TL2)
Temperature 56 degrees C / 132 degrees F (TQ2)
Temperature 59 degrees C / 138 degrees F (TL3)
Temperature 60 degrees C / 140 degrees F (TQ3)
Total CPU DRAM 2816 MB
```

```

Total SRAM                0 MB
Total SDRAM               0 MB
Start time                2012-01-12 12:05:43 PST
Uptime                   3 hours, 14 minutes, 6 seconds
Slot 7 information:
State                    Online
Temperature              35 degrees C / 95 degrees F (PMB)
Temperature              33 degrees C / 91 degrees F (Intake)
Temperature              50 degrees C / 122 degrees F (Exhaust A)
Temperature              55 degrees C / 131 degrees F (Exhaust B)
Temperature              56 degrees C / 132 degrees F (TL0)
Temperature              56 degrees C / 132 degrees F (TQ0)
Temperature              61 degrees C / 141 degrees F (TL1)
Temperature              57 degrees C / 134 degrees F (TQ1)
Temperature              55 degrees C / 131 degrees F (TL2)
Temperature              59 degrees C / 138 degrees F (TQ2)
Temperature              62 degrees C / 143 degrees F (TL3)
Temperature              62 degrees C / 143 degrees F (TQ3)
Total CPU DRAM           2816 MB
Total SRAM               0 MB
Total SDRAM              0 MB
Start time                2012-01-12 12:05:44 PST
Uptime                   3 hours, 14 minutes, 5 seconds

```

show chassis fpc pic-status (PTX5000 Packet Transport Router)

```

user@host> show chassis fpc pic-status
Slot 2  Online      FPC
PIC 0   Online      24x 10GE(LAN) SFP+
PIC 1   Online      24x 10GE(LAN) SFP+
Slot 5  Online      FPC
PIC 0   Online      24x 10GE(LAN) SFP+
PIC 1   Online      2x 40GE CFP
Slot 7  Online      FPC
PIC 0   Online      24x 10GE(LAN) SFP+
PIC 1   Online      2x 40GE CFP

```

show chassis fpc (ACX2000 Universal Access Router)

```

user@host> show chassis fpc

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory Utilization (%)
			Total Interrupt	DRAM (MB) Heap Buffer
0	Online	61	17 6	512 21 37

show chassis fpc 0 (ACX2000 Universal Access Router)

```

user@host> show chassis fpc 0

```

Slot	State	Temp (C)	CPU Utilization (%)	Memory Utilization (%)
			Total Interrupt	DRAM (MB) Heap Buffer
0	Online	61	17 6	512 21 37

show chassis fpc detail (ACX2000 Universal Access Router)

```

user@host> show chassis fpc detail
Slot 0 information:
State                    Online
Temperature              61 degrees C / 141 degrees F
Total CPU DRAM           512 MB
Start time                2012-05-29 02:52:06 PDT
Uptime                   27 minutes, 17 seconds

```

show chassis fpc pic-status (ACX2000 Universal Access Router)

```

user@host> show chassis fpc pic-status
Slot 0  Online
  PIC 0  Online      16x CHE1T1, RJ48
  PIC 1  Online      8x 1GE(LAN) RJ45
  PIC 2  Online      2x 1GE(LAN) SFP
  PIC 3  Online      2x 10GE(LAN) SFP+

```

show chassis FPC 1 (MX Routers with Media Services Blade [MSB])

```

user@switch> show chassis fpc 1

```

Slot	State	Temp (C)	CPU Utilization (%) Total	Interrupt	Memory DRAM (MB)	Utilization (%) Heap	Buffer
1	Online	34	5	0	3072	5	13

show chassis FPC 1 detail (MX Routers with Media Services Blade [MSB])

```

user@switch> show chassis fpc 1 detail
Slot 1 information:
  State                               Online
  Temperature                         34
  Total CPU DRAM                      3072 MB
  Total RLDRAM                        259 MB
  Total DDR DRAM                      4864 MB
  Start time:                         2012-06-19 10:51:43 PDT
  Uptime:                             16 minutes, 48 seconds
  Max Power Consumption               550 Watts

```

show chassis hardware

Syntax	show chassis hardware <detail extensive> <clei-models> <models>
Syntax (EX Series)	show chassis hardware <clei-models> <detail extensive> <models>
Syntax (T4000 Router)	show chassis hardware <clei-models> <detail extensive> <models>
Syntax (TX Matrix Router)	show chassis hardware <clei-models> <detail extensive> <models> <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis hardware <clei-models> <detail extensive> <models> <lcc <i>number</i> sfc <i>number</i> >
Syntax (MX Series Routers)	show chassis hardware <detail extensive> <clei-models> <models> <all-members> <local> <member <i>member-id</i> >
Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)	show chassis hardware <clei-models> <detail extensive> <models>
Syntax (QFX Series)	show chassis hardware <detail extensive> <clei-models> <interconnect-device <i>name</i> > <node-device <i>name</i> > <models>
Syntax (PTX Series Packet Transport Routers)	show chassis hardware <detail extensive> <clei-models> <models>

Syntax (ACX Series Universal Access Routers)	<pre>show chassis hardware <detail extensive> <clei-models> <models></pre>
Release Information	<p>Command introduced before Junos OS Release 7.4.</p> <p>models option introduced in Junos OS Release 8.2.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS Release 11.1 for QFX Series.</p> <p>Command introduced in Junos OS Release 12.1X48 for PTX Series Packet Transport Routers.</p> <p>Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.</p>
Description	<p>Display a list of all Flexible PIC Concentrators (FPCs) and PICs installed in the router or switch chassis, including the hardware version level and serial number.</p> <p>In the EX Series switch command output, FPC refers to the following:</p> <ul style="list-style-type: none"> On EX2200 switches, EX3200 switches, EX4200 standalone switches, and EX4500 switches—Refers to the switch; FPC <i>number</i> is always 0. On EX4200 switches in a Virtual Chassis configuration—Refers to the member of a Virtual Chassis; FPC <i>number</i> equals the member ID, from 0 through 9. On EX8208 and EX8216 switches—Refers to a line card; FPC <i>number</i> equals the slot number for the line card. <p>On a QFX3500 standalone switch, both the FPC and FPC <i>number</i> are always 0.</p> <p>On Type 5 FPC on T4000 routers, there are no top temperature sensor or bottom temperature sensor parameters. Instead, fan intake temperature sensor and fan exhaust temperature sensors parameters are displayed.</p>
Options	<p>none—Display information about hardware. For a TX Matrix router, display information about the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display information about the TX Matrix Plus router and its attached routers.</p> <p>clei-models—(Optional) Display Common Language Equipment Identifier (CLEI) barcode and model number for orderable field-replaceable units (FRUs).</p> <p>detail—(Optional) Include RAM and disk information in output.</p> <p>extensive—(Optional) Display ID EEPROM information.</p> <p>all-members—(MX Series routers only) (Optional) Display hardware-specific information for all the members of the Virtual Chassis configuration.</p> <p>interconnect-device <i>name</i>—(QFabric systems only) (Optional) Display hardware-specific information for the Interconnect device.</p>

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.

scc—(TX Matrix router only) (Optional) Display hardware information for the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Display hardware information for the TX Matrix Plus router (switch-fabric chassis). Replace *number* variable with 0.

Additional Information The **show chassis hardware detail** command now displays DIMM information for the following Routing Engines:

Table 33: Routing Engines Displaying DIMM Information

Routing Engines	Routers
RE-S-1800x2 and RE-S-1800x4	MX240, MX480, and MX960 routers
RE-A-1800x2	M120 and M320 routers

Required Privilege Level view

Related Documentation	<ul style="list-style-type: none"> • show chassis power on page 698
List of Sample Output	show chassis hardware (EX8216 Switch) on page 580 show chassis hardware clei-models (EX8216 Switch) on page 581 show chassis hardware clei-models (T1600 Router) on page 582 show chassis hardware detail (EX4200 Switch) on page 583 show chassis hardware models (EX4500 Switch) on page 583 show chassis hardware (J6350 Router) on page 583 show chassis hardware (J6300 Router) on page 583 show chassis hardware (M7i Router) on page 584 show chassis hardware (M10 Router) on page 584 show chassis hardware models (M10 Router) on page 585 show chassis hardware (M20 Router) on page 585 show chassis hardware models (M20 Router) on page 586 show chassis hardware (M40 Router) on page 586 show chassis hardware (M40e Router) on page 587 show chassis hardware (M120 Router) on page 587 show chassis hardware detail (M120 Router) on page 588 show chassis hardware models (M120 Router) on page 589 show chassis hardware (M160 Router) on page 590 show chassis hardware models (M160 Router) on page 590 show chassis hardware detail (M160 Router) on page 591 show chassis hardware (M320 Router) on page 592 show chassis hardware models (M320 Router) on page 593 show chassis hardware (MX5 Router) on page 594 show chassis hardware (MX10 Router) on page 594 show chassis hardware (MX40 Router) on page 595 show chassis hardware (Fixed MX80 Router) on page 595 show chassis hardware (Modular MX80 Router) on page 596 show chassis hardware (MX104 Router) on page 596 show chassis hardware detail (MX104 Router) on page 597 show chassis hardware extensive (MX104 Router) on page 598 show chassis hardware models (MX104 Router) on page 601 show chassis hardware clei-models (MX104 Router) on page 601 show chassis hardware (MX240 Router) on page 601 show chassis hardware detail (MX 240 Router with Routing Engine Displaying DIMM information) on page 602 show chassis hardware (MX240 Router with Enhanced MX SCB) on page 602 show chassis hardware (MX480 Router) on page 603 show chassis hardware (MX480 Router with Enhanced MX SCB) on page 604 show chassis hardware (MX960 Router) on page 604 show chassis hardware (MX960 Router with Bidirectional Optics) on page 604 show chassis hardware (MX960 Router with Enhanced MX SCB) on page 605 show chassis hardware models (MX960 Router with Enhanced MX SCB) on page 607 show chassis hardware detail (MX960 Router) on page 608 show chassis hardware (MX2010 Router) on page 608 show chassis hardware detail (MX2010 Router) on page 610 show chassis hardware extensive (MX2010 Router) on page 615

[show chassis hardware models \(MX2010 Router\) on page 620](#)
[show chassis hardware clei-models \(MX2010 Routers\) on page 621](#)
[show chassis hardware \(MX2020 Router\) on page 622](#)
[show chassis hardware detail \(MX2020 Router\) on page 630](#)
[show chassis hardware models \(MX2020 Router\) on page 639](#)
[show chassis hardware clei-models \(MX2020 Router\) on page 641](#)
[show chassis hardware \(MX Series routers with ATM MIC\) on page 642](#)
[show chassis hardware \(MX240, MX480, MX960 routers with Application Services Modular Line Card\) on page 642](#)
[show chassis hardware extensive \(MX240, MX480, MX960 routers with Application Services Modular Line Card\) on page 643](#)
[show chassis hardware \(MX480 Router with MPC4E\) on page 644](#)
[show chassis hardware \(MX2020 Router with MPC4E\) on page 644](#)
[show chassis hardware \(T320 Router\) on page 646](#)
[show chassis hardware \(T640 Router\) on page 648](#)
[show chassis hardware models \(T640 Router\) on page 648](#)
[show chassis hardware extensive \(T640 Router\) on page 649](#)
[show chassis hardware \(T4000 Router\) on page 649](#)
[show chassis hardware \(T4000 Router with 16 GB line card chassis \(LCC\) Routing Engine\) on page 651](#)
[show chassis hardware \(T4000 Router with LSR FPC\) on page 652](#)
[show chassis hardware clei-models \(T4000 Router\) on page 652](#)
[show chassis hardware detail \(T4000 Router\) on page 653](#)
[show chassis hardware models \(T4000 Router\) on page 655](#)
[show chassis hardware lcc \(TX Matrix Router\) on page 655](#)
[show chassis hardware scc \(TX Matrix Router\) on page 656](#)
[show chassis hardware \(T1600 Router\) on page 656](#)
[show chassis hardware \(TX Matrix Plus Router\) on page 659](#)
[show chassis hardware sfc \(TX Matrix Plus Router\) on page 663](#)
[show chassis hardware extensive \(TX Matrix Plus Router\) on page 665](#)
[show chassis hardware clei-models \(TX Matrix Plus Router\) on page 666](#)
[show chassis hardware detail \(TX Matrix Plus Router\) on page 668](#)
[show chassis hardware models \(TX Matrix Plus Router\) on page 670](#)
[show chassis hardware \(TX Matrix Plus router with 3D SIBs\) on page 673](#)
[show chassis hardware clei-models \(TX Matrix Plus router with 3D SIBs\) on page 676](#)
[show chassis hardware detail \(TX Matrix Plus router with 3D SIBs\) on page 680](#)
[show chassis hardware lcc \(TX Matrix Plus router with 3D SIBs\) on page 684](#)
[show chassis hardware sfc \(TX Matrix Plus router with 3D SIBs\) on page 684](#)
[show chassis hardware \(16-Port 10-Gigabit Ethernet MPC with SFP+ Optics \[MX Series Routers\]\) on page 686](#)
[show chassis hardware \(MPC3E \[MX Series Routers\]\) on page 686](#)
[show chassis hardware \(QFX3500 Switches\) on page 688](#)
[show chassis hardware detail \(QFX3500 Switches\) on page 688](#)
[show chassis hardware models \(QFX3500 Switches\) on page 689](#)
[show chassis hardware clei-models \(QFX3500 Switches\) on page 689](#)
[show chassis hardware interconnect-device \(QFabric Systems\) on page 689](#)
[show chassis hardware node-device \(QFabric Systems\) on page 690](#)
[show chassis hardware \(PTX5000 Packet Transport Router\) on page 690](#)
[show chassis hardware clei-models \(PTX5000 Packet Transport Router\) on page 691](#)

[show chassis hardware detail \(PTX5000 Packet Transport Router\) on page 692](#)
[show chassis hardware models \(PTX5000 Packet Transport Router\) on page 693](#)
[show chassis hardware extensive \(PTX5000 Packet Transport Router\) on page 694](#)
[show chassis hardware \(MX Routers with Media Services Blade \[MSB\]\) on page 695](#)
[show chassis hardware extensive \(MX Routers with Media Services Blade \[MSB\]\) on page 695](#)
[show chassis hardware \(QFX3500 Switch running Enhanced Layer 2 Software\) on page 696](#)

Output Fields [Table 34 on page 578](#) lists the output fields for the **show chassis hardware** command. Output fields are listed in the approximate order in which they appear.

Table 34: show chassis hardware Output Fields

Field Name	Field Description	Level of Output
Item	<p>Chassis component:</p> <ul style="list-style-type: none"> (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. See <i>EX Series Switches Hardware and CLI Terminology Mapping</i>. (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 and MX2020 routers)—Information about the chassis, midplane, craft interface (FPM), power midplane (PMP), Power Supply Modules (PSMs), Power Distribution Modules (PDMs), Routing Engines, Control Boards (CBs) and Switch Processor Mezzanine Boards (SPMBs), Switch Fabric Boards (SFBs), Flexible PIC Concentrators (FPCs), PICs, adapter cards (ADCs) and fan trays. 	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

Table 34: 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	<p>Brief description of the hardware item:</p> <ul style="list-style-type: none"> Type of power supply. Type of PIC. If the PIC type is not supported on the current software release, the output states Hardware Not Supported. Type of FPC: FPC Type 1, FPC Type 2, FPC Type 3, FPC Type 4, or FPC TypeOC192. <p>On EX Series switches, a brief description of the FPC.</p> <p>On the J Series routers, the FPC type corresponds to the Physical Interface Module (PIM). The following list shows the PIM abbreviation in the output and the corresponding PIM name.</p> <ul style="list-style-type: none"> 2x FE—Either two built-in Fast Ethernet interfaces (fixed PIM) or dual-port Fast Ethernet PIM 4x FE—4-port Fast Ethernet ePIM 1x GE Copper—Copper Gigabit Ethernet ePIM (one 10-Mbps, 100-Mbps, or 1000-Mbps port) 1x GE SFP—SFP Gigabit Ethernet ePIM (one fiber port) 4x GE Base PIC—Four built-in Gigabit Ethernet ports on a J4350 or J6350 chassis (fixed PIM) 2x Serial—Dual-port serial PIM 2x T1—Dual-port T1 PIM 2x E1—Dual-port E1 PIM 2x CTIE1—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) 	All levels

Table 34: show chassis hardware Output Fields (*continued*)

Field Name	Field Description	Level of Output
	<ul style="list-style-type: none"> • 2xSHDSL (ATM)—G SHDSL PIM (2-port two-wire module or 1-port four-wire module) • 1x TGM550—TGM550 Telephony Gateway Module (Avaya VoIP gateway module with one console port, two analog LINE ports, and two analog TRUNK ports) • 1x DS1 TIM510—TIM510 E1/T1 Telephony Interface Module (Avaya VoIP media module with one E1 or T1 trunk termination port and ISDN PRI backup) • 4x FXS, 4x FXO, TIM514—TIM514 Analog Telephony Interface Module (Avaya VoIP media module with four analog LINE ports and four analog TRUNK ports) • 4x BRI TIM521—TIM521 BRI Telephony Interface Module (Avaya VoIP media module with four ISDN BRI ports) • Crypto Accelerator Module—For enhanced performance of cryptographic algorithms used in IP Security (IPsec) services • MPC M 16x10GE—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-SFP 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   710-016845   CY0109220035   EX8216
Midplane      REV 06   710-016845   BA0909120112   EX8216-MP
CB 0          REV 22   710-020771   AX0109197723   EX8216-RE320
CB 1          REV 22   710-020771   AX0109197726   EX8216-RE320
  Routing Engine 1    BUILTIN     BUILTIN        RE-EX8216
FPC 3         REV 19   710-020683   BC0109083125   EX8200-48F

```


CPU	REV 13	710-020598	BF0109144549	EX8200-CPU
FPC 4	REV 17	710-020683	BC0108500127	EX8200-48F
CPU	REV 10	710-020598	BF0108460510	EX8200-CPU
PIC 0		BUILTIN	BUILTIN	48x 100 Base-QFX/1000
Base-X				
Xcvr 1	REV 01	740-011613	PE70V89	SFP-SX
Xcvr 11	REV 01	740-011613	PE70YCE	SFP-SX
Xcvr 12	REV 01	740-011613	PE70VSH	SFP-SX
Xcvr 13	REV 01	740-011613	E08C02063	SFP-SX
Xcvr 14	REV 01	740-011613	PE70VKU	SFP-SX
Xcvr 15	REV 01	740-011613	E08E03372	SFP-SX
Xcvr 21	REV 01	740-011613	PE70VAD	SFP-SX
Xcvr 22	REV 01	740-011613	E08E01228	SFP-SX
Xcvr 23	REV 01	740-011613	PE70VSL	SFP-SX
Xcvr 24	REV 01	740-011613	E08E03409	SFP-SX
Xcvr 25	REV 01	740-011613	PE70VL4	SFP-SX
Xcvr 26	REV 01	740-011613	PDQ4L2Z	SFP-SX
Xcvr 27	REV 01	740-011613	PE70WFK	SFP-SX
Xcvr 28	REV 01	740-011782	PBD2B5U	SFP-SX
Xcvr 29	REV 01	740-011613	PE70UQX	SFP-SX
Xcvr 30	REV 01	740-011613	PE70VL5	SFP-SX
Xcvr 31	REV 01	740-011613	PE70V0F	SFP-SX
Xcvr 32	REV 01	740-011613	E08C02052	SFP-SX
Xcvr 33	REV 01	740-011613	E08C02197	SFP-SX
Xcvr 34	REV 01	740-011613	PE70V0L	SFP-SX
Xcvr 35	REV 01	740-011613	E08E03390	SFP-SX
Xcvr 36	REV 01	740-011613	PDQ4VL9	SFP-SX
Xcvr 37	REV 01	740-011613	E08E03370	SFP-SX
Xcvr 38	REV 01	740-011613	E08E03362	SFP-SX
Xcvr 39	REV 01	740-011613	E08C02065	SFP-SX
Xcvr 40	REV 01	740-011613	E08E03405	SFP-SX
Xcvr 41	REV 01	740-011613	E08E03411	SFP-SX
Xcvr 43	REV 01	740-011613	E08C02171	SFP-SX
Xcvr 45	REV 01	740-011613	E08E03410	SFP-SX
FPC 13	REV 16	710-016837	BB0109051344	EX8200-8XS
CPU				
SIB 0	REV 10	710-021613	AY0109166244	EX8216-SF320
SIB 1	REV 10	710-021613	AY0109166357	EX8216-SF320
SIB 2	REV 10	710-021613	AY0109166362	EX8216-SF320
SIB 3	REV 10	710-021613	AY0109166338	EX8216-SF320
SIB 4	REV 10	710-021613	AY0109166350	EX8216-SF320
SIB 5	REV 10	710-021613	AY0109166365	EX8216-SF320
SIB 6	REV 10	710-021613	AY0109166361	EX8216-SF320
SIB 7	REV 10	710-021613	AY0109166399	EX8216-SF320
PSU 0	REV 17	740-021466	BG0709170003	EX8200-AC2K
PSU 1	REV 17	740-021466	BG0709170004	EX8200-AC2K
PSU 2	REV 17	740-021466	BG0709170020	EX8200-AC2K
PSU 3	REV 17	740-021466	BG0709170017	EX8200-AC2K
PSU 4	REV 17	740-021466	BG0709170008	EX8200-AC2K
PSU 5	REV 17	740-021466	BG0709170018	EX8200-AC2K
Top Fan Tray				
FTC 0	REV 4	760-022620	CX1209140212	EX8216-FT
FTC 1	REV 4	760-022620	CX1209140212	EX8216-FT
Bottom Fan Tray				
FTC 0	REV 4	760-022620	CX1209140211	EX8216-FT
FTC 1	REV 4	760-022620	CX1209140211	EX8216-FT
LCD 0	REV 04	710-025742	CE0109186919	EX8200 LCD

show chassis hardware clei-models (EX8216 Switch)

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

Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 08	710-016845		
PSU 0	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 1	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 2	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 3	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 4	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
PSU 5	REV 05	740-023002	COUPAEAEAA	EX8200-PWR-AC3KR
Top Fan Tray				
Bottom Fan Tray				

show chassis hardware clei-models (T1600 Router)

user@host> show chassis hardware clei-models

Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 03	710-005608		CHAS-BP-T640-S
FPM Display	REV 05	710-002897		CRAFT-T640-S
CIP	REV 06	710-002895		CIP-L-T640-S
PEM 0	Rev 07	740-017906	IPUPAC7KTA	PWR-T1600-3-80-DC-S
PEM 1	Rev 18	740-002595		PWR-T-DC-S
SCG 0	REV 15	710-003423		SCG-T-S
Routing Engine 0	REV 08	740-014082		RE-A-2000-4096-S
Routing Engine 1	REV 07	740-014082		RE-A-2000-4096-S
CB 0	REV 05	710-007655		CB-T-S
CB 1	REV 03	710-017707		CB-T-S
FPC 0	REV 07	710-013558		T640-FPC2-E2
PIC 0	REV 01	750-010618		PB-4GE-SFP
PIC 1	REV 06	750-001900		PB-10C48-SON-SMSR
PIC 2	REV 14	750-001901		PB-40C12-SON-SMIR
PIC 3	REV 07	750-001900		PB-10C48-SON-SMSR
FPC 1	REV 06	710-013553		T640-FPC1-E2
PIC 0	REV 08	750-001072		P-1GE-SX
PIC 1	REV 10	750-012266		PB-4GE-TYPE1-SFP-IQ2
PIC 2	REV 22	750-005634		PB-1CHOC12SMIR-QPP
FPC 2				
PIC 0	REV 16	750-007141		PC-10GE-SFP
PIC 1	REV 06	750-015217		PC-8GE-TYPE3-SFP-IQ2
PIC 2	REV 05	750-004695		PC-TUNNEL
PIC 3	REV 17	750-009553		PC-40C48-SON-SFP
FPC 3	REV 01	710-010154		T640-FPC3-E
PIC 0	REV 07	750-012793		PC-1XGE-TYPE3-XFP-IQ2
PIC 1	REV 25	750-007141		PC-10GE-SFP
PIC 2	REV 17	750-009553		PC-40C48-SON-SFP
PIC 3	REV 32	750-003700		PC-10C192-SON-VSR
FPC 4	REV 16	710-013037		T1600-FPC4-ES
PIC 1	REV 06	750-034781		PD-1CE-CFP
FPC 5	REV 02	710-013037		T1600-FPC4-ES
PIC 0	REV 16	750-012518		PD-40C192-SON-XFP
PIC 1	REV 01	750-010850		PD-10C768-SON-SR
FPC 6	REV 14	710-013037		T1600-FPC4-ES
PIC 0	REV 11	750-017405		PD-4XGE-XFP
PIC 1	REV 13	750-017405		PD-4XGE-XFP
FPC 7	REV 09	710-007529		T640-FPC3
PIC 0	REV 10	750-012793		PC-1XGE-TYPE3-XFP-IQ2
PIC 1	REV 01	750-015217		PC-8GE-TYPE3-SFP-IQ2
PIC 2	REV 01	750-015217		PC-8GE-TYPE3-SFP-IQ2
PIC 3	REV 15	750-009450		PC-10C192-SON-SR2
SIB 0	REV 07	710-013074		SIB-I-T1600-S
SIB 1	REV 07	710-013074		SIB-I-T1600-S

SIB 2	REV 07	710-013074	SIB-I-T1600-S
SIB 3	REV 07	710-013074	SIB-I-T1600-S
SIB 4	REV 07	710-013074	SIB-I-T1600-S
Fan Tray 0			FANTRAY-T-S
Fan Tray 1			FANTRAY-T-S
Fan Tray 2			FAN-REAR-TX-T640-S

show chassis hardware 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
```

show chassis hardware models (EX4500 Switch)

```
user@host> show chassis hardware models
Hardware inventory:
Item                Version  Part number  Serial number  FRU model number
Routing Engine 0     REV 01    750-035700   GG0210271867   EX4500-40F-FB-C
FPC 0                REV 01    750-035700   GG0210271867   EX4500-40F-FB-C
PIC 0                BUILTIN    BUILTIN      EX4500-40F-FB-C
Power Supply 1       REV 01    740-029654   H884FS00JC09   EX4500-PWR1-AC-FB
```

show chassis hardware (J6350 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              JN1090E07ADB JSR6350
Midplane             REV 03    710-014593   NP1265
System IO            REV 01    710-016210   NN9950         JX350 System IO
Crypto Module        REV 08    710-015273   NM6509         RE-J6350-3400
Routing Engine 0     248 MB   256MB CKS    00102006C24A00000039 Compact
Flash
FPC 0                FPC
PIC 0                4x GE Base PIC
FPC 1                REV 06    750-010355   AI07030023     FPC
PIC 0                2x T1
FPC 3                REV 06    750-011148   AJ06520151     FPC
PIC 0                2x E1
FPC 6                REV 06    750-013492   NC4170         FPC
PIC 0                4x FE
Power Supply 0
```

show chassis hardware (J6300 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              JN000164AB   J6300
Midplane             REV 02.04 710-010001   CORE99570
```

System IO	REV 02.00	710-010003	CORE100848	System IO board
Routing Engine	RevX2.6	750-010006	IWGS40735390	RE-J.3
FPC 0				FPC
PIC 0				2x FE
FPC 1	RevX2.0	750-011380	N3960005	FPC
PIC 0				1xADSL pic Annex A
FPC 2	RevX2.0	750-011380	N3960002	FPC
PIC 0				1xADSL pic Annex B
FPC 3	REV 03	750-010354	N0780028	FPC
PIC 0				1x T3

show chassis hardware (M7i Router)

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			31959	M7i
Midplane	REV 02	710-008761	CA0209	M7i Midplane
Power Supply 0	Rev 04	740-008537	PD10272	AC Power Supply
Routing Engine	REV 01	740-008846	1000396803	RE-5.0
CFEB	REV 02	750-009492	CA0166	Internet Processor IiV1
FPC 0				E-FPC
PIC 0	REV 04	750-003163	HJ6416	1x G/E, 1000 BASE-SX
PIC 1	REV 04	750-003163	HJ6423	1x G/E, 1000 BASE-SX
PIC 2	REV 04	750-003163	HJ6421	1x G/E, 1000 BASE-SX
PIC 3	REV 02	750-003163	HJ0425	1x G/E, 1000 BASE-SX
FPC 1				E-FPC
PIC 2	REV 01	750-009487	HM2275	ASP - Integrated
PIC 3	REV 01	750-009098	CA0142	2x F/E, 100 BASE-TX

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			B1157	M7i
Midplane	REV 05	710-008761	DM0840	M7i Midplane
Power Supply 0	Rev 08	740-008537	TE53755	AC Power Supply
Routing Engine	REV 07	740-011202	1000736567	RE-850
CFEB	REV 09	750-010463	DK6952	Internet Processor II
FPC 0				E-FPC
PIC 0	REV 12	750-012838	DL7993	4x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011614	PD94TDJ	SFP-LX10
Xcvr 1	REV 01	740-011615	PAD5EER	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
Power Supply 0 Rev 06  740-008537  PWR-M10i-M7i-AC-S
Power Supply 1 Rev 06  740-008537  PWR-M10i-M7i-AC-S
HCM 0         REV 03  710-010580  HCM-M10i-S
HCM 1         REV 03  710-010580  HCM-M10i-S
Routing Engine 0 REV 09  740-009459  RE-400-256-S
CFEB 0        REV 05  750-010465  FEB-M10i-M7i-S
FPC 0
  PIC 0        REV 10  750-002971  PE-40C3-SON-MM
  PIC 1        REV 11  750-002992  PE-4FE-TX
  PIC 2        REV 03  750-002977  PE-20C3-ATM-MM
  PIC 3        REV 08  750-005724  PE-20C3-ATM2-MM
FPC 1
  PIC 2        REV 12  750-008425  PE-AS
  PIC 3        REV 13  750-005636  PE-4CHDS3-QPP
Fan Tray 0    FANTRAY-M10I-S
Fan Tray 1    FANTRAY-M10I-S

```

show chassis hardware (M20 Router)

```

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

```

SDRAM bank 0	REV 01	710-000099	S/N 306835	64 MB
SDRAM bank 1	REV 01	710-000099	S/N 306832	64 MB
Fan Tray 0				Front Upper Fan Tray
Fan Tray 1				Front Middle Fan Tray
Fan Tray 2				Front Bottom Fan Tray
Fan Tray 3				Rear Fan Tray

show chassis hardware models (M20 Router)

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

Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
Backplane	REV 03	710-002334		CHAS-MP-M20-S
Power Supply A	REV 06	740-001465		PWR-M20-AC-S
Display	REV 04	710-001519		CRAFT-M20-S
Routing Engine 0	REV 06	740-003239		RE-333-768-S
Routing Engine 1	REV 06	740-003239		RE-333-768-S
SSB 0	REV 02	710-001951		SSB-E-M20
SSB 1	N/A	N/A		
FPC 0	REV 03	710-003308		FPC-E
PIC 0	REV 08	750-002303		P-4FE-TX
PIC 1	REV 07	750-004745		P-2MCDS3
PIC 2	REV 03	750-002965		PE-4CHDS3
FPC 1	REV 03	710-003308		FPC-E
PIC 0	REV 03	750-002914		P-20C3-ATM-MM
Fan Tray 0				FANTRAY-F-M20-S
Fan Tray 1				FANTRAY-F-M20-S
Fan Tray 2				FANTRAY-F-M20-S
Fan Tray 3				FANTRAY-R-M20-S

show chassis hardware (M40 Router)

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Backplane	REV 02	710-000073	S/N AA0053	
Power supply A	Rev 2	740-000235	S/N 000042	DC
Maxicab	REV X1	710-000229	S/N AA0139	
Minicab	REV X1	710-000482	S/N AA0201	
Display	REV 06	710-000150	S/N AA0905	
Host				cpv5000
SCB	REV X1	710-000075	S/N AA0158	Internet Processor I
SSRAM bank 0	REV 02	710-000077	S/N AA2267	1 MB
SSRAM bank 1	REV 02	710-000077	S/N AA2270	1 MB
SSRAM bank 2	REV 02	710-000077	S/N AA2269	1 MB
SSRAM bank 3	REV 02	710-000077	S/N AA2268	1 MB
FPC 0	REV 01	710-000175	S/N AA0048	
SSRAM	REV 01	710-000077	S/N AA2333	1 MB
SDRAM bank 0	REV 01	710-000099	S/N AA2332	64 MB
SDRAM bank 1	REV X1	710-000099	S/N AA2337	64 MB
PIC 0	REV 04	750-000613	S/N aa0343	1x OC-12 SONET, SMIR
PIC 1	REV 04	750-000613	S/N AA0379	1x OC-12 SONET, SMIR
PIC 2	REV 04	750-000613	S/N AA0377	1x OC-12 SONET, SMIR
PIC 3	REV 04	750-000613	S/N AA0378	1x Tunnel
FPC 2	REV 01	710-000175	S/N AA0042	
SSRAM	REV 02	710-000077	S/N AA2288	1 MB
SDRAM bank 0	REV 01	710-000099	S/N AA2331	64 MB
SDRAM bank 1	REV 01	710-000099	S/N AA2330	64 MB
PIC 0	REV X1	750-000603	S/N AA0143	4x OC-3 SONET, SMIR
PIC 1	REV X1	750-000615	S/N AA0149	4x OC-3 SONET, MM
PIC 2	REV X1	750-000611	S/N AA0148	4x OC-3 SONET, MM

PIC 3	REV 04	750-000613	S/N AA0330	1x OC-12 SONET, SMIR
FPC 4	REV 01	710-000175	S/N AA0050	
SSRAM	REV 01	710-000077	S/N AA2327	1 MB
SDRAM bank 0	REV 01	710-000099	S/N AA2329	64 MB
SDRAM bank 1	REV 01	710-000099	S/N AA2328	64 MB
PIC 0	REV 04	750-000613	S/N AA0320	1x OC-12 SONET, SMIR
PIC 2	REV 05	750-000616	S/N AA1341	1x OC-12 ATM, MM
PIC 3	REV 08	750-001072	S/N AB2462	1x G/E, 1000 BASE-SX
FPC 5	REV 10	710-000175	S/N AA7663	
SSRAM	REV 01	710-000077	S/N 501590	1 MB
SDRAM bank 0	REV 01	710-000099	S/N 300949	64 MB
SDRAM bank 1	REV 01	710-000099	S/N 300868	64 MB
PIC 1	REV 01	750-001323	S/N AB1670	1x Tunnel

show chassis hardware (M40e Router)

```

user@host> show chassis hardware
Hardware inventory:

```

Item	Version	Part number	Serial number	Description
Chassis				m40e
Midplane	REV 01	710-005071	AX3671	
FPM CMB	REV 03	710-001642	AR9074	
FPM Display	REV 03	710-001647	AR7331	
CIP	REV 04	710-002649	BB4449	
PEM 0	Rev 01	740-003787	MC12364	Power Entry Module
PEM 1	Rev 01	740-003787	MC12383	Power Entry Module
PCG 0	REV 07	710-001568	AG1332	
PCG 1	REV 07	710-001568	AR3789	
Host 0			3e000007c8176601	Present
MCS 0	REV 11	710-001226	AN5813	
SFM 0 SPP	REV 07	710-001228	AG4676	
SFM 0 SPR	REV 05	710-002189	AE4735	Internet Processor II
SFM 1 SPP	REV 07	710-001228	AP1347	
SFM 1 SPR	REV 05	710-002189	BE0063	Internet Processor II
FPC 0	REV 01	710-011725	BE0669	M40e-EP-FPC Type 1
CPU	REV 01	710-004600	BD9504	
PIC 0	REV 03	750-003737	AY3991	4x G/E, 1000 BASE-SX
FPC 1	REV 01	710-005197	BD9842	M40e-FPC Type 2
CPU	REV 01	710-004600	BB4869	
PIC 0	REV 07	750-001900	AR8278	1x OC-48 SONET, SMSR
FPC 2	REV 02	710-005197	BD9824	M40e-FPC Type 2
CPU	REV 01	710-004600	BD9531	
PIC 0	REV 03	750-003737	AY3986	4x G/E, 1000 BASE-SX
FPC 4	REV 02	710-005078	BE0664	M40e-FPC Type 1
CPU	REV 01	710-004600	BD9559	
PIC 0	REV 03	750-001894	AG7963	1x G/E, 1000 BASE-SX
PIC 2	REV 01	750-002575	AF2472	4x OC-3 SONET, SMIR
FPC 6	REV 02	710-005078	BE0652	M40e-FPC Type 1
CPU	REV 01	710-004600	BD9607	
PIC 0	REV 02	750-002911	AN2286	4x F/E, 100 BASE-TX
PIC 2	REV 01	750-002577	AP6345	4x OC-3 SONET, MM

show chassis hardware (M120 Router)

```

user@host> show chassis hardware
Hardware inventory:

```

Item	Version	Part number	Serial number	Description
Chassis			JN000054AC	M120
Midplane	REV 01	710-013667	RB4170	M120 Midplane
FPM Board	REV 02	710-011407	CJ9186	M120 FPM Board
FPM Display	REV 02	710-011405	CJ9173	M120 FPM Display

FPM CIP	REV 02	710-011410	CJ9221	M120 FPM CIP
PEM 0	Rev 05	740-011936	RM28320	AC Power Entry Module
PEM 1	Rev 05	740-011936	RM28321	AC Power Entry Module
Routing Engine 0	REV 03	740-014080	1000642883	RE-A-1000
CB 0	REV 03	710-011403	CM8346	M120 Control Board
CB 1	REV 06	710-011403	CP6728	M120 Control Board
FPC 1	REV 02	710-015908	CP6925	M120 CFPC 10GE
PIC 0		BUILTIN	BUILTIN	1x 10GE(LAN/WAN) XFP
Xcvr 0	REV 01	740-014279	62E204N00007	XFP-10G-LR
FPC 3	REV 03	710-011393	CJ9234	M120 FPC Type 2
PIC 0	REV 16	750-008155	NB5229	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F15JB	SFP-SX
Xcvr 1	REV 01	740-007326	P4QOR9G	SFP-SX
PIC 1	REV 09	750-007745	CG4360	4x OC-3 SONET, SMIR
PIC 2	REV 16	750-008155	ND7787	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F12AS	SFP-SX
Xcvr 1	REV 01	740-011613	P9F1ALU	SFP-SX
PIC 3	REV 07	750-011800	JW1284	8x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011613	P9F1AM6	SFP-SX
Xcvr 6	REV 01	740-011613	P9F16NN	SFP-SX
Xcvr 7	REV 01	740-011782	P8C29Y7	SFP-SX
Board B	REV 02	710-011395	CN3754	M120 FPC Mezz
FPC 4	REV 02	710-011398	CP6741	M120 FPC Type 3
PIC 0	REV 16	750-007141	NB2855	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011782	P922A1F	SFP-SX
Xcvr 1	REV 01	740-011782	P922A16	SFP-SX
Xcvr 2	REV 01	740-011782	P922A0U	SFP-SX
Xcvr 3	REV 01	740-011782	P9229UZ	SFP-SX
Xcvr 4	REV 01	740-009029	P11JXWP	SFP-LX
Xcvr 6	REV 01	740-011613	P9F1ALW	SFP-SX
FPC 5	REV 01	710-011388	CJ9088	M120 FPC Type 1
PIC 0	*** Hardware Not Supported ***			
PIC 1	REV 05	750-012052	NB0410	1x CHOC3 IQ SONET, SMLR
PIC 2	REV 01	750-013167	CM3824	4x CHDS3 IQ
PIC 3	REV 01	750-010240	CB5366	1x G/E SFP, 1000 BASE
Board B	REV 01	710-011390	CJ9103	M120 FPC Mezz Board
FEB 3	REV 04	710-011663	CP6673	M120 FEB
FEB 4	REV 04	710-011663	CJ9368	M120 FEB
FEB 5	REV 04	710-011663	CJ9386	M120 FEB
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Top Fan Tray
Fan Tray 3				Rear Bottom Fan Tray

show chassis hardware detail (M120 Router)

```

user@host> show chassis hardware detail
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN000054AC    M120
Midplane      REV 01   710-013667   RB4170        M120 Midplane
FPM Board     REV 02   710-011407   CJ9186        M120 FPM Board
FPM Display   REV 02   710-011405   CJ9173        M120 FPM Display
FPM CIP       REV 02   710-011410   CJ9221        M120 FPM CIP
PEM 0         Rev 05   740-011936   RM28320       AC Power Entry Module
PEM 1         Rev 05   740-011936   RM28321       AC Power Entry Module
Routing Engine 0 REV 03   740-014080   1000642883    RE-A-1000
ad0           248 MB   SILICONSYSTEMS INC 256M 126CT505S0763SC00110 Compact Flash
ad2           38154 MB HTE541040G9SA00    MPBBTOX2HS2E3M Hard Disk

```


CB 0	REV 03	710-011403	CM8346	M120 Control Board
CB 1	REV 06	710-011403	CP6728	M120 Control Board
FPC 1	REV 02	710-015908	CP6925	M120 CFPC 10GE
PIC 0		BUILTIN	BUILTIN	1x 10GE(LAN/WAN) XFP
Xcvr 0	REV 01	740-014279	62E204N00007	XFP-10G-LR
FPC 3	REV 03	710-011393	CJ9234	M120 FPC Type 2
PIC 0	REV 16	750-008155	NB5229	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F15JB	SFP-SX
Xcvr 1	REV 01	740-007326	P4Q0R9G	SFP-SX
PIC 1	REV 09	750-007745	CG4360	4x OC-3 SONET, SMIR
PIC 2	REV 16	750-008155	ND7787	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F12AS	SFP-SX
Xcvr 1	REV 01	740-011613	P9F1ALU	SFP-SX
PIC 3	REV 07	750-011800	JW1284	8x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011613	P9F1AM6	SFP-SX
Xcvr 6	REV 01	740-011613	P9F16NN	SFP-SX
Xcvr 7	REV 01	740-011782	P8C29Y7	SFP-SX
Board B	REV 02	710-011395	CN3754	M120 FPC Mezz
FPC 4	REV 02	710-011398	CP6741	M120 FPC Type 3
PIC 0	REV 16	750-007141	NB2855	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011782	P922A1F	SFP-SX
Xcvr 1	REV 01	740-011782	P922A16	SFP-SX
Xcvr 2	REV 01	740-011782	P922A0U	SFP-SX
Xcvr 3	REV 01	740-011782	P9229UZ	SFP-SX
Xcvr 4	REV 01	740-009029	P11JXWP	SFP-LX
Xcvr 6	REV 01	740-011613	P9F1ALW	SFP-SX
FPC 5	REV 01	710-011388	CJ9088	M120 FPC Type 1
PIC 0	*** Hardware Not Supported ***			
PIC 1	REV 05	750-012052	NB0410	1x CHOC3 IQ SONET, SMLR
PIC 2	REV 01	750-013167	CM3824	4x CHDS3 IQ
PIC 3	REV 01	750-010240	CB5366	1x G/E SFP, 1000 BASE
Board B	REV 01	710-011390	CJ9103	M120 FPC Mezz Board
FEB 3	REV 04	710-011663	CP6673	M120 FEB
FEB 4	REV 04	710-011663	CJ9368	M120 FEB
FEB 5	REV 04	710-011663	CJ9386	M120 FEB
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Top Fan Tray
Fan Tray 3				Rear Bottom Fan Tray

show chassis hardware models (M120 Router)

```

user@host> show chassis hardware models
Hardware inventory:
Item          Version  Part number  CLEI code  FRU model number
Midplane      REV 01   710-013667
FPM CIP       REV 02   710-011410   CRAFT-M120-S
PEM 0         Rev 05   740-011936   PWR-M120-AC-S
PEM 1         Rev 05   740-011936   PWR-M120-AC-S
Routing Engine 0 REV 03   740-014080   RE-A-1000-2048-S
CB 0          REV 03   710-011403   CB-M120-S
CB 1          REV 06   710-011403   CB-M120-S
FPC 1         REV 02   710-015908   M120-cFPC-1XGE-XFP
FPC 3
PIC 0         REV 16   750-008155   PB-2GE-SFP-QPP
PIC 1         REV 09   750-007745   PC-40C3-SON-SMIR
PIC 2         REV 16   750-008155   PB-2GE-SFP-QPP
PIC 3         REV 07   750-011800   PB-8GE-TYPE2-SFP-IQ2
FPC 4

```

PIC 0	REV 16	750-007141	PC-10GE-SFP
FPC 5			
PIC 1	REV 05	750-012052	PB-1CHOC3-SMIR-QPP
PIC 2	REV 01	750-013167	PE-4CHDS3-QPP
PIC 3	REV 01	750-010240	PB-1GE-SFP
Fan Tray 0			FFANTRAY-M120-S
Fan Tray 1			FFANTRAY-M120-S
Fan Tray 2			RFANTRAY-M120-S
Fan Tray 3			RFANTRAY-M120-S

show chassis hardware (M160 Router)

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

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

show chassis hardware models (M160 Router)

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

Hardware inventory:				
Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 03	710-009120		CHAS-BP-M320-S
FPM Display	REV 02	710-009351		CRAFT-M320-S
CIP	REV 03	710-005926		CIP-M320-S
PEM 2	Rev X4	740-009148		PWR-M-DC-S
PEM 3	Rev X4	740-009148		PWR-M-DC-S
Routing Engine 0	REV 02	740-008883		RE-1600-2048-S
Routing Engine 1	REV 02	740-008883		RE-1600-2048-S
FPC 0	REV 02	710-010419		M320-FPC1
PIC 0	REV 01	750-001323		P-TUNNEL
PIC 1	REV 02	750-002987		PE-10C12-SON-SMIR

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

show chassis hardware detail (M160 Router)

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

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

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

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

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

Fan Tray 1	FFANTRAY-M320-S
Fan Tray 2	RFANTRAY-M320-S

show chassis hardware (MX5 Router)

```

user@host> show chassis hardware
Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis              E1368      MX5-T
Midplane            REV 01    711-038215   YF5288        MX5-T
PEM 0               Rev 04    740-028288   VA01215       AC Power Entry Module
PEM 1               Rev 04    740-028288   VA01218       AC Power Entry Module
Routing Engine      BUILTIN   BUILTIN      BUILTIN        Routing Engine
TFEB 0              BUILTIN   BUILTIN      BUILTIN        Forwarding Engine
Processor
  QXM 0             REV 05    711-028408   ZA9136        MPC QXM
  FPC 0              BUILTIN   BUILTIN      BUILTIN        MPC BUILTIN
  MIC 0              BUILTIN   BUILTIN      BUILTIN        4x 10GE XFP
  PIC 0              BUILTIN   BUILTIN      BUILTIN        4x 10GE XFP
  FPC 1              BUILTIN   BUILTIN      BUILTIN        MPC BUILTIN
  MIC 0             REV 24    750-028392   YX9820        3D 20x 1GE(LAN) SFP
  PIC 0              BUILTIN   BUILTIN      BUILTIN        10x 1GE(LAN) SFP
    Xcvr 0           REV 01    740-031851   AM1045SUAQ3   SFP-SX
    Xcvr 1           REV 01    740-031851   AM1045SUAPA   SFP-SX
    Xcvr 2           REV 01    740-031851   AM1045SUAN7   SFP-SX
    Xcvr 3           REV 01    740-031851   AM1045SU91Q   SFP-SX
    Xcvr 4           REV 01    740-031851   AM1045SUDDR   SFP-SX
    Xcvr 9           REV 01    740-011613   AM0848SB6A1   SFP-SX
  PIC 1              BUILTIN   BUILTIN      BUILTIN        10x 1GE(LAN) SFP
    Xcvr 0           REV 01    740-031851   AM1045SUANO   SFP-SX
    Xcvr 1           REV 01    740-011613   AS0812S0719   SFP-SX
    Xcvr 2           REV 01    740-011613   AM0821SA121   SFP-SX
    Xcvr 3           REV 01    740-011613   PF21K21       SFP-SX
    Xcvr 4           REV 01    740-011613   AM0848SB69Z   SFP-SX
    Xcvr 5           REV 01    740-011782   P9POXV3       SFP-SX
    Xcvr 6           REV 01    740-011613   AM0812S8WJN   SFP-SX
    Xcvr 7           REV 01    740-011613   PAM3G9Q       SFP-SX
    Xcvr 8           REV 01    740-011613   AM0848SB4A6   SFP-SX
    Xcvr 9           REV 01    740-011782   P9MOU37       SFP-SX
  MIC 1             REV 20    750-028380   ZG2657        3D 2x 10GE XFP
  PIC 2              BUILTIN   BUILTIN      BUILTIN        1x 10GE XFP
  PIC 3              BUILTIN   BUILTIN      BUILTIN        1x 10GE XFP
Fan Tray              Fan Tray

```

show chassis hardware (MX10 Router)

```

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

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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)

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

Item	Version	Part number	Serial number	Description
Chassis			E1367	MX40-T
Midplane	REV 01	711-038211	YF5284	MX40-T
PEM 0	Rev 04	740-028288	VB01680	AC Power Entry Module
PEM 1	Rev 04	740-028288	VB01700	AC Power Entry Module
Routing Engine		BUILTIN	BUILTIN	Routing Engine
TFEB 0		BUILTIN	BUILTIN	Forwarding Engine
Processor				
QXM 0	REV 05	711-028408	ZA9048	MPC QXM
FPC 0		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0		BUILTIN	BUILTIN	4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	4x 10GE XFP
Xcvr 0	REV 01	740-014279	M7067UPP	XFP-10G-LR
Xcvr 1		NON-JNPR	K9J02UN	XFP-10G-LR
FPC 1		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0	REV 24	750-028392	YX3504	3D 20x 1GE(LAN) SFP
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-011613	AM0812S8WTE	SFP-SX
Xcvr 1	REV 01	740-011613	PFA6KV2	SFP-SX
Xcvr 2	REV 01	740-031851	AM1045SUDDM	SFP-SX
Xcvr 3	REV 01	740-011613	PD63C7M	SFP-SX
Xcvr 4	REV 01	740-011613	PD63DJY	SFP-SX
Xcvr 5	REV 02	740-011613	AA0950STLL9	SFP-SX
Xcvr 6	REV 01	740-011782	PAR1YHC	SFP-SX
Xcvr 7	REV 01	740-011782	P9P0XXL	SFP-SX
Xcvr 8	REV 01	740-011613	PD63D95	SFP-SX
Xcvr 9	REV 01	740-031851	AM1045SU9B8	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-011613	PF21L3Z	SFP-SX
Xcvr 1	REV 01	740-031851	AM1045SU7M9	SFP-SX
Xcvr 2	REV 01	740-031851	AM1045SUAPT	SFP-SX
Xcvr 3	REV 01	740-011613	PFF2BZH	SFP-SX
Xcvr 4	REV 01	740-031851	AM1045SUDDN	SFP-SX
Xcvr 5	REV 01	740-031851	AM1039S00ZR	SFP-SX
Xcvr 6	REV 01	740-031851	AM1045SUD6Y	SFP-SX
Xcvr 8	REV 01	740-011613	PFM1QBS	SFP-SX
Xcvr 9	REV 01	740-011613	PFF2E25	SFP-SX
MIC 1	REV 01	750-021130	KG4391	3D 2x 10GE XFP
PIC 2		BUILTIN	BUILTIN	1x 10GE XFP
Xcvr 0	REV 01	740-011571	C645XJ04G	XFP-10G-SR
PIC 3		BUILTIN	BUILTIN	1x 10GE XFP
Xcvr 0		NON-JNPR	CA49BK0AE	XFP-10G-SR
Fan Tray				Fan Tray

show chassis hardware (Fixed MX80 Router)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis				MX80-48T
Midplane	REV 01	711-031603	KF9250	MX80-48T
Routing Engine		BUILTIN	BUILTIN	Routing Engine

FEB 0		BUILTIN	BUILTIN	Forwarding Engine Board
FPC 0		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0		BUILTIN	BUILTIN	4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	4x 10GE XFP
Xcvr 0		NON-JNPR	M6439D41	XFP-10G-LR
Xcvr 1	REV 01	740-014279	6XE931N00202	XFP-10G-LR
Xcvr 2	REV 01	740-014289	C715XU05F	XFP-10G-SR
Xcvr 3	REV 01	740-014289	C650XU0EP	XFP-10G-SR
FPC 1		BUILTIN	BUILTIN	MPC BUILTIN
MIC 0	REV 01	711-029399	JR6981	12x 1GE(LAN) RJ45
PIC 0		BUILTIN	BUILTIN	12x 1GE(LAN) RJ45
PIC 1		BUILTIN	BUILTIN	12x 1GE(LAN) RJ45
MIC 1	REV 01	BUILTIN	BUILTIN	12x 1GE(LAN) RJ45
PIC 2		BUILTIN	BUILTIN	12x 1GE(LAN) RJ45
PIC 3		BUILTIN	BUILTIN	12x 1GE(LAN) RJ45
Fan Tray				Fan Tray

show chassis hardware (Modular MX80 Router)

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

Hardware inventory:				
Item	Version	Part number	Serial number	Description
Chassis				MX80
Midplane	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 (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      2x0C12/8x0C3 CC-CE
PIC 0          BUILTIN  BUILTIN          2x0C12/8x0C3 CC-CE
  Xcvr 0       REV 01  740-011615  PCQ0U2J       SFP-IR
  Xcvr 1       REV 01  740-016068  PjL7A6G       SFP-SR
  Xcvr 2       REV 01  740-016068  PjL7A5J       SFP-SR
  Xcvr 3       REV 01  740-016065  PjN5HPZ       SFP-SR
  Xcvr 4       REV 01  740-029122  PKB38TL       SFP-LR
  Xcvr 5       REV 01  740-011787  P6A107G       SFP-LR
  Xcvr 6       REV 01  740-029122  PKB38TR       SFP-LR
  Xcvr 7       REV 01  740-011787  PBKONK3       SFP-LR
MIC 1
FPC 2          BUILTIN  BUILTIN          MPC BUILTIN
MIC 0          BUILTIN  BUILTIN          4x 10GE(LAN) SFP+
PIC 0          BUILTIN  BUILTIN          4x 10GE(LAN) SFP+
  Xcvr 0       REV 01  740-031980  B10F00465     SFP+-10G-SR
  Xcvr 1       REV 01  740-031980  B10F00461     SFP+-10G-SR
  Xcvr 2       REV 01  740-031980  B10G01545     SFP+-10G-SR
  Xcvr 3       REV 01  740-031980  B10G01385     SFP+-10G-SR
Fan Tray 0     REV 02  711-049570  CAAX6538      Fan Tray

```

show chassis hardware detail (MX104 Router)

```

user@host> show chassis hardware detail
Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis                               G3503         MX104
Midplane          REV 28   750-044219  CAAX5741      MX104
PEM 0             REV 03   740-045933  1H072500016  AC Power Entry Module
PEM 1             REV 03   740-045932  1H073050017  DC Power Entry Module
Routing Engine 0  REV 20   750-044228  CAAY7935      RE-MX-104
  da0 7836 MB ATP IG eUSB SSD          Nand Flash 0
  usb0 (addr 1) EHCI root hub 0        Freescale     uhub0
  usb0 (addr 2) USB2513Bi 9491         SMSC          uhub1
  usb0 (addr 3) ATP IG eUSB SSD 44801  ATP Electronics umass0
Routing Engine 1  REV 13   750-044228  CAAM6380      RE-MX-104
  da0 7836 MB ATP IG eUSB SSD          Nand Flash 0
AFEB 0            BUILTIN  BUILTIN       Forwarding Engine
Processor
FPC 0             BUILTIN  BUILTIN       MPC BUILTIN
FPC 1             BUILTIN  BUILTIN       MPC BUILTIN
MIC 0             REV 15   750-036132  CAAF7948      2x0C12/8x0C3 CC-CE
PIC 0             BUILTIN  BUILTIN       2x0C12/8x0C3 CC-CE
  Xcvr 0          REV 01  740-011615  PCQ0U2J       SFP-IR
  Xcvr 1          REV 01  740-016068  PjL7A6G       SFP-SR
  Xcvr 2          REV 01  740-016068  PjL7A5J       SFP-SR
  Xcvr 3          REV 01  740-016065  PjN5HPZ       SFP-SR
  Xcvr 4          REV 01  740-029122  PKB38TL       SFP-LR
  Xcvr 5          REV 01  740-011787  P6A107G       SFP-LR
  Xcvr 6          REV 01  740-029122  PKB38TR       SFP-LR
  Xcvr 7          REV 01  740-011787  PBKONK3       SFP-LR
MIC 1
FPC 2             BUILTIN  BUILTIN       MPC BUILTIN
MIC 0             BUILTIN  BUILTIN       4x 10GE(LAN) SFP+
PIC 0             BUILTIN  BUILTIN       4x 10GE(LAN) SFP+
  Xcvr 0          REV 01  740-031980  B10F00465     SFP+-10G-SR
  Xcvr 1          REV 01  740-031980  B10F00461     SFP+-10G-SR
  Xcvr 2          REV 01  740-031980  B10G01545     SFP+-10G-SR
  Xcvr 3          REV 01  740-031980  B10G01385     SFP+-10G-SR
Fan Tray 0        REV 02  711-049570  CAAX6538      Fan Tray

```

show chassis hardware extensive (MX104 Router)

```

user@host> show chassis hardware extensive
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Jedec Code:   0x7fb0          EEPROM Version: 0x02
S/N:          G3503
Assembly ID:  0x0560          Assembly Version: 00.00
Date:         00-00-0000      Assembly Flags:  0x00
ID: MX104
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 7f b0 02 ff 05 60 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x20: 47 33 35 30 33 00 00 00 00 00 00 00 00 00 00 00
Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane      REV 28    750-044219  CAAX5741      MX104
Jedec Code:   0x7fb0          EEPROM Version: 0x02
P/N:          750-044219      S/N:          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 00 41 30 30 ff ff ff ff ff ff
Address 0x70: ff ff ff c2 47 33 35 30 33 00 00 00 00 00 00 00
PEM 0          REV 03    740-045933  1H072500016  AC Power Entry Module
Jedec Code:   0x7fb0          EEPROM Version: 0x02
P/N:          740-045933      S/N:          1H072500016
Assembly ID:  0x0475          Assembly Version: 00.03
Date:         12-14-2012      Assembly Flags:  0x00
Version:      REV 03          CLEI Code:     IPUPAJ9KAA
ID: AC Power Entry Module      FRU Model Number: PWR-AMX1100-AC-S
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff 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
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 00 41 30 30 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
  Address 0x40: 02 02 00 ff 01 49 50 55 50 41 4a 38 4b 41 41 50
  Address 0x50: 57 52 2d 41 4d 58 31 31 30 30 2d 44 43 2d 53 00
  Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff
  Address 0x70: ff ff ff 72 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: 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
  Address 0x70: ff ff ff c2 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: 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
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: S/NAAF7948
Assembly ID: 0x0a1a     Assembly Version: 01.15
Date: 07-03-2012       Assembly Flags: 0x00
Version: REV 15         CLEI Code: IP9IAM2DAA
ID: 2x0C12/8x0C3 CC-CE FRU Model Number: MIC-3D-80C3-20C12-ATM

Board Information Record:
Address 0x00: 12 01 05 03 05 ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0a 1a 01 0f 52 45 56 20 31 35 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 36 31 33 32 00 00
Address 0x20: 53 2f 4e 20 43 41 41 46 37 39 34 38 00 03 07 07
Address 0x30: dc ff ff ff 12 01 05 03 05 ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 49 50 39 49 41 4d 32 44 41 41 4d
Address 0x50: 49 43 2d 33 44 2d 38 4f 43 33 2d 32 4f 43 31 32
Address 0x60: 2d 41 54 4d 00 00 41 00 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff e3 c0 02 a3 9c 00 00 00 00 0a 60 00 00
PIC 0
Xcvr 0 REV 01 740-011615 BUILTIN PCQ0U2J 2x0C12/8x0C3 CC-CE SFP-IR
Xcvr 1 REV 01 740-016068 P3L7A6G SFP-SR
Xcvr 2 REV 01 740-016068 P3L7A5J SFP-SR
Xcvr 3 REV 01 740-016065 P3N5HPZ 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
Xcvr 0 REV 01 740-031980 B10F00465 4x 10GE(LAN) SFP+ 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: S/NAAX6538
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
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
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff ff

```

show chassis hardware models (MX104 Router)

```

user@host> show chassis hardware models
Hardware inventory:
Item                Version  Part number  Serial number  FRU model number
Midplane            REV 20   750-044219   CAAS5849       PROTO-ASSEMBLY
PEM 0               REV 01   740-045932   1H072400065
Routing Engine 0    REV 16   750-044228   CAAR5915       PROTO-ASSEMBLY
AFEB 0              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 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              REV 01   710-021041   JN10C7F7EAFC  MX240
Midplane            REV 01   710-017254   TR1502         MX240 Backplane
FPM Board            REV 01   710-017254   KD4017         Front Panel Display
PEM 0               Rev 02   740-017330   000332         PS 1.2-1.7kW; 100-240V
AC in
PEM 1               Rev 02   740-017330   000226         PS 1.2-1.7kW; 100-240V
AC in
Routing Engine 0    REV 06   740-013063   1000703522     RE-S-2000
Routing Engine 1    REV 06   740-015113   1000687625     RE-S-1300
CB 0                REV 07   710-013385   KC9057         MX SCB
CB 1                REV 05   710-013385   JY4760         MX SCB
FPC 1               REV 01   750-021679   KC7340         DPCE 40x 1GE R
  CPU               REV 06   710-013713   KD4078         DPC PMB
  PIC 0              BUILTIN BUILTIN         10x 1GE(LAN)
    Xcvr 0           REV 01   740-011613   P9F18ME        SFP-SX
  PIC 1              BUILTIN BUILTIN         10x 1GE(LAN)
  PIC 2              BUILTIN BUILTIN         10x 1GE(LAN)
  PIC 3              BUILTIN BUILTIN         10x 1GE(LAN)
FPC 2               REV 04   710-016669   JS4529         DPCE 40x 1GE R EQ

```

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

show chassis hardware detail (MX 240 Router with Routing Engine Displaying DIMM information)

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

Item	Version	Part number	Serial number	Description
Chassis			JN11279B4AFC	MX240 Backplane
Midplane	REV 07	760-021404	TS2474	MX240 Backplane
FPM Board	REV 03	760-021392	XC2643	Front Panel Display
PEM 0	Rev 03	740-017343	QCS0908A068	DC Power Entry Module
Routing Engine 0	REV 01	740-031117	AARCH00	RE-S-1800x4
ad0 3764 MB	STEC M2+	CF 9.0.2	STIM2Q3209239145303	Removable Compact Flash
ad1 28626 MB	WDC SSD-F0030S-5000		C933Z036237215548S00	Compact Flash
usb0 (addr 1)	EHCI root hub 0		Intel	uhub0
usb0 (addr 2)	product 0x0020 32		vendor 0x8087	uhub1
DIMM 0	VL31B5263E-F8S DIE REV-0 PCB REV-0			MFR ID-ce80
DIMM 1	VL31B5263E-F8S DIE REV-0 PCB REV-0			MFR ID-ce80
DIMM 2	VL31B5263E-F8S DIE REV-0 PCB REV-0			MFR ID-ce80
DIMM 3	SL31B5263E-F8S DIE REV-0 PCB REV-0			MFR ID-ce80
CB 0	REV 03	710-021523	XD7225	MX SCB
Fan Tray 0	REV 01	710-021113	WZ4986	MX240 Fan Tray

show chassis hardware (MX240 Router with Enhanced MX SCB)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			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)
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 (MX960 Router)

```

user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number  Description
Chassis                               MX960
Midplane         REV 01   710-013698   AA6082         MX960 Midplane
PIM              Rev 01   740-013110   000008         Power Inlet Module
PEM 2
PEM 3            Rev 01   740-013682   000038         PS 1.7kW; 200-240VAC in
Routing Engine 0 REV 00   740-015113   1000617944     RE-S-1300
CB 0             REV 05   710-013725   JK6947         MX960 Test SCB
FPC 4            REV 01   710-013305   JM7617         MX960 Test DPC
CPU
PIC 0            BUILTIN BUILTIN       1x 10GE(LAN/WAN)
PIC 1            BUILTIN BUILTIN       10x 1GE
FPC 7            REV 01   710-013305   JL9634         MX960 Test DPC
CPU
PIC 0            BUILTIN BUILTIN       1x 10GE(LAN/WAN)
Xcvr 0           NON-JNPR MYBG65I82C     XFP-10G-SR
PIC 1            BUILTIN BUILTIN       10x 1GE
Xcvr 1           REV 01   740-011782   P7N0368        SFP-SX
Xcvr 4           REV 01   740-011782   P8J1W27        SFP-SX
Xcvr 6           REV 01   740-011782   P8J1VSD        SFP-SX
Xcvr 9           REV 01   740-011782   P8J1W25        SFP-SX
Fan Tray 0
Fan Tray 1

```

show chassis hardware (MX960 Router with Bidirectional Optics)

```

user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number  Description
Chassis                               MX960
Midplane         REV 03   710-013698   TR0234         MX960 Backplane

```


FPM Board	REV 03	710-014974	JA0878	Front Panel Display
PDM	Rev 03	740-013110	QCS11135028	Power Distribution Module
PEM 0	Rev 03	740-013682	QCS11154036	PS 1.7kW; 200-240VAC in
PEM 1	Rev 03	740-013682	QCS11154010	PS 1.7kW; 200-240VAC in
PEM 2	Rev 03	740-013682	QCS11154022	PS 1.7kW; 200-240VAC in
Routing Engine 0	REV 06	740-013063	1000691458	RE-S-2000
CB 0	REV 07	710-013385	KA2190	MX SCB
CB 1	REV 07	710-013385	KA0837	MX SCB
FPC 3	REV 02	750-018122	KB3890	DPCE 40x 1GE R
CPU				
FPC 4	REV 01	750-018122	KB3889	DPCE 40x 1GE R
CPU	REV 06	710-013713	KB3976	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 1	REV 01	740-020426	4910549	SFP-1000BASE-BX40-D
Xcvr 2	REV 01	740-020426	4910551	SFP-1000BASE-BX40-D
Xcvr 5	REV 01	740-021340	77E245N00006	SFP-1000BASE-BX10-U
Xcvr 6	REV 01	740-020425	4882821	SFP-1000BASE-BX40-U
Xcvr 8	REV 01	740-020425	4882820	SFP-1000BASE-BX40-U
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-020465	77E555N00894	SFP-1000BASE-BX10-D
Xcvr 1	REV 01	740-020465	75E467X00818	SFP-1000BASE-BX10-D
Xcvr 2	REV 01	740-020465	75E467X00573	SFP-1000BASE-BX10-D
Xcvr 3	REV 01	740-020465	4888227	SFP-1000BASE-BX10-D
Xcvr 4	REV 01	740-020465	4888241	SFP-1000BASE-BX10-D
Xcvr 5	REV 01	740-021340	77E245N00005	SFP-1000BASE-BX10-U
Xcvr 6	REV 01	740-021340	76E245X00487	SFP-1000BASE-BX10-U
Xcvr 7	REV 01	740-021341	5255889	SFP-1000BASE-BX10-U
Xcvr 8	REV 01	740-021341	5255887	SFP-1000BASE-BX10-U
Xcvr 9	REV 01	740-021340	77E245N00004	SFP-1000BASE-BX10-U
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-020424	5007582	SFP-1000BASE-BX10-D
Xcvr 1	REV 01	740-020424	4888187	SFP-1000BASE-BX10-D
Xcvr 2	REV 01	740-020424	4656500	SFP-1000BASE-BX10-D
Xcvr 5	REV 01	740-021341	5255886	SFP-1000BASE-BX10-U
Xcvr 7	REV 01	740-021340	77E245N00003	SFP-1000BASE-BX10-U
Xcvr 8	REV 01	740-021341	5255888	SFP-1000BASE-BX10-U
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-017726	74S184H30341	SFP-EX
Xcvr 1	REV 01	740-017726	4814061	SFP-EX
Xcvr 5	REV 01	740-017726	6ZS184H31108	SFP-EX
Xcvr 9	REV 01	740-021340	76E245X00486	SFP-1000BASE-BX10-U
Fan Tray 0				
Fan Tray 1	REV 03	740-014971	TP0850	Fan Tray

show chassis hardware (MX960 Router with Enhanced MX SCB)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN1096805AFA	MX960
Midplane	REV 03	710-013698	TR0183	MX960 Backplane
Fan Extender	REV 02	710-018051	JY5227	Extended Cable Manager
FPM Board	REV 03	710-014974	JZ6876	Front Panel Display
PDM	Rev 03	740-013110	QCS11035023	Power Distribution Module
PEM 1	Rev 03	740-013682	QCS1109400L	PS 1.7kW; 200-240VAC in
PEM 2	Rev 03	740-013682	QCS11094015	PS 1.7kW; 200-240VAC in
PEM 3	Rev 03	740-013682	QCS11094012	PS 1.7kW; 200-240VAC in
Routing Engine 0	REV 06	740-013063	1000687969	RE-S-2000
Routing Engine 1	REV 06	740-013063	1000687955	RE-S-2000
CB 0	REV 11	750-031391	YZ6072	Enhanced MX SCB
CB 1	REV 11	750-031391	YZ6068	Enhanced MX SCB

CB 2	REV 11	750-031391	YZ6081	Enhanced MX SCB
FPC 0	REV 01	750-018122	KA5576	DPCE 40x 1GE R
CPU	REV 06	710-013713	KB3961	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011613	P9F18GF	SFP-SX
Xcvr 2	REV 01	740-011782	P9M0TL9	SFP-SX
Xcvr 7	REV 01	740-011782	P9P0XXH	SFP-SX
Xcvr 9	REV 01	740-011782	P9M0TN1	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011613	PAJ4UHC	SFP-SX
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011613	PFF2CD0	SFP-SX
Xcvr 1	REV 01	740-011613	PBG3ZUT	SFP-SX
Xcvr 2	REV 01	740-011613	PFF2DDV	SFP-SX
Xcvr 5	REV 01	740-011613	P8E2SST	SFP-SX
Xcvr 9	REV 01	740-011782	PB8329N	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-026192	1U0201084503342	SFP-100BASE-BX10-U
Xcvr 1	REV 01	740-026193	1U1201084503313	SFP-100BASE-BX10-D
Xcvr 2	REV 01	740-011613	PAJ4Y5B	SFP-SX
Xcvr 6	REV 01	740-011782	P9M0U3M	SFP-SX
Xcvr 7	REV 01	740-011782	P9M0TLA	SFP-SX
FPC 1	REV 16	750-031089	YL0719	MPC Type 2 3D
CPU	REV 06	711-030884	YL1463	MPC PMB 2G
MIC 0	REV 07	750-028387	JR6500	3D 4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 01	740-014279	733019A00154	XFP-10G-LR
Xcvr 1	REV 02	740-014289	T09F55034	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 01	740-014279	913019B00791	XFP-10G-LR
Xcvr 1	REV 01	740-014289	98S803A90384	XFP-10G-SR
MIC 1	REV 24	750-028387	YJ3950	3D 4x 10GE XFP
PIC 2		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 02	740-014279	T10B36134	XFP-10G-LR
Xcvr 1	REV 01	740-014289	T07M86354	XFP-10G-SR
PIC 3		BUILTIN	BUILTIN	2x 10GE XFP
FPC 2	REV 08	710-014219	JY9654	DPCE 4x 10GE R
CPU	REV 06	710-013713	JZ6549	DPC PMB
PIC 0		BUILTIN	BUILTIN	1x 10GE(LAN/WAN)
PIC 1		BUILTIN	BUILTIN	1x 10GE(LAN/WAN)
PIC 2		BUILTIN	BUILTIN	1x 10GE(LAN/WAN)
Xcvr 0	REV 03	740-011571	C931BK028	XFP-10G-SR
PIC 3		BUILTIN	BUILTIN	1x 10GE(LAN/WAN)
FPC 3	REV 10	750-024199	XJ6692	MX FPC Type 3
CPU	REV 03	710-022351	XF5182	DPC PMB
PIC 0	REV 17	750-009553	RJ2945	4x OC-48 SONET
Xcvr 1	REV 01	740-011785	PCP3YLL	SFP-SR
Xcvr 3	REV 01	740-011785	PDSOMRY	SFP-SR
PIC 1	REV 32	750-003700	DP2113	1x OC-192 12xMM VSR
FPC 5	REV 25	750-028467	YM8256	MPC 3D 16x 10GE
CPU	REV 10	711-029089	YL3029	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 1	REV 01	740-031980	AHNOX1Z	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
FPC 7	REV 02	750-031092	JR6658	MPC Type 1 3D Q
CPU	REV 01	711-030884	JZ9038	MPC PMB 2G
MIC 0	REV 08	750-028392	JZ8737	3D 20x 1GE(LAN) SFP
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-011782	PBE2C6Y	SFP-SX

Xcvr 2		NON-JNPR	U8105N8	SFP-SX
Xcvr 4	REV 01	740-011613	PFM18EF	SFP-SX
Xcvr 7	REV 01	740-011613	PFF2AM8	SFP-SX
Xcvr 8	REV 01	740-011613	PFF2CT6	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-011782	PB82VHH	SFP-SX
Xcvr 1	REV 01	740-011613	PFF2CSW	SFP-SX
Xcvr 9	REV 01	740-011613	PFF2BY0	SFP-SX
QXM 0	REV 04	711-028408	JR6372	MPC QXM
FPC 8	REV 05	750-024387	JW9754	MX FPC Type 2
CPU	REV 03	710-022351	KF1651	DPC PMB
PIC 0	REV 08	750-014730	DM3664	4x OC-3 1x OC-12 SFP
Xcvr 0	REV 01	740-016065	81S290N00077	SFP-SR
Xcvr 1		NON-JNPR	2191844	SFP-SR
Xcvr 2	REV 01	740-011618	PD81EE5	SFP-IR
PIC 1	REV 08	750-014637	DM3671	4x OC-12-3 SFP
Xcvr 0	REV 01	740-011785	PCK3UNK	SFP-SR
Xcvr 3	REV 01	740-011785	PDSOMPZ	SFP-SR
FPC 10	REV 04	710-013699	JY4654	DPCE 40x 1GE R
CPU	REV 05	710-013713	JS9717	DPC PMB
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 5	REV 01	740-011782	PAR1L72	SFP-SX
Xcvr 6	REV 01	740-011782	P8N1YQ4	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN)
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN)
Xcvr 0	REV 01	740-011782	P8Q2AVL	SFP-SX
Xcvr 5	REV 01	740-011782	PAR1L7B	SFP-SX
Xcvr 6	REV 01	740-011782	PAR1L2J	SFP-SX
Xcvr 8	REV 01	740-011782	P8N1YMY	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN)
Fan Tray 0	REV 03	740-014971	TP0567	Fan Tray
Fan Tray 1	REV 03	740-014971	TP0702	Fan Tray

show chassis hardware models (MX960 Router with Enhanced MX SCB)

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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-40C48-SON-SFP
PIC 1	REV 32	750-003700	DP2113	PC-10C192-SON-VSR
FPC 5	REV 25	750-028467	YM8256	MPC-3D-16XGE-SFP
FPC 7	REV 02	750-031092	JR6658	MX-MPC1-3D-Q
MIC 0	REV 08	750-028392	JZ8737	MIC-3D-20GE-SFP
FPC 8	REV 05	750-024387	JW9754	MX-FPC2
PIC 0	REV 08	750-014730	DM3664	PB-40C3-10C12-SON2-SFP
PIC 1	REV 08	750-014637	DM3671	PB-40C3-40C12-SON-SFP
FPC 10	REV 04	710-013699	JY4654	DPC-R-40GE-SFP

Fan Tray 0	REV 03	740-014971	TP0567	FFANTRAY-MX960-S
Fan Tray 1	REV 03	740-014971	TP0702	FFANTRAY-MX960-S

show chassis hardware detail (MX960 Router)

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Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis
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
PIC 1
FPC 7             REV 01    710-013305   JL9634         MX960 Test DPC
CPU
PIC 0
  Xcvr 0
PIC 1
  Xcvr 1          REV 01    740-011782   P7N0368        SFP-SX
  Xcvr 4          REV 01    740-011782   P8J1W27        SFP-SX
  Xcvr 6          REV 01    740-011782   P8J1VSD        SFP-SX
  Xcvr 9          REV 01    740-011782   P8J1W25        SFP-SX
Fan Tray 0
Fan Tray 1

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show chassis hardware (MX2010 Router)

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Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis
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

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SFB 0	REV 06	711-032385	ZV1828	Switch Fabric Board
SFB 1	REV 07	711-032385	ZZ2568	Switch Fabric Board
SFB 2	REV 07	711-032385	ZZ2563	Switch Fabric Board
SFB 3	REV 07	711-032385	ZZ2564	Switch Fabric Board
SFB 4	REV 07	711-032385	ZZ2580	Switch Fabric Board
SFB 5	REV 07	711-032385	ZZ2579	Switch Fabric Board
SFB 6	REV 07	711-032385	CAAB4882	Switch Fabric Board
SFB 7	REV 07	711-032385	CAAB4898	Switch Fabric Board
FPC 0	REV 33	750-028467	CAAB1919	MPC 3D 16x 10GE
CPU	REV 11	711-029089	CAAB7174	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMH02RE	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMH038C	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AMH0390	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AMG0SUA	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMH0579	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMG0SGP	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AMH04SV	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AMH04X3	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMH0135	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMH02NC	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AMH02XB	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AMH02PN	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMH057Y	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMG0JHE	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AMH02HT	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AMH04V4	SFP+-10G-SR
FPC 1	REV 21	750-033205	ZG5027	MPC Type 3
CPU	REV 04	711-035209	YT4780	HMPD PMB 2G
MIC 0	REV 03	750-033307	ZV6299	10X10GE SFPP
PIC 0		BUILTIN	BUILTIN	10X10GE SFPP
Xcvr 0	REV 01	740-031980	083363A00410	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	083363A00334	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	113363A00125	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	083363A00953	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AHR013D	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJ40JUR	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJ40JKL	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJ30ECK	SFP+-10G-SR
Xcvr 8	REV 01	740-021308	19T511100864	SFP+-10G-SR
Xcvr 9	REV 01	740-021308	19T511100868	SFP+-10G-SR
MIC 1	REV 03	750-033307	ZV6268	10X10GE SFPP
PIC 2		BUILTIN	BUILTIN	10X10GE SFPP
Xcvr 0	REV 01	740-031980	AJC0JML	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJ403PC	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJ10N25	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJ40JF4	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AJ40JSJ	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJ403V7	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJ40JN3	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJ40JSU	SFP+-10G-SR
Xcvr 8	REV 01	740-021308	19T511100468	SFP+-10G-SR
Xcvr 9	REV 01	740-021308	19T511101363	SFP+-10G-SR
FPC 8	REV 22	750-031089	ZT9746	MPC Type 2 3D
CPU	REV 06	711-030884	ZS1271	MPC PMB 2G
MIC 0	REV 26	750-028392	ABBS1150	3D 20x 1GE(LAN) SFP
PIC 0		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-031851	PLG023C	SFP-SX

Xcvr 1	REV 01	740-031851	PLG09C6	SFP-SX
Xcvr 2	REV 02	740-011613	AM0950SF9L7	SFP-SX
Xcvr 3	REV 02	740-011613	AM1001SFN1H	SFP-SX
Xcvr 4	REV 02	740-011613	AM1001SFM9D	SFP-SX
Xcvr 5	REV 02	740-011613	AM1001SFLTJ	SFP-SX
Xcvr 6	REV 01	740-031851	AC1108S03L9	SFP-SX
Xcvr 7	REV 01	740-031851	AC1102S00NC	SFP-SX
Xcvr 8	REV 01	740-031851	AC1102S00MX	SFP-SX
Xcvr 9	REV 01	740-031851	AC1102S0085	SFP-SX
PIC 1		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-031851	AC1102S00KU	SFP-SX
Xcvr 1	REV 01	740-031851	AC1102S00NG	SFP-SX
Xcvr 2	REV 01	740-031851	AC1102S00K3	SFP-SX
Xcvr 3	REV 01	740-031851	AC1102S008R	SFP-SX
Xcvr 4	REV 01	740-031851	AM1107SUFVJ	SFP-SX
Xcvr 5	REV 01	740-031851	AC1108S03LG	SFP-SX
MIC 1	REV 26	750-028387	ABBR9582	3D 4x 10GE XFP
PIC 2		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0		NON-JNPR	T10A91703	XFP-10G-SR
Xcvr 1		NON-JNPR	T09L42604	XFP-10G-SR
PIC 3		BUILTIN	BUILTIN	2x 10GE XFP
FPC 9	REV 11	750-036284	ZL3591	MPC 3D 16x 10GE EM
CPU	REV 10	711-029089	ZL0513	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	1YT517101825	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	1YT517101821	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	1YT517101682	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	ALQ13R6	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	1YT517101828	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	1YT517101716	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	1YT517101732	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	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

show chassis hardware detail (MX2010 Router)

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Hardware inventory:
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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 Module	REV 01	740-045050	1E02224000P	DC 52V Power Supply
PSM 1 Module	REV 01	740-045050	1E02224000M	DC 52V Power Supply
PSM 2 Module	REV 01	740-045050	1E022240010	DC 52V Power Supply
PSM 3 Module	REV 01	740-045050	1E02224000G	DC 52V Power Supply
PSM 4 Module	REV 01	740-045050	1E022240013	DC 52V Power Supply
PSM 5 Module	REV 01	740-045050	1E022240007	DC 52V Power Supply
PSM 6 Module	REV 01	740-045050	1E02224001C	DC 52V Power Supply
PSM 7 Module	REV 01	740-045050	1E02224001D	DC 52V Power Supply
PSM 8 Module	REV 01	740-045050	1E02224001B	DC 52V Power Supply
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
PIC 2		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-032210	UMN03T4	CFP-100G-LR4
FPC 2	REV 16	750-037358	CAAL1001	MPC Type 4-1
CPU	REV 08	711-035209	CAAK7927	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	193363A00589	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00028	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	193363A00376	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00016	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	193363A00499	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	973152A00039	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11E01239	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	973152A00058	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	B10M00075	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00014	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AMA0638	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00063	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AMA0629	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	973152A00053	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	193363A00344	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	973152A00046	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	AMA062M	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00080	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	193363A00580	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00064	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	093363A01494	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	973152A00020	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	123363A00047	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	973152A00072	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-021308	03DZ06A01033	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00022	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	03DZ06A01026	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00013	SFP+-10G-SR
Xcvr 4	REV 01	740-021308	03DZ06A01028	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	973152A00079	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	03DZ06A01018	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	973152A00025	SFP+-10G-SR
FPC 3	REV 33	750-028467	CAAF5400	MPC 3D 16x 10GE
CPU	REV 11	711-029089	CAAH7626	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00066	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00021	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	973152A00062	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00027	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00065	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00069	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	973152A00026	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00003	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00035	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00004	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	973152A00049	SFP+-10G-SR

Xcvr 3	REV 01	740-021308	973152A00055	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00010	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	973152A00001	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	973152A00073	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	973152A00012	SFP+-10G-SR
FPC 4	REV 21	750-033205	ZG5028	MPC Type 3
CPU	REV 05	711-035209	YX3911	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
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	AJ40JJK	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11F00238	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B10M00275	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	193363A00211	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	B11D05577	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11G00586	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AMA08B7	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AMA04Q0	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B11D05840	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11E00467	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11E00029	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	19T511101712	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-031980	193363A00568	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B10M00166	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B10M00212	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11D05823	SFP+-10G-SR
Xcvr 4	REV 01	740-021308	03DZ06A01005	SFP+-10G-SR
Xcvr 5	REV 01	740-021308	03DZ06A01003	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	03DZ06A01009	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	03DZ06A01004	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	8X10GE SFPP
Xcvr 0	REV 01	740-021308	03DZ06A01017	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	03DZ06A01016	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	03DZ06A01024	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	03DZ06A01008	SFP+-10G-SR
Xcvr 4	REV 01	740-030658	AD0946A02UH	SFP+-10G-USR
Xcvr 5	REV 01	740-021308	T09J67913	SFP+-10G-SR
Xcvr 6	REV 01	740-021308	AD0837ES09G	SFP+-10G-SR
Xcvr 7	REV 01	740-021308	03DZ06A01015	SFP+-10G-SR
FPC 8	REV 03	750-045372	CAAD3111	MPC Type 3
CPU	REV 08	711-035209	CAAD8033	HMPC PMB 2G
MIC 0	REV 03	750-036233	ZL2032	2X40GE QSFP
PIC 0		BUILTIN	BUILTIN	2X40GE QSFP
Xcvr 0	REV 01	740-032986	QB230273	QSFP+-40G-SR4
Xcvr 1	REV 01	740-032986	QB230254	QSFP+-40G-SR4
MIC 1	REV 03	750-036233	ZL2021	2X40GE QSFP
PIC 2		BUILTIN	BUILTIN	2X40GE QSFP

Xcvr 0	REV 01	740-032986	QB390962	QSFP+-40G-SR4
Xcvr 1	REV 01	740-032986	QB390960	QSFP+-40G-SR4
FPC 9	REV 09	750-037355	CAAF1531	MPC Type 4-2
CPU	REV 08	711-035209	CAAB9927	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-031980	193363A00525	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	193363A00504	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	193363A00368	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJ40JSS	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-031980	123363A00042	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B10M00023	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJ802EM	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11E02348	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP
ADC 0	REV 13	750-043596	ABBX5532	Adapter Card
ADC 1	REV 13	750-043596	ABBX5550	Adapter Card
ADC 2	REV 13	750-043596	ABBX5571	Adapter Card
ADC 3	REV 13	750-043596	ABBX5568	Adapter Card
ADC 4	REV 13	750-043596	ABBX5556	Adapter Card
ADC 5	REV 13	750-043596	ABBX5553	Adapter Card
ADC 6	REV 13	750-043596	ABBX5541	Adapter Card
ADC 7	REV 13	750-043596	ABBX5578	Adapter Card
ADC 8	REV 13	750-043596	ABBX5560	Adapter Card
ADC 9	REV 07	750-043596	ABBV7188	Adapter Card
Fan Tray 0	REV 03	760-046960	ACAY0127	172mm FanTray - 6 Fans
Fan Tray 1	REV 2A	760-046960	ACAY0068	172mm FanTray - 6 Fans
Fan Tray 2	REV 2A	760-046960	ACAY0072	172mm FanTray - 6 Fans
Fan Tray 3	REV 2A	760-046960	ACAY0070	172mm FanTray - 6 Fans

show chassis hardware extensive (MX2010 Router)

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

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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:           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:           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:           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

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Address 0x50: 58 32 30 31 30 2d 43 52 41 46 54 2d 53 00 00 00
Address 0x60: 00 00 00 00 00 00 41 00 00 ff ff ff ff ff ff ff
Address 0x70: ff ff ff 93 ff ff ff ff ff ff ff ff ff ff ff ff
PSM 0          REV 01   740-045050   1E02224000P   DC 52V Power Supply
Module
Jedec Code:    0x7fb0          EEPROM Version: 0x02
P/N:           740-045050      S/N:           1E02224000P
Assembly ID:   0x0478          Assembly Version: 01.01
Date:          12-06-2012      Assembly Flags: 0x00
Version:       REV 01          CLEI Code:     XXXXXXXXXX
ID: DC 52V Power Supply Module FRU Model Number: MX2000-PSM-HC-DC-S-A
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff 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 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 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

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Jedec Code: 0x7fb0          EEPROM Version: 0x02
P/N: 740-041821            S/N: 9009099704
Assembly ID: 0x09c0        Assembly Version: 01.02
Date: 03-15-2012          Assembly Flags: 0x00
Version: REV 02
ID: RE-S-1800x4            FRU Model Number: RE-S-1800X4-16G-S
Board Information Record:
  Address 0x00: 54 32 30 32 37 44 41 2d 34 34 47 42 23 41 23 00
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 09 c0 01 02 52 45 56 20 30 32 00 00
  Address 0x10: 00 00 00 00 37 34 30 2d 30 34 31 38 32 31 00 00
  Address 0x20: 39 30 30 39 30 39 39 37 30 34 00 00 00 0f 03 07
  Address 0x30: dc ff ff ff 54 32 30 32 37 44 41 2d 34 34 47 42
  Address 0x40: 23 41 23 00 01 00 00 00 00 00 00 00 00 00 00 52
  Address 0x50: 45 2d 53 2d 31 38 30 30 58 34 2d 31 36 47 2d 53
  Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff 8c ff ff ff ff ff ff ff ff ff ff ff ff
ad0 3831 MB UGB30SFA4000T1 SFA4000T1 00000651 Compact Flash
ad1 30533 MB UGB94BPH32H0S1-KCI 11000019592 Disk 1
usb0 (addr 1) EHCI root hub 0 Intel uhub0
usb0 (addr 2) product 0x0020 32 vendor 0x8087 uhub1
DIMM 0 SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
DIMM 1 SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
DIMM 2 SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
DIMM 3 SGU04G72H1BD2SA-BB DIE REV-52 PCB REV-54 MFR ID-ce80
Routing Engine 1 REV 02 740-041821 9009099706 RE-S-1800x4
Jedec Code: 0x7fb0          EEPROM Version: 0x02
P/N: 740-041821            S/N: 9009099706
Assembly ID: 0x09c0        Assembly Version: 01.02
Date: 02-23-2012          Assembly Flags: 0x00
Version: REV 02
ID: RE-S-1800x4            FRU Model Number: RE-S-1800X4-16G-S
Board Information Record:
  Address 0x00: 54 32 30 32 37 44 41 2d 34 34 47 42 23 41 23 00
I2C Hex Data:
  Address 0x00: 7f b0 02 ff 09 c0 01 02 52 45 56 20 30 32 00 00
  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: 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

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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 c2 ff ff ff ff ff ff ff ff ff ff ff
...
SPMB 0          REV 02   711-041855   ABBV3825          PMB Board
Jedec Code:    0x7fb0          EEPROM Version:    0x01
P/N:           711-041855      S/N:             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
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
Address 0x40: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff 00 00 00 00 00 00 00 00 00 00 00 00
...
SFB 0          REV 05   711-044466   ABBX5682          Switch Fabric Board
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           711-044466      S/N:             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
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
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:             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
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
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          HMPD PMB 2G
Jedec Code:    0x7fb0          EEPROM Version:    0x01

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P/N:          711-035209          S/N:          S/N CAAB9842
Assembly ID:  0x0b04             Assembly Version: 01.08
Date:         05-17-2012         Assembly Flags:  0x00
Version:      REV 08
ID: HMPG PMB 2G
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 01 ff 0b 04 01 08 52 45 56 20 30 38 00 00
  Address 0x10: 00 00 00 00 37 31 31 2d 30 33 35 32 30 39 00 00
  Address 0x20: 53 2f 4e 20 43 41 41 42 39 38 34 32 00 11 05 07
  Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff ff
  Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x70: ff ff ff ff 00 00 00 00 00 00 00 00 00 00 00 00
PIC 0          BUILTIN          BUILTIN          4x10GE SFPP
Jedec Code:    0x0000            EEPROM Version:  0x00
P/N:          BUILTIN            S/N:            BUILTIN
Assembly ID:   0x0a53            Assembly Version: 00.00
Date:         00-00-0000         Assembly Flags:  0x00
ID: 4x10GE SFPP
Board Information Record:
  Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
  Address 0x00: 00 00 00 00 0a 53 00 00 00 00 00 00 00 00 00 00
  Address 0x10: 00 00 00 00 42 55 49 4c 54 49 4e 00 4d 58 43 00
  Address 0x20: 42 55 49 4c 54 49 4e 00 4d 58 43 00 00 00 00 00
  Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  Address 0x70: 00 00 00 00 c0 02 ae 64 00 00 00 00 0a 52 00 00
  Xcvr 0      REV 01      740-021308      19T511101656      SFP+-10G-SR
  Xcvr 1      REV 01      740-031980      AMA04RU           SFP+-10G-SR
  Xcvr 2      REV 01      740-031980      193363A00558        SFP+-10G-SR
  Xcvr 3      REV 01      740-031980      B10M00202           SFP+-10G-SR
...
ADC 0          REV 13      750-043596      ABBX5532            Adapter Card
Jedec Code:    0x7fb0            EEPROM Version:  0x02
P/N:          750-043596         S/N:            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 00 41 00 00 ff ff ff ff ff ff
  Address 0x70: ff ff ff 3a 00 00 00 00 00 00 00 00 00 00 00 00
...

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show chassis hardware models (MX2010 Router)

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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	000000000000000000000000
PSM 5	REV 0B	740-033727	VG00015	000000000000000000000000
PSM 6	REV 0B	740-033727	VH00097	000000000000000000000000
PSM 7	REV 0C	740-033727	VJ00151	000000000000000000000000
PSM 8	REV 0C	740-033727	VJ00149	000000000000000000000000
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)

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Hardware inventory:

Item	Version	Part number	CLEI code	FRU model number
FPM Board	REV 06	711-032349	PROTOXCLEI	711-032349
PSM 4	REV 0C	740-033727	0000000000	000000000000000000000000
PSM 5	REV 0B	740-033727	0000000000	000000000000000000000000
PSM 6	REV 0B	740-033727	0000000000	000000000000000000000000
PSM 7	REV 0C	740-033727	0000000000	000000000000000000000000
PSM 8	REV 0C	740-033727	0000000000	000000000000000000000000
PDM 0	REV 0B	740-038109		
PDM 1	REV 0B	740-038109		
Routing Engine 0	REV 02	740-041821		RE-S-1800X4-16G-S
Routing Engine 1	REV 02	740-041821		RE-S-1800X4-16G-S
CB 0	REV 08	750-040257	PROTOXCLEI	750-040257
CB 1	REV 08	750-040257	PROTOXCLEI	750-040257
SFB 0	REV 06	711-032385	PROTOXCLEI	711-032385
SFB 1	REV 07	711-032385	PROTOXCLEI	711-032385
SFB 2	REV 07	711-032385	PROTOXCLEI	711-032385
SFB 3	REV 07	711-032385	PROTOXCLEI	711-032385
SFB 4	REV 07	711-032385	PROTOXCLEI	711-032385

SFB 5	REV 07	711-032385	PROTOXCLEI	711-0323856
SFB 6	REV 07	711-032385	PROTOXCLEI	711-044170
SFB 7	REV 07	711-032385	PROTOXCLEI	711-044170
FPC 0	REV 33	750-028467		MPC-3D-16XGE-SFPP
FPC 1	REV 21	750-033205		MX-MPC3-3D
MIC 0	REV 03	750-033307	PROTOXCLEI	MIC3-3D-10XGE-SFPP
MIC 1	REV 03	750-033307	PROTOXCLEI	MIC3-3D-10XGE-SFPP
FPC 8	REV 22	750-031089	COUIBAYBAA	MX-MPC2-3D
MIC 0	REV 26	750-028392	COUIA15BAA	MIC-3D-20GE-SFP
MIC 1	REV 26	750-028387	COUIA16BAA	MIC-3D-4XGE-XFP
FPC 9	REV 11	750-036284	CMUIACGBAA	MPCE-3D-16XGE-SFPP
ADC 0	REV 05	750-043596	PROTOXCLEI	750-043596
ADC 1	REV 01	750-043596	PROTOXCLEI	750-043596
ADC 8	REV 01	750-043596	PROTOXCLEI	750-043596
ADC 9	REV 02	750-043596	PROTOXCLEI	750-043596
Fan Tray 0	REV 2A	760-046960		
Fan Tray 1	REV 2A	760-046960		
Fan Tray 2	REV 2A	760-046960		
Fan Tray 3	REV 2A	760-046960		

show chassis hardware (MX2020 Router)

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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			JN11E2227AFJ	MX2020
Midplane	REV 27	750-040240	ABAB9384	Lower Power Midplane
Midplane 1	REV 04	711-032386	ABAB9386	Upper Backplane
PMP 1	REV 05	711-032428	ACAJ1579	Upper Power Midplane
PMP 0	REV 04	711-032426	ACAJ1524	Lower Power Midplane
FPM Board	REV 06	760-040242	ABBT8837	Front Panel Display
PSM 0	REV 01	740-045050	1E022240056	DC 52V Power Supply
Module				
PSM 1	REV 01	740-045050	1E022240054	DC 52V Power Supply
Module				
PSM 2	REV 01	740-045050	1E02224005H	DC 52V Power Supply
Module				
PSM 3	REV 01	740-045050	1E022240053	DC 52V Power Supply
Module				
PSM 4	REV 01	740-045050	1E02224004K	DC 52V Power Supply
Module				
PSM 7	REV 01	740-045050	1E02224006W	DC 52V Power Supply
Module				
PSM 8	REV 01	740-045050	1E022240062	DC 52V Power Supply
Module				
PSM 9	REV 01	740-045050	1E02224005B	DC 52V Power Supply
Module				
PSM 10	REV 01	740-045050	1E02224005A	DC 52V Power Supply
Module				
PSM 11	REV 01	740-045050	1E022240052	DC 52V Power Supply
Module				
PSM 12	REV 01	740-045050	1E022240051	DC 52V Power Supply
Module				
PSM 13	REV 01	740-045050	1E022240058	DC 52V Power Supply
Module				
PSM 14	REV 01	740-045050	1E02224004L	DC 52V Power Supply
Module				
PSM 15	REV 01	740-045050	1E02224005M	DC 52V Power Supply
Module				
PSM 16	REV 01	740-045050	1E02224006S	DC 52V Power Supply
Module				

PSM 17	REV 01	740-045050	1E02224005Z	DC 52V Power Supply
Module				
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
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	ABB0302	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABB0495	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01581	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01176	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01251	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02752	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00786	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01020	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01023	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02819	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02812	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11D04437	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01279	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01333	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00978	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01018	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01784	SFP+-10G-USR
Xcvr 3	REV 01	740-031980	AK80NKP	SFP+-10G-SR
FPC 4	REV 30	750-028467	ABB0308	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABB11095	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	ABB11082	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00523	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01848	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01865	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00540	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00422	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00428	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K00423	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K01855	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K01847	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00526	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K00529	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00525	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00425	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00530	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01851	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00528	SFP+-10G-SR
FPC 6	REV 32	750-028467	ABBN6832	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN6534	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MB4	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FQ6	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N1F	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLQ	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80KDR	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FGJ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N5G	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KD8	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LET	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80N1X	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NRF	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL2	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N3D	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MRB	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LEQ	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LER	SFP+-10G-SR
FPC 7	REV 32	750-028467	ABBN6811	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7288	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NK8	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80LJG	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LBU	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N21	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEU	SFP+-10G-SR

Xcvr 1	REV 01	740-031980	AK80NLM	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NL6	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LES	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEN	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80ME0	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LMG	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80MM1	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MG7	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80KF9	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NRQ	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLE	SFP+-10G-SR
FPC 8	REV 23	750-028467	YN2977	MPC 3D 16x 10GE
CPU	REV 10	711-029089	YP1856	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00875	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00851	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00772	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00882	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00735	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00169	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00726	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00077	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00168	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00676	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00732	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00091	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00725	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00642	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00871	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00853	SFP+-10G-SR
FPC 9	REV 32	750-028467	ABBN6798	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6556	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	9ZDZ06A00055	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00239	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AD0915E003K	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AD0915E003A	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MRC	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NL5	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKN	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N3U	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N1T	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJ808DJ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NG4	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80FND	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80FKQ	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLT	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKR	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LKM	SFP+-10G-SR
FPC 10	REV 32	750-028467	ABBN6813	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6542	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NA3	SFP+-10G-SR

Xcvr 1	REV 01	740-031980	AK80NLF	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80MRH	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KE4	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	973152A00030	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80L9H	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80ME8	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLR	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NG1	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MCA	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LFC	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LEM	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N9X	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80LAC	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LF2	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N8T	SFP+-10G-SR
FPC 11	REV 30	750-028467	ABBN0281	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0526	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01326	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E03973	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00950	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00674	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00775	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E04461	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01074	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02821	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04501	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00757	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01623	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01022	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04359	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02751	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E02736	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01178	SFP+-10G-USR
FPC 12	REV 32	750-028467	ABBN6796	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7259	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K01856	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01853	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01863	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02863	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02668	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02881	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01671	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02627	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02725	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02692	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02730	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03081	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02736	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02568	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02747	SFP+-10G-SR

Xcvr 3	REV 01	740-031980	163363A02579	SFP+-10G-SR
FPC 13	REV 30	750-028467	ABBN0270	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBJ0966	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NL1	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NXW	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KD2	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80FMD	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NKQ	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MGH	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N38	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL7	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEL	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NKD	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KCY	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LHK	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80M5J	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MBE	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NLG	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LFH	SFP+-10G-SR
FPC 14	REV 32	750-028467	ABBN6790	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6515	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LZM	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MCC	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KCM	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KE0	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021310	C10F99155	SFP+-10G-LRM
Xcvr 1	REV 01	740-021310	C10F99049	SFP+-10G-LRM
Xcvr 2	REV 01	740-021310	C10F99128	SFP+-10G-LRM
Xcvr 3	REV 01	740-021310	C10F99169	SFP+-10G-LRM
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LF3	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02597	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A03060	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03057	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEX	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FEU	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80FNM	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AJQQQ5G	SFP+-10G-SR
FPC 15	REV 32	750-028467	ABBN6791	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7289	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00424	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01849	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01862	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K01852	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00427	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00430	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01854	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00426	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00429	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01864	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01850	SFP+-10G-SR

Xcvr 3	REV 01	740-031980	B11K00522	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E01144	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00985	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00796	SFP+-10G-USR
Xcvr 3	REV 01	740-031980	B11K01866	SFP+-10G-SR
FPC 16	REV 30	750-028467	ABBM4592	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0465	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01435	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01052	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01328	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01254	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02738	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02881	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01624	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00889	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02883	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00681	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E04306	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02813	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01801	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02753	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01156	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04324	SFP+-10G-USR
FPC 17	REV 32	750-028467	ABBN6810	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7237	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02638	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02082	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01674	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03058	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03048	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02729	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02566	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02567	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02878	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02739	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01959	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02660	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02731	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02588	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02673	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02654	SFP+-10G-SR
FPC 18	REV 30	750-028467	ABBM4739	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0487	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02569	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02886	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A03082	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	133363A00297	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02726	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A03050	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02884	SFP+-10G-SR

Xcvr 3	REV 01	740-031980	163363A03076	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02581	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02873	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02582	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03083	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031981	UL70BU6	SFP+-10G-LR
Xcvr 1	REV 01	740-031981	UL50QC6	SFP+-10G-LR
Xcvr 2	REV 01	740-031981	UL708N6	SFP+-10G-LR
Xcvr 3	REV 01	740-031981	UL603KK	SFP+-10G-LR
FPC 19	REV 32	750-028467	ABBN6827	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6508	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A01688	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A01724	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01773	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02593	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03061	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A03056	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02669	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03070	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02572	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02697	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02585	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03052	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02591	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02649	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02577	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02698	SFP+-10G-SR
ADC 0	REV 13	750-043596	ABBX5561	Adapter Card
ADC 1	REV 13	750-043596	ABBX5546	Adapter Card
ADC 2	REV 13	750-043596	ABBX5535	Adapter Card
ADC 3	REV 13	750-043596	ABBX5552	Adapter Card
ADC 4	REV 13	750-043596	ABBX5581	Adapter Card
ADC 5	REV 13	750-043596	ABBX5545	Adapter Card
ADC 6	REV 13	750-043596	ABBX5554	Adapter Card
ADC 7	REV 07	750-043596	ABBV7194	Adapter Card
ADC 8	REV 07	750-043596	ABBV7251	Adapter Card
ADC 9	REV 07	750-043596	ABBV7202	Adapter Card
ADC 10	REV 13	750-043596	ABBX5538	Adapter Card
ADC 11	REV 13	750-043596	ABBX5566	Adapter Card
ADC 12	REV 13	750-043596	ABBX5542	Adapter Card
ADC 13	REV 13	750-043596	ABBX5539	Adapter Card
ADC 14	REV 13	750-043596	ABBX5555	Adapter Card
ADC 15	REV 13	750-043596	ABBX5557	Adapter Card
ADC 16	REV 13	750-043596	ABBX5536	Adapter Card
ADC 17	REV 13	750-043596	ABBX5559	Adapter Card
ADC 18	REV 13	750-043596	ABBX5537	Adapter Card
ADC 19	REV 11	750-043596	ABBW5685	Adapter Card
Fan Tray 0	REV 2A	760-046960	ACAY0030	172mm FanTray - 6 Fans
Fan Tray 1	REV 2A	760-046960	ACAY0039	172mm FanTray - 6 Fans
Fan Tray 2	REV 2A	760-046960	ACAY0033	172mm FanTray - 6 Fans
Fan Tray 3	REV 2A	760-046960	ACAY0062	172mm FanTray - 6 Fans

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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				
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	CAA6141	PMB Board
SPMB 1	REV 01	711-041855	ZS2275	PMB Board
SFB 0	REV 05	711-044466	ABBT2161	Switch Fabric Board
SFB 1	REV 05	711-044466	ABBT2159	Switch Fabric Board
SFB 2	REV 05	711-044466	ABBX3718	Switch Fabric Board
SFB 3	REV 05	711-044466	ABBT2152	Switch Fabric Board

SFB 4	REV 05	711-044466	ABBT2160	Switch Fabric Board
SFB 5	REV 05	711-044466	ABBT2145	Switch Fabric Board
SFB 6	REV 05	711-044466	ABBT2150	Switch Fabric Board
SFB 7	REV 05	711-044466	ABBT2163	Switch Fabric Board
FPC 0	REV 30	750-028467	ABBN0284	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0507	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00990	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E04357	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01327	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04375	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02760	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02904	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E03963	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00756	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04418	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01077	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01128	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01253	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E01140	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01626	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01075	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01177	SFP+-10G-USR
FPC 1	REV 30	750-028467	ABBN0308	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBJ1095	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04305	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01147	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01195	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01743	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01892	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02880	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00725	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01057	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02816	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11C04501	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E02764	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00789	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01250	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02847	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00787	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E03803	SFP+-10G-USR
FPC 2	REV 30	750-028467	ABBN0316	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBJ1082	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00523	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01848	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01865	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00540	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00422	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00428	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K00423	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K01855	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+

Xcvr 0	REV 01	740-031980	B11K01847	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00526	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K00529	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00525	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00425	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00530	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01851	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00528	SFP+-10G-SR
FPC 3	REV 32	750-028467	ABBN6832	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6534	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MB4	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FQ6	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N1F	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLQ	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80KDR	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FGJ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80N5G	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KD8	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LET	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80N1X	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NRF	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL2	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N3D	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MRB	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LEQ	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LER	SFP+-10G-SR
FPC 4	REV 32	750-028467	ABBN6811	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7288	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NK8	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80LJG	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LBU	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N21	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEU	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLM	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NL6	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LES	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEN	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80ME0	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LMG	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80MM1	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MG7	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80KF9	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NRQ	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NLE	SFP+-10G-SR
FPC 5	REV 32	750-028467	ABBN6791	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7289	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00424	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01849	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01862	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K01852	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP

Xcvr 0	REV 01	740-031980	B11K00427	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K00430	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01854	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00426	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K00429	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01864	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01850	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11K00522	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E01144	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00985	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00796	SFP+-10G-USR
Xcvr 3	REV 01	740-031980	B11K01866	SFP+-10G-SR
FPC 6	REV 30	750-028467	ABBM4592	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0465	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01435	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01052	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01328	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01254	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02738	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02881	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01624	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00889	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02883	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00681	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E04306	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02813	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01801	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02753	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01156	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04324	SFP+-10G-USR
FPC 7	REV 32	750-028467	ABBN6810	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7237	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03058	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02082	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01674	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02638	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03048	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02729	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02566	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02567	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02878	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02739	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01959	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02660	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02731	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02588	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02673	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02654	SFP+-10G-SR
FPC 8	REV 30	750-028467	ABBM4739	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0487	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+

Xcvr 0	REV 01	740-031980	163363A02569	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02886	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A03082	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	133363A00297	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02726	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A03050	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02884	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03076	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02581	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02873	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02582	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03083	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031981	UL70BU6	SFP+-10G-LR
Xcvr 1	REV 01	740-031981	UL50QC6	SFP+-10G-LR
Xcvr 2	REV 01	740-031981	UL708N6	SFP+-10G-LR
Xcvr 3	REV 01	740-031981	UL603KK	SFP+-10G-LR
FPC 9	REV 32	750-028467	ABBN6827	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6508	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A01688	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A01724	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01773	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02593	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A03061	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A03056	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02669	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03070	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02572	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02697	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02585	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03052	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02591	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02649	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02577	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02698	SFP+-10G-SR
FPC 10	REV 30	750-028467	ABBN0302	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0495	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01581	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01176	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01251	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02752	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00786	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01020	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01023	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02819	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02812	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11D04437	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01279	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01333	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00978	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E01018	SFP+-10G-USR

Xcvr 2	REV 01	740-030658	B11F01784	SFP+-10G-USR
Xcvr 3	REV 01	740-031980	AK80NKP	SFP+-10G-SR
FPC 11	REV 32	750-028467	ABBN6790	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6515	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LZM	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MCC	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KCM	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KE0	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021310	C10F99155	SFP+-10G-LRM
Xcvr 1	REV 01	740-021310	C10F99049	SFP+-10G-LRM
Xcvr 2	REV 01	740-021310	C10F99128	SFP+-10G-LRM
Xcvr 3	REV 01	740-021310	C10F99169	SFP+-10G-LRM
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LF3	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02597	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A03060	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03057	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEX	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80FEU	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80FNM	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AJQQQ5G	SFP+-10G-SR
FPC 12	REV 30	750-028467	ZM5111	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ZP6607	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LJA	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MFZ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKL	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80KF4	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80FBJ	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MM2	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80LJV	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NXV	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N1H	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLS	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80FL5	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL9	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NG2	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80KDU	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80MG1	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80MM0	SFP+-10G-SR
FPC 13	REV 30	750-028467	ABBN0208	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABB11084	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04745	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01570	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E04388	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01439	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04739	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01869	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01675	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01901	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01346	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11F01288	SFP+-10G-USR

Xcvr 2	REV 01	740-030658	B11F01824	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E04312	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E02811	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E03847	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01495	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11F01265	SFP+-10G-USR
FPC 14	REV 23	750-028467	YN2977	MPC 3D 16x 10GE
CPU	REV 10	711-029089	YP1856	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00875	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00851	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00772	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00882	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00735	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00169	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00726	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00077	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00168	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00676	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00732	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00091	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	183363A00725	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00642	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	183363A00871	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	183363A00853	SFP+-10G-SR
FPC 15	REV 32	750-028467	ABBN6798	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBK6556	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	9ZD06A00055	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	183363A00239	SFP+-10G-SR
Xcvr 2	REV 01	740-021308	AD0915E003K	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	AD0915E003A	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80MRC	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NL5	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKN	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80N3U	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80N1T	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJ808DJ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NG4	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80FND	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80FKQ	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NLT	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NKR	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LKM	SFP+-10G-SR
FPC 16	REV 30	750-028467	ABBN0270	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBJ0966	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NL1	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NXW	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KD2	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80FMD	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80NKQ	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MGH	SFP+-10G-SR

Xcvr 2	REV 01	740-031980	AK80N38	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80NL7	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80M5J	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80NKD	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80KCY	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LHK	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LEL	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AK80MBE	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80NLG	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AK80LFH	SFP+-10G-SR
FPC 17	REV 32	750-028467	ABBN6796	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN7259	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	B11K01856	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11K01853	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11K01863	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02863	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02668	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02881	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A01671	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02627	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02725	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02692	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02730	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A03081	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	163363A02736	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	163363A02568	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	163363A02747	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	163363A02579	SFP+-10G-SR
FPC 18	REV 30	750-028467	ABBN0281	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ABBN0526	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11F01326	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E03973	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E00950	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E00674	SFP+-10G-USR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E00775	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E04461	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E01074	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E02821	SFP+-10G-USR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04501	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E00757	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11F01623	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01022	SFP+-10G-USR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-030658	B11E04359	SFP+-10G-USR
Xcvr 1	REV 01	740-030658	B11E02751	SFP+-10G-USR
Xcvr 2	REV 01	740-030658	B11E02736	SFP+-10G-USR
Xcvr 3	REV 01	740-030658	B11E01178	SFP+-10G-USR
FPC 19	REV 32	750-028467	ABBN6813	MPC 3D 16x 10GE
CPU	REV 10	711-029089	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
ADC 13	REV 13	750-043596	ABBX5539	Adapter Card
ADC 14	REV 13	750-043596	ABBX5555	Adapter Card
ADC 15	REV 13	750-043596	ABBX5557	Adapter Card
ADC 16	REV 13	750-043596	ABBX5536	Adapter Card
ADC 17	REV 13	750-043596	ABBX5559	Adapter Card
ADC 18	REV 13	750-043596	ABBX5537	Adapter Card
ADC 19	REV 11	750-043596	ABBW5685	Adapter Card
Fan Tray 0	REV 04	760-046960	ACAY0090	172mm FanTray - 6 Fans
Fan Tray 1	REV 04	760-046960	ACAY0088	172mm FanTray - 6 Fans
Fan Tray 2	REV 04	760-046960	ACAY0089	172mm FanTray - 6 Fans
Fan Tray 3	REV 04	760-046960	ACAY0108	172mm FanTray - 6 Fans

show chassis hardware models (MX2020 Router)

```

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
FPC 14	REV 23	750-028467	YN2977	MPC-3D-16XGE-SFPP
FPC 15	REV 32	750-028467	ABBN6798	MPC-3D-16XGE-SFPP
FPC 16	REV 30	750-028467	ABBN0270	MPC-3D-16XGE-SFPP
FPC 17	REV 32	750-028467	ABBN6796	MPC-3D-16XGE-SFPP
FPC 18	REV 30	750-028467	ABBN0281	MPC-3D-16XGE-SFPP
FPC 19	REV 32	750-028467	ABBN6813	MPC-3D-16XGE-SFPP
ADC 0	REV 13	750-043596	ABBX5561	PROTO-ASSEMBLY
ADC 1	REV 13	750-043596	ABBX5546	PROTO-ASSEMBLY
ADC 2	REV 13	750-043596	ABBX5535	MX2000-LC-ADAPTER
ADC 3	REV 13	750-043596	ABBX5552	MX2000-LC-ADAPTER
ADC 4	REV 13	750-043596	ABBX5581	MX2000-LC-ADAPTER
ADC 5	REV 13	750-043596	ABBX5545	PROTO-ASSEMBLY
ADC 6	REV 13	750-043596	ABBX5554	PROTO-ASSEMBLY
ADC 7	REV 07	750-043596	ABBV7194	MX2000-LC-ADAPTER
ADC 8	REV 07	750-043596	ABBV7251	MX2000-LC-ADAPTER
ADC 9	REV 07	750-043596	ABBV7202	MX2000-LC-ADAPTER
ADC 10	REV 13	750-043596	ABBX5579	MX2000-LC-ADAPTER
ADC 12	REV 13	750-043596	ABBX5575	MX2000-LC-ADAPTER
ADC 13	REV 13	750-043596	ABBX5539	PROTO-ASSEMBLY
ADC 14	REV 13	750-043596	ABBX5555	PROTO-ASSEMBLY
ADC 15	REV 13	750-043596	ABBX5557	MX2000-LC-ADAPTER
ADC 16	REV 13	750-043596	ABBX5536	PROTO-ASSEMBLY
ADC 17	REV 13	750-043596	ABBX5559	PROTO-ASSEMBLY
ADC 18	REV 13	750-043596	ABBX5537	PROTO-ASSEMBLY
ADC 19	REV 11	750-043596	ABBW5685	PROTO-ASSEMBLY
Fan Tray 0	REV 04	760-046960	ACAY0090	
Fan Tray 1	REV 04	760-046960	ACAY0088	
Fan Tray 2	REV 04	760-046960	ACAY0089	
Fan Tray 3	REV 04	760-046960	ACAY0108	

show chassis hardware clei-models (MX2020 Router)

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
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 (MX Series routers with ATM MIC)

```

user@host> show chassis hardware
Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis                               JN115736EAFc  MX240
Midplane          REV 07    760-021404   ABAA5038      MX240 Backplane
FPM Board         REV 03    760-021392   ABBA2758      Front Panel Display
PEM 0             Rev 01    740-022697   QCS0937C07K   PS 1.2-1.7kW; 100-240V
AC in
PEM 1             Rev 01    740-022697   QCS0939C04X   PS 1.2-1.7kW; 100-240V
AC in
PEM 2             Rev 01    740-022697   QCS0937C06B   PS 1.2-1.7kW; 100-240V
AC in
PEM 3             Rev 01    740-022697   QCS0937C07U   PS 1.2-1.7kW; 100-240V
AC in
Routing Engine 0  REV 12    740-013063   9009042291    RE-S-2000
Routing Engine 1  REV 12    740-013063   9009042266    RE-S-2000
CB 0              REV 06    710-021523   ABBC1435      MX SCB
CB 1              REV 06    710-021523   ABBC1497      MX SCB
FPC 2             REV 14    750-031088   YH8446        MPC Type 2 3D Q
CPU               REV 06    711-030884   YH9612        MPC PMB 2G
MIC 0
MIC 1             REV 10    750-036132   ZP7062        2x0C12/8x0C3 CC-CE
PIC 2             BUILtIN   BUILtIN      2x0C12/8x0C3 CC-CE

Xcvr 0            NON-JNPR   23393-00492   UNKNOWN
Xcvr 1            NON-JNPR   23393-00500   UNKNOWN
Xcvr 2            NON-JNPR   23393-00912   UNKNOWN
Xcvr 3            REV 01    740-015638   22216-00575   Load SFP
Xcvr 4            REV 01    740-015638   24145-00110   Load SFP
Xcvr 5            REV 01    740-015638   24145-00016   Load SFP
Xcvr 6            REV 01    740-015638   24145-00175   Load SFP
Xcvr 7            NON-JNPR   23393-00627   UNKNOWN
QXM 0             REV 05    711-028408   YF4681        MPC QXM
QXM 1             REV 05    711-028408   YF4817        MPC QXM
Fan Tray 0        REV 01    710-021113   XL3645        MX240 Fan Tray

```

show chassis hardware (MX240, MX480, MX960 routers with Application Services Modular Line Card)

```

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

```

Chassis			JN11D969BAFA	MX960
Midplane	REV 03	710-013698	ACAA2362	MX960 Backplane
FPM Board	REV 03	710-014974	ZR0639	Front Panel Display
PDM	Rev 03	740-013110	QCS152250SX	Power Distribution Module
PEM 0	Rev 10	740-013683	QCS1512718W	DC Power Entry Module
PEM 1	Rev 10	740-013683	QCS1512702Y	DC Power Entry Module
Routing Engine 0	REV 15	740-013063	9012024667	RE-S-2000
Routing Engine 1	REV 15	740-013063	9012024649	RE-S-2000
CB 0	REV 14	750-031391	ZJ7749	Enhanced MX SCB
CB 1	REV 14	750-031391	ZJ7750	Enhanced MX SCB
CB 2	REV 14	750-031391	ZY9233	Enhanced MX SCB
FPC 0	REV 17	750-031089	YR7434	MPC Type 2 3D
CPU				
FPC 1	REV 11	750-037207	ZW9727	AS-MCC
CPU	REV 04	711-038173	ZW4817	AS-MCC-PMB
MIC 0	REV 01	750-037214	ZH3764	AS-MSC
PIC 0		BUILTIN	BUILTIN	AS-MSC
MIC 1	REV 01	711-028408	JZ9200	AS-MXC
PIC 2		BUILTIN	BUILTIN	AS-MXC
FPC 4	REV 30	750-028467	ABBN0232	MPC 3D 16x 10GE
CPU				
FPC 5	REV 04	750-037207	ZK9074	AS-MCC
CPU				
Fan Tray 0	REV 05	740-014971	VT5683	Fan Tray
Fan Tray 1	REV 05	740-014971	VT5684	Fan Tray

show chassis hardware extensive (MX240, MX480, MX960 routers with Application Services Modular Line Card)

user@host> show chassis hardware extensive

```
ID: AS-MCC                                FRU Model Number: 750-037207
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff I2C Hex Data:
Address 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: 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 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: 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 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
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
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)

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user@host> show chassis hardware

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Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11E188CAFJ	MX2020
Midplane	REV 04	711-032387	ABAC7474	Lower Backplane
Midplane 1	REV 04	711-032386	ABAC7408	Upper Backplane
PMP 1	REV 03	711-032428	ACAJ1137	Upper Power Midplane
PMP 0	REV 03	711-032426	ACAJ1016	Lower Power Midplane
FPM Board	REV 06	760-040242	ABBT8832	Front Panel Display
PSM 3	REV 0C	740-033727	VK00255	DC 52V Power Supply
Module				
PSM 4	REV 0C	740-033727	VJ00148	DC 52V Power Supply
Module				
PSM 5	REV 0C	740-033727	VK00207	DC 52V Power Supply
Module				
PSM 6	REV 0C	740-033727	VK00319	DC 52V Power Supply
Module				
PSM 7	REV 0C	740-033727	VK00264	DC 52V Power Supply
Module				
PSM 8	REV 0B	740-033727	VG00025	DC 52V Power Supply
Module				
PSM 13	REV 0C	740-033727	VK00274	DC 52V Power Supply
Module				
PSM 14	REV 0C	740-033727	VJ00167	DC 52V Power Supply
Module				
PSM 15	REV 0C	740-033727	VK00299	DC 52V Power Supply
Module				
PSM 16	REV 0C	740-033727	VK00213	DC 52V Power Supply
Module				
PSM 17	REV 0C	740-033727	VK00253	DC 52V Power Supply
Module				
PDM 0	REV 0B	740-038109	VJ00040	DC Power Dist Module
PDM 2	REV 0B	740-038109	VJ00025	DC Power Dist Module
Routing Engine 0	REV 02	740-041821	9009089735	RE-S-1800x4
Routing Engine 1	REV 02	740-041821	9009089731	RE-S-1800x4
CB 0	REV 04	750-040257	ZT2846	Control Board
CB 1	REV 04	750-040257	ZT2877	Control Board
SPMB 0	REV 01	711-041855	ZS2282	PMB Board
SPMB 1	REV 01	711-041855	ZS2261	PMB Board
SFB 0	REV 07	711-032385	ZZ2582	Switch Fabric Board
SFB 1	REV 04	711-032385	ZV4229	Switch Fabric Board
SFB 2	REV 07	711-032385	CAAB4902	Switch Fabric Board
SFB 3	REV 07	711-032385	CAAB4891	Switch Fabric Board
SFB 4	REV 07	711-032385	CAAB4883	Switch Fabric Board
SFB 5	REV 07	711-032385	CAAB4889	Switch Fabric Board
SFB 6	REV 06	711-032385	ZV1818	Switch Fabric Board
SFB 7	REV 07	711-032385	CAAB4897	Switch Fabric Board
FPC 0	REV 34	750-031090	ZT9799	MPC Type 2 3D EQ
CPU	REV 06	711-030884	ZS1122	MPC PMB 2G
MIC 0	REV 11	750-033535	CAAD7674	MIC-3D-10C192-XFP
PIC 0		BUILTIN	BUILTIN	MIC-3D-10C192-XFP
Xcvr 0	REV 01	740-014279	753019A00404	XFP-0C192-SR
MIC 1	REV 14	750-031967	ZM6103	MIC-3D-80C30C12-40C48
PIC 2		BUILTIN	BUILTIN	MIC-3D-80C30C12-40C48
Xcvr 0	REV 01	740-011615	PEF1AZP	SFP-IR
Xcvr 1	REV 01	740-011615	PEF1AZN	SFP-IR
Xcvr 2	REV 01	740-021308	ANA0N8S	SFP+-10G-SR
QXM 0	REV 06	711-028408	ZT9339	MPC QXM
QXM 1	REV 06	711-028408	ZT9237	MPC QXM
FPC 9	REV 34	750-031090	ZT9770	MPC Type 2 3D EQ
CPU	REV 06	711-030884	ZS1302	MPC PMB 2G
MIC 0	REV 24	750-028387	YJ3950	3D 4x 10GE XFP

PIC 0		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0		NON-JNPR	T09M52516	XFP-10G-SR
Xcvr 1		NON-JNPR	CA49BK095	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 02	740-014289	C834XU01T	XFP-10G-SR
Xcvr 1		NON-JNPR	T09M52515	XFP-10G-SR
MIC 1	REV 11	750-033535	CAAD7681	MIC-3D-10C192-XFP
PIC 2		BUILTIN	BUILTIN	MIC-3D-10C192-XFP
Xcvr 0	REV 01	740-014279	KBQ02BE	XFP-OC192-SR
QXM 0	REV 06	711-028408	ZT9151	MPC QXM
QXM 1	REV 06	711-028408	ZT9116	MPC QXM
FPC 10	REV 27	750-033205	ZL6215	MPCE Type 3 3D
CPU	REV 07	711-035209	ZK9038	HMPC PMB 2G
MIC 0	REV 18	750-028380	YG6885	3D 2x 10GE XFP
PIC 0		BUILTIN	BUILTIN	1x 10GE XFP
Xcvr 0	REV 01	740-014289	C706XU0AG	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	1x 10GE XFP
Xcvr 0	REV 02	740-014289	T08L84366	XFP-10G-SR
FPC 14	REV 09	750-037355	CAAF1534	MPC4E 3D 2CGE+8XGE
CPU	REV 08	711-035209	CAAB9879	HMPC PMB 2G
PIC 0		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-021308	21T511100436	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AHPOGPM	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	123363A00032	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	19T511100477	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0		NON-JNPR	X12J00260	CFP-100G-SR10
PIC 2		BUILTIN	BUILTIN	4x10GE SFPP
Xcvr 0	REV 01	740-021308	21T511104086	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	21T511104627	SFP+-10G-SR
Xcvr 3	REV 01	740-021308	21T511104644	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	1X100GE CFP
FPC 19	REV 32	750-028467	ZR2008	MPC 3D 16x 10GE
CPU	REV 10	711-029089	ZT6933	AMPC PMB
PIC 0		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	19T511100291	SFP+-10G-SR
Xcvr 1	REV 01	740-021308	AMH02VE	SFP+-10G-SR
PIC 1		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	23T511102128	SFP+-10G-SR
PIC 2		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-021308	AMS15PP	SFP+-10G-SR
PIC 3		BUILTIN	BUILTIN	4x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	123363A00716	SFP+-10G-SR
ADC 0	REV 05	750-043596	CAAC2072	Adapter Card
ADC 9	REV 01	750-043596	ZV4111	Adapter Card
ADC 10	REV 05	750-043596	CAAC2058	Adapter Card
ADC 14	REV 02	750-043596	ZW1561	Adapter Card
ADC 19	REV 01	750-043596	ZV4127	Adapter Card
Fan Tray 0	REV 03	760-046960	ACAY0124	172mm FanTray - 6 Fans
Fan Tray 1	REV 2A	760-046960	ACAY0022	172mm FanTray - 6 Fans
Fan Tray 2	REV 2A	760-046960	ACAY0023	172mm FanTray - 6 Fans
Fan Tray 3	REV 2A	760-046960	ACAY0025	172mm FanTray - 6 Fans

show chassis hardware (T320 Router)

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user@host> show chassis hardware
```

```
Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			19093	T320
Midplane	REV 04	710-004339	BC1436	T320 Backplane
FPM GBUS	REV 03	710-004461	BC1407	T320 FPM Board

FPM Display	REV 04	710-002897	BE0763	FPM Display
CIP	REV 05	710-002895	BB2311	T Series CIP
PEM 0	Rev 01	740-004359	NB12546	Power Entry Module
SCG 0	REV 06	710-004455	AY4522	T320 Sonet
Clock Gen.				
Routing Engine 0				unknown
CB 0	REV 13	710-002728	BC1577	T Series
Control Board				
CB 1	REV 13	710-002728	BC1595	T Series
Control Board				
FPC 1	REV 09	710-007531	HS1572	FPC Type 2
CPU	REV 15	710-001726	HR8763	FPC CPU
PIC 0	REV 01	750-010618	CB5579	4x G/E SFP,
1000 BASE				
SFP 0	REV 01	740-007326	P5809Z1	SFP-SX
SFP 1	REV 01	740-007326	P4Q10XU	SFP-SX
SFP 2		NON-JNPR	RA45020031	SFP-SX
SFP 3		NON-JNPR	RA45020032	SFP-SX
PIC 1	REV 01	750-010618	CD9587	4x G/E SFP,
1000 BASE				
SFP 0		NON-JNPR	P5A08QZ	SFP-T
SFP 1	REV 01	740-007326	P4Q133K	SFP-SX
SFP 2	REV 01	740-007326	P5809YY	SFP-SX
SFP 3	REV 01	740-007327	4C81704	SFP-LX
MMB 1	REV 03	710-005555	HR9401	MMB-288mbit
PPB 0	REV 04	710-003758	HR2886	PPB Type 2
FPC 2	REV 07	710-005860	HP2392	FPC Type 1
CPU	REV 14	710-001726	HP7797	FPC CPU
PIC 0	REV 02	750-007643	HM0853	1x G/E QPP,
1000 BASE				
SFP 0	REV 01	740-007326	P11E9JJ	SFP-SX
MMB 1	REV 02	710-005555	HN2379	MMB-288mbit
PPB 0	REV 04	710-003758	HP8092	PPB Type 2
FPC 3	REV 07	710-005860	HP2393	FPC Type 1
CPU	REV 14	710-001726	HP0968	FPC CPU
PIC 0	REV 01	750-010240	CB5363	1x G/E SFP,
1000 BASE				
SFP 0	REV 01	740-007326	P4R0PNH	SFP-SX
PIC 1	REV 03	750-003034	HD2832	4x OC-3 SONET,
SMIR				
MMB 1	REV 02	710-005555	HN6307	MMB-288mbit
PPB 0	REV 04	710-003758	HP5051	PPB Type 2
FPC 4	REV 01	710-010845	JD3872	FPC Type 4
CPU	REV 02	710-011481	JB6042	FPC CPU
5	REV 01	710-005802	BC1566	FPC Type 2
CPU	REV 09	710-001726	AY4922	FPC CPU
PIC 0	REV 02	750-008155	BE2114	2x G/E QPP,
1000 BASE				
SFP 0	REV 01	740-007326	P4R0PMQ	SFP-SX
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   UNKNOWNON     UNKNOWNON
  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)

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

```

Fan Tray 0	FANTRAY-T-S
Fan Tray 1	FANTRAY-T-S
Fan Tray 2	FAN-REAR-TX-T640-S

show chassis hardware extensive (T640 Router)

```

user@host> show chassis hardware extensive
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Jedec Code:   0x7fb0          EEPROM Version: 0x01
P/N:          .....        S/N:          .....
Assembly ID:  0x0507          Assembly Version: 00.00
Date:         00-00-0000      Assembly Flags:  0x00
Version:      .....
ID: Gibson LCC Chassis
Board Information Record:
Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
I2C Hex Data:
Address 0x00: 7f b0 01 ff 05 07 00 00 00 00 00 00 00 00 00 00
Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x20: ff ff ff ff ff ff ff ff ff ff ff ff 00 00 00 00
Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Midplane      REV 04      710-002726  AX5633
Jedec Code:   0x7fb0          EEPROM Version: 0x01
P/N:          710-002726.    S/N:          S/N AX5633.
Assembly ID:  0x0127          Assembly Version: 01.04
Date:         06-27-2001      Assembly Flags:  0x00
Version:      REV 04.....
ID: Gibson Backplane
Board Information Record:
Address 0x00: ad 01 08 00 00 90 69 0e f8 00 ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 01 27 01 04 52 45 56 20 30 34 00 00
Address 0x10: 00 00 00 00 37 31 30 2d 30 30 32 37 32 36 00 00
Address 0x20: 53 2f 4e 20 41 58 35 36 33 33 00 00 00 1b 06 07
Address 0x30: d1 ff ff ff ad 01 08 00 00 90 69 0e f8 00 ff ff
Address 0x40: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
FPM GBUS      REV 02      710-002901  HE3245
...
FPM Display   REV 02      710-002897  HA4873
...
CIP           REV 05      710-002895  HA4729
...
PEM 1         RevX02     740-002595  MD21815      Power Entry Module
...
SCG 0         REV 04      710-003423  HF6023
...
SCG 1         REV 04      710-003423  HF6061
...
Routing Engine 0 REV 01     740-005022  210865700292 RE-3.0
...
CB 0          REV 06      710-002728  HE3614
...
FPC 1         REV 01      710-002385  HE3009      FPC Type 1
...
              REV 06      710-001726  HC0010

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show chassis hardware (T4000 Router)

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user@host> show chassis hardware

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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	AJJ01R0	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJJ01TC	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	AJJ0364	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJD0GV3	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B10M03343	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AJJ01QJ	SFP+-10G-SR
LMB 0	REV 05	711-034381	EJ8490	Type-0 LMB
LMB 1	REV 04	711-035774	EJ8517	Type-1 LMB
LMB 2	REV 05	711-034381	EJ8489	Type-0 LMB
FPC 3	REV 07	750-032819	EG3637	FPC Type 5-3D
CPU	REV 09	711-030686	EG0150	SNG PMB
PIC 0	REV 08	750-035293	EF3657	1x100GE
Xcvr 0	REV 01	740-032210	C22CQNJ	CFP-100G-LR4
PIC 1	REV 10	750-034624	BBAN4098	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	B11J04902	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11J04891	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01MX	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11J04183	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B11J04894	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J04184	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11J04897	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11J04899	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	AJJ01TV	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	B11J04057	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AJJ01M4	SFP+-10G-SR

Xcvr 11	REV 01	740-031980	B11J04905	SFP+-10G-SR
LMB 0	REV 04	711-034381	EG1524	Type-0 LMB
LMB 1	REV 03	711-035774	EG0345	Type-1 LMB
LMB 2	REV 04	711-034381	EG1522	Type-0 LMB
FPC 5	REV 03	710-033871	BBAJ0768	FPC Type 4-ES
CPU	REV 11	710-016744	BBAH9342	ST-PMB2
PIC 0	REV 09	750-029262	EE6789	100GE
PIC 1	REV 03	750-034781	EE6655	100GE CFP
Xcvr 0	REV 01	740-032210	J11A22334	CFP-100G-LR4
BRIDGE 0	REV 03	711-029995	EE6572	100GE Bridge Board
MMB 0	REV 07	710-025563	BBAJ4657	ST-MMB2
MMB 1	REV 07	710-025563	BBAJ3073	ST-MMB2
FPC 6	REV 05	750-010153	EF4936	FPC Type 5-3D
CPU	REV 06	711-030686	EF4189	SNG PMB
PIC 0	REV 10	750-034624	BBAN4109	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	B11J04895	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11J04898	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11J04021	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11J04903	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B11J04311	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J04059	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11J04016	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11J04017	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B11J04887	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	B11J04297	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B11J04893	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B11J04022	SFP+-10G-SR
PIC 1	REV 02	750-034624	EE3711	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	AJH033X	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJJ01N0	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01SV	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJJ032L	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B10M01593	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJD0FF1	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJJ01NU	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	123363A01305	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B10M00361	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJJ01M7	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AJJ032X	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AJJ01PG	SFP+-10G-SR
LMB 0	REV 04	711-034381	EF3838	Type-0 LMB
LMB 1	REV 03	711-035774	EF3821	Type-1 LMB
LMB 2	REV 04	711-034381	EF3834	Type-0 LMB
SPMB 0	REV 05	710-023321	ED1990	LCC Switch CPU
SPMB 1	REV 05	710-023321	EA2768	LCC Switch CPU
SIB 0	REV 02	711-036340	EF8802	SIB-HC-3D
SIB 1	REV 07	711-036340	EG2286	SIB-HC-3D
SIB 2	REV 07	711-036340	EG2252	SIB-HC-3D
SIB 3	REV 02	711-036340	EF1358	SIB-HC-3D
SIB 4	REV 02	711-036340	EF8806	SIB-HC-3D
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
-- Rev 2				
Fan Tray 2				Rear Fan Tray -- Rev 3

show chassis hardware (T4000 Router with 16 GB line card chassis (LCC) Routing Engine)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN11BDF2CAHA	T1600

Midplane	REV 01	710-027486	ACAJ0774	T640 Backplane
FPM GBUS	REV 13	710-002901	BBAL6812	T640 FPM Board
FPM Display	REV 04	710-021387	BBAP2679	T1600 FPM Display
CIP	REV 06	710-002895	BBAP4758	T-series CIP
PEM 0	Rev 03	740-026384	XF86421	Power Entry Module 3x80
PEM 1	Rev 03	740-026384	XF86429	Power Entry Module 3x80
SCG 0	REV 18	710-003423	BBAP1896	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAN8659	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	740-042243	737F-002238	RE-DUO-1800-16G
Routing Engine 1	REV 01	740-042243	737F-002403	RE-DUO-1800-16G
CB 1	REV 11	710-022597	EK4526	LCC Control Board
CB 1	REV 11	710-022597	EK4527	LCC Control Board
FPC 0	REV 05	710-033871	EK5644	FPC Type 4-ES
CPU	REV 11	710-016744	EK3428	ST-PMB2
PIC 0	REV 20	750-017405	EJ3041	4x 10GE (LAN/WAN) XFP
PIC 1	REV 17	750-026962	EH7536	10x10GE (LAN/WAN) SFPP
MMB 0	REV 07	710-025563	EK6039	ST-MMB2
MMB 1	REV 07	710-025563	EK6086	ST-MMB2
FPC 1	REV 05	710-033871	EK6583	FPC Type 4-ES
CPU	REV 11	710-016744	EK3401	ST-PMB2
PIC 0	REV 17	750-026962	EJ8948	10x10GE (LAN/WAN) SFPP
MMB 0	REV 07	710-025563	EK6202	ST-MMB2
MMB 1	REV 07	710-025563	EK6112	ST-MMB2
SPMB 1	REV 05	710-023321	EK4900	LCC Switch CPU
SIB 0	REV 11	710-013074	EK5958	SIB-I8-SF
SIB 1	REV 11	710-013074	EK4606	SIB-I8-SF
SIB 2	REV 11	710-013074	EK5971	SIB-I8-SF
SIB 3	REV 11	710-013074	EK4609	SIB-I8-SF
SIB 4	REV 11	710-013074	EK4602	SIB-I8-SF
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 2

show chassis hardware (T4000 Router with LSR FPC)

```
user@switch> show chassis hardware
```

Hardware inventory:				
Item	Version	Part number	Serial number	Description
Chassis			JN1173A24AHA	T4000
FPC 3	REV	750-048373	AN7797	FPC Type 5-LSR
CPU	REV 10	711-030686	AN6649	SNG PMB
PIC 0	REV 07	750-034624	EF6830	12x10GE (LAN/WAN) SFPP

show chassis hardware clei-models (T4000 Router)

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

Hardware inventory:				
Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 01	710-027486	IPMJ700DRD	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387		CRAFT-T1600-S
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	IPUIBKLMMA	PD-1CE-CFP-FPC4
FPC 6				
PIC 0	REV 10	750-034624	XXXXXXXXCC	PF-12XGE-SFPP
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T4000-S
Fan Tray 2				FANTRAY-TXP-R-S

show chassis hardware detail (T4000 Router)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN1172F25AHA	T4000
Midplane	REV 01	710-027486	RC8355	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAE0927	T640 FPM Board
FPM Display	REV 01	710-021387	EF6764	T1600 FPM Display
CIP	REV 06	710-002895	BBAD9210	T-series CIP
PEM 0	REV 01	740-036442	VA00016	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAD7248	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAE3874	T640 Sonet Clock Gen.
Routing Engine 0	REV 05	740-026941	P737F-002248	RE-DUO-1800
ad0 3823 MB	SMART CF		2009121602A661576157	Compact Flash
ad1 59690 MB	STEC MACH-8 SSD		STM000103FDB	Disk 1
Routing Engine 1	REV 06	740-026941	P737F-002653	RE-DUO-1800
ad0 3823 MB	SMART CF		201011150153F52CF52C	Compact Flash
ad1 62720 MB	SMART Lite SATA Drive		2010110900150A880A88	Disk 1
CB 0	REV 09	710-022597	ED0295	LCC Control Board
CB 1	REV 09	710-022597	EA6050	LCC Control Board
FPC 0	REV 26	750-032819	EK1173	FPC Type 5-3D
CPU	REV 12	711-030686	EJ8584	SNG PMB
PIC 0	REV 07	750-034624	EF6837	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	123363A01145	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	123363A01147	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01P3	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B10M03256	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AJJ01M2	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	123363A01137	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJJ01PN	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJJ01NW	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	123363A01139	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJJ01KE	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	123363A01336	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B10M01325	SFP+-10G-SR
PIC 1	REV 07	750-034624	EF6800	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	AJJ01SA	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJJ01QZ	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJH0217	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJJ01TE	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	AJJ01KV	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJJ01MU	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJJ01R0	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	AJJ01TC	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	AJJ0364	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJD0GV3	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B10M03343	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AJJ01QJ	SFP+-10G-SR
LMB 0	REV 05	711-034381	EJ8490	Type-0 LMB
LMB 1	REV 04	711-035774	EJ8517	Type-1 LMB
LMB 2	REV 05	711-034381	EJ8489	Type-0 LMB
FPC 3	REV 07	750-032819	EG3637	FPC Type 5-3D

CPU	REV 09	711-030686	EG0150	SNG PMB
PIC 0	REV 08	750-035293	EF3657	1x100GE
Xcvr 0	REV 01	740-032210	C22CQNJ	CFP-100G-LR4
PIC 1	REV 10	750-034624	BBAN4098	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	B11J04902	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11J04891	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01MX	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11J04183	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B11J04894	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J04184	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11J04897	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11J04899	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	AJJ01TV	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	B11J04057	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AJJ01M4	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B11J04905	SFP+-10G-SR
LMB 0	REV 04	711-034381	EG1524	Type-0 LMB
LMB 1	REV 03	711-035774	EG0345	Type-1 LMB
LMB 2	REV 04	711-034381	EG1522	Type-0 LMB
FPC 5	REV 03	710-033871	BBAJ0768	FPC Type 4-ES
CPU	REV 11	710-016744	BBAH9342	ST-PMB2
PIC 0	REV 09	750-029262	EE6789	100GE
PIC 1	REV 03	750-034781	EE6655	100GE CFP
Xcvr 0	REV 01	740-032210	J11A22334	CFP-100G-LR4
BRIDGE 0	REV 03	711-029995	EE6572	100GE Bridge Board
MMB 0	REV 07	710-025563	BBAJ4657	ST-MMB2
MMB 1	REV 07	710-025563	BBAJ3073	ST-MMB2
FPC 6	REV 05	750-010153	EF4936	FPC Type 5-3D
CPU	REV 06	711-030686	EF4189	SNG PMB
PIC 0	REV 10	750-034624	BBAN4109	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	B11J04895	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11J04898	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	B11J04021	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	B11J04903	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B11J04311	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J04059	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	B11J04016	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11J04017	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B11J04887	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	B11J04297	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B11J04893	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	B11J04022	SFP+-10G-SR
PIC 1	REV 02	750-034624	EE3711	12x10GE (LAN/WAN) SFPP
Xcvr 0	REV 01	740-031980	AJH033X	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	AJJ01N0	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AJJ01SV	SFP+-10G-SR
Xcvr 3	REV 01	740-031980	AJJ032L	SFP+-10G-SR
Xcvr 4	REV 01	740-031980	B10M01593	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	AJD0FF1	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	AJJ01NU	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	123363A01305	SFP+-10G-SR
Xcvr 8	REV 01	740-031980	B10M00361	SFP+-10G-SR
Xcvr 9	REV 01	740-031980	AJJ01M7	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	AJJ032X	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AJJ01PG	SFP+-10G-SR
LMB 0	REV 04	711-034381	EF3838	Type-0 LMB
LMB 1	REV 03	711-035774	EF3821	Type-1 LMB
LMB 2	REV 04	711-034381	EF3834	Type-0 LMB
SPMB 0	REV 05	710-023321	ED1990	LCC Switch CPU
SPMB 1	REV 05	710-023321	EA2768	LCC Switch CPU
SIB 0	REV 02	711-036340	EF8802	SIB-HC-3D

SIB 1	REV 07	711-036340	EG2286	SIB-HC-3D
SIB 2	REV 07	711-036340	EG2252	SIB-HC-3D
SIB 3	REV 02	711-036340	EF1358	SIB-HC-3D
SIB 4	REV 02	711-036340	EF8806	SIB-HC-3D
Fan Tray 0				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
FPM GBUS      REV 09   710-002901  RA2784         T640 FPM Board
FPM Display   REV 05   710-002897  RA2825         FPM Display
CIP           REV 06   710-002895  HT0684         T Series CIP
PEM 0         Rev 11   740-002595  PM18483        Power Entry Module
PEM 1         Rev 11   740-002595  qb13984        Power Entry Module
SCG 0         REV 11   710-003423  HT0022         T640 Sonet Clock Gen.
Routing Engine 0 REV 13   740-005022  210865700363  RE-3.0 (RE-600)
CB 0          REV 03   710-007655  HW1195         Control Board (CB-T)
FPC 1         REV 05   710-007527  HM3245         FPC Type 2
  CPU         REV 14   710-001726  HM1084         FPC CPU
  PIC 0        REV 02   750-007218  AZ1112         2x OC-12 ATM2 IQ, SMIR
  PIC 1        REV 02   750-007745  HG3462         4x OC-3 SONET, SMIR
  PIC 2        REV 14   750-001901  BA5390         4x OC-12 SONET, SMIR
  PIC 3        REV 09   750-008155  HS3012         2x G/E IQ, 1000 BASE
    SFP 0      NON-JNPR  P1186TY        SFP-S
    SFP 1      REV 01   740-007326  P11WLTF        SFP-SX
```

MMB 1	REV 02	710-005555	HL7514	MMB-288mbit
PPB 0	REV 04	710-003758	HM4405	PPB Type 2
PPB 1	REV 04	710-003758	AV1960	PPB Type 2
FPC 2	REV 08	710-010154	HZ3578	E-FPC Type 3
CPU	REV 05	710-010169	HZ3219	FPC CPU-Enhanced
PIC 0	REV 02	750-009567	HX2882	1x 10GE(LAN), XENPAK
SFP 0	REV 01	740-009898	USC202U709	XENPAK-LR
PIC 1	REV 03	750-003336	HJ9954	4x OC-48 SONET, SMSR
PIC 2	REV 01	750-004535	HC0235	1x OC-192 SM SR1
PIC 3	REV 07	750-007141	HX1699	10x 1GE(LAN), 1000 BASE
SFP 0	REV 01	740-007326	2441042	SFP-SX
SFP 1	REV 01	740-007326	2441027	SFP-SX
MMB 0	REV 03	710-010171	HV2365	MMB-5M3-288mbit
MMB 1	REV 03	710-010171	HZ3888	MMB-5M3-288mbit
SPMB 0	REV 09	710-003229	HW5245	T Series Switch CPU
SIB 3	REV 07	710-005781	HR5927	SIB-L8-F16
B Board	REV 06	710-005782	HR5971	SIB-L8-F16 (B)
SIB 4	REV 07	710-005781	HR5903	SIB-L8-F16
B Board	REV 06	710-005782	HZ5275	SIB-L8-F16 (B)

show chassis hardware scc (TX Matrix Router)

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

Hardware inventory:

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

show chassis hardware (T1600 Router)

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

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			B2703	T1600
Midplane	REV 03	710-005608	RC4137	T640 Backplane
FPM GBUS	REV 10	710-002901	DT7062	T640 FPM Board
FPM Display	REV 05	710-002897	DS3067	FPM Display
CIP	REV 06	710-002895	DT3386	T-series CIP
PEM 0	Rev 07	740-017906	UA26344	Power Entry Module 3x80
PEM 1	Rev 18	740-002595	UF38441	Power Entry Module
SCG 0	REV 15	710-003423	DV0941	T640 Sonet Clock Gen.
Routing Engine 0	REV 08	740-014082	9009014502	RE-A-2000
Routing Engine 1	REV 07	740-014082	9009009591	RE-A-2000
CB 0	REV 05	710-007655	JA9360	Control Board (CB-T)
CB 1	REV 03	710-017707	DT3251	Control Board (CB-T)
FPC 0	REV 07	710-013558	DR4253	E2-FPC Type 2
CPU	REV 05	710-013563	DS3902	FPC CPU-Enhanced

PIC 0	REV 01	750-010618	CB5446	4x G/E SFP, 1000 BASE
Xcvr 0	REV 01	740-011613	P9F11CW	SFP-SX
Xcvr 1	REV 01	740-011613	P9F15C2	SFP-SX
Xcvr 2	REV 01	740-011782	PB94K0L	SFP-SX
PIC 1	REV 06	750-001900	HB6399	1x OC-48 SONET, SMSR
PIC 2	REV 14	750-001901	AP1092	4x OC-12 SONET, SMIR
PIC 3	REV 07	750-001900	AR8275	1x OC-48 SONET, SMSR
MMB 1	REV 07	710-010171	DS1524	MMB-5M3-288mbit
FPC 1	REV 06	710-013553	DL9067	E2-FPC Type 1
CPU	REV 04	710-013563	DM1685	FPC CPU-Enhanced
PIC 0	REV 08	750-001072	AB1688	1x G/E, 1000 BASE-SX
PIC 1	REV 10	750-012266	JX5519	4x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011613	AM0812S8UK6	SFP-SX
Xcvr 2	REV 01	740-011613	AM0812S8UK1	SFP-SX
Xcvr 3	REV 01	740-011782	P8N1YHG	SFP-SX
PIC 2	REV 22	750-005634	DP0083	1x CHOC12 IQ SONET, SMIR
MMB 1	REV 07	710-008923	DN1862	MMB 3M 288-bit
FPC 2	REV 01	710-005548	HJ9899	FPC Type 3
CPU	REV 06	710-001726	HC0586	FPC CPU
PIC 0	REV 16	750-007141	NC9660	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011613	AM0812S8XAR	SFP-SX
Xcvr 1	REV 01	740-011782	P920E7B	SFP-SX
Xcvr 2	REV 01	740-011613	AM0812S8XAU	SFP-SX
Xcvr 4	REV 01	740-011613	AM0812S8XAK	SFP-SX
Xcvr 5	REV 01	740-011613	AM0812S8XAA	SFP-SX
Xcvr 6	REV 01	740-011613	PAJ4NKY	SFP-SX
Xcvr 7	REV 01	740-011613	AM0812S8UJW	SFP-SX
Xcvr 8	REV 01	740-011782	PB81X89	SFP-SX
Xcvr 9	REV 01	740-011613	AM0812S8UJX	SFP-SX
PIC 1	REV 06	750-015217	DK3280	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011782	P8P0A3T	SFP-SX
Xcvr 1	REV 01	740-013111	5090002	SFP-T
Xcvr 2	REV 01	740-011613	AM0814S93BQ	SFP-SX
Xcvr 4		NON-JNPR	PDE0FAN	SFP-SX
Xcvr 5	REV 01	740-011782	P8Q20XY	SFP-SX
Xcvr 6	REV 01	740-011613	AM0812S8UJV	SFP-SX
Xcvr 7	REV 01	740-011613	AM0812S8UP7	SFP-SX
PIC 2	REV 05	750-004695	HT4383	1x Tunnel
PIC 3	REV 17	750-009553	RL0204	4x OC-48 SONET
Xcvr 0	REV 01	740-011785	PDS3T23	SFP-SR
Xcvr 1	REV 01	740-011785	P6Q0F3E	SFP-SR
MMB 0	REV 03	710-004047	HD5843	MMB-288mbit
MMB 1	REV 03	710-004047	HE3208	MMB-288mbit
PPB 0	REV 02	710-002845	HA4524	PPB Type 3
PPB 1	REV 02	710-002845	HA4766	PPB Type 3
FPC 3	REV 01	710-010154	HR0863	E-FPC Type 3
CPU	REV 01	710-010169	HN3422	FPC CPU-Enhanced
PIC 0	REV 07	750-012793	WF5096	1x 10GE(LAN/WAN) IQ2
Xcvr 0		NON-JNPR	M64294TP	XFP-10G-LR
PIC 1	REV 25	750-007141	DV2127	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011613	PFA6LTJ	SFP-SX
Xcvr 1	REV 01	740-011782	P9P0XV4	SFP-SX
Xcvr 2	REV 01	740-011782	P9M0TNX	SFP-SX
Xcvr 4	REV 01	740-011782	P9B0TTP	SFP-SX
Xcvr 5		NON-JNPR	PB54LED	SFP-SX
PIC 2	REV 17	750-009553	RL0212	4x OC-48 SONET
Xcvr 0	REV 01	740-011785	PDS3T8G	SFP-SR
PIC 3	REV 32	750-003700	DL1279	1x OC-192 12xMM VSR

MMB 0	REV 01	710-010171	HR0821	MMB-288mbit
MMB 1	REV 01	710-010171	HR0818	MMB-288mbit
FPC 4	REV 16	710-013037	EB4919	FPC Type 4-ES
CPU	REV 09	710-016744	BBAA4382	ST-PMB2
PIC 0	REV 03	711-029996	EB1569	100GE
PIC 1	REV 05	711-029999	EB9983	100GE CFP
Xcvr 0	REV 0	740-032210	J10G80746	CFP-100G-LR4
BRIDGE 0	REV 02	711-029995	EB2235	100GE Bridge Board
MMB 0	REV 04	710-025563	BBAA7112	ST-MMB2
MMB 1	REV 04	710-025563	BBAA7149	ST-MMB2
FPC 5	REV 02	710-013037	DE3407	FPC Type 4-ES
CPU	REV 04	710-016744	DA2124	ST-PMB2
PIC 0	REV 16	750-012518	DF2554	4x OC-192 SONET XFP
Xcvr 0	REV 01	740-014279	AA0745N1FX8	XFP-OC192-SR
Xcvr 1	REV 01	740-014279	AA0748N1HN5	XFP-OC192-SR
Xcvr 2	REV 01	740-014279	AA0748N1HT6	XFP-OC192-SR
Xcvr 3	REV 01	740-014279	AA0744N1EC9	XFP-OC192-SR
PIC 1	REV 01	750-010850	JA0329	1x OC-768 SONET SR
MMB 0	REV 04	710-016036	DE9577	ST-MMB2
MMB 1	REV 04	710-016036	DK4060	ST-MMB2
FPC 6	REV 14	710-013037	DV1431	FPC Type 4-ES
CPU	REV 09	710-016744	DT9020	ST-PMB2
PIC 0	REV 11	750-017405	DM6261	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 01	740-014289	C701XU05Q	XFP-10G-SR
Xcvr 1	REV 01	740-014279	AA0748N1HPT	XFP-10G-LR
Xcvr 2	REV 01	740-014289	T08E19189	XFP-10G-SR
Xcvr 3	REV 01	740-014289	C715XU058	XFP-10G-SR
PIC 1	REV 13	750-017405	DP8772	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 02	740-011571	C850XJ037	XFP-10G-SR
Xcvr 1	REV 02	740-014289	C839XU0L9	XFP-10G-SR
Xcvr 2	REV 02	740-014289	C834XU05A	XFP-10G-SR
Xcvr 3	REV 02	740-014289	C810XU0CE	XFP-10G-SR
MMB 0	REV 01	710-025563	DT8454	ST-MMB2
MMB 1	REV 01	710-025563	DT8366	ST-MMB2
FPC 7	REV 09	710-007529	HZ7624	FPC Type 3
CPU	REV 15	710-001726	HZ1413	FPC CPU
PIC 0	REV 10	750-012793	DM5627	1x 10GE(LAN/WAN) IQ2
Xcvr 0	REV 02	740-011571	C831XJ062	XFP-10G-SR
PIC 1	REV 01	750-015217	JT6762	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011782	P8Q25JU	SFP-SX
Xcvr 1	REV 01	740-011782	P9B0U0K	SFP-SX
PIC 2	REV 01	750-015217	JS4268	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011613	AM0812S8XBZ	SFP-SX
Xcvr 1	REV 01	740-011613	AM0812S8XAP	SFP-SX
Xcvr 2	REV 01	740-011613	AM0812S8XBY	SFP-SX
Xcvr 3	REV 01	740-011613	AM0812S8XBX	SFP-SX
Xcvr 4	REV 01	740-011613	P9F1652	SFP-SX
Xcvr 5	REV 01	740-011782	P8Q21YC	SFP-SX
Xcvr 6	REV 01	740-011782	P8Q27HQ	SFP-SX
Xcvr 7	REV 01	740-011613	P8E2SSU	SFP-SX
PIC 3	REV 15	750-009450	NB6790	1x OC-192 SM SR2
MMB 0	REV 03	710-005555	HZ3450	MMB-288mbit
MMB 1	REV 03	710-005555	HZ3415	MMB-288mbit
PPB 0	REV 04	710-002845	HP0887	PPB Type 3
PPB 1	REV 04	710-002845	HW5255	PPB Type 3
SPMB 0	REV 10	710-003229	HX3699	T-series Switch CPU
SPMB 1	REV 12	710-003229	DT3091	T-series Switch CPU
SIB 0	REV 07	710-013074	DS4747	SIB-I8-SF
SIB 1	REV 07	710-013074	DS4942	SIB-I8-SF
SIB 2	REV 07	710-013074	DS4965	SIB-I8-SF
SIB 3	REV 07	710-013074	DS4990	SIB-I8-SF

SIB 4	REV 07	710-013074	DS4944	SIB-I8-SF
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 2

show chassis hardware (TX Matrix Plus Router)

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user@host> show chassis hardware
sfc0-re0:
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Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              REV 05  710-022574  JN113186EAHB  TXP
Midplane              REV 03  710-024027  TS3822        SFC Midplane
FPM Display           REV 05  710-023792  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    BUILTIN       SFC Switch CPU
SPMB 1                BUILTIN    BUILTIN       SFC Switch CPU
SIB F13 0             REV 04  750-024564  DW5764        F13 SIB
  B Board             REV 03  710-023431  DW9053        F13 SIB Mezz
SIB F13 3             REV 04  750-024564  DW5785        F13 SIB
  B Board             REV 03  710-023431  DW9030        F13 SIB Mezz
SIB F13 6
SIB F13 8             REV 04  750-024564  DW5752        F13 SIB
  B Board             REV 03  710-023431  DW9051        F13 SIB Mezz
SIB F13 11            REV 04  750-024564  DW5782        F13 SIB
  B Board             REV 03  710-023431  DW9058        F13 SIB Mezz
SIB F13 12            REV 03  750-024564  DT9466        F13 SIB
  B Board             REV 02  710-023431  DT6556        F13 SIB Mezz
SIB F2S 0/0           REV 05  710-022603  DW7898        F2S SIB
  B Board             REV 05  710-023787  DW7625        F2S SIB Mezz
SIB F2S 0/2           REV 05  710-022603  DW7811        F2S SIB
  B Board             REV 05  710-023787  DW7550        F2S SIB Mezz
SIB F2S 0/4           REV 04  710-022603  DW4873        F2S SIB
  B Board             REV 05  710-023787  DW8509        F2S SIB Mezz
SIB F2S 0/6           REV 04  710-022603  DW4867        F2S SIB
  B Board             REV 05  710-023787  DW8472        F2S SIB Mezz
SIB F2S 1/0           REV 04  710-022603  DW4871        F2S SIB
  B Board             REV 05  710-023787  DW8497        F2S SIB Mezz
SIB F2S 1/2           REV 05  710-022603  DW7868        F2S SIB
  B Board             REV 05  710-023787  DW7551        F2S SIB Mezz
SIB F2S 1/4           REV 04  710-022603  DW4854        F2S SIB
  B Board             REV 05  710-023787  DW8496        F2S SIB Mezz
SIB F2S 1/6           REV 05  710-022603  DW7889        F2S SIB
  B Board             REV 05  710-023787  DW7496        F2S SIB Mezz
SIB F2S 2/0           REV 04  710-022603  DW4852        F2S SIB
  B Board             REV 05  710-023787  DW8498        F2S SIB Mezz
SIB F2S 2/2           REV 04  710-022603  DW4845        F2S SIB
  B Board             REV 05  710-023787  DW8457        F2S SIB Mezz
SIB F2S 2/4           REV 05  710-022603  DW7802        F2S SIB
  B Board             REV 05  710-023787  DW7562        F2S SIB Mezz
SIB F2S 2/6           REV 04  710-022603  DW4822        F2S SIB
  B Board             REV 05  710-023787  DW8467        F2S SIB Mezz
SIB F2S 3/0           REV 05  710-022603  DW7815        F2S SIB
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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

1cc0-re0:

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11036F8AHA	T1600
Midplane	REV 03	710-017247	RC3799	T-series Backplane
FPM GBUS	REV 10	710-002901	DP7009	T640 FPM Board
FPM Display	REV 01	710-021387	DN7026	T1600 FPM Display
CIP	REV 06	710-002895	DP6024	T-series CIP
PEM 1	Rev 02	740-023211	WA50019	Power Entry Module 4x60A
SCG 0	REV 15	710-003423	DR6757	T640 Sonet Clock Gen.
SCG 1	REV 15	710-003423	DS2225	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	740-026941	737F-1040	RE-DUO-1800
Routing Engine 1	REV 01	740-026941	737F-1016	RE-DUO-1800
CB 0	REV 06	710-022597	DX4011	LCC Control Board
CB 1	REV 06	710-022597	DX4017	LCC Control Board
FPC 1	REV 07	710-013035	DN5847	FPC Type 3-ES
CPU	REV 08	710-016744	DP2570	ST-PMB2
PIC 0	REV 05	750-015217	DB0418	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011782	P8Q27ZG	SFP-SX
Xcvr 1		NON-JNPR	PDA1U0D	SFP-SX
Xcvr 2	REV 01	740-011613	P9F1ALW	SFP-SX
Xcvr 3	REV 01	740-011782	PBA403V	SFP-SX
Xcvr 4		NON-JNPR	PDE09DP	SFP-SX
Xcvr 5	REV 01	740-011782	PCH2P4K	SFP-SX
Xcvr 6	REV 01	740-011782	PB94K0F	SFP-SX
Xcvr 7	REV 01	740-011782	PBA2R2A	SFP-SX
PIC 1	REV 03	750-004424	HJ4020	1x 10GE(LAN), DWDM
PIC 2	REV 01	750-003336	HG6073	4x OC-48 SONET, SMSR
MMB 0	REV 04	710-016036	DP3401	ST-MMB2
FPC 3	REV 12	710-013037	DR1169	FPC Type 4-ES
CPU	REV 08	710-016744	DP9429	ST-PMB2
PIC 0	REV 02	750-010850	JA0332	1x OC-768 SONET SR
MMB 0	REV 04	710-016036	DR0628	ST-MMB2
MMB 1	REV 04	710-016036	DR0592	ST-MMB2
FPC 4	REV 05	710-021534	DR7350	FPC Type 1-ES
CPU	REV 08	710-016744	DP8096	ST-PMB2
PIC 0	REV 04	750-014627	DP9171	4x OC-3 1x OC-12 SFP
Xcvr 0	REV 02	740-011615	PDE2RVR	SFP-SR

PIC 1	REV 22	750-005634	DS5815	1x CHOC12 IQ SONET, SMIR
PIC 2	REV 09	750-002911	CF4539	4x F/E, 100 BASE-TX
PIC 3	REV 08	750-021652	DR2827	1x CHOC12 IQE SONET
Xcvr 0		NON-JNPR	8	UNKNOWN
MMB 0	REV 04	710-016036	DR0809	ST-MMB2
FPC 5	REV 07	710-007529	HS5608	FPC Type 3
CPU	REV 15	710-001726	HX4351	FPC CPU
PIC 0	REV 14	750-009567	WJ8961	1x 10GE(LAN), XENPAK
Xcvr 0	REV 01	740-013170	J05K05961	XENPAK-LR
PIC 1	REV 16	750-007141	JJ8146	10x 1GE(LAN), 1000 BASE
Xcvr 1	REV 01	740-011613	P9F117T	SFP-SX
Xcvr 2	REV 01	740-011782	PBA2VCL	SFP-SX
Xcvr 3	REV 01	740-011782	PB83DRB	SFP-SX
Xcvr 4	REV 01	740-011613	AM0812S8UP8	SFP-SX
PIC 2	REV 12	750-009567	WF3566	1x 10GE(LAN), XENPAK
Xcvr 0	REV 02	740-013170	T07C94489	XENPAK-LR
MMB 0	REV 03	710-005555	HZ1907	MMB-288mbit
MMB 1	REV 03	710-005555	HW5283	MMB-288mbit
PPB 0	REV 04	710-002845	HZ7717	PPB Type 3
PPB 1	REV 04	710-002845	HS0110	PPB Type 3
FPC 6	REV 07	710-013035	DP7486	FPC Type 3-ES
CPU	REV 08	710-016744	DP2545	ST-PMB2
PIC 0	REV 09	750-009567	NE6323	1x 10GE(LAN), XENPAK
Xcvr 0	REV 02	740-013170	T09C71959	XENPAK-LR
PIC 1	REV 06	750-015217	DN4775	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011782	P7E0T6M	SFP-SX
Xcvr 1	REV 01	740-011613	AM0812S8XAY	SFP-SX
Xcvr 2	REV 01	740-011782	P7E0T6J	SFP-SX
Xcvr 3	REV 01	740-011782	PCH2P7D	SFP-SX
Xcvr 4	REV 01	740-011782	P9B0QYT	SFP-SX
Xcvr 5	REV 01	740-011613	AM0812S8WQJ	SFP-SX
Xcvr 6	REV 02	740-013111	9301220	SFP-T
Xcvr 7	REV 01	740-011782	P9B0TZ5	SFP-SX
PIC 2	REV 06	750-015217	DM6747	8x 1GE(TYPE3), IQ2
Xcvr 0	REV 01	740-011613	PAP0ZB2	SFP-SX
Xcvr 1	REV 01	740-013111	70191002	SFP-T
Xcvr 6	REV 01	740-011782	PBA29H8	SFP-SX
Xcvr 7	REV 01	740-011613	AM0812S8WQG	SFP-SX
MMB 0	REV 04	710-016036	DP3238	ST-MMB2
FPC 7	REV 03	710-021540	DV3154	FPC Type 2-ES
CPU	REV 09	710-016744	DT9053	ST-PMB2
PIC 0	REV 13	750-001901	HB4225	4x OC-12 SONET, SMIR
PIC 1	REV 05	750-001900	AD3644	1x OC-48 SONET, SMSR
PIC 2	REV 10	750-008155	HV0335	2x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011782	PCH2UKF	SFP-SX
Xcvr 1	REV 01	740-011782	PCH2V19	SFP-SX
PIC 3	REV 03	750-014638	JS9493	1x OC-48-12-3 SFP
Xcvr 0	REV 01	740-011785	P6Q0ENK	SFP-SR
MMB 0	REV 05	710-016036	DP3323	ST-MMB2
SPMB 0	REV 04	710-023321	DX3004	LCC Switch CPU
SPMB 1	REV 04	710-023321	DX3009	LCC Switch CPU
SIB 0	REV 07	710-022594	DW4195	LCC SIB
B Board	REV 07	710-023185	DW3930	LCC SIB Mezz
SIB 1	REV 07	710-022594	DW4179	LCC SIB
B Board	REV 07	710-023185	DW3919	LCC SIB Mezz
SIB 2				
SIB 3	REV 06	710-022594	DT8251	LCC SIB
B Board	REV 06	710-023185	DT5792	LCC SIB Mezz
SIB 4	REV 08	710-022594	DW8014	LCC SIB

B Board	REV 07	710-023185	DW3917	LCC SIB Mezz
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 3

lcc1-re0:

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN1102270AHA	T1600
Midplane	REV 04	710-017247	RC5358	T-series Backplane
FPM GBUS	REV 10	710-002901	DS3443	T640 FPM Board
FPM Display	REV 01	710-021387	DS6411	T1600 FPM Display
CIP	REV 06	710-002895	DS4235	T-series CIP
PEM 0	Rev 02	740-023211	VM82438	Power Entry Module 4x60A
SCG 0	REV 15	710-003423	DS6649	T640 Sonet Clock Gen.
SCG 1	REV 15	710-003423	DR6775	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	740-026941	737F-1083	RE-DUO-1800
Routing Engine 1	REV 01	740-026941	737F-1104	RE-DUO-1800
CB 0	REV 06	710-022597	DW8542	LCC Control Board
CB 1	REV 06	710-022597	DW8530	LCC Control Board
FPC 0	REV 02	710-010845	JE2392	FPC Type 4
CPU	REV 02	710-011481	JF6820	FPC CPU-Enhanced
PIC 0	REV 11	750-017405	DP7259	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 01	740-014279	AA0741N1C8T	XFP-10G-LR
Xcvr 1	REV 01	740-014279	AA0746N1GAM	XFP-10G-LR
Xcvr 2	REV 01	740-014279	AA0747N1H0B	XFP-10G-LR
Xcvr 3	REV 01	740-014279	AA0748N1HZ5	XFP-10G-LR
MMB 0	REV 03	710-010842	HY7601	ST-MMB
FPC 1	REV 16	710-013037	BBAA7398	FPC Type 4-ES
CPU	REV 09	710-016744	BBAA2329	ST-PMB2
PIC 0	REV 03	711-029996	EB1575	100GE
PIC 1	REV 06	750-034781	EB9980	100GE CFP
MMB 0	REV 04	710-025563	BBAA5325	ST-MMB2
MMB 1	REV 04	710-025563	BBAA5444	ST-MMB2
FPC 2	REV 16	710-013037	BBAA7185	FPC Type 4-ES
CPU	REV 09	710-016744	BBAA3522	ST-PMB2
PIC 0	REV 03	711-029996	EB1557	100GE
PIC 1	REV 05	750-034781	EB4660	100GE CFP
Xcvr 0	REV 0	740-032210	J10F73666	CFP-100G-LR4
BRIDGE 0	REV 02	711-029995	EB2237	100GE Bridge Board
MMB 0	REV 04	710-025563	BBAA5347	ST-MMB2
MMB 1	REV 04	710-025563	BBAA5401	ST-MMB2
FPC 3	REV 10	710-021534	DZ0941	FPC Type 1-ES
CPU	REV 09	710-016744	DY6364	ST-PMB2
PIC 0	REV 13	750-012266	DK9192	4x 1GE(LAN), IQ2
Xcvr 0	REV 01	740-011613	AM0812S8WVD	SFP-SX
Xcvr 1		NON-JNPR	PDD63Q4	SFP-SX
Xcvr 2		NON-JNPR	PDE4G54	SFP-SX
Xcvr 3		NON-JNPR	PD40MAG	SFP-SX
PIC 1	REV 01	750-007641	HJ2003	1x G/E IQ, 1000 BASE
Xcvr 0	REV 01	740-011613	AM0812S8WVG	SFP-SX
PIC 3	REV 17	750-007444	JB6873	1x CHSTM1 IQ SDH, SMIR
MMB 0	REV 04	710-025563	DZ0281	ST-MMB2
FPC 4	REV 06	710-013035	DK0614	FPC Type 3-ES
CPU	REV 07	710-016744	DK1616	ST-PMB2
PIC 0	REV 22	750-007141	DM1870	10x 1GE(LAN), 1000 BASE
Xcvr 0	REV 01	740-011782	PCL3UKW	SFP-SX
Xcvr 1	REV 01	740-011782	P7E0T73	SFP-SX
Xcvr 2	REV 01	740-007326	P4TOWLR	SFP-SX

Xcvr 3	REV 01	740-011782	PAR1LRL	SFP-SX
Xcvr 4	REV 01	740-011782	P9M0U3Z	SFP-SX
Xcvr 5	REV 01	740-011782	P9M0U0C	SFP-SX
Xcvr 6	REV 01	740-011782	P9M0TLG	SFP-SX
Xcvr 7	REV 01	740-011782	P9M0U0F	SFP-SX
Xcvr 8	REV 01	740-011613	PFA6LAP	SFP-SX
Xcvr 9	REV 01	740-011782	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	PDSOMMB	SFP-SR
Xcvr 3	REV 01	740-011785	PDE1KXP	SFP-SR
MMB 0	REV 07	710-010171	DP7374	MMB-5M3-288mbit
MMB 1	REV 07	710-010171	DP7404	MMB-5M3-288mbit
FPC 6	REV 07	710-013035	DM0994	FPC Type 3-ES
CPU	REV 07	710-016744	DM3651	ST-PMB2
PIC 0	REV 07	750-015217	DN4743	8x 1GE(TYPE3), IQ2
Xcvr 3	REV 01	740-011613	AM0812S8XB0	SFP-SX
Xcvr 4	REV 01	740-011782	PB829RB	SFP-SX
Xcvr 5	REV 01	740-011782	P8J1SYX	SFP-SX
PIC 1	REV 03	750-003336	HJ9954	4x OC-48 SONET, SMSR
PIC 3	REV 02	750-012793	JM7665	1x 10GE(LAN/WAN) IQ2
MMB 0	REV 04	710-016036	DN6913	ST-MMB2
FPC 7	REV 08	710-010845	JM3958	FPC Type 4
CPU	REV 04	710-011481	JK3669	FPC CPU-Enhanced
PIC 0	REV 11	750-017405	DP8837	4x 10GE (LAN/WAN) XFP
Xcvr 1	REV 01	740-014279	753019A00277	XFP-10G-LR
Xcvr 2	REV 02	740-011571	C850XJ00P	XFP-10G-SR
Xcvr 3	REV 01	740-014279	AA0813N1RTG	XFP-10G-LR
MMB 0	REV 04	710-010842	JN1971	ST-MMB
SPMB 0	REV 04	710-023321	DW3629	LCC Switch CPU
SPMB 1	REV 04	710-023321	DW3621	LCC Switch CPU
SIB 0	REV 07	710-022594	DW4200	LCC SIB
B Board	REV 07	710-023185	DW3932	LCC SIB Mezz
SIB 1	REV 07	710-022594	DW4193	LCC SIB
B Board	REV 07	710-023185	DW3904	LCC SIB Mezz
SIB 2				
SIB 3	REV 07	710-022594	DW4210	LCC SIB
B Board	REV 06	710-023185	DT5780	LCC SIB Mezz
SIB 4	REV 08	710-022594	DW8019	LCC SIB
B Board	REV 06	710-023185	DT5795	LCC SIB Mezz
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 3

show chassis hardware sfc (TX Matrix Plus Router)

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user@host> show chassis hardware sfc 0
sfc0-re0:
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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			JN112F007AHB	TXP
Midplane	REV 05	710-022574	TS4027	SFC Midplane
FPM Display	REV 03	710-024027	DX0282	TXP FPM Display
CIP 0	REV 04	710-023792	DW4889	TXP CIP
CIP 1	REV 04	710-023792	DW4887	TXP CIP
PEM 0	Rev 07	740-027463	UM26368	Power Entry Module
Routing Engine 0	REV 01	740-026942	737A-1064	SFC RE
Routing Engine 1	REV 01	740-026942	737A-1082	SFC RE
CB 0	REV 09	710-022606	DW6099	SFC Control Board
CB 1	REV 09	710-022606	DW6096	SFC Control Board
SPMB 0		BUILTIN		SFC Switch CPU
SPMB 1		BUILTIN		SFC Switch CPU
SIB F13 0	REV 04	710-022600	DX0841	F13 SIB
B Board	REV 03	710-023431	DX0966	F13 SIB Mezz
SIB F13 1	REV 04	750-024564	DW5776	F13 SIB
B Board	REV 03	710-023431	DW9028	F13 SIB
SIB F13 3	REV 04	750-024564	DW5762	F13 SIB
B Board	REV 03	710-023431	DW9059	F13 SIB
SIB F13 4	REV 04	750-024564	DW5797	F13 SIB
B Board	REV 03	710-023431	DW9041	F13 SIB
SIB F13 6	REV 04	750-024564	DW5770	F13 SIB
B Board	REV 03	710-023431	DW9079	F13 SIB Mezz
SIB F13 7	REV 04	750-024564	DW5758	F13 SIB
B Board	REV 03	710-023431	DW9047	F13 SIB
SIB F13 8	REV 04	750-024564	DW5761	F13 SIB
B Board	REV 03	710-023431	DW9043	F13 SIB Mezz
SIB F13 9	REV 04	750-024564	DW5754	F13 SIB
B Board	REV 03	710-023431	DW9078	F13 SIB Mezz
SIB F13 11	REV 04	710-022600	DX0826	F13 SIB
B Board	REV 03	710-023431	DX0967	F13 SIB Mezz
SIB F13 12	REV 04	750-024564	DW5794	F13 SIB
B Board	REV 03	710-023431	DW9044	F13 SIB Mezz
SIB F2S 0/0	REV 05	710-022603	DW7897	F2S SIB
B Board	REV 05	710-023787	DW7657	NEO PMB
SIB F2S 0/2	REV 05	710-022603	DW7833	F2S SIB
B Board	REV 05	710-023787	DW7526	NEO PMB
SIB F2S 0/4	REV 05	710-022603	DW7875	F2S SIB
B Board	REV 05	710-023787	DW7588	NEO PMB
SIB F2S 0/6	REV 05	710-022603	DW7860	F2S SIB
B Board	REV 05	710-023787	DW7589	NEO PMB
SIB F2S 1/0	REV 04	710-022603	DW4820	F2S SIB
B Board	REV 05	710-023787	DW8510	NEO PMB
SIB F2S 1/2	REV 05	710-022603	DW7849	F2S SIB
B Board	REV 05	710-023787	DW7525	NEO PMB
SIB F2S 1/4	REV 05	710-022603	DW7927	F2S SIB
B Board	REV 05	710-023787	DW7556	F2S SIB Mezz
SIB F2S 1/6	REV 05	710-022603	DW7866	F2S SIB
B Board	REV 05	710-023787	DW7651	NEO PMB
SIB F2S 2/0	REV 05	710-022603	DW7880	F2S SIB
B Board	REV 05	710-023787	DW7523	NEO PMB
SIB F2S 2/2	REV 05	710-022603	DW7895	F2S SIB
B Board	REV 05	710-023787	DW7591	NEO PMB
SIB F2S 2/4	REV 05	710-022603	DW7907	F2S SIB
B Board	REV 05	710-023787	DW7590	NEO PMB
SIB F2S 2/6	REV 05	710-022603	DW7785	F2S SIB
B Board	REV 05	710-023787	DW7524	NEO PMB
SIB F2S 3/0	REV 05	710-022603	DW7782	F2S SIB
B Board	REV 05	710-023787	DW7634	NEO PMB
SIB F2S 3/2	REV 05	710-022603	DW7793	F2S SIB
B Board	REV 05	710-023787	DW7548	NEO PMB

SIB F2S 3/4	REV 05	710-022603	DW7779	F2S SIB
B Board	REV 05	710-023787	DW7587	NEO PMB
SIB F2S 3/6	REV 05	710-022603	DW7930	F2S SIB
B Board	REV 05	710-023787	DW7505	NEO PMB
SIB F2S 4/0	REV 05	710-022603	DW7867	F2S SIB
B Board	REV 05	710-023787	DW7656	NEO PMB
SIB F2S 4/2	REV 05	710-022603	DW7917	F2S SIB
B Board	REV 05	710-023787	DW7640	NEO PMB
SIB F2S 4/4	REV 05	710-022603	DW7929	F2S SIB
B Board	REV 05	710-023787	DW7643	NEO PMB
SIB F2S 4/6	REV 05	710-022603	DW7870	F2S SIB
B Board	REV 05	710-023787	DW7635	NEO PMB
Fan Tray 0	REV 06	760-024497	DV7831	Front Fan Tray
Fan Tray 1	REV 06	760-024497	DV9614	Front Fan Tray
Fan Tray 2	REV 06	760-024502	DV9618	Rear Fan Tray
Fan Tray 3	REV 06	760-024502	DV9616	Rear Fan Tray
Fan Tray 4	REV 06	760-024502	DV7807	Rear Fan Tray
Fan Tray 5	REV 06	760-024502	DV7828	Rear Fan Tray

show chassis hardware extensive (TX Matrix Plus Router)

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

Item	Version	Part number	Serial number	Description
Chassis			JN112F007AHB	TXP
Jedec Code:	0x7fb0	EEPROM Version:	0x02	
		S/N:	JN112F007AHB	
Assembly ID:	0x052c	Assembly Version:	00.00	
Date:	00-00-0000	Assembly Flags:	0x00	
ID:	TXP			

Board Information Record:

Address 0x00: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

I2C Hex Data:

Address 0x00: 7f b0 02 ff 05 2c 00 00 00 00 00 00 00 00 00 00
 Address 0x10: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
 Address 0x20: 4a 4e 31 31 32 46 30 30 37 41 48 42 00 00 00 00
 Address 0x30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
 Address 0x40: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
 Address 0x50: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
 Address 0x60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
 Address 0x70: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Midplane	REV 05	710-022574	TS4027	SFC Midplane
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Jedec Code:	0x7fb0	EEPROM Version:	0x01
P/N:	710-022574	S/N:	S/N TS4027
Assembly ID:	0x0962	Assembly Version:	01.05
Date:	03-23-2009	Assembly Flags:	0x00
Version:	REV 05		
ID:	SFC Midplane		

Board Information Record:

Address 0x00: ad 01 ff ff 00 1d b5 14 00 00 ff ff ff ff ff ff

I2C Hex Data:

Address 0x00: 7f b0 01 ff 09 62 01 05 52 45 56 20 30 35 00 00
 Address 0x10: 00 00 00 00 37 31 30 2d 30 32 32 35 37 34 00 00
 Address 0x20: 53 2f 4e 20 54 53 34 30 32 37 00 00 00 17 03 07
 Address 0x30: d9 ff ff ff ad 01 ff ff 00 1d b5 14 00 00 ff ff
 Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff
 Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
 Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
 Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff

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

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

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user@host> show chassis hardware clei-models
sfc0-re0:

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Hardware inventory:

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Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 05	710-022574		CHAS-BP-TXP-S
FPM Display	REV 03	710-024027		CRAFT-TXP-S
CIP 0	REV 05	710-023792		CIP-TXP-S
CIP 1	REV 05	710-023792		CIP-TXP-S
PEM 0	Rev 04	740-027463	IPUPAFGKTA	PWR-TXP-7-60-DC
PEM 1	Rev 04	740-027463	IPUPAFGKTA	PWR-TXP-7-60-DC
Routing Engine 0	REV 06	740-026942		RE-DUO-C2600-16G-S
Routing Engine 1	REV 06	740-026942		RE-DUO-C2600-16G-S
CB 0	REV 05	710-022606		CB-TXP-S
CB 1	REV 09	710-022606		CB-TXP-S
SIB F13 0	REV 04	750-024564		SIB-TXP-F13
SIB F13 3	REV 04	750-024564		SIB-TXP-F13
SIB F13 8	REV 04	750-024564		SIB-TXP-F13
SIB F13 11	REV 04	750-024564		SIB-TXP-F13
SIB F13 12	REV 03	750-024564		SIB-TXP-F13
SIB F2S 0/0	REV 05	710-022603		SIB-TXP-F2S-S
SIB F2S 0/2	REV 05	710-022603		SIB-TXP-F2S-S
SIB F2S 0/4	REV 04	710-022603		SIB-TXP-F2S-S
SIB F2S 0/6	REV 04	710-022603		SIB-TXP-F2S-S
SIB F2S 1/0	REV 04	710-022603		SIB-TXP-F2S-S
SIB F2S 1/2	REV 05	710-022603		SIB-TXP-F2S-S
SIB F2S 1/4	REV 04	710-022603		SIB-TXP-F2S-S
SIB F2S 1/6	REV 05	710-022603		SIB-TXP-F2S-S
SIB F2S 2/0	REV 04	710-022603		SIB-TXP-F2S-S
SIB F2S 2/2	REV 04	710-022603		SIB-TXP-F2S-S
SIB F2S 2/4	REV 05	710-022603		SIB-TXP-F2S-S

SIB F2S 2/6	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 3/0	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 3/2	REV 03	710-022603	SIB-TXP-F2S-S
SIB F2S 3/4	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 3/6	REV 03	710-022603	SIB-TXP-F2S-S
SIB F2S 4/0	REV 03	710-022603	SIB-TXP-F2S-S
SIB F2S 4/2	REV 05	710-022603	SIB-TXP-F2S-S
SIB F2S 4/4	REV 04	710-022603	SIB-TXP-F2S-S
SIB F2S 4/6	REV 03	710-022603	SIB-TXP-F2S-S
Fan Tray 0	REV 02	760-024497	FANTRAY-TXP-H-S
Fan Tray 1	REV 02	760-024497	FANTRAY-TXP-H-S
Fan Tray 2	REV 05	760-024502	FANTRAY-TXP-V-S
Fan Tray 3			
Fan Tray 4	REV 05	760-024502	FANTRAY-TXP-V-S
Fan Tray 5	REV 02	760-024502	FANTRAY-TXP-V-S

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lcc0-re0:
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Hardware inventory:
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Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 03	710-017247		CHAS-BP-T1600-S
FPM Display	REV 01	710-021387		CRAFT-T1600-S
CIP	REV 06	710-002895		CIP-L-T640-S
PEM 1	Rev 02	740-023211	IPUPAC8KTA	PWR-T1600-4-60-DC-S
SCG 0	REV 15	710-003423		SCG-T-S
SCG 1	REV 15	710-003423		SCG-T-S
Routing Engine 0	REV 01	740-026941		RE-DUO-C1800-8G-S
Routing Engine 1	REV 01	740-026941		RE-DUO-C1800-8G-S
CB 0	REV 06	710-022597		CB-LCC-S
CB 1	REV 06	710-022597		CB-LCC-S
FPC 1	REV 07	710-013035		T640-FPC3-ES
PIC 0	REV 05	750-015217		PC-8GE-TYPE3-SFP-IQ2
PIC 1	REV 03	750-004424		PC-1XGE-LR
PIC 2	REV 01	750-003336		PC-40C48-SON-SMSR
FPC 3	REV 12	710-013037		T1600-FPC4-ES
PIC 0	REV 02	750-010850		PD-10C768-SON-SR
FPC 4	REV 05	710-021534		T640-FPC1-ES
PIC 0	REV 04	750-014627		PB-40C3-10C12-SON-SFP
PIC 1	REV 22	750-005634		PB-1CHOC12SMIR-QPP
PIC 2	REV 09	750-002911		PB-4FE-TX
PIC 3	REV 08	750-021652		PB-1CHOC12-STM4-IQE-SFP
FPC 5	REV 07	710-007529		T640-FPC3
PIC 0	REV 14	750-009567		PC-1XGE-XENPAK
PIC 1	REV 16	750-007141		PC-10GE-SFP
PIC 2	REV 12	750-009567		PC-1XGE-XENPAK
FPC 6	REV 07	710-013035		T640-FPC3-ES
PIC 0	REV 09	750-009567		PC-1XGE-XENPAK
PIC 1	REV 06	750-015217		PC-8GE-TYPE3-SFP-IQ2
PIC 2	REV 06	750-015217		PC-8GE-TYPE3-SFP-IQ2
FPC 7	REV 03	710-021540		T640-FPC2-ES
PIC 0	REV 13	750-001901		PB-40C12-SON-SMIR
PIC 1	REV 05	750-001900		PB-10C48-SON-SMSR
PIC 2	REV 10	750-008155		PB-2GE-SFP-QPP
PIC 3	REV 03	750-014638		PB-10C48-SON-B-SFP
SIB 0	REV 07	710-022594		SIB-TXP-T1600-S
SIB 1	REV 07	710-022594		SIB-TXP-T1600-S
SIB 3	REV 06	710-022594		SIB-TXP-T1600-S
SIB 4	REV 08	710-022594		SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

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lcc1-re0:
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Hardware inventory:
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Item	Version	Part number	CLEI code	FRU model number
Midplane	REV 04	710-017247		CHAS-BP-T1600-S
FPM Display	REV 01	710-021387		CRAFT-T1600-S
CIP	REV 06	710-002895		CIP-L-T640-S
PEM 0	Rev 02	740-023211	IPUPAC8KTA	PWR-T1600-4-60-DC-S
SCG 0	REV 15	710-003423		SCG-T-S
SCG 1	REV 15	710-003423		SCG-T-S
Routing Engine 0	REV 01	740-026941		RE-DUO-C1800-8G-S
Routing Engine 1	REV 01	740-026941		RE-DUO-C1800-8G-S
CB 0	REV 06	710-022597		CB-LCC-S
CB 1	REV 06	710-022597		CB-LCC-S
FPC 0	REV 02	710-010845		T640-FPC4-ES
PIC 0	REV 11	750-017405		PD-4XGE-XFP
FPC 1	REV 16	710-013037		T1600-FPC4-ES
PIC 1	REV 06	750-034781		PD-1CE-CFP
FPC 2	REV 16	710-013037		T1600-FPC4-ES
PIC 1	REV 05	750-034781		PD-1CE-CFP
FPC 3	REV 10	710-021534		T640-FPC1-ES
PIC 0	REV 13	750-012266		PB-4GE-TYPE1-SFP-IQ2
PIC 1	REV 01	750-007641		PE-1GE-SFP-QPP
PIC 3	REV 17	750-007444		PB-1CHSTM1-SMIR-QPP
FPC 4	REV 06	710-013035		T640-FPC3-ES
PIC 0	REV 22	750-007141		PC-10GE-SFP
PIC 1	REV 16	750-009450		PC-10C192-SON-SR2
PIC 2	REV 05	750-004424		PC-1XGE-LR
PIC 3	REV 12	750-013423		PC-MS-500-3
FPC 5	REV 07	710-013560		T640-FPC3-E2
PIC 0	REV 11	750-012793		PC-1XGE-TYPE3-XFP-IQ2
PIC 1	REV 01	750-004695		PC-TUNNEL
PIC 2	REV 32	750-003700		PC-10C192-SON-VSR
PIC 3	REV 12	750-009553		PC-40C48-SON-SFP
FPC 6	REV 07	710-013035		T640-FPC3-ES
PIC 0	REV 07	750-015217		PC-8GE-TYPE3-SFP-IQ2
PIC 1	REV 03	750-003336		PC-40C48-SON-SMSR
PIC 3	REV 02	750-012793		PC-1XGE-TYPE3-XFP-IQ2
FPC 7	REV 08	710-010845		T640-FPC4-ES
PIC 0	REV 11	750-017405		PD-4XGE-XFP
SIB 0	REV 07	710-022594		SIB-TXP-T1600-S
SIB 1	REV 07	710-022594		SIB-TXP-T1600-S
SIB 3	REV 07	710-022594		SIB-TXP-T1600-S
SIB 4	REV 08	710-022594		SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

show chassis hardware detail (TX Matrix Plus Router)

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


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

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lcc0-re0:
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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			JN1101F27AHA	T1600
Midplane	REV 04	710-017247	RC5317	T Series Backplane
FPM GBUS	REV 10	710-002901	DS8197	T640 FPM Board
FPM Display	REV 01	710-021387	DS6433	T1600 FPM Display
CIP	REV 06	710-002895	DS1493	T Series CIP
PEM 0	Rev 08	740-017906	UD26601	Power Entry Module 3x80
SCG 0	REV 15	710-003423	DP5847	T640 Sonet Clock Gen.
SCG 1	REV 15	710-003423	DR0924	T640 Sonet Clock Gen.
Routing Engine 0	REV 01	740-026942	737F-1024	LCC RE
ad0 3887 MB SMART CF			2008110502B63E513E51	Compact Flash
ad1 30533 MB SAMSUNG MCBQE32G8MPP-0V SY814A1208				Disk 1
Routing Engine 1	REV 01	740-026942	737F-1024	LCC RE
ad0 3887 MB SMART CF			2008110500F9A8A8A8A8	Compact Flash

ad1	30533 MB	SAMSUNG	MCBQE32G8MPP-0V	SY814A1076	Disk 1
CB 0		REV 05	710-022597	DV4264	LCC Control Board
CB 1		REV 03	710-022597	DP8558	LCC Control Board
FPC 0		REV 14	710-013037	DS9967	FPC Type 4-ES
CPU		REV 08	710-016744	DS3989	ST-PMB2
PIC 0		REV 12	750-013198	DL7506	1x Tunnel
PIC 1		REV 12	750-013198	DL7505	1x Tunnel
MMB 0		REV 01	710-025563	DS8524	ST-MMB2
MMB 1		REV 01	710-025563	DS8373	ST-MMB2
FPC 1		REV 14	710-013037	DT0027	FPC Type 4-ES
CPU		REV 09	710-016744	DS7684	ST-PMB2
PIC 0		REV 12	750-013198	DL7512	1x Tunnel
PIC 1		REV 12	750-013198	DL7498	1x Tunnel
MMB 0		REV 01	710-025563	DS8494	ST-MMB2
MMB 1		REV 01	710-025563	DS8436	ST-MMB2
SPMB 0		REV 04	710-023321	DV3867	LCC Switch CPU
SPMB 1		REV 02	710-023321	DP0238	LCC Switch CPU
SIB 0		REV 06	710-022594	DT8268	LCC SIB
B Board		REV 06	710-023185	DT5791	LCC SIB Mezz
SIB 1		REV 06	710-022594	DT8261	LCC SIB
B Board		REV 06	710-023185	DT5769	LCC SIB Mezz
SIB 2		REV 04	710-022594	DS2315	LCC SIB
B Board		REV 06	710-023185	DT5788	LCC SIB Mezz
SIB 3		REV 06	710-022594	DT8253	LCC SIB
B Board		REV 06	710-023185	DT5811	LCC SIB Mezz
SIB 4		REV 06	710-022594	DT8248	LCC SIB
B Board		REV 06	710-023185	DT5812	LCC SIB Mezz
Fan Tray 0					Front Top Fan Tray
Fan Tray 1					Front Bottom Fan Tray
Fan Tray 2					Rear Fan Tray

show chassis hardware models (TX Matrix Plus Router)

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user@host> show chassis hardware models
sfc0-re0:
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Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
FPM Display	REV 03	710-024027	DX0282	CRAFT-TXP
CIP 0	REV 04	710-023792	DW4889	CIP-TXP
CIP 1	REV 04	710-023792	DW4887	CIP-TXP
PEM 0	Rev 07	740-027463	UM26368	yyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
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

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

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lcc1-re0:
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Hardware inventory:
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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

1cc2-re0:

Hardware inventory:

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

1cc3-re0:

Hardware inventory:

Item	Version	Part number	Serial number	FRU model number
Midplane	REV 04	710-017247	RC5319	CHAS-BP-T1600-S
FPM Display	REV 01	710-021387	DS6402	CRAFT-T1600-S
CIP	REV 06	710-002895	DR9973	CIP-L-T640-S
PEM 0	Rev 07	740-017906	UC26496	PWR-T1600-3-80-DC-S
PEM 1	Rev 07	740-017906	UC26599	PWR-T1600-3-80-DC-S
SCG 0	REV 15	710-003423	DP5831	SCG-T-S
CB 0	REV 06	710-022597	DW8533	CB-LCC
CB 1	REV 06	710-022597	DW8538	CB-LCC

FPC 0	REV 14	710-013037	DS5345	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS7641	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS5479	PD-4XGE-XFP
FPC 1	REV 14	710-013037	DS7338	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS7631	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS7632	PD-4XGE-XFP
FPC 2	REV 14	710-013037	DS9962	T1600-FPC4-ES
PIC 0	REV 13	750-017405	DS7581	PD-4XGE-XFP
PIC 1	REV 13	750-017405	DS7627	PD-4XGE-XFP
FPC 4	REV 10	710-010845	JZ6573	T640-FPC4-ES
PIC 0	REV 14	750-012518	JT5124	PD-40C192-SON-XFP
FPC 5	REV 14	710-013037	DT0016	T1600-FPC4-ES
PIC 0	REV 14	750-012518	JY9918	PD-40C192-SON-XFP
FPC 7	REV 07	710-013035	DM0967	T1600-FPC3-ES
PIC 0	REV 16	750-007141	JJ8059	PC-10GE-SFP
PIC 1	REV 13	750-004695	DM5712	PC-TUNNEL
SIB 0	REV 07	710-022594	DW4174	SIB-TXP-T1600-S
SIB 1	REV 07	710-022594	DW4207	SIB-TXP-T1600-S
SIB 2	REV 06	710-022594	DT8231	SIB-TXP-T1600-S
SIB 3	REV 07	710-022594	DW4175	SIB-TXP-T1600-S
SIB 4	REV 07	710-022594	DW4209	SIB-TXP-T1600-S
Fan Tray 0				FANTRAY-T-S
Fan Tray 1				FANTRAY-T-S
Fan Tray 2				FANTRAY-TXP-R-S

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

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user@host> show chassis hardware
sfc0-re0:
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Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11CAAA4AHB	TXP
Midplane	REV 05	710-022574	ABAC4696	SFC Midplane
FPM Display	REV 09	710-024027	EH3138	TXP FPM Display
CIP 0	REV 12	710-023792	EF6349	TXP CIP
CIP 1	REV 12	710-023792	EG5294	TXP CIP
PEM 0	Rev 06	740-027463	XH04595	Power Entry Module
PEM 1	Rev 06	740-027463	XH04592	Power Entry Module
Routing Engine 0	REV 07	740-026942	P737A-002541	RE-DUO-2600
Routing Engine 1	REV 07	740-026942	P737A-002602	RE-DUO-2600
CB 0	REV 15	710-022606	EH4376	SFC Control Board
CB 1	REV 15	710-022606	EH4379	SFC Control Board
SPMB 0		BUILTIN		SFC Switch CPU
SPMB 1		BUILTIN		SFC Switch CPU
SIB F13 0	REV 10	750-035002	EM9305	F13 SIB 3D
B Board	REV 06	711-035082	EM9667	F13 SIB 3D Mezz
P Board	REV 05	711-043544	EM9708	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB34FB00S	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01H	CXP Module
Xcvr 4	REV 01	740-047547	XB34FB02W	CXP Module
Xcvr 6	REV 01	740-047547	XB34FB01T	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB00W	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01S	CXP Module
Xcvr 12	REV 01	740-047547	XB34FB03H	CXP Module
Xcvr 14	REV 01	740-047547	XB34FB023	CXP Module
SIB F13 3	REV 01	710-035001	EJ2612	F13 SIB 3D
B Board	REV 01	711-035082	EJ3815	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2678	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB04C	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB00Z	CXP Module

Xcvr 4	REV 01	740-047547	XB47FB036	CXP Module
Xcvr 6	REV 01	740-047547	XB47FB029	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02N	CXP Module
Xcvr 10	REV 01	740-047547	XB42FB0CS	CXP Module
Xcvr 12	REV 01	740-047547	XB47FB01X	CXP Module
Xcvr 14	REV 01	740-047547	XB48FB02F	CXP Module
SIB F13 6	REV 05	750-035002	EK2675	F13 SIB 3D
B Board	REV 03	711-035082	EK2612	F13 SIB 3D Mezz
P Board	REV 04	711-043544	EK1179	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB01T	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB02M	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB031	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB04P	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02T	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01V	CXP Module
Xcvr 12	REV 01	740-047547	XB48FB02C	CXP Module
Xcvr 14		NON-JNPR		No Module
SIB F13 12	REV 01	710-035001	EJ2631	F13 SIB 3D
B Board	REV 01	711-035082	EJ3808	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2676	F13 SIB 3D Power
SIB F2S 0/0	REV 01	711-034977	EH9829	F2S SIB 3D
B Board	REV 01	711-034979	EH9927	F2S SIB 3D Mezz
SIB F2S 0/2	REV 01	711-034977	EH9791	F2S SIB 3D
B Board	REV 01	711-034979	EH9852	F2S SIB 3D Mezz
SIB F2S 0/4	REV 01	711-034977	EH9803	F2S SIB 3D
B Board	REV 01	711-034979	EH9915	F2S SIB 3D Mezz
SIB F2S 0/6	REV 01	711-034977	EH9763	F2S SIB 3D
B Board	REV 01	711-034979	EH9880	F2S SIB 3D Mezz
SIB F2S 1/0	REV 01	711-034977	EH9757	F2S SIB 3D
B Board	REV 01	711-034979	EH9889	F2S SIB 3D Mezz
SIB F2S 1/2	REV 01	711-034977	EH9815	F2S SIB 3D
B Board	REV 01	711-034979	EH9890	F2S SIB 3D Mezz
SIB F2S 1/4	REV 08	750-034978	EN1954	F2S SIB 3D
B Board	REV 02	711-034979	EN1436	F2S SIB 3D Mezz
SIB F2S 1/6	REV 01	711-034977	EJ7054	F2S SIB 3D
B Board	REV 01	711-034979	EJ8238	F2S SIB 3D Mezz
SIB F2S 2/0	REV 01	711-034977	EH9830	F2S SIB 3D
B Board	REV 01	711-034979	EH9844	F2S SIB 3D Mezz
SIB F2S 2/2	REV 01	711-034977	EH9818	F2S SIB 3D
B Board	REV 01	711-034979	EH9888	F2S SIB 3D Mezz
SIB F2S 2/4	REV 01	711-034977	EH9795	F2S SIB 3D
B Board	REV 01	711-034979	EH9869	F2S SIB 3D Mezz
SIB F2S 2/6	REV 01	711-034977	EJ7026	F2S SIB 3D
B Board	REV 01	711-034979	EJ8273	F2S SIB 3D Mezz
SIB F2S 3/0	REV 01	711-034977	EH9811	F2S SIB 3D
B Board	REV 01	711-034979	EH9892	F2S SIB 3D Mezz
SIB F2S 3/2	REV 01	711-034977	EH9812	F2S SIB 3D
B Board	REV 01	711-034979	EH9877	F2S SIB 3D Mezz
SIB F2S 3/4	REV 08	750-034978	EN1947	F2S SIB 3D
B Board	REV 02	711-034979	EN1471	F2S SIB 3D Mezz
Fan Tray 0	REV 10	760-024497	EH3313	Front Fan Tray
Fan Tray 1	REV 10	760-024497	EH3290	Front Fan Tray
Fan Tray 2	REV 10	760-024502	EH3292	Rear Fan Tray
Fan Tray 3	REV 10	760-024502	EH3287	Rear Fan Tray
Fan Tray 4	REV 10	760-024502	EH3286	Rear Fan Tray
Fan Tray 5	REV 10	760-024502	EH3285	Rear Fan Tray

1cc0-re0:

Hardware inventory:

Item	Version	Part number	Serial number	Description
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Chassis			JN11B23FEAHA	T1600
Midplane	REV 01	710-027486	RC9787	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAG5132	T640 FPM Board
FPM Display	REV 04	710-021387	BBAL9612	T1600 FPM Display
CIP	REV 06	710-002895	BBAN0605	T-series CIP
PEM 0	REV 05	740-036442	1G022060143	Power Entry Module 6x60
PEM 1	REV 05	740-036442	1G022060011	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAL7318	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAL7255	T640 Sonet Clock Gen.
Routing Engine 0	REV 07	740-026941	P737F-002933	RE-DUO-1800
Routing Engine 1	REV 06	740-026941	P737F-002749	RE-DUO-1800
CB 0	REV 11	710-022597	EH3611	LCC Control Board
CB 1	REV 11	710-022597	EH4798	LCC Control Board
FPC 5	REV 17	710-013037	BBAC5333	FPC Type 4-ES
CPU	REV 10	710-016744	BBAB7619	ST-PMB2
PIC 0	REV 18	750-017405	BBAE3420	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 03	740-014289	T10C90659	XFP-10G-SR
MMB 0	REV 05	710-025563	BBAB9538	ST-MMB2
MMB 1	REV 05	710-025563	BBAB9502	ST-MMB2
FPC 7	REV 01	750-045173	BBAV0032	FPC Type 5-3D
CPU				
SPMB 0	REV 05	710-023321	EG9434	LCC Switch CPU
SPMB 1	REV 05	710-023321	EH3878	LCC Switch CPU
SIB 0	REV 01	750-041657	EH7997	LCC SIB 3D
B Board	REV 01	711-042424	EH7674	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB014	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB05A	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB052	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB01B	CXP Module
SIB 1	REV 01	750-041657	EH8023	LCC SIB 3D
B Board	REV 01	711-042424	EH7659	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05J	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01E	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB01J	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB02S	CXP Module
SIB 2	REV 03	750-041657	EJ6554	LCC SIB 3D
B Board	REV 02	711-042424	EJ5756	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB34FB01Z	CXP Module
Xcvr 2	REV 01	740-047547	XB34FB013	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB04Z	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB05N	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 4

lcc2-re0:

Hardware inventory:

Item	Version	Part number	Serial number	Description
Chassis			JN11B3975AHA	T1600
Midplane	REV 01	710-027486	RC9826	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAG5124	T640 FPM Board
FPM Display	REV 03	710-021387	BBAJ1112	T1600 FPM Display
CIP	REV 06	710-002895	BBAL3744	T-series CIP
PEM 0	REV 05	740-036442	1G022060081	Power Entry Module 6x60
PEM 1	REV 05	740-036442	1G022060188	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAH8775	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAL7272	T640 Sonet Clock Gen.
Routing Engine 0	REV 07	740-026941	P737F-002992	RE-DUO-1800
Routing Engine 1	REV 07	740-026941	P737F-002938	RE-DUO-1800
CB 0	REV 11	710-022597	EH4805	LCC Control Board

CB 1	REV 11	710-022597	EH4786	LCC Control Board
FPC 1	REV 01	710-033873	BBAH0320	FPC Type 3-ES
CPU	REV 11	710-016744	BBAF3281	ST-PMB2
MMB 0	REV 06	710-025563	BBAF5061	ST-MMB2
FPC 5	REV 04	710-033871	BBAM5070	FPC Type 4-ES
CPU	REV 11	710-016744	BBAM6653	ST-PMB2
PIC 1	REV 20	750-017405	BBAM1296	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 03	740-014289	T10B42981	XFP-10G-SR
MMB 0	REV 07	710-025563	BBAN2631	ST-MMB2
MMB 1	REV 07	710-025563	BBAN2538	ST-MMB2
SPMB 0	REV 05	710-023321	EH3903	LCC Switch CPU
SPMB 1	REV 05	710-023321	EH3902	LCC Switch CPU
SIB 0	REV 01	750-041657	EH8019	LCC SIB 3D
B Board	REV 01	711-042424	EH7680	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB04F	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB04S	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB04B	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB043	CXP Module
SIB 1	REV 01	750-041657	EH8012	LCC SIB 3D
B Board	REV 01	711-042424	EH7658	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05E	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01Z	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB018	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB054	CXP Module
SIB 2	REV 01	750-041657	EH7993	LCC SIB 3D
B Board	REV 01	711-042424	EH7678	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05C	CXP Module
Xcvr 2	REV 01	740-047547	XB47FB00N	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB05U	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB05L	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 4

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

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user@host> show chassis hardware clei-models
sfc0-re0:
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Hardware inventory:
Item          Version  Part number  CLEI code  FRU model number
Midplane      REV 05   710-022574
FPM Display   REV 09   710-024027
CIP 0         REV 12   710-023792
CIP 1         REV 12   710-023792
PEM 0         Rev 06   740-027463  IPUPAFGKTA PWR-TXP-7-60-DC-S
Routing Engine 0 REV 07   740-026942
Routing Engine 1 REV 07   740-026942
CB 0          REV 13   710-022606
CB 1          REV 14   710-022606
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
Xcvr 10       REV 01   740-047547

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Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 1	REV 10	750-035002	PROTOXCLEI	SIB-TXP-3D-F13-S
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D
Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
Xcvr 8	REV 01	740-048813		
Xcvr 10	REV 01	740-048813		
Xcvr 12	REV 01	740-048813		
Xcvr 14	REV 01	740-048813		
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D
Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 6	REV 16	750-035002	PROTOXCLEI	SIB-TXP-3D-F13
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 7	REV 10	750-035002	PROTOXCLEI	SIB-TXP-3D-F13-S
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D
Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D

Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 9	REV 16	750-035002	PROTOXCLEI	SIB-TXP-3D-F13
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D
Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 11	REV 10	750-035002	PROTOXCLEI	750-035002
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-048813		
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F13 12	REV 16	750-035002	PROTOXCLEI	SIB-TXP-3D-F13
Xcvr 0	REV 01	740-047547		CXP-TXP-3D
Xcvr 1	REV 01	740-047547		CXP-TXP-3D
Xcvr 2	REV 01	740-047547		CXP-TXP-3D
Xcvr 3	REV 01	740-047547		CXP-TXP-3D
Xcvr 4	REV 01	740-047547		CXP-TXP-3D
Xcvr 5	REV 01	740-047547		CXP-TXP-3D
Xcvr 6	REV 01	740-047547		CXP-TXP-3D
Xcvr 7	REV 01	740-047547		CXP-TXP-3D
Xcvr 8	REV 01	740-047547		CXP-TXP-3D
Xcvr 10	REV 01	740-047547		CXP-TXP-3D
Xcvr 12	REV 01	740-047547		CXP-TXP-3D
Xcvr 14	REV 01	740-047547		CXP-TXP-3D
SIB F2S 0/0	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 0/2	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 0/4	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 0/6	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 1/0	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 1/2	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 1/4	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S

SIB F2S 1/6	REV 08	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 2/0	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 2/2	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 2/4	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 2/6	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 3/0	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 3/2	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 3/4	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 3/6	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 4/0	REV 07	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 4/2	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 4/4	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
SIB F2S 4/6	REV 06	750-034978	PROTOXCLEI	SIB-TXP-3D-F2S
Fan Tray 0	REV 10	760-024497		FANTRAY-TXP-H-S
Fan Tray 1	REV 10	760-024497		FANTRAY-TXP-H-S
Fan Tray 2	REV 10	760-024502		FANTRAY-TXP-V-S
Fan Tray 3	REV 10	760-024502		FANTRAY-TXP-V-S
Fan Tray 4	REV 10	760-024502		FANTRAY-TXP-V-S
Fan Tray 5	REV 10	760-024502		FANTRAY-TXP-V-S

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lcc0-re0:
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Hardware inventory:
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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	XXXXXXXXXD	PF-12-24XGE-SFPP
FPC 4	REV 02	750-045173	IP9IAL4DAC	T4000-FPC5-3D
PIC 0	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
PIC 1	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
FPC 5	REV 01	750-045173	IP9IAL4DAB	T4000-FPC5-3D
PIC 0	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
PIC 1	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
FPC 6	REV 01	750-045173	IP9IAL4DAB	T4000-FPC5-3D
PIC 0	REV 17	750-034624	IP9IAL2DAA	PF-12XGE-SFPP
PIC 1	REV 10	750-035293	IP9IAL3DAA	PF-1CGE-CFP
SIB 0	REV 06	750-041657	PROTOXCLEI	SIB-TXP-3D-LCC
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
SIB 1	REV 06	750-041657	PROTOXCLEI	SIB-TXP-3D-LCC
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		

Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
SIB 2	REV 06	750-041657	PROTOXCLEI	SIB-TXP-3D-LCC
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
SIB 3	REV 07	750-041657	PROTOXCLEI	SIB-TXP-3D-LCC
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
SIB 4	REV 06	750-041657	PROTOXCLEI	SIB-TXP-3D-LCC
Xcvr 0	REV 01	740-048813		
Xcvr 1	REV 01	740-048813		
Xcvr 2	REV 01	740-048813		
Xcvr 3	REV 01	740-048813		
Xcvr 4	REV 01	740-048813		
Xcvr 5	REV 01	740-048813		
Xcvr 6	REV 01	740-048813		
Xcvr 7	REV 01	740-048813		
Fan Tray 0				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
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
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

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Xcvr 6          REV 01  740-047547  XB48FB05N      CXP Module
Fan Tray 0
Fan Tray 1
Fan Tray 2
Front Top Fan Tray
Front Bottom Fan Tray
Rear Fan Tray -- Rev 4

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lcc2-re0:
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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			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
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:
```

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Hardware inventory:
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Item	Version	Part number	Serial number	Description
Chassis			JN11B23FEAHA	T1600
Midplane	REV 01	710-027486	RC9787	T-series Backplane
FPM GBUS	REV 13	710-002901	BBAG5132	T640 FPM Board
FPM Display	REV 04	710-021387	BBAL9612	T1600 FPM Display
CIP	REV 06	710-002895	BBAN0605	T-series CIP
PEM 0	REV 05	740-036442	1G022060143	Power Entry Module 6x60
PEM 1	REV 05	740-036442	1G022060011	Power Entry Module 6x60
SCG 0	REV 18	710-003423	BBAL7318	T640 Sonet Clock Gen.
SCG 1	REV 18	710-003423	BBAL7255	T640 Sonet Clock Gen.
Routing Engine 0	REV 07	740-026941	P737F-002933	RE-DUO-1800
Routing Engine 1	REV 06	740-026941	P737F-002749	RE-DUO-1800
CB 0	REV 11	710-022597	EH3611	LCC Control Board
CB 1	REV 11	710-022597	EH4798	LCC Control Board
FPC 5	REV 17	710-013037	BBAC5333	FPC Type 4-ES
CPU	REV 10	710-016744	BBAB7619	ST-PMB2
PIC 0	REV 18	750-017405	BBAE3420	4x 10GE (LAN/WAN) XFP
Xcvr 0	REV 03	740-014289	T10C90659	XFP-10G-SR
MMB 0	REV 05	710-025563	BBAB9538	ST-MMB2
MMB 1	REV 05	710-025563	BBAB9502	ST-MMB2
FPC 7	REV 01	750-045173	BBAV0032	FPC Type 5-3D
CPU				
SPMB 0	REV 05	710-023321	EG9434	LCC Switch CPU
SPMB 1	REV 05	710-023321	EH3878	LCC Switch CPU
SIB 0	REV 01	750-041657	EH7997	LCC SIB 3D
B Board	REV 01	711-042424	EH7674	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB014	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB05A	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB052	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB01B	CXP Module
SIB 1	REV 01	750-041657	EH8023	LCC SIB 3D
B Board	REV 01	711-042424	EH7659	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB48FB05J	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01E	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB01J	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB02S	CXP Module
SIB 2	REV 03	750-041657	EJ6554	LCC SIB 3D
B Board	REV 02	711-042424	EJ5756	LCC SIB 3D Mezz
Xcvr 0	REV 01	740-047547	XB34FB01Z	CXP Module
Xcvr 2	REV 01	740-047547	XB34FB013	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB04Z	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB05N	CXP Module
Fan Tray 0				Front Top Fan Tray
Fan Tray 1				Front Bottom Fan Tray
Fan Tray 2				Rear Fan Tray -- Rev 4

show chassis hardware sfc (TX Matrix Plus router with 3D SIBs)

```
user@host> show chassis hardware sfc 0
sfc0-re0:
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-----
Hardware inventory:
```

Item	Version	Part number	Serial number	Description
Chassis			JN11CAAA4AHB	TXP
Midplane	REV 05	710-022574	ABAC4696	SFC Midplane

FPM Display	REV 09	710-024027	EH3138	TXP FPM Display
CIP 0	REV 12	710-023792	EF6349	TXP CIP
CIP 1	REV 12	710-023792	EG5294	TXP CIP
PEM 0	Rev 06	740-027463	XH04595	Power Entry Module
PEM 1	Rev 06	740-027463	XH04592	Power Entry Module
Routing Engine 0	REV 07	740-026942	P737A-002541	RE-DUO-2600
Routing Engine 1	REV 07	740-026942	P737A-002602	RE-DUO-2600
CB 0	REV 15	710-022606	EH4376	SFC Control Board
CB 1	REV 15	710-022606	EH4379	SFC Control Board
SPMB 0		BUILTIN		SFC Switch CPU
SPMB 1		BUILTIN		SFC Switch CPU
SIB F13 0	REV 10	750-035002	EM9305	F13 SIB 3D
B Board	REV 06	711-035082	EM9667	F13 SIB 3D Mezz
P Board	REV 05	711-043544	EM9708	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB34FB00S	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB01H	CXP Module
Xcvr 4	REV 01	740-047547	XB34FB02W	CXP Module
Xcvr 6	REV 01	740-047547	XB34FB01T	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB00W	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01S	CXP Module
Xcvr 12	REV 01	740-047547	XB34FB03H	CXP Module
Xcvr 14	REV 01	740-047547	XB34FB023	CXP Module
SIB F13 3	REV 01	710-035001	EJ2612	F13 SIB 3D
B Board	REV 01	711-035082	EJ3815	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2678	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB04C	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB00Z	CXP Module
Xcvr 4	REV 01	740-047547	XB47FB036	CXP Module
Xcvr 6	REV 01	740-047547	XB47FB029	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02N	CXP Module
Xcvr 10	REV 01	740-047547	XB42FB0CS	CXP Module
Xcvr 12	REV 01	740-047547	XB47FB01X	CXP Module
Xcvr 14	REV 01	740-047547	XB48FB02F	CXP Module
SIB F13 6	REV 05	750-035002	EK2675	F13 SIB 3D
B Board	REV 03	711-035082	EK2612	F13 SIB 3D Mezz
P Board	REV 04	711-043544	EK1179	F13 SIB 3D Power
Xcvr 0	REV 01	740-047547	XB48FB01T	CXP Module
Xcvr 2	REV 01	740-047547	XB48FB02M	CXP Module
Xcvr 4	REV 01	740-047547	XB48FB031	CXP Module
Xcvr 6	REV 01	740-047547	XB48FB04P	CXP Module
Xcvr 8	REV 01	740-047547	XB48FB02T	CXP Module
Xcvr 10	REV 01	740-047547	XB34FB01V	CXP Module
Xcvr 12	REV 01	740-047547	XB48FB02C	CXP Module
Xcvr 14		NON-JNPR		No Module
SIB F13 12	REV 01	710-035001	EJ2631	F13 SIB 3D
B Board	REV 01	711-035082	EJ3808	F13 SIB 3D Mezz
P Board	REV 01	711-043544	EJ2676	F13 SIB 3D Power
SIB F2S 0/0	REV 01	711-034977	EH9829	F2S SIB 3D
B Board	REV 01	711-034979	EH9927	F2S SIB 3D Mezz
SIB F2S 0/2	REV 01	711-034977	EH9791	F2S SIB 3D
B Board	REV 01	711-034979	EH9852	F2S SIB 3D Mezz
SIB F2S 0/4	REV 01	711-034977	EH9803	F2S SIB 3D
B Board	REV 01	711-034979	EH9915	F2S SIB 3D Mezz
SIB F2S 0/6	REV 01	711-034977	EH9763	F2S SIB 3D
B Board	REV 01	711-034979	EH9880	F2S SIB 3D Mezz
SIB F2S 1/0	REV 01	711-034977	EH9757	F2S SIB 3D
B Board	REV 01	711-034979	EH9889	F2S SIB 3D Mezz
SIB F2S 1/2	REV 01	711-034977	EH9815	F2S SIB 3D
B Board	REV 01	711-034979	EH9890	F2S SIB 3D Mezz
SIB F2S 1/4	REV 08	750-034978	EN1954	F2S SIB 3D
B Board	REV 02	711-034979	EN1436	F2S SIB 3D Mezz

SIB F2S 1/6	REV 01	711-034977	EJ7054	F2S SIB 3D
B Board	REV 01	711-034979	EJ8238	F2S SIB 3D Mezz
SIB F2S 2/0	REV 01	711-034977	EH9830	F2S SIB 3D
B Board	REV 01	711-034979	EH9844	F2S SIB 3D Mezz
SIB F2S 2/2	REV 01	711-034977	EH9818	F2S SIB 3D
B Board	REV 01	711-034979	EH9888	F2S SIB 3D Mezz
SIB F2S 2/4	REV 01	711-034977	EH9795	F2S SIB 3D
B Board	REV 01	711-034979	EH9869	F2S SIB 3D Mezz
SIB F2S 2/6	REV 01	711-034977	EJ7026	F2S SIB 3D
B Board	REV 01	711-034979	EJ8273	F2S SIB 3D Mezz
SIB F2S 3/0	REV 01	711-034977	EH9811	F2S SIB 3D
B Board	REV 01	711-034979	EH9892	F2S SIB 3D Mezz
SIB F2S 3/2	REV 01	711-034977	EH9812	F2S SIB 3D
B Board	REV 01	711-034979	EH9877	F2S SIB 3D Mezz
SIB F2S 3/4	REV 08	750-034978	EN1947	F2S SIB 3D
B Board	REV 02	711-034979	EN1471	F2S SIB 3D Mezz
Fan Tray 0	REV 10	760-024497	EH3313	Front Fan Tray
Fan Tray 1	REV 10	760-024497	EH3290	Front Fan Tray
Fan Tray 2	REV 10	760-024502	EH3292	Rear Fan Tray
Fan Tray 3	REV 10	760-024502	EH3287	Rear Fan Tray
Fan Tray 4	REV 10	760-024502	EH3286	Rear Fan Tray
Fan Tray 5	REV 10	760-024502	EH3285	Rear Fan Tray

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	ULHOKG3	CFP-100G-LR4
MIC 1	REV 02	750-033199	YG3245	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-032210	ULHOKGF	CFP-100G-LR4
FPC 4	REV 12.3.09	750-033205	YR9437	MPC Type 3
CPU	REV 03	711-035209	YT5857	HMPC PMB 2G
MIC 0	REV 05	750-033199	YR3295	1X100GE CFP
PIC 0		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0		NON-JNPR	X12000187	CFP-100G-SR10
MIC 1	REV 10	750-033199	YX4518	1X100GE CFP
PIC 2		BUILTIN	BUILTIN	1X100GE CFP
Xcvr 0	REV 01	740-035329	X12J00008	CFP-100G-SR10
FPC 5	REV 06	750-024884	JW9769	MPC Type 2 3D EQ
CPU	REV 02	711-028401	JR6158	MPC PMB 2G Proto
MIC 0	REV 05	750-028387	JR6197	3D 4x 10GE XFP
PIC 0		BUILTIN	BUILTIN	2x 10GE XFP
Xcvr 0	REV 01	740-014289	T07M71112	XFP-10G-SR
Xcvr 1	REV 02	740-014289	T08L85610	XFP-10G-SR
PIC 1		BUILTIN	BUILTIN	2x 10GE XFP
MIC 1	REV 22	750-028392	YM0053	3D 20x 1GE(LAN) SFP
PIC 2		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 0	REV 01	740-011613	AM0703S005B	SFP-SX
Xcvr 1	REV 01	740-011613	E07L01352	SFP-SX
PIC 3		BUILTIN	BUILTIN	10x 1GE(LAN) SFP
Xcvr 5	REV 01	740-013111	6500217	SFP-T

Xcvr 9	REV 02	740-013111	8499527	SFP-T
Fan Tray				Left Fan Tray

The PIC number for MIC 1 always starts from 2 (even if the first MIC is a 1X100GE CFP or a legacy MIC).

show chassis hardware (QFX3500 Switches)

```
user@switch> show chassis hardware
Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis
Routing Engine 0
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
Front Airflow
Fan Tray 1
Front Airflow
Fan Tray 2
Front Airflow
QFX Fan Tray, Back to
QFX Fan Tray, Back to
QFX Fan Tray, Back to
```

show chassis hardware detail (QFX3500 Switches)

```
user@switch> show chassis hardware detail
Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis
Routing Engine 0
FPC 0            REV 05      750-036931   EE0823         QFX3500-48S4Q-AFI

CPU              BUILTIN     BUILTIN      FPC CPU
PIC 0            BUILTIN     BUILTIN      48x 10G-SFP+
Xcvr 0           REV 01      740-030589   S99E270079     SFP+-10G-LPBK
Xcvr 1           REV 01      740-030589   S9AK450099     SFP+-10G-LPBK
Xcvr 2           REV 01      740-030589   S99E270078     SFP+-10G-LPBK
Xcvr 3           REV 01      740-030589   S9AK450098     SFP+-10G-LPBK
Xcvr 4           REV 01      740-030589   S99E270075     SFP+-10G-LPBK
Xcvr 5           REV 01      740-030589   S9AK450093     SFP+-10G-LPBK
Xcvr 6           REV 01      740-030589   S9AK450097     SFP+-10G-LPBK
Xcvr 7           REV 01      740-030589   S9AK450095     SFP+-10G-LPBK
Xcvr 8           REV 01      740-030589   S99E270072     SFP+-10G-LPBK
Xcvr 9           REV 01      740-030589   S99E270073     SFP+-10G-LPBK
Xcvr 10          REV 01      740-030589   S99E270080     SFP+-10G-LPBK
Xcvr 11          REV 01      740-030589   S9AK450169     SFP+-10G-LPBK
Xcvr 12          REV 01      740-030589   S99E270076     SFP+-10G-LPBK
Xcvr 13          REV 01      740-030589   S9AK450167     SFP+-10G-LPBK
Xcvr 14          REV 01      740-030589   S9AK450170     SFP+-10G-LPBK
Xcvr 15          REV 01      740-030589   S9AK450166     SFP+-10G-LPBK
Xcvr 16          REV 01      740-030589   S9AK450092     SFP+-10G-LPBK
Xcvr 17          REV 01      740-030589   S9AK450163     SFP+-10G-LPBK
Xcvr 18          REV 01      740-030589   S9AK450094     SFP+-10G-LPBK
Xcvr 19          REV 01      740-030589   S9AK450100     SFP+-10G-LPBK
```

Xcvr 20	REV 01	740-030589	S9AK450168	SFP+-10G-LPBK
Xcvr 21	REV 01	740-030589	S9AK450165	SFP+-10G-LPBK
Xcvr 22	REV 01	740-030589	S9AK450073	SFP+-10G-LPBK
Xcvr 23	REV 01	740-030589	S9AK450164	SFP+-10G-LPBK
Xcvr 24	REV 01	740-030589	S9AK450074	SFP+-10G-LPBK
Xcvr 25	REV 01	740-030589	SA62270195	SFP+-10G-LPBK
Xcvr 26	REV 01	740-030589	S9AK450078	SFP+-10G-LPBK
Xcvr 27	REV 01	740-030589	S9AK450024	SFP+-10G-LPBK
Xcvr 28	REV 01	740-030589	S9AK450027	SFP+-10G-LPBK
Xcvr 29	REV 01	740-030589	S9AK450080	SFP+-10G-LPBK
Xcvr 30	REV 01	740-030589	S9AK450030	SFP+-10G-LPBK
Xcvr 31	REV 01	740-030589	S9AK450025	SFP+-10G-LPBK
Xcvr 32	REV 01	740-030589	S9AK450023	SFP+-10G-LPBK
Xcvr 33	REV 01	740-030589	S9AK450075	SFP+-10G-LPBK
Xcvr 34	REV 01	740-030589	S9AK450161	SFP+-10G-LPBK
Xcvr 35	REV 01	740-030589	S9AK450071	SFP+-10G-LPBK
Xcvr 36	REV 01	740-030589	S9AK450072	SFP+-10G-LPBK
Xcvr 37	REV 01	740-030589	S9AK450022	SFP+-10G-LPBK
Xcvr 38	REV 01	740-030589	S9AK450021	SFP+-10G-LPBK
Xcvr 39	REV 01	740-030589	S9AK450175	SFP+-10G-LPBK
Xcvr 40	REV 01	740-030589	S9AK450162	SFP+-10G-LPBK
Xcvr 41	REV 01	740-030589	S99E270074	SFP+-10G-LPBK
Xcvr 42	REV 01	740-030589	S9AK450174	SFP+-10G-LPBK
Xcvr 43	REV 01	740-030589	S9AK450077	SFP+-10G-LPBK
Xcvr 44	REV 01	740-030589	S9AK450076	SFP+-10G-LPBK
Xcvr 45	REV 01	740-030589	S9AK450026	SFP+-10G-LPBK
Xcvr 46	REV 01	740-030589	S9AK450079	SFP+-10G-LPBK
Xcvr 47	REV 01	740-030589	S9AK450029	SFP+-10G-LPBK
PIC 1		BUILTIN	BUILTIN	15x 10G-SFP+
Xcvr 1	REV 01	740-032986	QA170087	QSFP+-40G-SR4
Xcvr 4	REV 01	740-032986	QA360442	QSFP+-40G-SR4
Xcvr 8	REV 01	740-032986	QA170091	QSFP+-40G-SR4
Xcvr 12	REV 01	740-032986	QA170042	QSFP+-40G-SR4
MGMT BRD	REV 08	750-036946	EE0731	QFX3500-MB
Power Supply 0	Rev 04	740-032091	UI00690	QFX PS 650W AC
Power Supply 1	Rev 04	740-032091	UI00679	QFX PS 650W AC
Fan Tray 0				QFX Fan Tray
Fan Tray 1				QFX Fan Tray

show chassis hardware models (QFX3500 Switches)

```

user@switch> show chassis hardware models
Hardware inventory:
Item          Version  Part number  Serial number  FRU model number
Routing Engine 0          BUILTIN    BUILTIN
FPC 0          REV 02    711-032234  EC4074
Power Supply 0  PSMI 2C  11-d65800  --

```

show chassis hardware clei-models (QFX3500 Switches)

```

user@switch> show chassis hardware clei-models
Hardware inventory:
Item          Version  Part number  CLEI code      FRU model number
Routing Engine 0          BUILTIN
FPC 0          REV 02    711-032234
Power Supply 0  PSMI 2C  11-d65800

```

show chassis hardware 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
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
PIC 0            BUILTIN  BUILTIN
  Xcvr 8         REV 01  740-030658  AD0946A028B  FPC CPU
                                                         48x 10G-SFP+
                                                         SFP+-10G-USR
...

```

show chassis hardware (PTX5000 Packet Transport Router)

```

user@switch> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN1D1FD7AJA    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

```

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 clei-models (PTX5000 Packet Transport Router)

```
user@switch> 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
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 detail (PTX5000 Packet Transport Router)

```

user@switch> show chassis hardware detail
Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              REV 03    711-031896   JN1D1FD7AJA   PTX5000
Midplane             REV 08    760-030647   EG1679        Midplane-8S
FPM                  REV 05    740-032019   ZE00006       Front Panel Display
PDU 0                Rev 05    740-032022   ZJ00018       DC Power Dist Unit
  PSM 0               Rev 04    740-032022   ZC00052       DC 12V Power Supply
  PSM 1               Rev 04    740-032022   ZD00051       DC 12V Power Supply
  PSM 2               Rev 05    740-032022   ZJ00060       DC 12V Power Supply
CCG 0                REV 04    750-030653   EG3703        Clock Generator
CCG 1                REV 04    750-030653   EG3698        Clock Generator
Routing Engine 0     REV 05    740-026942   P737A-002231  RE-DUO-2600
  ad0 3823 MB SMART CF 201006190039C02DC02D Compact Flash
  ad1 62720 MB SMART Lite SATA Drive 2011042300CF4C6B4C6B Disk 1
Routing Engine 1     REV 06    740-026942   P737A-002438  RE-DUO-2600
  ad0 3823 MB SMART CF 20100619053455F055F0 Compact Flash
  ad1 62720 MB SMART Lite SATA Drive 20110423000AE8E7E8E7 Disk 1
CB 0                 REV 08    750-030625   EG5519        Control Board
CB 1                 REV 08    750-030625   EG5516        Control Board
FPC 0                REV 18    750-036844   EJ3080        FPC
  CPU                REV 12    711-030686   EJ3260        SNG PMB
FPC 2                REV 13    750-036844   EG5065        FPC
  CPU                REV 09    711-030686   EG4082        SNG PMB
  PIC 0              REV 14    750-031913   EG5127        24x 10GE(LAN) SFP+
    Xcvr 0            REV 01    740-031980   143363A00240  SFP+-10G-SR
    Xcvr 1            REV 01    740-031981   UK90PZ1       SFP+-10G-LR
    Xcvr 2            REV 01    740-031980   AD1141A04XH   SFP+-10G-SR
    Xcvr 3            REV 01    740-031981   UK90Q46       SFP+-10G-LR
    Xcvr 4            REV 01    740-031980   AD1141A04X4   SFP+-10G-SR
    Xcvr 6            REV 01    740-031980   B11H02560     SFP+-10G-SR
    Xcvr 7            REV 01    740-031980   B11C01589     SFP+-10G-SR
    Xcvr 8            REV 01    740-031980   AD1141A04XF   SFP+-10G-SR
    Xcvr 10           REV 01    740-031980   123363A01094  SFP+-10G-SR
    Xcvr 11           REV 01    740-031980   AK80LKF       SFP+-10G-SR
    Xcvr 12           REV 01    740-031980   183363A01528  SFP+-10G-SR
    Xcvr 14           REV 01    740-031980   193363A01079  SFP+-10G-SR
    Xcvr 15           REV 01    740-031980   AK80MC8       SFP+-10G-SR
    Xcvr 16           REV 01    740-031980   AJC0BHC       SFP+-10G-SR
    Xcvr 19           REV 01    740-021309   J08D26856     SFP+-10G-LR
    Xcvr 21           REV 01    740-031980   AK80KCT       SFP+-10G-SR
    Xcvr 22           REV 01    740-031981   UK90PZL       SFP+-10G-LR
    Xcvr 23           REV 01    740-031980   AK80N1V       SFP+-10G-SR

```


FPC 3	REV 13	750-036844	EG5074	FPC
CPU	REV 09	711-030686	EG4064	SNG PMB
PIC 1	REV 10	750-031903	EG0325	SNG Load
FPC 5	REV 06	750-036844	EH3198	FPC
CPU				
PIC 0	REV 14	750-031913	EG5134	24x 10GE(LAN) SFP+
Xcvr 0	REV 01	740-031980	AK80LBH	SFP+-10G-SR
Xcvr 1	REV 01	740-031980	B11B03724	SFP+-10G-SR
Xcvr 2	REV 01	740-031980	AK80FMH	SFP+-10G-SR
Xcvr 5	REV 01	740-031980	B11J00818	SFP+-10G-SR
Xcvr 6	REV 01	740-031980	193363A00743	SFP+-10G-SR
Xcvr 7	REV 01	740-031980	B11B06125	SFP+-10G-SR
Xcvr 10	REV 01	740-031980	B11H02529	SFP+-10G-SR
Xcvr 11	REV 01	740-031980	AK80LFB	SFP+-10G-SR
Xcvr 12	REV 01	740-031980	193363A01061	SFP+-10G-SR
Xcvr 15	REV 01	740-031980	B11J00687	SFP+-10G-SR
Xcvr 16	REV 01	740-031980	193363A00738	SFP+-10G-SR
Xcvr 18	REV 01	740-031980	AK80MQX	SFP+-10G-SR
Xcvr 19	REV 01	740-021309	J08C17257	SFP+-10G-LR
Xcvr 22	REV 01	740-031980	B11J00730	SFP+-10G-SR
Xcvr 23	REV 01	740-031980	AK80KEE	SFP+-10G-SR
PIC 1	REV 08	750-036710	EG3105	2x 40GE CFP
Xcvr 0	REV 01	740-034554	B260HLT	CFP-40G-LR4
Xcvr 1	REV 01	740-034554	B11C02847	CFP-40G-LR4
FPC 6	REV 18	750-036844	EJ4391	FPC
CPU	REV 12	711-030686	EJ3257	SNG PMB
FPC 7	REV 18	750-036844	EJ4382	FPC
CPU	REV 12	711-030686	EJ3238	SNG PMB
SPMB 0	REV 10	711-030686	EG5418	SNG PMB
SPMB 1	REV 09	711-030686	EG5373	SNG PMB
SIB 0	REV 07	750-030631	EG4858	SIB-I-8S
SIB 1	REV 07	750-030631	EG4872	SIB-I-8S
SIB 2	REV 07	750-030631	EG4866	SIB-I-8S
SIB 3	REV 07	750-030631	EG6011	SIB-I-8S
SIB 4	REV 07	750-030631	EG4907	SIB-I-8S
SIB 5	REV 07	750-030631	EG4879	SIB-I-8S
SIB 6	REV 07	750-030631	EG4864	SIB-I-8S
SIB 7	REV 07	750-030631	EG4899	SIB-I-8S
SIB 8	REV 07	750-030631	EG4880	SIB-I-8S
Fan Tray 0	REV 04	760-032784	EG1496	Vertical Fan Tray
Fan Tray 1	REV 04	760-030642	EG1335	Horizontal Fan Tray
Fan Tray 2	REV 02	760-030642	ED4952	Horizontal Fan Tray

show chassis hardware models (PTX5000 Packet Transport Router)

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

```
Hardware inventory:
```

Item	Version	Part number	Serial number	FRU model number
FPM	REV 08	760-030647	EG1679	CRAFT-PTX5000-S
PDU 0	Rev 05	740-032019	ZE00006	PWR-SAN-PDU-DC
PSM 0	Rev 05	740-032022	ZJ00018	PSM-PTX-DC-120-S
PSM 1	Rev 04	740-032022	ZC00052	PWR-SAN-12-DC
PSM 2	Rev 04	740-032022	ZD00051	PWR-SAN-12-DC
PSM 3	Rev 05	740-032022	ZJ00060	PSM-PTX-DC-120-S
CCG 0	REV 04	750-030653	EG3703	CCG-PTX-S
CCG 1	REV 04	750-030653	EG3698	CCG-PTX-S
Routing Engine 0	REV 05	740-026942	P737A-002231	RE-DUO-C2600-16G-S
Routing Engine 1	REV 06	740-026942	P737A-002438	RE-DUO-C2600-16G-S
CB 0	REV 08	750-030625	EG5519	CB-PTX-S
CB 1	REV 08	750-030625	EG5516	CB-PTX-S
FPC 0	REV 18	750-036844	EJ3080	FPC-PTX-P1-A

FPC 2	REV 13	750-036844	EG5065	FPC-PTX-P1-A
PIC 0	REV 14	750-031913	EG5127	P1-PTX-24-10GE-SFPP
FPC 3	REV 13	750-036844	EG5074	FPC-PTX-P1-A
FPC 5				
PIC 0	REV 14	750-031913	EG5134	P1-PTX-24-10GE-SFPP
FPC 6	REV 18	750-036844	EJ4391	FPC-PTX-P1-A
FPC 7	REV 18	750-036844	EJ4382	FPC-PTX-P1-A
SIB 0	REV 07	750-030631	EG4858	SIB-I-PTX5008
SIB 1	REV 07	750-030631	EG4872	SIB-I-PTX5008
SIB 2	REV 07	750-030631	EG4866	SIB-I-PTX5008
SIB 3	REV 07	750-030631	EG6011	SIB-I-PTX5008
SIB 4	REV 07	750-030631	EG4907	SIB-I-PTX5008
SIB 5	REV 07	750-030631	EG4879	SIB-I-PTX5008
SIB 6	REV 07	750-030631	EG4864	SIB-I-PTX5008
SIB 7	REV 07	750-030631	EG4899	SIB-I-PTX5008
SIB 8	REV 07	750-030631	EG4880	SIB-I-PTX5008
Fan Tray 1	REV 04	760-030642	EG1335	FAN-PTX-H-S

show chassis hardware extensive (PTX5000 Packet Transport Router)

```

user@switch> 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:           S/N UE0003
Assembly ID:  0x043d          Assembly Version: 04.00
Date:         11-29-2010     Assembly Flags: 0x00
Version:      Rev 04         CLEI Code:     032022XXXX
ID: DC Power Dist Unit      FRU Model Number: PWR-SAN-PDU-DC
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 04 3d 04 00 52 65 76 20 30 34 00 00
Address 0x10: 00 00 00 00 37 34 30 2d 30 33 32 30 31 39 00 00
Address 0x20: 53 2f 4e 20 55 45 30 30 30 33 00 00 00 1d 0b 07
Address 0x30: da ff ff ff ff ff ff ff ff ff ff ff ff ff ff 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:           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
```

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:           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:           S/N ZW4819
Assembly ID:     0x0b38          Assembly Version: 01.04
Date:            12-30-2011      Assembly Flags: 0x00
Version:         REV 04
ID: AS-MCC PMB
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0b 38 01 04 52 45 56 20 30 34 00 00
Address 0x10: 00 00 00 00 37 31 31 2d 30 33 38 31 37 33 00 00
Address 0x20: 53 2f 4e 20 5a 57 34 38 31 39 00 00 00 1e 0c 07
Address 0x30: db ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 50 52 4f 54 4f 58 43 4c 45 49 37
Address 0x50: 31 31 2d 30 33 38 31 37 33 00 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 30 34 00 ff ff ff ff ff ff ff
```

```

Address 0x70: ff ff ff 60 00 00 00 00 00 00 00 00 00 00 00
MIC 0          REV 06    750-037214    ZW3574          AS-MS
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           750-037214      S/N:             S/N ZW3574
Assembly ID:   0x0a44          Assembly Version: 01.06
Date:          02-19-2012      Assembly Flags:   0x00
Version:       REV 06          CLEI Code:        PROTOXCLEI
ID: AS-MS      FRU Model Number: 750-037214
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 02 ff 0a 44 01 06 52 45 56 20 30 36 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 32 31 34 00 00
Address 0x20: 53 2f 4e 20 5a 57 33 35 37 34 00 00 00 13 02 07
Address 0x30: dc ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 37
Address 0x50: 35 30 2d 30 33 37 32 31 34 00 00 00 00 00 00
Address 0x60: 00 00 00 00 00 00 30 36 00 ff ff ff ff ff ff
Address 0x70: ff ff ff 60 c0 03 e5 f4 00 00 00 00 00 00 00 00
PIC 0          BUILTIN      BUILTIN          AS-MS
MIC 1          REV 00    750-037211          AS-MXC
Jedec Code:    0x7fb0          EEPROM Version:    0x01
P/N:           750-037211
Assembly ID:   0x0a43          Assembly Version: 01.00
Date:          255-255-65535   Assembly Flags:   0x00
Version:       REV 00
ID: AS-MXC
Board Information Record:
Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
Address 0x00: 7f b0 01 ff 0a 43 01 00 52 45 56 20 30 30 00 00
Address 0x10: 00 00 00 00 37 35 30 2d 30 33 37 32 31 31 00 00
Address 0x20: 00 00 00 00 00 00 00 00 00 00 00 00 00 ff ff ff
Address 0x30: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff
Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Address 0x70: ff ff ff ff c0 02 e6 6c 7f b0 02 ff 0a 44 01 06
PIC 2          BUILTIN      BUILTIN          AS-MXC

```

show chassis hardware (QFX3500 Switch running Enhanced Layer 2 Software)

```


user@switch> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               P3566          QFX3500
Pseudo CB 0
Routing Engine 0
FPC 0         REV 16    750-036931   P3566-C        QFX3500-48S4Q
CPU           BUILTIN   BUILTIN      FPC CPU
PIC 0         BUILTIN   BUILTIN      48x 10G-SFP+
  Xcvr 12     REV 01    740-030658   AD1125A0438    SFP+-10G-USR
  Xcvr 13     REV 01    740-030658   AD1125A02GN    SFP+-10G-USR
PIC 1         BUILTIN   BUILTIN      4x 40G-QSFP+
PIC 2
MGMT BRD      REV 10    750-036946   BBAW0328       QFX3500-MGMT-RJ45-AFI
Power Supply 0 Rev 05    740-032091   WA13035        JPSU-650W-AC-AFI
Power Supply 1
Fan Tray 0
to Back Airflow
QFX3500 Fan Tray, Front

```

Fan Tray 1
to Back Airflow
Fan Tray 2
to Back Airflow

QFX3500 Fan Tray, Front
QFX3500 Fan Tray, Front

show chassis power

Syntax	show chassis power
Syntax (MX Series Router)	show chassis power <all-members> <local> <member <i>member-id</i> >
Syntax (MX2020 3D Universal Edge Routers)	show chassis power
Syntax (PTX Series)	show chassis power <detail>
Syntax (MX2010 3D Universal Edge Routers)	show chassis power
Release Information	Command introduced in Junos OS Release 10.0. Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.
Description	<p>(MX Series 3D Universal Edge Routers and PTX Series Packet Transport Routers only)</p> <p>Display power limits and usage information for the AC or DC power sources.</p> <ul style="list-style-type: none">On the MX Series 3D Universal Edge Routers, power is supplied by Power Entry Modules (PEMs). <div><p>NOTE: The new high-capacity (4100 W) enhanced DC PEM on MX960 routers includes a new design that can condition the input voltage. This results in the output voltage differing from the input voltage. The earlier generation of DC PEMs coupled the input power directly to the output, thereby making it safe to assume that the output voltage was equal to the input voltage.</p></div> <ul style="list-style-type: none">On the MX2020 3D Universal Edge Routers, the power system consists of three components: the power supply modules (PSMs), the power distribution module (PDM), and the power midplane. The power feed is connected to the PDM. The PDM delivers power to the power midplane. The power midplane supplies power to the PSMs. The MX2020 router chassis provides 3+3 (2500W/80A) or 4+4 (2100W/60A) PSM redundancy for the critical FRUs with two power zones.On the MX2010 3D Universal Edge Routers, the power system consists of three components: the power supply modules (PSMs), the power distribution module (PDM), and the power midplane. The power feed is connected to the PDM. The PDM delivers power to the power midplane. The power midplane supplies power to the PSMs. Unlike

the MX2020 router chassis, the MX2010 router chassis does not provide redundancy for the critical FRUs because there is only one power zone.

- On the PTX Series Packet Transport Routers, power is supplied by power supply modules (PSMs). On PTX5000 routers, the power feeds connect to the power distribution units (PDUs).

- Options**
- none**—Display basic power usage information for the AC and DC power sources.
 - all-members**—(MX Series routers only) (Optional) Display power usage information for all members of the Virtual Chassis configuration.
 - detail**—(PTX Series only) (Optional) Include power usage for specific FRUs.
 - local**—(MX Series routers only) (Optional) Display power usage information for the local Virtual Chassis member.
 - member *member-id***—(MX Series routers only) (Optional) Display power usage information for the specified member of the Virtual Chassis configuration. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

Required Privilege Level

view

Related Documentation

- [show chassis power sequence on page 710](#)
- *Checklist for Monitoring Power Supplies*

List of Sample Output

[show chassis power \(MX960 Router with DC PEM\) on page 702](#)
[show chassis power \(MX960 Router with AC PEM\) on page 703](#)
[show chassis power \(MX480 Router with AC PEM\) on page 704](#)
[show chassis power \(MX240 Router with DC PEM\) on page 704](#)
[show chassis power \(MX2010 Router\) on page 705](#)
[show chassis power \(MX2020 Router\) on page 706](#)
[show chassis power \(PTX5000 Packet Transport Router\) on page 708](#)
[show chassis power detail \(PTX5000 Packet Transport Router\) on page 708](#)

Output Fields

[Table 35 on page 700](#) lists the output fields for the **show chassis power** command. Output fields are listed in the approximate order in which they appear.

Table 35: show chassis power Output Fields

Field Name	Field Description	Level of Output
PEM number	<p>(MX Series routers only) AC or DC PEM number on the chassis. The following output fields are displayed for the PEM:</p> <ul style="list-style-type: none"> • State—State of the PEM: <ul style="list-style-type: none"> • Online—PEM is present in the slot and online. • Empty—PEM is not present in the slot. • Present—PEM is present in the slot, but not online. • AC/DC Input—OK or Check—State of the AC or DC input power feed with the number of active and expected feeds (one or two). For a DC input power feed, this output field also displays the reference voltage input with maximum input voltage displayed in mV (in parentheses) for the AC or DC PEM. • Capacity—Actual power input capacity with maximum capacity displayed (in parentheses) in watts. <p>NOTE: The maximum capacity for AC and DC PEMs is:</p> <ul style="list-style-type: none"> • MX960 AC PEM—4100 W if two feeds are connected. 1700 W if one feed is connected. • MX960 DC PEM—4100 W if two feeds are connected. 1700 W if one feed is connected. • MX480 AC PEM—2520 W if it is high-line. 1450 W if it is low-line. • MX480 DC PEM—2400 W if the DIP switch is off. 2600 W if the DIP switch is on. • MX240 AC PEM—2520 W if it is high-line. 1450 W if it is low-line. • MX240 DC PEM—2400 W if the DIP switch is off. 2600 W if the DIP switch is on. • DC Output—DC power output in Watts for the specified zone, at the specified amps and voltage (A @ V), and load and percentage utilization of the maximum capacity) for the zone. 	All levels

Table 35: show chassis power Output Fields (*continued*)

Field Name	Field Description	Level of Output
System	<p>(MX Series, MX2020, and MX2010 routers only) Overall power statistics for the system zone.</p> <p>The following output fields are displayed for MX Series routers:</p> <ul style="list-style-type: none"> • <i>Zone number</i>: <ul style="list-style-type: none"> • Capacity—Maximum power capacity applicable for the zone, in watts. • Allocated power—Actual capacity allocated for the zone, in watts, with remaining power displayed in parentheses. • Actual usage—Actual power usage for the zone, in watts. • Total system capacity—Cumulative power capacity of all the zones, in watts. • Total remaining capacity—Difference between the Total system capacity and cumulative Allocated power of all the zones, in watts. <p>The following output fields are displayed for MX2010 and MX2020 routers:</p> <ul style="list-style-type: none"> • Capacity—Maximum power capacity applicable for the zone, in watts. • Allocated power—Actual capacity allocated for the zone, in watts, with remaining power displayed in parentheses. • Actual usage—Actual power usage for the zone, in watts. <p>NOTE: For MX2020 routers, there are two power subsystems (Lower Zone and Upper Zone) and the listed output fields are displayed for each zone.</p>	All levels
Total Power	(PTX Series only) Total power used by the switch (displayed in watts).	All levels
PDU number	(PTX5000 only) ID number of the power distribution unit (PDU) on the chassis.	All levels

Table 35: show chassis power Output Fields (*continued*)

Field Name	Field Description	Level of Output
PSM number	<p>(PTX Series, MX2020 routers, and MX2010 routers only) ID number of the power supply module..</p> <p>(PTX Series) The following output fields are displayed for each PSM:</p> <ul style="list-style-type: none"> • Input (V)—Voltage supplied to the PSM. • Used (W)—Actual power usage for the PSM (measured in watts). <p>(MX2010 and MX2020 routers) The following output fields are displayed for each PSM:</p> <ul style="list-style-type: none"> • State—State of the PSM: <ul style="list-style-type: none"> • Online—PSM is present in the slot and online. • Empty—PSM is not present in the slot. • Present—PSM is present in the slot but not online. • DC Input—State of the DC input power feed with the number of active or expected feeds (in parentheses). • Capacity—Actual power input capacity and maximum capacity (in parentheses) displayed in watts. <p>NOTE: The maximum capacity for AC and DC PSMs is:</p> <ul style="list-style-type: none"> • MX2010/MX2020 AC PSM—2500 W. • MX2010/MX2020 DC PSM—2100 W if the DIP switch is at 60A settings. 2500 W if the DIP switch is at 80A settings. • DC Output—DC power output in watts for the specified zone at the specified amperes and voltage (A at V), and load and percentage utilization of the maximum capacity for the zone. 	All levels
Item	<p>(PTX Series only) (detail keyword only)</p> <p>Actual power usage (measured in watts) for the following FRUs:</p> <ul style="list-style-type: none"> • Fan Tray <i>n</i>—Power usage for the specified fan tray. • RE<i>n</i>/CB<i>n</i>—Power usage for the specified Routing Engines and Control Boards • SIB/CCG/FPD—Power usage for the Switch Interface Board, Centralized Clock Generator (PTX5000 only), and Front Panel Display (craft interface). • FPC <i>n</i>—Power usage for the FPC in the slot specified. 	detail

Sample Output

show chassis power (MX960 Router with DC PEM)

```

user@host> show chassis power
PEM 0:
  State:      Online
  DC input:   OK (2 feed expected, 2 feed connected)
  DC input:   48.0 V input (57000 mV)
  Capacity:   4100 W (maximum 4100 W)
  DC output:  513 W (zone 0, 9 A at 57 V, 12% of capacity)

PEM 1:

```

```

State:      Online
DC input:   OK (2 feed expected, 2 feed connected)
DC input:   48.0 V input (57000 mV)
Capacity:   4100 W (maximum 4100 W)
DC output:  228 W (zone 1, 4 A at 57 V, 5% of capacity)

PEM 2:
State:      Online
DC input:   OK (2 feed expected, 2 feed connected)
DC input:   48.0 V input (57000 mV)
Capacity:   4100 W (maximum 4100 W)
DC output:  513 W (zone 0, 9 A at 57 V, 12% of capacity)

PEM 3:
State:      Online
DC input:   OK (2 feed expected, 2 feed connected)
DC input:   48.0 V input (57000 mV)
Capacity:   4100 W (maximum 4100 W)
DC output:  342 W (zone 1, 6 A at 57 V, 8% of capacity)

System:
Zone 0:
  Capacity:      4100 W (maximum 4100 W)
  Allocated power: 1680 W (2420 W remaining)
  Actual usage:  1026 W
Zone 1:
  Capacity:      4100 W (maximum 4100 W)
  Allocated power: 1263 W (2837 W remaining)
  Actual usage:  570 W
Total system capacity: 8200 W (maximum 8200 W)
Total remaining power: 5257 W

```

show chassis power (MX960 Router with AC PEM)

```

user@host> show chassis power
PEM 0:
State:      Online
AC input:   OK (2 feed expected, 2 feed connected)
Capacity:   4100 W (maximum 4100 W)
DC output:  0 W (zone 0, 0 A at 56 V, 0% of capacity)

PEM 1:
State:      Present
AC input:   Check (2 feed expected, 1 feed connected)
Capacity:   1700 W (maximum 4100 W)

PEM 2:
State:      Empty
Input:      Absent

PEM 3:
State:      Online
AC input:   OK (1 feed expected, 1 feed connected)
Capacity:   1700 W (maximum 1700 W)

System:
Zone 0:
  Capacity:      4100 W (maximum 4100 W)
  Allocated power: 540 W (3560 W remaining)
  Actual usage:  0 W
Zone 1:

```

```
Capacity:          0 W (maximum 0 W)
Allocated power:   0 W (0 W remaining)
Actual usage:      0 W
Total system capacity: 4100 W (maximum 4100 W)
Total remaining power: 3560 W
```

show chassis power (MX480 Router with AC PEM)

```
user@host> show chassis power
PEM 0:
  State:      Online
  AC input:   OK (1 feed expected, 1 feed connected)
  Capacity:   2520 W (maximum 2520 W)
  DC output:  472 W (zone 0, 8 A at 59 V, 18% of capacity)

PEM 1:
  State:      Online
  AC input:   OK (1 feed expected, 1 feed connected)
  Capacity:   2520 W (maximum 2520 W)
  DC output:  472 W (zone 0, 8 A at 59 V, 18% of capacity)

PEM 2:
  State:      Online
  AC input:   OK (1 feed expected, 1 feed connected)
  Capacity:   2520 W (maximum 2520 W)
  DC output:  118 W (zone 0, 2 A at 59 V, 4% of capacity)

PEM 3:
  State:      Empty
  Input:      Absent

System:
  Maximum capacity: 5040 W
  Allocated capacity: 1675 W (33% of maximum)
  Remaining capacity: 3365 W
  Actual usage:      1062 W
```

show chassis power (MX240 Router with DC PEM)

```
user@host> show chassis power
PEM 0:
  State:      Online
  DC input:   OK (1 feed expected, 1 feed connected)
  DC input:   48.0 V input (53500 mV)
  Capacity:   2400 W (maximum 2400 W)
  DC output:  318 W (zone 0, 6 A at 53 V, 13% of capacity)

PEM 1:
  State:      Online
  DC input:   OK (1 feed expected, 1 feed connected)
  DC input:   48.0 V input (54000 mV)
  Capacity:   2400 W (maximum 2400 W)
  DC output:  0 W (zone 0, 0 A at 54 V, 0% of capacity)

PEM 2:
  State:      Online
  DC input:   OK (1 feed expected, 1 feed connected)
  DC input:   48.0 V input (52500 mV)
  Capacity:   2400 W (maximum 2400 W)
  DC output:  312 W (zone 0, 6 A at 52 V, 13% of capacity)
```

```

PEM 3:
  State:      Online
  DC input:   OK (1 feed expected, 1 feed connected)
  DC input:   48.0 V input (55000 mV)
  Capacity:   2400 W (maximum 2400 W)
  DC output:  0 W (zone 0, 0 A at 55 V, 0% of capacity)

System:
  Maximum capacity: 2400 W
  Allocated capacity: 1270 W (52% of maximum)
  Remaining capacity: 1130 W
  Actual usage:     630 W

```

show chassis power (MX2010 Router)

```

user@host > show chassis power
PSM 0:
  State:      Online
  DC input:   OK (INP0 feed expected, INP0 feed connected)
  Capacity:   2500 W (maximum 2500 W)
  DC output:  1022.06 W (19.75 A at 51.75 V, 40.88% of capacity)

PSM 1:
  State:      Online
  DC input:   OK (INP0 feed expected, INP0 feed connected)
  Capacity:   2500 W (maximum 2500 W)
  DC output:  996.19 W (19.25 A at 51.75 V, 39.85% of capacity)

PSM 2:
  State:      Online
  DC input:   OK (INP0 feed expected, INP0 feed connected)
  Capacity:   2500 W (maximum 2500 W)
  DC output:  1022.06 W (19.75 A at 51.75 V, 40.88% of capacity)

PSM 3:
  State:      Online
  DC input:   OK (INP0 feed expected, INP0 feed connected)
  Capacity:   2500 W (maximum 2500 W)
  DC output:  1004.25 W (19.50 A at 51.50 V, 40.17% of capacity)

PSM 4:
  State:      Online
  DC input:   OK (INP0 feed expected, INP0 feed connected)
  Capacity:   2500 W (maximum 2500 W)
  DC output:  996.19 W (19.25 A at 51.75 V, 39.85% of capacity)

PSM 5:
  State:      Online
  DC input:   OK (INP0 feed expected, INP0 feed connected)
  Capacity:   2500 W (maximum 2500 W)
  DC output:  1017.12 W (19.75 A at 51.50 V, 40.69% of capacity)

PSM 6:
  State:      Online
  DC input:   OK (INP0 feed expected, INP0 feed connected)
  Capacity:   2500 W (maximum 2500 W)
  DC output:  1009.12 W (19.50 A at 51.75 V, 40.37% of capacity)

PSM 7:
  State:      Online
  DC input:   OK (INP0 feed expected, INP0 feed connected)

```

Capacity: 2500 W (maximum 2500 W)
DC output: 996.19 W (19.25 A at 51.75 V, 39.85% of capacity)

PSM 8:

State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2500 W (maximum 2500 W)
DC output: 1004.25 W (19.50 A at 51.50 V, 40.17% of capacity)

System:

Capacity: 22500 W (maximum 22500 W)
Allocated power: 12888 W (9612 W remaining)
Actual usage: 9067.44 W

show chassis power (MX2020 Router)

```
user@host > show chassis power
```

PSM 0:

State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2500 W (maximum 2500 W)
DC output: 858.44 W (Lower Zone, 16.75 A at 51.25 V, 34.34% of capacity)

PSM 1:

State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2500 W (maximum 2500 W)
DC output: 854.25 W (Lower Zone, 16.75 A at 51.00 V, 34.17% of capacity)

PSM 2:

State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2500 W (maximum 2500 W)
DC output: 858.44 W (Lower Zone, 16.75 A at 51.25 V, 34.34% of capacity)

PSM 3:

State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2500 W (maximum 2500 W)
DC output: 867.00 W (Lower Zone, 17.00 A at 51.00 V, 34.68% of capacity)

PSM 4:

State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2500 W (maximum 2500 W)
DC output: 871.25 W (Lower Zone, 17.00 A at 51.25 V, 34.85% of capacity)

PSM 5:

State: Empty
Input: Absent

PSM 6:

State: Empty
Input: Absent

PSM 7:

State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2500 W (maximum 2500 W)
DC output: 867.00 W (Lower Zone, 17.00 A at 51.00 V, 34.68% of capacity)

PSM 8:
State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2500 W (maximum 2500 W)
DC output: 879.75 W (Lower Zone, 17.25 A at 51.00 V, 35.19% of capacity)

PSM 9:
State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2100 W (maximum 2500 W)
DC output: 624.75 W (Upper Zone, 12.25 A at 51.00 V, 29.75% of capacity)

PSM 10:
State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2100 W (maximum 2500 W)
DC output: 615.00 W (Upper Zone, 12.00 A at 51.25 V, 29.29% of capacity)

PSM 11:
State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2100 W (maximum 2500 W)
DC output: 624.75 W (Upper Zone, 12.25 A at 51.00 V, 29.75% of capacity)

PSM 12:
State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2100 W (maximum 2500 W)
DC output: 624.75 W (Upper Zone, 12.25 A at 51.00 V, 29.75% of capacity)

PSM 13:
State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2100 W (maximum 2500 W)
DC output: 612.00 W (Upper Zone, 12.00 A at 51.00 V, 29.14% of capacity)

PSM 14:
State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2100 W (maximum 2500 W)
DC output: 627.81 W (Upper Zone, 12.25 A at 51.25 V, 29.90% of capacity)

PSM 15:
State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2100 W (maximum 2500 W)
DC output: 627.81 W (Upper Zone, 12.25 A at 51.25 V, 29.90% of capacity)

PSM 16:
State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2100 W (maximum 2500 W)
DC output: 615.00 W (Upper Zone, 12.00 A at 51.25 V, 29.29% of capacity)

PSM 17:
State: Online
DC input: OK (INP0 feed expected, INP0 feed connected)
Capacity: 2100 W (maximum 2500 W)
DC output: 624.75 W (Upper Zone, 12.25 A at 51.00 V, 29.75% of capacity)

System:

```
Upper Zone:
  Capacity:      18900 W (maximum 22500 W)
  Allocated power: 12900 W (6000 W remaining)
  Actual usage:   5596.62 W
Lower Zone:
  Capacity:      17500 W (maximum 17500 W)
  Allocated power: 12900 W (4600 W remaining)
  Actual usage:   6056.12 W
Total system capacity: 36400 W (maximum 40000 W)
Total remaining power: 10600 W
```

show chassis power (PTX5000 Packet Transport Router)

```
user@host> show chassis power
Chassis Power      Input(V)      Used(W)

Total Power                               4006

PDU 0
  PSM 0
    Input 1      54      149
  PSM 1
    Input 1      54      377
  PSM 2
    Input 1      54      745
  PSM 3
    Input 1      54      715

PDU 1
  PSM 0
    Input 1      54      246
  PSM 1
    Input 1      54      332
  PSM 2
    Input 1      54      721
  PSM 3
    Input 1      54      721
```

show chassis power detail (PTX5000 Packet Transport Router)

```
user@host> show chassis power detail
Chassis Power      Input(V)      Used(W)

Total Power                               3997

PDU 0
  PSM 0
    Input 1      54      136
  PSM 1
    Input 1      54      377
  PSM 2
    Input 1      54      741
  PSM 3
    Input 1      54      721

PDU 1
  PSM 0
    Input 1      54      235
  PSM 1
    Input 1      54      332
  PSM 2
```


Input 1	54	726
PSM 3		
Input 1	54	729
Item	Used(W)	
Fan Tray 0	49	
Fan Tray 1	127	
Fan Tray 2	117	
RE0/CB0	109	
RE1/CB1	100	
SIB/CCG/FPD	375	
FPC 0	381	
FPC 1	0	
FPC 2	447	
FPC 3	560	
FPC 4	0	
FPC 5	448	
FPC 6	379	
FPC 7	388	

show chassis power sequence

Syntax	show chassis power sequence
Release Information	Command introduced in Junos OS Release 10.0. Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.
Description	(MX Series 3D Universal Edge Routers only) Show power-on sequence for the chassis Dense Port Concentrators (DPCs). (PTX Series Packet Transport Routers, MX2010 and MX2020 routers only) Show power-on sequence for FPCs installed in the chassis.
Options	This command has no options.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none">• show chassis power on page 698
List of Sample Output	show chassis power sequence (MX Series) on page 710 show chassis power sequence (MX2010 Routers) on page 710 show chassis power sequence (MX2020 Routers) on page 711 show chassis power sequence (PTX5000 Packet Transport Router) on page 711
Output Fields	Table 36 on page 710 lists the output fields for the show chassis power sequence command. Output fields are listed in the approximate order in which they appear.

Table 36: show chassis power sequence Output Fields

Field Name	Field Description
Chassis FRU Power Sequence	(MX Series) Power-on sequence for the DPCs in the chassis. The numbers indicate the slot number of the DPCs. (PTX Series, MX2010 and MX2020 routers only) Power-on sequence for the FPCs in the chassis. The numbers indicate the slot number of the FPC.

Sample Output

show chassis power sequence (MX Series)

```
user@host> show chassis power sequence
Chassis FRU Power Sequence: 3 4 5 6 7 8 9 10 11 0 1 2
```

show chassis power sequence (MX2010 Routers)

```
user@host > show chassis power sequence
Chassis FRU Power On Sequence: 0 1 2 3 4 5 6 7 8 9
```

show chassis power sequence (MX2020 Routers)

```
user@host > show chassis power sequence
Chassis FRU Power On Sequence: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
```

show chassis power sequence (PTX5000 Packet Transport Router)

```
user@host> show chassis power sequence
Chassis FRU Power On Sequence: 0 1 2 3 4 5 6 7
```

show chassis routing-engine

Syntax	show chassis routing-engine <bios <i>slot</i> >
Syntax (EX Series Switches)	show chassis routing-engine < <i>slot</i> >
Syntax (T Series routers)	show chassis routing-engine <bios <i>slot</i> >
Syntax (TX Matrix Routers)	show chassis routing-engine <bios <i>slot</i> > <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Routers)	show chassis routing-engine <bios <i>slot</i> > <lcc <i>number</i> sfc <i>number</i> >
Syntax (QFX Series)	show chassis routing-engine <interconnect-device <i>name</i> > <node-device <i>name</i> >
Syntax (MX Series Routers)	show chassis routing-engine <bios <i>slot</i> > <all-members> <local> <member <i>member-id</i> >
Syntax (MX2010 and MX2020 3D Universal Edge Routers)	show chassis routing-engine <bios <i>slot</i> >
Syntax (MX104 3D Universal Edge Routers)	show chassis routing-engine
Syntax (ACX Series Universal Access Routers)	show chassis routing-engine
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in Junos OS Release in 9.6. Command introduced in Junos OS Release 11.1 for QFX Series. Command introduced in Junos OS Release 12.2 for ACX Series Universal Access Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers. Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.
Description	Display the status of the Routing Engine.

Options **none**—Display information about one or more Routing Engines. On a TX Matrix router, display information about all Routing Engines on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display information about all Routing Engines on the TX Matrix Plus router and its attached routers.

all-members—(MX Series routers only) (Optional) Display Routing Engine information for all members of the Virtual Chassis configuration.

bios—(Optional) Display the (BIOS) firmware version.

interconnect-device *number*—(QFabric systems only) (Optional) Display Routing Engine information for a specified Interconnect device.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display Routing Engine information for a specified T640 router (line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display Routing Engine 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 Routing Engine information for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display Routing Engine information for the specified member of the Virtual Chassis configuration. For an MX Series Virtual Chassis, replace *member-id* with a value of 0 or 1.

node-device *number*—(QFabric systems only) (Optional) Display Routing Engine information for a specified Node device.

scc—(TX Matrix routers only) (Optional) Display Routing Engine information for the TX Matrix router (switch-card chassis).

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

slot—(Systems with multiple Routing Engines) (Optional) Display information for an individual Routing Engine. Replace *slot* with 0 or 1. For QFX3500 switches, there is only one Routing Engine, so you do not need to specify the slot number.

Required Privilege Level view

Related Documentation

- *request chassis routing-engine master*
- *Configuring Routing Engine Redundancy*
- *Switching the Global Master and Backup Roles in a Virtual Chassis Configuration*

List of Sample Output

- [show chassis routing-engine \(M5 Router\) on page 716](#)
- [show chassis routing-engine \(M10 Router\) on page 717](#)
- [show chassis routing-engine \(M20 Router\) on page 717](#)
- [show chassis routing-engine \(M40 Router\) on page 718](#)
- [show chassis routing-engine \(M120 Router\) on page 718](#)
- [show chassis routing-engine \(M160 Router\) on page 719](#)
- [show chassis routing-engine \(MX104 Router\) on page 719](#)
- [show chassis routing-engine \(MX240 Router\) on page 720](#)
- [show chassis routing-engine \(MX480 Router\) on page 721](#)
- [show chassis routing-engine \(MX960 Router\) on page 721](#)
- [show chassis routing-engine \(MX2010 Router\) on page 721](#)
- [show chassis routing-engine \(MX2020 Router\) on page 722](#)
- [show chassis routing-engine \(T320 router\) on page 723](#)
- [show chassis routing-engine \(T640 router\) on page 724](#)
- [show chassis routing-engine \(T1600 router\) on page 724](#)
- [show chassis routing-engine \(T4000 router\) on page 725](#)
- [show chassis routing-engine \(TX Matrix Router\) on page 726](#)
- [show chassis routing-engine lcc \(TX Matrix Router\) on page 727](#)
- [show chassis routing-engine bios \(TX Matrix Router\) on page 727](#)
- [show chassis routing-engine \(TX Matrix Plus Router\) on page 728](#)
- [show chassis routing-engine lcc \(TX Matrix Plus Router\) on page 729](#)
- [show chassis routing-engine bios \(TX Matrix Plus Router\) on page 730](#)
- [show chassis routing-engine \(QFX Series\) on page 730](#)
- [show chassis routing-engine \(PTX Series Packet Transport Router\) on page 730](#)
- [show chassis routing-engine \(ACX2000 Universal Access Router\) on page 731](#)
- [show chassis routing-engine \(ACX1000 Universal Access Router\) on page 731](#)

Output Fields [Table 37 on page 714](#) lists the output fields for the **show chassis routing-engine** command. Output fields are listed in the approximate order in which they appear.

Table 37: show chassis routing-engine Output Fields

Field Name	Field Description
Slot	(Systems with single and multiple Routing Engines) Slot number.
Current state	(Systems with multiple Routing Engines) Current state of the Routing Engine: Master , Backup , or Disabled .
Election priority	(Systems with multiple Routing Engines) Election priority for the Routing Engine: Master or Backup .
Temperature	Temperature of the air flowing past the Routing Engine.

Table 37: show chassis routing-engine Output Fields (*continued*)

Field Name	Field Description
CPU Temperature	Temperature of the CPU.
DRAM	Total DRAM available to the Routing Engine's processor. Starting with Junos OS Release 12.3R1, the DRAM field displays both available memory and installed memory.
Memory utilization	Percentage of Routing Engine memory being used.
CPU utilization	Information about the Routing Engine's CPU utilization: <ul style="list-style-type: none"> • User—Percentage of CPU time being used by user processes. • Background—Percentage of CPU time being used by background processes. • Kernel—Percentage of CPU time being used by kernel processes. • Interrupt—Percentage of CPU time being used by interrupts. • Idle—Percentage of CPU time that is idle.
Model	Routing Engine model number.
Serial ID	(Systems with multiple Routing Engines) Identification number of the Routing Engine in this slot.
Start time	Time at which the Routing Engine started running.
Uptime	How long the Routing Engine has been running.
Routing Engine BIOS Version	BIOS version being run by the Routing Engine.

Table 37: show chassis routing-engine Output Fields (*continued*)

Field Name	Field Description
Last reboot reason	<p>Reason for last reboot, including:</p> <ul style="list-style-type: none"> power cycle/failure—Halt of the Routing Engine using the halt command, powering down using the power button on the chassis or any other method (such as removal of the control board or Routing Engine), and then powering back the Routing Engine. A halt of the operating system also occurs if you enter the request system halt command. You can enter this command to halt the system operations on the chassis or specific Routing Engines. To restart the software, press any key on the keyboard. watchdog—Reboot due to a hardware watchdog. A watchdog is a hardware monitoring process that examines the health and performance of the router to enable the device to recover from failures. A watchdog checks for problems at certain intervals, and reboots the routing engine if a problem is encountered. reset-button reset—(Not available on the J Series router or EX Series switch) Reboot due to pressing of the reset button on the Routing Engine. power-button hard power off—Reboot due to pressing of the power button on the chassis. A powering down of the software also occurs if you enter the request system power-off command. You can enter this command to power down the chassis or specific Routing Engines; you can then restart the software. misc hardware reason—Reboot due to miscellaneous hardware reasons. thermal shutdown—Reboot due to the router or switch reaching a critical temperature at which point it is unsafe to continue operations. hard disk failure—Reboot due to a hard disk or solid-state drive (SSD) failure. reset from debugger—Reboot due to reset from the debugger. chassis control reset—Restart the chassis process that manages PICs, FPCs, and other hardware components. The chassis control module that runs the Routing Engine performs management and monitoring functions, and it provides a single access point for operational and maintenance functions. A reset of the chassis management process occurs when you enter the restart chassis-control command. bios auto recovery reset—Reboot due to a BIOS auto-recovery reset. could not be determined—Reboot due to an undetermined reason. Router rebooted after a normal shutdown—Reboot due to a normal shutdown. This reason is displayed if the Routing Engine is powered down by pushing and holding the online/offline button on the Routing Engine faceplate for 30 seconds, and then powered back. A reboot of the software also occurs if you enter the request system reboot command. You can enter this command to reboot the chassis or specific Routing Engines.
Load averages	Routing Engine load averages for the last 1, 5, and 15 minutes.

Sample Output

show chassis routing-engine (M5 Router)

```

user@host> show chassis routing-engine
Routing Engine status:
  Temperature                25 degrees C / 77 degrees F
  DRAM                       768 MB
  Memory utilization         21 percent
  CPU utilization:
    User                      0 percent
    Background                0 percent
    Kernel                    0 percent
    Interrupt                  0 percent

```



```

Idle 100 percent
Model RE-2.0
Serial ID 31000007349bf701
Start time 2003-12-04 09:42:17 PST
Uptime 26 days, 1 hour, 12 minutes, 27 seconds
Last reboot reason Router rebooted after a normal shutdown
Load averages: 1 minute 5 minute 15 minute
                0.00 0.01 0.00

```

show chassis routing-engine (M10 Router)

```

user@host> show chassis routing-engine
Routing Engine status:
  Temperature 25 degrees C / 77 degrees F
  DRAM 768 MB
  Memory utilization 21 percent
  CPU utilization:
    User 0 percent
    Background 0 percent
    Kernel 0 percent
    Interrupt 0 percent
    Idle 100 percent
  Model RE-2.0
  Serial ID 31000007349bf701
  Start time 2003-12-04 09:42:17 PST
  Uptime 26 days, 1 hour, 12 minutes, 27 seconds
  Last reboot reason Router rebooted after a normal shutdown
  Load averages: 1 minute 5 minute 15 minute
                  0.00 0.01 0.00

```

show chassis routing-engine (M20 Router)

```

user@host> show chassis routing-engine
Routing Engine status:
  Slot 0:
    Current state Master
    Election priority Master (default)
    Temperature 29 degrees C / 84 degrees F
    DRAM 768 MB
    Memory utilization 20 percent
    CPU utilization:
      User 1 percent
      Background 0 percent
      Kernel 2 percent
      Interrupt 0 percent
      Idle 97 percent
    Model RE-2.0
    Serial ID 58000007348d9a01
    Start time 2003-12-30 07:05:47 PST
    Uptime 3 hours, 41 minutes, 14 seconds
    Last reboot reason Router rebooted after a normal shutdown
    Load averages: 1 minute 5 minute 15 minute
                    0.00 0.02 0.00

  Routing Engine status:
    Slot 1:
      Current state Backup
      Election priority Backup (default)
      Temperature 29 degrees C / 84 degrees F
      DRAM 768 MB
      Memory utilization 0 percent
      CPU utilization:

```

```

User                0 percent
Background          0 percent
Kernel              1 percent
Interrupt           0 percent
Idle                99 percent
Model               RE-2.0
Serial ID            d800000734745701
Start time          2003-06-17 16:37:33 PDT
Uptime              195 days, 18 hours, 47 minutes, 9 seconds
Last reboot reason   Router rebooted after a normal shutdown

```

show chassis routing-engine (M40 Router)

```

user@host> show chassis routing-engine
Routing Engine status:
  Temperature        25 degrees C / 77 degrees F
  DRAM                768 MB
  Memory utilization  21 percent
  CPU utilization:
    User              0 percent
    Background        0 percent
    Kernel            0 percent
    Interrupt         0 percent
    Idle              100 percent
  Model              RE-2.0
  Serial ID           31000007349bf701
  Start time          2003-12-04 09:42:17 PST
  Uptime              26 days, 1 hour, 12 minutes, 27 seconds
  Last reboot reason   Router rebooted after a normal shutdown
  Load averages:      1 minute   5 minute  15 minute
                      0.00        0.01    0.00

```

show chassis routing-engine (M120 Router)

```

user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state      Master
  Election priority   Master (default)
  Temperature        46 degrees C / 114 degrees F
  CPU temperature     44 degrees C / 111 degrees F
  DRAM                2048 MB
  Memory utilization  18 percent
  CPU utilization:
    User              0 percent
    Background        0 percent
    Kernel            5 percent
    Interrupt         0 percent
    Idle              95 percent
  Model              RE-A-1000
  Serial ID           1000621154
  Start time          2006-10-31 17:10:05 PST
  Uptime              14 minutes, 31 seconds
  Last reboot reason   Router rebooted after a normal shutdown
  Load averages:      1 minute   5 minute  15 minute
                      0.02        0.07    0.07

Routing Engine status:
Slot 1:
  Current state      Backup
  Election priority   Backup (default)
  Temperature        45 degrees C / 113 degrees F

```

```

CPU temperature          42 degrees C / 107 degrees F
DRAM                    2048 MB
Memory utilization       15 percent
CPU utilization:
  User                   0 percent
  Background             0 percent
  Kernel                 0 percent
  Interrupt              0 percent
  Idle                   100 percent
Model                   RE-A-1000
Serial ID                1000621151
Start time               2006-10-31 17:10:04 PST
Uptime                  14 minutes, 30 seconds
Last reboot reason      Router rebooted after a normal shutdown

```

show chassis routing-engine (M160 Router)

```

user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state          Master
  Election priority      Master (default)
  Temperature            43 degrees C / 109 degrees F
  DRAM                   2048 MB
  Memory utilization     11 percent
  CPU utilization:
    User                 1 percent
    Background           0 percent
    Kernel               2 percent
    Interrupt            0 percent
    Idle                 97 percent
  Model                  RE-3.0
  Serial ID              210865700403
  Start time             2003-12-23 12:25:55 PST
  Uptime                 6 days, 22 hours, 33 minutes, 24 seconds
  Last reboot reason     Router rebooted after a normal shutdown
  Load averages:        1 minute   5 minute   15 minute
                        0.24       0.13       0.04

Routing Engine status:
Slot 1:
  Current state          Backup
  Election priority      Backup (default)
  Temperature            40 degrees C / 104 degrees F
  DRAM                   2048 MB
  Memory utilization     9 percent
  CPU utilization:
    User                 0 percent
    Background           0 percent
    Kernel               0 percent
    Interrupt            0 percent
    Idle                 100 percent
  Model                  RE-3.0
  Serial ID              210865700332
  Start time             2003-12-23 12:25:55 PST
  Uptime                 6 days, 22 hours, 33 minutes, 21 seconds
  Last reboot reason     Router rebooted after a normal shutdown

```

show chassis routing-engine (MX104 Router)

```

user@host> show chassis routing-engine

```

```

Routing Engine status:
Slot 0:
  Current state           Master
  Election priority       Master (default)
  Temperature             32 degrees C / 89 degrees F
  CPU temperature         42 degrees C / 107 degrees F
  DRAM                   3840 MB (3840 MB installed)
  Memory utilization      18 percent
  CPU utilization:
    User                  0 percent
    Background            0 percent
    Kernel                3 percent
    Interrupt             2 percent
    Idle                  94 percent
  Model                  RE-MX-104
  Serial ID               CAAR5925
  Start time              2013-06-05 13:17:08 IST
  Uptime                  1 hour, 15 minutes, 8 seconds
  Last reboot reason      0x200:normal shutdown
  Load averages:         1 minute   5 minute   15 minute
                        0.87       0.90       0.41

Routing Engine status:
Slot 1:
  Current state           Backup
  Election priority       Backup (default)
  Temperature             32 degrees C / 89 degrees F
  CPU temperature         38 degrees C / 100 degrees F
  DRAM                   3840 MB (3840 MB installed)
  Memory utilization      13 percent
  CPU utilization:
    User                  0 percent
    Background            0 percent
    Kernel                1 percent
    Interrupt             2 percent
    Idle                  97 percent
  Model                  RE-MX-104
  Serial ID               CAAM6369
  Start time              2013-06-05 13:07:37 IST
  Uptime                  1 hour, 24 minutes, 34 seconds
  Last reboot reason      0x200:normal shutdown
  Load averages:         1 minute   5 minute   15 minute
                        0.19       0.15       0.06

```

show chassis routing-engine (MX240 Router)

```

user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state           Backup
  Election priority       Master (default)
  Temperature             40 degrees C / 104 degrees F
  CPU temperature         47 degrees C / 116 degrees F
  DRAM                   3584 MB
  Memory utilization      7 percent
  CPU utilization:
    User                  0 percent
    Background            0 percent
    Kernel                0 percent
    Interrupt             0 percent
    Idle                  100 percent
  Model                  RE-S-2000

```

```

Serial ID          1000703522
Start time         2007-12-19 10:35:40 PST
Uptime             16 days, 3 hours, 15 minutes, 23 seconds
Last reboot reason Router rebooted after a normal shutdown

```

show chassis routing-engine (MX480 Router)

```

user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state      Master
  Election priority  Master (default)
  Temperature        41 degrees C / 105 degrees F
  CPU temperature    38 degrees C / 100 degrees F
  DRAM               2048 MB
  Memory utilization 13 percent
  CPU utilization:
    User             0 percent
    Background       0 percent
    Kernel           2 percent
    Interrupt        0 percent
    Idle             98 percent
  Model              RE-S-1300
  Serial ID          1000697044
  Start time         2008-01-04 06:46:08 PST
  Uptime             8 hours, 17 minutes, 16 seconds
  Last reboot reason Router rebooted after a normal shutdown

```

show chassis routing-engine (MX960 Router)

```

user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state      Master
  Election priority  Master (default)
  Temperature        37 degrees C / 98 degrees F
  CPU temperature    37 degrees C / 98 degrees F
  DRAM               2048 MB
  Memory utilization 18 percent
  CPU utilization:
    User             0 percent
    Background       0 percent
    Kernel           4 percent
    Interrupt        0 percent
    Idle             96 percent
  Model              RE-S-1300
  Serial ID          1000617944
  Start time         2006-10-26 12:37:13 PDT
  Uptime             6 days, 4 hours, 59 minutes, 40 seconds
  Last reboot reason Router rebooted after a normal shutdown
  Load averages:    1 minute  5 minute  15 minute
                    0.16      0.08      0.02

```

show chassis routing-engine (MX2010 Router)

```

user@host> show chassis routing-engine

Routing Engine status:
Slot 0:
  Current state      Master
  Election priority  Master (default)
  Temperature        3 degrees C / 37 degrees F

```

```

CPU temperature          3 degrees C / 37 degrees F
DRAM                    17152 MB
Memory utilization       13 percent
CPU utilization:
  User                   0 percent
  Background             0 percent
  Kernel                 4 percent
  Interrupt              2 percent
  Idle                   95 percent
Model                   RE-S-1800x4
Serial ID                9009099704
Start time              2012-10-02 14:33:32 PDT
Uptime                  14 hours, 39 minutes, 39 seconds
Last reboot reason      Router rebooted after a normal shutdown.
Load averages:          1 minute   5 minute   15 minute
                        0.06       0.05       0.01

Routing Engine status:
Slot 1:
  Current state          Backup
  Election priority      Backup (default)
  Temperature            1 degrees C / 33 degrees F
  CPU temperature        2 degrees C / 35 degrees F
  DRAM                   17152 MB
  Memory utilization     11 percent
  CPU utilization:
    User                 0 percent
    Background           0 percent
    Kernel               0 percent
    Interrupt            0 percent
    Idle                 100 percent
  Model                  RE-S-1800x4
  Serial ID              9009099706
  Start time             2012-10-02 10:36:06 PDT
  Uptime                 18 hours, 36 minutes, 57 seconds
  Last reboot reason     Router rebooted after a normal shutdown.
  Load averages:        1 minute   5 minute   15 minute
                        0.01       0.00       0.00

```

show chassis routing-engine (MX2020 Router)

```

user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state          Master
  Election priority      Master (default)
  Temperature            6 degrees C / 42 degrees F
  CPU temperature        6 degrees C / 42 degrees F
  DRAM                   17152 MB
  Memory utilization     14 percent
  CPU utilization:
    User                 1 percent
    Background           0 percent
    Kernel               7 percent
    Interrupt            2 percent
    Idle                 91 percent
  Model                  RE-S-1800x4
  Serial ID              9009089704
  Start time             2012-10-02 11:05:24 PDT
  Uptime                 2 days, 15 hours, 49 minutes, 13 seconds
  Last reboot reason     Router rebooted after a normal shutdown.
  Load averages:        1 minute   5 minute   15 minute

```

```

                                0.10      0.05      0.01
Routing Engine status:
Slot 1:
  Current state                Backup
  Election priority            Backup (default)
  Temperature                  7 degrees C / 44 degrees F
  CPU temperature              5 degrees C / 41 degrees F
  DRAM                        17152 MB
  Memory utilization           12 percent
  CPU utilization:
    User                      0 percent
    Background                0 percent
    Kernel                    0 percent
    Interrupt                 0 percent
    Idle                      99 percent
  Model                        RE-S-1800x4
  Serial ID                    9009094138
  Start time                   2012-10-02 11:09:57 PDT
  Uptime                      2 days, 15 hours, 44 minutes, 27 seconds
  Last reboot reason           Router rebooted after a normal shutdown.
  Load averages:              1 minute   5 minute  15 minute
                                0.00      0.00      0.00

```

show chassis routing-engine (T320 router)

```

user@host> show chassis routing-engine
Slot 0:
  Current state                Master
  Election priority            Master (default)
  Temperature                  51 degrees C / 123 degrees F
  CPU temperature              55 degrees C / 131 degrees F
  DRAM                        3584 MB
  Memory utilization           11 percent
  CPU utilization:
    User                      0 percent
    Background                0 percent
    Kernel                    2 percent
    Interrupt                 0 percent
    Idle                      97 percent
  Model                        RE-A-2000
  Serial ID                    9009010618
  Start time                   2012-10-10 01:24:05 PDT
  Uptime                      5 days, 10 hours, 49 minutes, 23 seconds
  Last reboot reason           0x1:power cycle/failure
  Load averages:              1 minute   5 minute  15 minute
                                0.00      0.05      0.04

Routing Engine status:
Slot 1:
  Current state                Backup
  Election priority            Backup (default)
  Temperature                  45 degrees C / 113 degrees F
  CPU temperature              48 degrees C / 118 degrees F
  DRAM                        3584 MB
  Memory utilization           9 percent
  CPU utilization:
    User                      0 percent
    Background                0 percent
    Kernel                    0 percent
    Interrupt                 0 percent
    Idle                      100 percent
  Model                        RE-A-2000

```

Serial ID	9009003642
Start time	2012-10-10 01:24:04 PDT
Uptime	5 days, 10 hours, 49 minutes, 28 seconds
Last reboot reason	0x1:power cycle/failure

show chassis routing-engine (T640 router)

```
user@host> show chassis routing-engine
```

```
Routing Engine status:
```

```
Slot 0:
```

Current state	Master
Election priority	Master (default)
Temperature	50 degrees C / 122 degrees F
CPU temperature	58 degrees C / 136 degrees F
DRAM	3584 MB
Memory utilization	14 percent
CPU utilization:	
User	1 percent
Background	0 percent
Kernel	4 percent
Interrupt	1 percent
Idle	95 percent
Model	RE-A-2000
Serial ID	1000686556
Start time	2012-10-10 01:24:02 PDT
Uptime	5 days, 10 hours, 50 minutes, 27 seconds
Last reboot reason	0x1:power cycle/failure
Load averages:	1 minute 5 minute 15 minute
	1.24 0.33 0.12

```
Routing Engine status:
```

```
Slot 1:
```

Current state	Backup
Election priority	Backup (default)
Temperature	44 degrees C / 111 degrees F
CPU temperature	49 degrees C / 120 degrees F
DRAM	3584 MB
Memory utilization	12 percent
CPU utilization:	
User	0 percent
Background	0 percent
Kernel	0 percent
Interrupt	1 percent
Idle	99 percent
Model	RE-A-2000
Serial ID	1000702739
Start time	2012-10-10 01:24:02 PDT
Uptime	5 days, 10 hours, 50 minutes, 26 seconds
Last reboot reason	0x1:power cycle/failure

show chassis routing-engine (T1600 router)

```
user@host> show chassis routing-engine
```

```
Routing Engine status:
```

```
Slot 0:
```

Current state	Master
Election priority	Master (default)
Temperature	48 degrees C / 118 degrees F
CPU temperature	58 degrees C / 136 degrees F
DRAM	3584 MB
Memory utilization	13 percent
CPU utilization:	


```

User                0 percent
Background          0 percent
Kernel              3 percent
Interrupt            1 percent
Idle                96 percent
Model               RE-A-2000
Serial ID            1000704521
Start time           2012-10-10 01:23:41 PDT
Uptime               5 days, 10 hours, 46 minutes, 56 seconds
Last reboot reason   0x1:power cycle/failure
Load averages:       1 minute   5 minute   15 minute
                      0.05       0.03       0.01

Routing Engine status:
Slot 1:
  Current state      Backup
  Election priority   Backup (default)
  Temperature         44 degrees C / 111 degrees F
  CPU temperature     48 degrees C / 118 degrees F
  DRAM                3584 MB
  Memory utilization  12 percent
  CPU utilization:
    User              0 percent
    Background        0 percent
    Kernel             0 percent
    Interrupt          0 percent
    Idle              100 percent
  Model               RE-A-2000
  Serial ID            9009006579
  Start time           2012-10-10 01:23:42 PDT
  Uptime               5 days, 10 hours, 46 minutes, 54 seconds
  Last reboot reason   0x1:power cycle/failure

```

show chassis routing-engine (T4000 router)

```

user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state      Master
  Election priority   Master (default)
  Temperature         33 degrees C / 91 degrees F
  CPU temperature     50 degrees C / 122 degrees F
  DRAM                8960 MB
  Memory utilization  18 percent
  CPU utilization:
    User              0 percent
    Background        0 percent
    Kernel             4 percent
    Interrupt          1 percent
    Idle              95 percent
  Model               RE-DUO-1800
  Serial ID            P737F-002248
  Start time           2012-02-09 22:49:53 PST
  Uptime               2 hours, 21 minutes, 35 seconds
  Last reboot reason   Router rebooted after a normal shutdown.
  Load averages:       1 minute   5 minute   15 minute
                      0.00       0.04       0.00

Routing Engine status:
Slot 1:
  Current state      Backup
  Election priority   Backup (default)
  Temperature         32 degrees C / 89 degrees F

```

```
CPU temperature      46 degrees C / 114 degrees F
DRAM                8960 MB
Memory utilization   24 percent
CPU utilization:
  User              0 percent
  Background        0 percent
  Kernel            0 percent
  Interrupt         0 percent
  Idle              99 percent
Model               RE-DU0-1800
Serial ID            P737F-002653
Start time          2012-02-08 20:12:51 PST
Uptime              1 day, 4 hours, 58 minutes, 28 seconds
Last reboot reason   Router rebooted after a normal shutdown.
```

show chassis routing-engine (TX Matrix Router)

```
user@host> show chassis routing-engine
scc-re0:
```

Routing Engine status:

Slot 0:

```
Current state      Master
Election priority   Master (default)
Temperature         34 degrees C / 93 degrees F
CPU temperature     33 degrees C / 91 degrees F
DRAM               2048 MB
Memory utilization  12 percent
CPU utilization:
  User              0 percent
  Background        0 percent
  Kernel            2 percent
  Interrupt         0 percent
  Idle              98 percent
Model              RE-4.0
Serial ID           P11123900153
Start time          2004-08-05 18:42:05 PDT
Uptime              9 days, 22 hours, 49 minutes, 50 seconds
Last reboot reason   Router rebooted after a normal shutdown
Load averages:      1 minute   5 minute   15 minute
                    0.00       0.08       0.07
```

1cc0-re0:

Routing Engine status:

Slot 0:

```
Current state      Master
Election priority   Master (default)
Temperature         33 degrees C / 91 degrees F
CPU temperature     30 degrees C / 86 degrees F
DRAM               2048 MB
Memory utilization  12 percent
CPU utilization:
  User              0 percent
  Background        0 percent
  Kernel            1 percent
  Interrupt         0 percent
  Idle              98 percent
Model              RE-3.0
Serial ID           210865700363
Start time          2004-08-05 18:42:05 PDT
```

```

Uptime                9 days, 22 hours, 48 minutes, 20 seconds
Last reboot reason    Router rebooted after a normal shutdown
Load averages:        1 minute   5 minute   15 minute
                        0.00       0.02       0.00

```

```
lcc2-re0:
```

```
-----
Routing Engine status:
```

```
Slot 0:
```

```

Current state          Master
Election priority      Master (default)
Temperature            34 degrees C / 93 degrees F
CPU temperature        35 degrees C / 95 degrees F
DRAM                  2048 MB
Memory utilization     12 percent
CPU utilization:
  User                 0 percent
  Background           0 percent
  Kernel               2 percent
  Interrupt            0 percent
  Idle                 98 percent
Model                 RE-4.0
Serial ID              P11123900126
Start time             2004-08-05 18:42:05 PDT
Uptime                9 days, 22 hours, 49 minutes, 4 seconds
Last reboot reason    Router rebooted after a normal shutdown
Load averages:        1 minute   5 minute   15 minute
                        0.01       0.01       0.0

```

show chassis routing-engine lcc (TX Matrix Router)

```
user@host> show chassis routing-engine 0 lcc 0
```

```
lcc0-re0:
```

```
-----
Routing Engine status:
```

```
Slot 0:
```

```

Current state          Master
Election priority      Master (default)
Temperature            33 degrees C / 91 degrees F
CPU temperature        30 degrees C / 86 degrees F
DRAM                  2048 MB
Memory utilization     12 percent
CPU utilization:
  User                 0 percent
  Background           0 percent
  Kernel               1 percent
  Interrupt            0 percent
  Idle                 98 percent
Model                 RE-3.0
Serial ID              210865700363
Start time             2004-08-05 18:42:05 PDT
Uptime                7 days, 22 hours, 49 minutes, 6 seconds
Last reboot reason    Router rebooted after a normal shutdown
Load averages:        1 minute   5 minute   15 minute
                        0.00       0.00       0.00

```

show chassis routing-engine bios (TX Matrix Router)

```
user@host> show chassis routing-engine bios
```

```
scc-re0:
```

```
Routing Engine BIOS Version: V1.0.0
1cc0-re0:
-----
```

```
Routing Engine BIOS Version: V1.0.17
1cc2-re0:
-----
```

```
Routing Engine BIOS Version: V1.0.0
```

show chassis routing-engine (TX Matrix Plus Router)

```
user@host> show chassis routing-engine
sfc0-re0:
-----
```

```
Routing Engine status:
```

```
Slot 0:
```

Current state	Master
Election priority	Master (default)
Temperature	27 degrees C / 80 degrees F
CPU temperature	42 degrees C / 107 degrees F
DRAM	3327 MB
Memory utilization	12 percent
CPU utilization:	
User	0 percent
Background	0 percent
Kernel	2 percent
Interrupt	0 percent
Idle	98 percent
Model	RE-TXP-SFC
Serial ID	737A-1024
Start time	2009-05-11 17:39:49 PDT
Uptime	3 hours, 45 minutes, 25 seconds
Last reboot reason	Router rebooted after a normal shutdown.
Load averages:	1 minute 5 minute 15 minute
	0.00 0.00 0.00

```
Routing Engine status:
```

```
Slot 1:
```

Current state	Backup
Election priority	Backup (default)
Temperature	29 degrees C / 84 degrees F
CPU temperature	43 degrees C / 109 degrees F
DRAM	3327 MB
Memory utilization	11 percent
CPU utilization:	
User	0 percent
Background	0 percent
Kernel	0 percent
Interrupt	0 percent
Idle	100 percent
Model	RE-TXP-SFC
Serial ID	737A-1024
Start time	2009-05-11 17:08:54 PDT
Uptime	4 hours, 16 minutes, 52 seconds
Last reboot reason	0x1:power cycle/failure

```
1cc0-re0:
-----
```

```
Routing Engine status:
```

```
Slot 0:
```

Current state	Master
Election priority	Master (default)
Temperature	30 degrees C / 86 degrees F

```

CPU temperature          43 degrees C / 109 degrees F
DRAM                    3327 MB
Memory utilization       9 percent
CPU utilization:
  User                   0 percent
  Background             0 percent
  Kernel                 2 percent
  Interrupt              0 percent
  Idle                   98 percent
Model                   RE-TXP-LCC
Serial ID                737F-1024
Start time               2009-05-11 17:40:32 PDT
Uptime                  3 hours, 44 minutes, 51 seconds
Last reboot reason      Router rebooted after a normal shutdown.
Load averages:          1 minute   5 minute  15 minute
                        0.00       0.00    0.00

Routing Engine status:
Slot 1:
  Current state          Backup
  Election priority      Backup (default)
  Temperature            30 degrees C / 86 degrees F
  CPU temperature        43 degrees C / 109 degrees F
  DRAM                   3327 MB
  Memory utilization     9 percent
  CPU utilization:
    User                 0 percent
    Background           0 percent
    Kernel               0 percent
    Interrupt            0 percent
    Idle                 100 percent
  Model                  RE-TXP-LCC
  Serial ID              737F-1024
  Start time             2009-05-06 17:31:32 PDT
  Uptime                 5 days, 3 hours, 54 minutes, 19 seconds
  Last reboot reason     Router rebooted after a normal shutdown.

```

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

```

user@host> show chassis routing-engine 0 lcc 0
1cc0-re0:
-----
Routing Engine status:
Slot 0:
  Current state          Master
  Election priority      Master (default)
  Temperature            30 degrees C / 86 degrees F
  CPU temperature        43 degrees C / 109 degrees F
  DRAM                   3327 MB
  Memory utilization     9 percent
  CPU utilization:
    User                 0 percent
    Background           0 percent
    Kernel               2 percent
    Interrupt            0 percent
    Idle                 98 percent
  Model                  RE-TXP-LCC
  Serial ID              737F-1024
  Start time             2009-05-11 17:40:32 PDT
  Uptime                 3 hours, 45 minutes, 26 seconds
  Last reboot reason     Router rebooted after a normal shutdown.
  Load averages:        1 minute   5 minute  15 minute

```

```

0.00      0.00      0.00
Routing Engine status:
Slot 1:
  Current state      Backup
  Election priority  Backup (default)
  Temperature        30 degrees C / 86 degrees F
  CPU temperature    43 degrees C / 109 degrees F
  DRAM               3327 MB
  Memory utilization 9 percent
  CPU utilization:
    User             0 percent
    Background       0 percent
    Kernel           0 percent
    Interrupt        0 percent
    Idle             100 percent
  Model              RE-TXP-LCC
  Serial ID          737F-1024
  Start time         2009-05-06 17:31:32 PDT
  Uptime             5 days, 3 hours, 54 minutes, 59 seconds
  Last reboot reason Router rebooted after a normal shutdown.

```

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

```

user@host> show chassis routing-engine bios
sfc0-re0:

```

```

-----
Routing Engine BIOS Version: V0.0.Z

```

```

lcc0-re0:

```

```

-----
Routing Engine BIOS Version: V0.0.N

```

show chassis routing-engine (QFX Series)

```

user@switch> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state Master
  Election priority Master (default)
  DRAM 2820 MB
  Memory utilization 49 percent
  CPU utilization:
    User 1 percent
    Background 0 percent
    Kernel 1 percent
    Interrupt 0 percent
    Idle 97 percent
  Model QFX3500-48S4Q
  Serial ID S/N ED3709
  Uptime 3 days, 4 hours, 29 minutes, 42 seconds
  Last reboot reason 0x200:chassis control reset
  Load averages: 1 minute 5 minute 15 minute
0.37 0.26 0.19

```

show chassis routing-engine (PTX Series Packet Transport Router)

```

user@switch> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state      Master
  Election priority  Master (default)
  Temperature        60 degrees C / 140 degrees F

```

```

CPU temperature          76 degrees C / 168 degrees F
DRAM                    17152 MB
Memory utilization      11 percent
CPU utilization:
  User                   0 percent
  Background             0 percent
  Kernel                 4 percent
  Interrupt              0 percent
  Idle                   95 percent
Model                   RE-DUO-2600
Serial ID               P737A-002231
Start time              2011-12-21 16:54:37 PST
Uptime                  25 minutes, 44 seconds
Last reboot reason      Router rebooted after a normal shutdown.
Load averages:          1 minute   5 minute   15 minute
                        0.01       0.02       0.06

Routing Engine status:
Slot 1:
  Current state          Backup
  Election priority      Backup (default)
  Temperature            50 degrees C / 122 degrees F
  CPU temperature        64 degrees C / 147 degrees F
  DRAM                   17152 MB
  Memory utilization     10 percent
  CPU utilization:
    User                 0 percent
    Background           0 percent
    Kernel               0 percent
    Interrupt            0 percent
    Idle                 99 percent
  Model                  RE-DUO-2600
  Serial ID              P737A-002438
  Start time             2011-12-21 16:52:26 PST
  Uptime                  27 minutes, 49 seconds
  Last reboot reason      Router rebooted after a normal shutdown.

```

show chassis routing-engine (ACX2000 Universal Access Router)

```

user@host> show chassis routing-engine
Routing Engine status:
  Temperature            53 degrees C / 127 degrees F
  DRAM                   1536 MB
  Memory utilization     25 percent
  CPU utilization:
    User                 0 percent
    Background           0 percent
    Kernel               0 percent
    Interrupt            1 percent
    Idle                 99 percent
  Model                  RE-ACX-2000
  Start time             2012-05-09 00:57:07 PDT
  Uptime                  5 days, 3 hours, 16 minutes, 15 seconds
  Last reboot reason      Router rebooted after a normal shutdown.
  Load averages:          1 minute   5 minute   15 minute
                        0.00       0.03       0.05

```

show chassis routing-engine (ACX1000 Universal Access Router)

```

user@host> show chassis routing-engine
Routing Engine status:
  Temperature            36 degrees C / 96 degrees F

```

DRAM	768 MB
Memory utilization	50 percent
CPU utilization:	
User	3 percent
Background	0 percent
Kernel	6 percent
Interrupt	0 percent
Idle	91 percent
Model	RE-ACX-1000
Start time	2012-05-10 07:12:23 PDT
Uptime	4 days, 10 hours, 46 minutes, 53 seconds
Last reboot reason	Router rebooted after a normal shutdown.
Load averages:	1 minute 5 minute 15 minute
	0.00 0.00 0.00

show chassis sibs

Syntax	show chassis sibs
Syntax (TX Matrix Router)	show chassis sibs <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Router)	show chassis sibs <lcc <i>number</i> sfc <i>number</i> >
Syntax (PTX Series Packet Transport Routers)	show chassis sibs <detail> <slot>
Release Information	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 12.1 for the PTX Series Packet Transport Routers.</p> <p>sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>detail and sib-slot options introduced for the PTX Packet Transport Router in Junos OS Release 12.1</p>
Description	(M320,T Series routers, TX Matrix routers, TX Matrix Plus routers, and PTX Series routers only) Display Switch Interface Boards (SIBs) status information.
Options	<p>none—(TX Matrix routers and TX Matrix Plus routers only) On a TX Matrix router, display the SIB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display the SIB status for the TX Matrix Plus router and its attached routers.</p> <p>detail—(PTX Series) (Optional) Display detailed SIB status information.</p> <p>lcc <i>number</i>—(TX Matrix routers and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display SIB status information 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 SIB status information for a specified T1600 or T4000 router (LCC) that is connected to the TX Matrix Plus router.</p> <p>Replace <i>number</i> with the following values depending on the LCC configuration:</p> <ul style="list-style-type: none"> • 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.

scc—(TX Matrix routers only) (Optional) Display SIB status information for the TX Matrix router (switch-card chassis).

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

slot—(PTX Series) (Optional) Display status information about the SIB in the specified slot only. The range of values is 0 through 8.

Required Privilege Level

view

Related Documentation

- *request chassis sib*
- *show chassis spmb sibs*
- [show chassis environment sib on page 383](#)
- *Monitoring the SIBs*
- *M320 SIB Description*
- [Routing Matrix with a TX Matrix Plus Router Solutions Page](#)

List of Sample Output

[show chassis sibs \(T640 Router\) on page 737](#)
[show chassis sibs \(T4000 Router\) on page 737](#)
[show chassis sibs \(TX Matrix Router\) on page 737](#)
[show chassis sibs \(T1600 Router\) on page 738](#)
[show chassis sibs \(TX Matrix Plus Router\) on page 738](#)
[show chassis sibs \(TX Matrix Plus Router with 3D SIBs\) on page 739](#)
[show chassis sibs sfc \(TX Matrix Plus Router\) on page 741](#)
[show chassis sibs lcc \(TX Matrix Plus Router\) on page 742](#)
[show chassis sibs lcc \(TX Matrix Plus Router with 3D SIBs\) on page 742](#)
[show chassis sibs \(M320 Router\) on page 743](#)
[show chassis sibs \(PTX Series\) on page 743](#)
[show chassis sibs \(PTX Series\) on page 743](#)

Output Fields

Table 38 on page 734 lists the output fields for the **show chassis sibs** command. Output fields are listed in the approximate order in which they appear.

Table 38: show chassis sibs Output Fields

Field Name	Field Description
Slot	SIB slot number.
Type	(TX Matrix Plus router only) SIB type.
Uptime	How long the SIB has been up and running.
State	SIB status: <ul style="list-style-type: none"> • Activating—SIB is coming online; this is a transitional state. • Deactivating—SIB is going offline; this is a transitional state.

Table 38: show chassis sibs Output Fields (*continued*)

Field Name	Field Description
	<ul style="list-style-type: none"> • Connected—SIBs on a T1600 router are connected and trained but are either not online or are spare, because the plane on the TX Matrix Plus router (or switch-fabric chassis) is still offline. • Disconnected—SIBs on all T640 routers on the TX Matrix router (switch-card chassis) are in the Disconnected state, because a SIB on the SCC has gone offline. Likewise, SIBs on all T1600 routers on the TX Matrix Plus router (or switch-fabric chassis) are in the Disconnected state, because a SIB on the SFC has gone offline. On the TX Matrix Plus router with 3D SIBs, the LCC SIB is also disconnected if the F13 SIB is online, but none of the cables are connected or trained. • Online—SIB is operational and running. • Offline—SIB is powered down. <p>NOTE: If a SIB transitions to the Offline state, the command displays an appropriate reason in the output. For instance, if the SIB is taken offline using the request chassis sib command, the show chassis sibs command displays --- Offlined by cli command --- in the output.</p> <ul style="list-style-type: none"> • Spare—SIB is redundant and will move to active state if one of the working SIBs fails to pass traffic. <p>NOTE: Spare does not apply to PTX Series Packet Transport Routers, as there are no spare SIBs.</p> <ul style="list-style-type: none"> • Empty—No SIB is present. • Fault—SIB is in an alarmed state in which the SIB's plane is not operational for one of the following reasons: <ul style="list-style-type: none"> • Onboard fabric ASIC is not operational. • Fiber-optic connector faults. • FPC connector faults. • SIB midplane connector faults. • Check—SIB is in an alarmed state due to link errors or destination errors. A SIB can transition to the Check state from the online or spare state. The Check state can be caused by the following reasons: <ul style="list-style-type: none"> • Unsupported FPC installed on a router. • SIB not inserted properly (such as bent pins). • Destination errors are detected on the SIB. In this case, the Packet Forwarding Engine stops using the SIB to send traffic to the affected destination Packet Forwarding Engine. When a Packet Forwarding Engine cannot be reached on that plane or SIB, a destination error is reported against that SIB. <p>NOTE: For SIBs in the Check state, the output displays some additional information:</p> <ul style="list-style-type: none"> • In Junos OS Release 9.6 and later, the Check state message shows the number of Packet Forwarding Engines in the plane having destination errors. For example, Check (10 destination errors) indicates 10 Packet Forwarding Engines cannot be reached on

Table 38: show chassis sibs Output Fields (*continued*)

Field Name	Field Description
	<p>that particular SIB. If there are no destination errors, and if the SIB transitions to the Check state because of link errors only, the Check state message shows Check (0 destination errors).</p> <ul style="list-style-type: none"> In Junos OS Release 9.5 and earlier, the Check state message shows Check (destination errors) if there are Packet Forwarding Engines with destination errors in this plane. However, it does not show the number of Packet Forwarding Engines having destination errors. If there are no destination errors and if the SIB transitions to the Check state because of link errors only, the Check state message shows Check (no destination errors). <p>If the SIB is in a Check state, because of destination errors, the CLI displays an additional line in the output, use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details.</p> <ul style="list-style-type: none"> Link errors are detected on the channel between the SIB and a Packet Forwarding Engine. Link errors can be detected at initialization time or runtime: <ul style="list-style-type: none"> Link errors caused by a link training failure at initialization time—The Packet Forwarding Engine does not use the SIB to send traffic. The show chassis fabric fpcs command shows Plane disabled as status for this link. Link errors caused by CRC errors detected at runtime—The Packet Forwarding Engine continues to use the SIB to send traffic. The show chassis fabric fpcs command shows Link error as the status for this link. <p>NOTE: The Check state does not apply to PTX Series Packet Transport Routers.</p> <ul style="list-style-type: none"> SFC Error—If an F13 SIB on the TX Matrix Plus router (SFC) transitions to the Fault state (for instance, because of link errors), and then if an LCC SIB (connected to the F13 SIB) comes online, the LCC SIB transitions to the SFC Error state. This state indicates that the F13 SIB to which the LCC SIB is connected has errors. <p>NOTE: The Connected, Disconnected, and SFC Error states are only applicable to the SIBs on an LCC.</p> <ul style="list-style-type: none"> Invalid—The specific SIB slot is not valid for 4-LCC chassis configuration. See the <i>TX Matrix Plus Hardware Guide</i> for more information about the supported SIB slots. <p>NOTE: The Invalid state is applicable to TX Matrix Plus routers only.</p>
Fabric links	<p>Indicates status of fabric links on the SIB.</p> <ul style="list-style-type: none"> Active—All fabric links on SIB are active. Errors detected on the SIB's fabric links, if any, are reported in the Errors column. Unused—All fabric links on the SIB are not used for fabric traffic.
Errors	<p>Indicates if there is any error on the SIB.</p> <ul style="list-style-type: none"> None—No errors Link Errors—Fabric link errors were found on SIB RX link.

Table 38: show chassis sibs Output Fields (*continued*)

Field Name	Field Description
	<ul style="list-style-type: none"> • Cell drops—Fabric cell drops were found on the SIB ASIC. • Link Errors, Cell drops—Both link errors and cell drops were detected on at least one of the SIB's fabric links.
Link Errors	indicate the number of links which are marked faulty because the errors on them have crossed threshold.
Cable Errors	Indicate the number of mandatory cables that are not connected, or in up state for that plane
Destination Errors	Indicate the number of destinations that are not reachable on this plane.

Sample Output

show chassis sibs (T640 Router)

```

user@host> show chassis sibs
Slot  State                      Uptime
0     Empty
1     Offline                    --- Offlined by cli command ---
2     Check (21 destination errors) 1 day, 1 hour, 32 minutes, 55 seconds
3     Check (0 destination errors)  1 day, 1 hour, 32 minutes, 45 seconds
4     Empty

```

use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

show chassis sibs (T4000 Router)

```

user@host> show chassis sibs
Slot  State                      Uptime
0     Spare
1     Online                    3 hours, 48 minutes, 38 seconds
2     Online                    3 hours, 48 minutes, 22 seconds
3     Online                    3 hours, 48 minutes, 5 seconds
4     Online                    3 hours, 47 minutes, 49 seconds

```

show chassis sibs (TX Matrix Router)

```

user@host> show chassis sibs
scc-re0:
-----
Slot  State                      Uptime
0     Empty
1     Empty
2     Offline                    --- Offlined by cli command ---
3     Offline
4     Online                    7 days, 21 hours, 50 minutes, 4 seconds
lcc0-re0:
-----
Slot  State                      Uptime
0     Offline                    --- Offlined by cli command ---
1     Empty
2     Check (21 destination errors) 1 day, 1 hour, 32 minutes, 55 seconds

```

```

3    Check (0 destination errors)    1 day, 1 hour, 32 minutes, 45 seconds
4    Empty

```

use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

show chassis sibs (T1600 Router)

```
user@host> show chassis sibs
```

```

Slot
Slot  State                               Uptime
0     Check (destination errors)          2 hours, 23 minutes, 2 seconds
1     Offline                            --- Offlined by cli command ---
2     Check (destination errors)          2 hours, 23 minutes, 3 seconds
3     Check (destination errors)          2 hours, 23 minutes, 3 seconds
4     Check (destination errors)          2 hours, 23 minutes, 3 seconds

```

use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

show chassis sibs (TX Matrix Plus Router)

```
user@host> show chassis sibs
```

```
sfc0-re0:
```

```

-----
Slot  State          Type          Link errors  Destination errors  Uptime
0     Spare          SIB F13      NONE         NONE
1     Empty
2     Invalid
3     Online          SIB F13      NONE         NONE          1 hour,
53 minutes, 19 seconds
4     Empty
5     Invalid
6     Online          SIB F13      NONE         NONE          1 hour,
53 minutes, 8 seconds
7     Empty
8     Online          SIB F13      NONE         NONE          1 hour,
52 minutes, 57 seconds
9     Empty
10    Invalid
11    Online          SIB F13      NONE         NONE          1 hour,
52 minutes, 46 seconds
12    Empty
13    Invalid
14    Invalid
15    Invalid
0/0   Spare          SIB F2S      NONE         NONE
0/2   Spare          SIB F2S      NONE         NONE
0/4   Spare          SIB F2S      NONE         NONE
0/6   Spare          SIB F2S      NONE         NONE
1/0   Online          SIB F2S      NONE         NONE          1 hour,
53 minutes, 29 seconds
1/2   Online          SIB F2S      NONE         NONE          1 hour,
53 minutes, 28 seconds
1/4   Online          SIB F2S      NONE         NONE          1 hour,
53 minutes, 27 seconds
1/6   Online          SIB F2S      NONE         NONE          1 hour,
53 minutes, 26 seconds
2/0   Online          SIB F2S      NONE         NONE          1 hour,
53 minutes, 18 seconds
2/2   Online          SIB F2S      NONE         NONE          1 hour,
53 minutes, 17 seconds

```

```

2/4 Online SIB F2S NONE NONE 1 hour,
53 minutes, 16 seconds
2/6 Online SIB F2S NONE NONE 1 hour,
53 minutes, 14 seconds
3/0 Online SIB F2S NONE NONE 1 hour,
53 minutes, 7 seconds
3/2 Online SIB F2S NONE NONE 1 hour,
53 minutes, 5 seconds
3/4 Online SIB F2S NONE NONE 1 hour,
53 minutes, 4 seconds
3/6 Online SIB F2S NONE NONE 1 hour,
53 minutes, 3 seconds
4/0 Online SIB F2S NONE NONE 1 hour,
52 minutes, 56 seconds
4/2 Online SIB F2S NONE NONE 1 hour,
52 minutes, 54 seconds
4/4 Online SIB F2S NONE NONE 1 hour,
52 minutes, 53 seconds
4/6 Online SIB F2S NONE NONE 1 hour,
52 minutes, 52 seconds

```

```
lcc0-re0:
```

```

-----
Slot State Link errors Destination errors Uptime
0 Spare NONE NONE
1 Online NONE NONE 1 hour, 53 minutes, 31
seconds
2 Online NONE NONE 1 hour, 53 minutes, 27
seconds
3 Online NONE NONE 1 hour, 53 minutes, 23
seconds
4 Online NONE NONE 1 hour, 53 minutes, 19
seconds

```

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

```
user@host> show chassis sibs
```

```
sfc0-re0:
```

```

-----
Slot State Type Cable errors Link errors Destination
errors Uptime
0 Online SIB F13 6 NONE NONE
21 hours, 54 minutes, 28 seconds
1 Online SIB F13 8 NONE NONE
21 hours, 54 minutes, 12 seconds
2 Invalid
3 Online SIB F13 6 NONE NONE
21 hours, 57 minutes, 6 seconds
4 Online SIB F13 8 1 NONE
21 hours, 56 minutes, 49 seconds
5 Invalid
6 Online SIB F13 6 NONE NONE
21 hours, 56 minutes, 25 seconds
7 Online SIB F13 8 NONE NONE
21 hours, 56 minutes, 8 seconds
8 Online SIB F13 6 NONE NONE
21 hours, 55 minutes, 43 seconds
9 Online SIB F13 8 NONE NONE
21 hours, 55 minutes, 26 seconds
10 Invalid
11 Empty NONE NONE NONE

```

12	Empty	NONE	NONE	NONE
13	Invalid	NONE	NONE	NONE
14	Invalid	NONE	NONE	NONE
15	Invalid	NONE	NONE	NONE
0/0	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 55 minutes, 16 seconds			
0/2	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 54 minutes, 49 seconds			
0/4	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 54 minutes, 47 seconds			
0/6	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 54 minutes, 45 seconds			
1/0	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 57 minutes, 29 seconds			
1/2	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 57 minutes, 27 seconds			
1/4	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 57 minutes, 25 seconds			
1/6	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 57 minutes, 23 seconds			
2/0	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes, 48 seconds			
2/2	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes, 46 seconds			
2/4	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes, 43 seconds			
2/6	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes, 41 seconds			
3/0	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes, 6 seconds			
3/2	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes, 4 seconds			
3/4	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes, 2 seconds			
3/6	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 56 minutes			
4/0	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 55 minutes, 24 seconds			
4/2	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 55 minutes, 22 seconds			
4/4	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 55 minutes, 20 seconds			
4/6	Online SIB F2S	-n/a-	NONE	NONE
	21 hours, 55 minutes, 18 seconds			

lcc0-re0:

Slot	State	Cable errors	Link errors	Destination errors	Uptime
0	Online	6	NONE	NONE	21 hours, 47 minutes, 29 seconds
1	Online	6	NONE	NONE	21 hours, 47 minutes, 50 seconds
2	Online	6	NONE	NONE	21 hours, 47 minutes, 43 seconds
3	Online	6	NONE	NONE	21 hours, 47 minutes, 36 seconds
4	Empty	NONE	NONE	NONE	

use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

lcc4-re0:


```

Slot  State          Cable errors  Link errors  Destination errors  Uptime
0      Online          6            NONE         NONE                21 hours,
57 minutes, 1 second
1      Online          6            NONE         NONE                21 hours,
57 minutes, 21 seconds
2      Online          6            NONE         NONE                21 hours,
57 minutes, 14 seconds
3      Online          6            NONE         NONE                21 hours,
57 minutes, 7 seconds
4      Empty          NONE         NONE         NONE
use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

```

lcc7-re0:

```

-----
Slot  State          Cable errors  Link errors  Destination errors  Uptime
0      Online          2            NONE         NONE                21 hours,
56 minutes, 54 seconds
1      Online          2            NONE         NONE                21 hours,
57 minutes, 21 seconds
2      Online          2            NONE         NONE                21 hours,
57 minutes, 12 seconds
3      Online          2            NONE         NONE                21 hours,
57 minutes, 3 seconds
4      Empty          NONE         NONE         NONE
use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

```

show chassis sibs sfc (TX Matrix Plus Router)

```

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

```

```

-----
Slot  State          Type          Link errors  Destination errors  Uptime
0      Spare          SIB F13       NONE         NONE
1      Empty
2      Invalid
3      Online          SIB F13       NONE         NONE                12 hours,
6 minutes, 22 seconds
4      Empty
5      Invalid
6      Online          SIB F13       NONE         NONE                12 hours,
6 minutes, 11 seconds
7      Empty
8      Online          SIB F13       NONE         NONE                12 hours,
6 minutes
9      Empty
10     Invalid
11     Online          SIB F13       NONE         NONE                12 hours,
5 minutes, 49 seconds
12     Empty
13     Invalid
14     Invalid
15     Invalid
0/0    Spare          SIB F2S       NONE         NONE
0/2    Spare          SIB F2S       NONE         NONE
0/4    Spare          SIB F2S       NONE         NONE
0/6    Spare          SIB F2S       NONE         NONE
1/0    Online          SIB F2S       NONE         NONE                12 hours,
6 minutes, 32 seconds
1/2    Online          SIB F2S       NONE         NONE                12 hours,
6 minutes, 31 seconds
1/4    Online          SIB F2S       NONE         NONE                12 hours,

```

6 minutes, 30 seconds				
1/6 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 29 seconds				
2/0 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 21 seconds				
2/2 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 20 seconds				
2/4 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 19 seconds				
2/6 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 17 seconds				
3/0 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 10 seconds				
3/2 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 9 seconds				
3/4 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 7 seconds				
3/6 Online	SIB F2S	NONE	NONE	12 hours,
6 minutes, 6 seconds				
4/0 Online	SIB F2S	NONE	NONE	12 hours,
5 minutes, 59 seconds				
4/2 Online	SIB F2S	NONE	NONE	12 hours,
5 minutes, 57 seconds				
4/4 Online	SIB F2S	NONE	NONE	12 hours,
5 minutes, 56 seconds				
4/6 Online	SIB F2S	NONE	NONE	12 hours,
5 minutes, 55 seconds				

show chassis sibs lcc (TX Matrix Plus Router)

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

Slot	State	Link errors	Destination errors	Uptime
0	Online	NONE	NONE	20 hours, 14 minutes,
				50 seconds
1	Fault	NONE	NONE	
2	Online	NONE	NONE	20 hours, 15 minutes,
				2 seconds
3	Online	NONE	NONE	20 hours, 14 minutes,
				58 seconds
4	Online	NONE	NONE	20 hours, 14 minutes,
				54 seconds

show chassis sibs lcc (TX Matrix Plus Router with 3D SIBs)

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

Slot	State	Cable errors	Link errors	Destination errors	Uptime
0	Disconnected	NONE	NONE	NONE	17 hours,
					2 minutes, 37 seconds
1	Online	NONE	NONE	NONE	17 hours,
					3 minutes, 6 seconds
2	Online	NONE	NONE	NONE	17 hours,
					2 minutes, 59 seconds
3	Online	NONE	NONE	NONE	17 hours,
					2 minutes, 52 seconds
4	Online	NONE	NONE	NONE	17 hours,
					2 minutes, 44 seconds

show chassis sibs (M320 Router)

```
user@host> show chassis sibs
```

0	Online	1 hour, 18 minutes, 3 seconds
1	Offline	--- Offlined by cli command ---
2	Online	1 hour, 18 minutes, 18 seconds
3	Online	1 hour, 18 minutes, 3 seconds

show chassis sibs (PTX Series)

```
user@host> show chassis sibs
```

Slot	State	Fabric links	Errors
0	Online	Active	None
1	Online	Active	Link Errors
2	Online	Active	None
3	Online	Active	Cell drops
4	Offline	Unused	None
5	Online	Active	None
6	Online	Active	None
7	Online	Active	None
8	Online	Active	None

show chassis sibs (PTX Series)

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

```
Slot 4 information
```

State	Offline
Reason	Offlined by cli command
Fabric links	Unused
Errors	None

show chassis synchronization

Syntax	<code>show chassis synchronization</code> <code><extensive></code> <code><backup master></code>
Release Information	Command introduced in Junos OS Release 7.6 for M320 routers. Command introduced in Junos OS Release 8.3 for M40e routers. Command introduced in Junos OS Release 9.3 for M120 routers. Command introduced in Junos OS Release 10.2 for T320, T640, and T1600 routers. Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.2 for ACX Series routers.
Description	(ACX Series, M320, M40e, M120, T320, T640, and T1600 routers and PTX Series Packet Transport Routers only) Display information about the external clock source currently used for chassis synchronization.
Options	extensive —(Optional) Display clock synchronization information in detail. backup —(Optional) Display clock synchronization information about the backup clock. master —(Optional) Display clock synchronization information about the master clock.
Required Privilege Level	maintenance
Related Documentation	<ul style="list-style-type: none">• request chassis synchronization switch on page 238• <i>Configuring Clock Synchronization Interface for MX Series Routers</i>• <i>show chassis synchronization (MX Series Routers)</i>• <i>Supported Time Synchronization Standard</i>• <i>Configuring External Clock Synchronization for ACX Series Routers</i>
List of Sample Output	show chassis synchronization on page 746 show chassis synchronization master on page 746 show chassis synchronization backup on page 746 show chassis synchronization extensive on page 746 show chassis synchronization (T320, T640, and T1600 Routers) on page 747 show chassis synchronization (PTX Series Packet Transport Routers) on page 747 show chassis synchronization extensive (ACX Series Routers) on page 747
Output Fields	Table 39 on page 745 lists the output fields for the <code>show chassis synchronization</code> command. Output fields are listed in the approximate order in which they appear. show chassis synchronizations show chassis synchronizations show chassis synchronization

Table 39: show chassis synchronization Output Fields

Field Name	Field Description
Current state	<p>Indicates current status of external clock sources:</p> <ul style="list-style-type: none"> • backup—Source is currently the backup clock source. • master—Source is currently the master clock source. • Online-Master—(PTX Series Packet Transport Routers) Source is the master clock. Source is online. • Online-Standby—(PTX Series Packet Transport Routers) Source is the standby (backup) clock. Source is online.
Current clock state	<p>Indicates current source of external synchronization:</p> <ul style="list-style-type: none"> • internal—Source is providing its own clocking. • locked to master CB—(M320, M40e, and M120 routers) Source is locked to master clock source. • locked to master SCG—(T320, T640, and T1600 routers) Source is locked to master clock source. • locked to master CCG—(PTX Series Packet Transport Routers) Source is locked to master clock source.
Selected for	Number of seconds this clock has been the master or backup clock source.
Selected since	Timestamp for establishment as master or backup clock source.
Deviation (in ppm)	Difference in clock timing, in parts per million (ppm).
Last deviation (in ppm)	Previous difference in clock timing, if any, in ppm.
Configured sources	Information about clock sources eligible for selection as master clock.
Source	Information about external clock sources.
Priority	<p>Indicates priority of external clock sources:</p> <ul style="list-style-type: none"> • primary—Source is a primary reference. • secondary—Source is a secondary reference.
Deviation (in ppm)	<p>Current difference in clock timing, in ppm:</p> <ul style="list-style-type: none"> • measuring—Establishing source deviation. • number—Deviation in ppm.
Last deviation (in ppm)	<p>Previous difference in clock timing, in ppm:</p> <ul style="list-style-type: none"> • number—Deviation in ppm.
Status	<p>Indicates status of external sources:</p> <ul style="list-style-type: none"> • present—Source is configured and present. • qualified—Source is eligible for synchronization source.

Sample Output

show chassis synchronization

```
user@host> show chassis synchronization
Clock Synchronization Status :
  Clock module on CB 0
    Current state      : master
    Current clock state : internal
    Selected for       : 18 hours, 12 minutes, 43 seconds
    Selected since      : 2008-09-10 03:27:47 PDT
    Deviation (in ppm)  : +0.00
    Last deviation (in ppm): +0.00
  Clock Synchronization Status :
    Clock module on CB 1
      Current state      : backup
      Current clock state : locked to master CB
      Selected for       : 1 day, 12 hours, 49 minutes, 20 seconds
      Selected since      : 2008-09-09 08:51:10 PDT
```

show chassis synchronization master

```
user@host> show chassis synchronization master
Clock Synchronization Status :
  Clock module on CB 0
    Current state      : master
    Current clock state : internal
    Selected for       : 8 days, 21 minutes, 12 seconds
    Selected since      : 2008-08-27 21:05:40 PDT
    Deviation (in ppm)  : +0.00
    Last deviation (in ppm): +0.00
```

show chassis synchronization backup

```
user@host> show chassis synchronization backup
Clock Synchronization Status :
  Clock module on CB 1
    Current state      : backup
    Current clock state : locked to master CB
    Selected for       : 34 days, 20 hours, 17 minutes, 8 seconds
    Selected since      : 2008-08-01 01:22:16 PDT
```

show chassis synchronization extensive

```
user@host> show chassis synchronization extensive
Clock Synchronization Status :
  Clock module on CB 0
    Current state      : master
    Current clock state : internal
    Selected for       : 8 days, 36 minutes, 29 seconds
    Selected since      : 2008-08-27 21:05:40 PDT
    Deviation (in ppm)  : +0.00
    Last deviation (in ppm): +0.00
  Clock Synchronization Status :
    Clock module on CB 1
      Current state      : backup
      Current clock state : locked to master CB
      Selected for       : 34 days, 20 hours, 19 minutes, 53 seconds
      Selected since      : 2008-08-01 01:22:16 PDT
```

show chassis synchronization (T320, T640, and T1600 Routers)

```

user@host> show chassis synchronization
Clock Synchronization Status :
Clock module on SCG 0
  Current state           : master
  Current clock state     : locked to external-a
  Selected for            : 2 hours, 28 minutes, 4 seconds
  Selected since          : 2006-02-17 01:12:58 PST
Configured sources
  Source      Priority  Deviation    Last deviation  Status
                (in ppm)    (in ppm)
  external-a  primary   measuring    -0.10           in-use
  external-b  secondary -0.10        -0.10           qualified
Clock Synchronization Status :
Clock module on SCG 1
  Current state           : backup
  Current clock state     : locked to master SCG
  Selected for            : 19 hours, 49 minutes, 14 seconds
  Selected since          : 2006-02-16 07:51:48 PST
Configured sources
  Source      Priority  Deviation    Last deviation  Status
                (in ppm)    (in ppm)
  external-a  primary   -0.25        -0.25           qualified
  external-b  secondary -0.25        -0.25           qualified

```

show chassis synchronization (PTX Series Packet Transport Routers)

```

user@host> show chassis synchronization
Clock Synchronization Status :
Clock module on CCG 0
  Current state           : Online - Master
  Current clock state     : internal
  Selected for            : 1 hour, 24 minutes, 21 seconds
  Selected since          : 2011-03-21 15:59:37 PDT
  Deviation (in ppm)      : +0.51
  Last deviation (in ppm) : +0.51
Clock Synchronization Status :
Clock module on CCG 1
  Current state           : Online - Standby
  Current clock state     : locked to master CCG
  Selected for            : 1 hour, 39 minutes, 12 seconds
  Selected since          : 2011-03-21 15:44:46 PDT

```

show chassis synchronization extensive (ACX Series Routers)

```

user@host> show chassis synchronization extensive
Current clock status : Locked
Clock locked to      : Primary
Configured sources:
Interface            : ce1-0/0/4
Status               : Primary                               Index      : 132
Clock source state   : Clk qualified   Priority     : Default(8)
Configured QL        : PRC              ESMC QL      : Unknown
Clock source type    : ifd              Clock Event : Clock locked
Kernel flags         : Up,pri,

```

show chassis temperature-thresholds

Syntax	show chassis temperature-thresholds
Syntax (TX Matrix Routers)	show chassis temperature-thresholds <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Routers)	show chassis temperature-thresholds <lcc <i>number</i> sfc <i>number</i> >
Syntax (MX Series Routers)	show chassis temperature-thresholds <all-members> <local> <member <i>member-id</i> >
Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)	show chassis temperature-thresholds
Syntax (QFX Series)	show chassis temperature-thresholds <interconnect-device <i>name</i> > <node-device <i>name</i> >
Release Information	<p>Command introduced in Junos OS Release 8.0.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>sfc command introduced for the TX Matrix Plus router in Junos OS Release 9.6.</p> <p>Command introduced in Junos OS Release 11.1 for QFX Series.</p> <p>Command introduced in Junos OS Release 12.1 for T4000 Core Routers.</p> <p>Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers.</p> <p>Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.</p>
Description	Display chassis temperature threshold settings, in degrees Celsius.
Options	<p>none—Display the temperature threshold details.</p> <p>all-members—(MX Series routers only) (Optional) Display the chassis temperature threshold settings of all member routers in the Virtual Chassis configuration.</p> <p>interconnect-device <i>name</i>—(QFabric systems only) (Optional) Display the chassis temperature threshold settings of the Interconnect device.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display the temperature threshold details of a specified T640 router (line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display the temperature threshold details of a specified router (line-card chassis) that is connected to a TX Matrix Plus router.</p>

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

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

local—(MX Series routers only) (Optional) Display the chassis temperature threshold settings of the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display the chassis temperature threshold settings of the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

node-device *name*—(QFabric systems only) (Optional) Display the chassis temperature threshold settings of the Node device.

scc—(TX Matrix routers only) (Optional) Display the temperature threshold details of the TX Matrix router (switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) On TX Matrix Plus routers, display the temperature threshold details of the TX Matrix Plus router, which is the switch-fabric chassis. Replace *number* with 0.

Required Privilege Level

view

Related Documentation

- *Defining Alarm Thresholds for System Temperature Sensors*

List of Sample Output

[show chassis temperature-thresholds on page 751](#)
[show chassis temperature-thresholds \(MX104 Router\) on page 751](#)
[show chassis temperature-thresholds \(MX240, MX480, MX960 Routers with Application Services Modular Line Card\) on page 751](#)
[show chassis temperature-thresholds \(MX480 Router with MPC4E\) on page 752](#)
[show chassis temperature-thresholds \(MX2010 Router\) on page 752](#)
[show chassis temperature-thresholds \(MX2020 Router\) on page 754](#)
[show chassis temperature-thresholds \(MX2020 Router with MPC4E\) on page 757](#)
[show chassis temperature-thresholds \(T4000 Core Routers\) on page 759](#)
[show chassis temperature-thresholds \(TX Matrix Plus Router\) on page 759](#)
[show chassis temperature-thresholds lcc \(TX Matrix Plus Router\) on page 761](#)
[show chassis temperature-thresholds sfc \(TX Matrix Plus Router\) on page 761](#)
[show chassis temperature-thresholds \(TX Matrix Plus routers with 3D SIBs\) on page 762](#)
[show chassis temperature-thresholds \(QFX3500 Switch and QFX3600\) on page 763](#)

[show chassis temperature-thresholds interconnect-device \(QFabric System\)](#) on page 763

[show chassis temperature-thresholds \(PTX5000 Packet Transport Router\)](#) on page 764

[show chassis temperature-thresholds \(MX Routers with Media Services Blade \[MSB\]\)](#) on page 765

Output Fields Table 40 on page 750 lists the output fields for the **show chassis temperature-thresholds** command. Output fields are listed in the approximate order in which they appear.

Table 40: show chassis temperature-thresholds Output Fields

Field name	Field Description
Item	Chassis component. If per FRU per slot thresholds are configured, the components about which information is displayed include the chassis, the Routing Engines, FPCs, and FEBs. If per FRU per slot thresholds are not configured, the components about which information is displayed include the chassis and the Routing Engines.
Fan speed	<p>NOTE: On the QFX3500 switch and QFX3600 switch, there are four fan speeds: low, medium-low, medium-high, and high. The fan speed changes at the threshold when going from a low speed to a higher speed. When the fan speed changes from a higher speed to a lower speed, the temperature changes two degrees below the threshold.</p> <p>Temperature threshold settings, in degrees Celsius, for the fans to operate at normal and high speeds.</p> <ul style="list-style-type: none"> • Normal—The fans operate at normal speed if the component is at or below this temperature and all the fans are present and functioning normally. <p>NOTE: On a TX Matrix Plus router with 3D SIBs, the threshold temperature at the XF junction is set to 70°C for Normal fan speed, which is less than or equal to 4800 RPM.</p> <ul style="list-style-type: none"> • High—The fans operate at high speed if the component has exceeded this temperature or a fan has failed or is missing. <p>NOTE: On a TX Matrix Plus router with 3D SIBs, the threshold temperature at the XF junction is set to 75°C for High fan speed, which is greater than or equal to 5000 RPM.</p> <p>NOTE: For MX480 Routers, there are three fan speeds: Low, Medium, and High.</p> <p>An alarm is not triggered until the temperature exceeds the threshold settings for a yellow alarm or a red alarm.</p>
Yellow alarm	<p>Temperature threshold settings, in degrees Celsius, that trigger a yellow alarm.</p> <ul style="list-style-type: none"> • Normal—The temperature that must be exceeded on the component to trigger a yellow alarm when the fans are running at full speed. • Bad fan—The temperature that must be exceeded on the component to trigger a yellow alarm when one or more fans have failed or are missing.
Red alarm	<p>Temperature threshold settings, in degrees Celsius, that trigger a red alarm.</p> <ul style="list-style-type: none"> • Normal—The temperature that must be exceeded on the component to trigger a red alarm when the fans are running at full speed. • Bad fan—The temperature that must be exceeded on the component to trigger a red alarm when one or more fans have failed or are missing.
Fire Shutdown	(T4000 routers, TX Matrix Plus router with 3D SIBs, and PTX Series Packet Transport Routers only)—Temperature threshold settings, in degrees Celsius, for the network device to shut down.

Sample Output

show chassis temperature-thresholds

```
user@host> show chassis temperature-thresholds
```

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)	
	Normal	High	Normal	Bad fan	Normal	Bad fan
Chassis default	48	54	65	55	75	65
Routing Engine 0	70	80	95	95	110	110
Routing Engine 1	70	80	95	95	110	110
FPC 0	55	60	75	65	90	80
FPC 1	55	60	75	65	90	80
FPC 2	55	60	75	65	90	80
FPC 3	55	60	75	65	90	80
FPC 4	55	60	75	65	90	80
FPC 5	55	60	75	65	90	80
FPC 6	55	60	75	65	90	80
FPC 7	55	60	75	65	90	80
FPC 8	55	60	75	65	90	80
FPC 9	55	60	75	65	90	80
FPC 10	55	60	75	65	90	80
FPC 11	55	60	75	65	90	80

show chassis temperature-thresholds (MX104 Router)

```
user@host> show chassis temperature-thresholds
```

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)		Fire Shutdown (degrees C)	
	Normal	High	Normal	Bad fan	Normal	Bad fan	Normal	Bad fan
Chassis default	48	54	65	55	75	65		
Routing Engine 0	55	80	95	95	105	100		

show chassis temperature-thresholds (MX240, MX480, MX960 Routers with Application Services Modular Line Card)

```
user@host> show chassis temperature-thresholds
```

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)		Fire Shutdown (degrees C)	
	Normal	High	Normal	Bad fan	Normal	Bad fan	Normal	Bad fan
Chassis default	48	54	65	55	75	65		
Routing Engine 0	70	80	95	95	110	110		
Routing Engine 1	70	80	95	95	110	110		
FPC 0	55	60	75	65	90	80		
FPC 1	55	60	75	65	90	80		
FPC 2	55	60	75	65	90	80		
FPC 4	55	60	75	65	90	80		

```

FPC 5          55    60    75    65    90    80
95

```

show chassis temperature-thresholds (MX480 Router with MPC4E)

```

user@ host> show chassis temperature-thresholds
      Fan speed      Yellow alarm      Red alarm      Fire Shutdown
      (degrees C)    (degrees C)    (degrees C)    (degrees C)
Item
Normal
Chassis default      48    54    65    55    75    65
100
Routing Engine 0      70    80    95    95    110    110
112
Routing Engine 1      70    80    95    95    110    110
112
FPC 2      55    60    75    65    95    80
100
FPC 3      55    60    75    65    95    80
100
FPC 4      55    60    75    65    90    80
95

```

show chassis temperature-thresholds (MX2010 Router)

```

user@host> show chassis temperature-thresholds
      Fan speed      Yellow alarm      Red alarm      Fire Shutdown
      (degrees C)    (degrees C)    (degrees C)    (degrees C)
Item
Normal
Routing Engine 0      70    80    95    95    110    110    112
Routing Engine 1      70    80    95    95    110    110    112
CB 0 IntakeA-Zone0    60    65    78    75    85    80    95
CB 0 IntakeB-Zone1    60    65    78    75    85    80    95
CB 0 IntakeC-Zone0    60    65    78    75    85    80    95
CB 0 ExhaustA-Zone0   60    65    78    75    85    80    95
CB 0 ExhaustB-Zone1   60    65    78    75    85    80    95
CB 0 TCBC-Zone0       60    65    78    75    85    80    95
CB 1 IntakeA-Zone0    60    65    78    75    85    80    95
CB 1 IntakeB-Zone1    60    65    78    75    85    80    95
CB 1 IntakeC-Zone0    60    65    78    75    85    80    95
CB 1 ExhaustA-Zone0   60    65    78    75    85    80    95
CB 1 ExhaustB-Zone1   60    65    78    75    85    80    95
CB 1 TCBC-Zone0       60    65    78    75    85    80    95
SPMB 0 Intake         56    62    75    63    83    76    95
SPMB 1 Intake         56    62    75    63    83    76    95
SFB 0 Intake-Zone0    56    62    75    63    82    70    87
SFB 0 Exhaust-Zone1   56    62    75    63    82    70    87
SFB 0 IntakeA-Zone0   56    62    75    63    82    70    87
SFB 0 IntakeB-Zone1   56    62    75    63    82    70    87
SFB 0 Exhaust-Zone0   56    62    75    63    82    70    87
SFB 0 SFB-XF2-Zone1   70    80    90    90    107    107    115
SFB 0 SFB-XF1-Zone0   70    80    90    90    107    107    115
SFB 0 SFB-XF0-Zone0   70    80    90    90    107    107    115
SFB 1 Intake-Zone0    56    62    75    63    82    70    87
SFB 1 Exhaust-Zone1   56    62    75    63    82    70    87
SFB 1 IntakeA-Zone0   56    62    75    63    82    70    87
SFB 1 IntakeB-Zone1   56    62    75    63    82    70    87
SFB 1 Exhaust-Zone0   56    62    75    63    82    70    87
SFB 1 SFB-XF2-Zone1   70    80    90    90    107    107    115
SFB 1 SFB-XF1-Zone0   70    80    90    90    107    107    115

```

SFB 1 SFB-XF0-Zone0	70	80	90	90	107	107	115
SFB 2 Intake-Zone0	56	62	75	63	82	70	87
SFB 2 Exhaust-Zone1	56	62	75	63	82	70	87
SFB 2 IntakeA-Zone0	56	62	75	63	82	70	87
SFB 2 IntakeB-Zone1	56	62	75	63	82	70	87
SFB 2 Exhaust-Zone0	56	62	75	63	82	70	87
SFB 2 SFB-XF2-Zone1	70	80	90	90	107	107	115
SFB 2 SFB-XF1-Zone0	70	80	90	90	107	107	115
SFB 2 SFB-XF0-Zone0	70	80	90	90	107	107	115
SFB 3 Intake-Zone0	56	62	75	63	82	70	87
SFB 3 Exhaust-Zone1	56	62	75	63	82	70	87
SFB 3 IntakeA-Zone0	56	62	75	63	82	70	87
SFB 3 IntakeB-Zone1	56	62	75	63	82	70	87
SFB 3 Exhaust-Zone0	56	62	75	63	82	70	87
SFB 3 SFB-XF2-Zone1	70	80	90	90	107	107	115
SFB 3 SFB-XF1-Zone0	70	80	90	90	107	107	115
SFB 3 SFB-XF0-Zone0	70	80	90	90	107	107	115
SFB 4 Intake-Zone0	56	62	75	63	82	70	87
SFB 4 Exhaust-Zone1	56	62	75	63	82	70	87
SFB 4 IntakeA-Zone0	56	62	75	63	82	70	87
SFB 4 IntakeB-Zone1	56	62	75	63	82	70	87
SFB 4 Exhaust-Zone0	56	62	75	63	82	70	87
SFB 4 SFB-XF2-Zone1	70	80	90	90	107	107	115
SFB 4 SFB-XF1-Zone0	70	80	90	90	107	107	115
SFB 4 SFB-XF0-Zone0	70	80	90	90	107	107	115
SFB 5 Intake-Zone0	56	62	75	63	82	70	87
SFB 5 Exhaust-Zone1	56	62	75	63	82	70	87
SFB 5 IntakeA-Zone0	56	62	75	63	82	70	87
SFB 5 IntakeB-Zone1	56	62	75	63	82	70	87
SFB 5 Exhaust-Zone0	56	62	75	63	82	70	87
SFB 5 SFB-XF2-Zone1	70	80	90	90	107	107	115
SFB 5 SFB-XF1-Zone0	70	80	90	90	107	107	115
SFB 5 SFB-XF0-Zone0	70	80	90	90	107	107	115
SFB 6 Intake-Zone0	56	62	75	63	82	70	87
SFB 6 Exhaust-Zone1	56	62	75	63	82	70	87
SFB 6 IntakeA-Zone0	56	62	75	63	82	70	87
SFB 6 IntakeB-Zone1	56	62	75	63	82	70	87
SFB 6 Exhaust-Zone0	56	62	75	63	82	70	87
SFB 6 SFB-XF2-Zone1	70	80	90	90	107	107	115
SFB 6 SFB-XF1-Zone0	70	80	90	90	107	107	115
SFB 6 SFB-XF0-Zone0	70	80	90	90	107	107	115
SFB 7 Intake-Zone0	56	62	75	63	82	70	87
SFB 7 Exhaust-Zone1	56	62	75	63	82	70	87
SFB 7 IntakeA-Zone0	56	62	75	63	82	70	87
SFB 7 IntakeB-Zone1	56	62	75	63	82	70	87
SFB 7 Exhaust-Zone0	56	62	75	63	82	70	87
SFB 7 SFB-XF2-Zone1	70	80	90	90	107	107	115
SFB 7 SFB-XF1-Zone0	70	80	90	90	107	107	115
SFB 7 SFB-XF0-Zone0	70	80	90	90	107	107	115
FPC 0	55	60	75	65	95	80	100
FPC 1	55	60	75	65	90	80	95
FPC 2	55	60	75	65	95	80	100
FPC 3	55	60	75	65	90	80	95
FPC 4	55	60	75	65	90	80	95
FPC 5	55	60	75	65	95	80	100
FPC 6	55	60	75	65	90	80	95
FPC 7	55	60	75	65	95	80	100
FPC 8	55	60	75	65	90	80	95
FPC 9	55	60	75	65	95	80	100
ADC 0 Intake	56	62	75	63	83	76	95
ADC 0 Exhaust	56	62	75	63	83	76	95

ADC 0 ADC-XF1	70	80	90	90	107	107	115
ADC 0 ADC-XF0	70	80	90	90	107	107	115
ADC 1 Intake	56	62	75	63	83	76	95
ADC 1 Exhaust	56	62	75	63	83	76	95
ADC 1 ADC-XF1	70	80	90	90	107	107	115
ADC 1 ADC-XF0	70	80	90	90	107	107	115
ADC 2 Intake	56	62	75	63	83	76	95
ADC 2 Exhaust	56	62	75	63	83	76	95
ADC 2 ADC-XF1	70	80	90	90	107	107	115
ADC 2 ADC-XF0	70	80	90	90	107	107	115
ADC 3 Intake	56	62	75	63	83	76	95
ADC 3 Exhaust	56	62	75	63	83	76	95
ADC 3 ADC-XF1	70	80	90	90	107	107	115
ADC 3 ADC-XF0	70	80	90	90	107	107	115
ADC 4 Intake	56	62	75	63	83	76	95
ADC 4 Exhaust	56	62	75	63	83	76	95
ADC 4 ADC-XF1	70	80	90	90	107	107	115
ADC 4 ADC-XF0	70	80	90	90	107	107	115
ADC 5 Intake	56	62	75	63	83	76	95
ADC 5 Exhaust	56	62	75	63	83	76	95
ADC 5 ADC-XF1	70	80	90	90	107	107	115
ADC 5 ADC-XF0	70	80	90	90	107	107	115
ADC 6 Intake	56	62	75	63	83	76	95
ADC 6 Exhaust	56	62	75	63	83	76	95
ADC 6 ADC-XF1	70	80	90	90	107	107	115
ADC 6 ADC-XF0	70	80	90	90	107	107	115
ADC 7 Intake	56	62	75	63	83	76	95
ADC 7 Exhaust	56	62	75	63	83	76	95
ADC 7 ADC-XF1	70	80	90	90	107	107	115
ADC 7 ADC-XF0	70	80	90	90	107	107	115
ADC 8 Intake	56	62	75	63	83	76	95
ADC 8 Exhaust	56	62	75	63	83	76	95
ADC 8 ADC-XF1	70	80	90	90	107	107	115
ADC 8 ADC-XF0	70	80	90	90	107	107	115
ADC 9 Intake	56	62	75	63	83	76	95
ADC 9 Exhaust	56	62	75	63	83	76	95
ADC 9 ADC-XF1	70	80	90	90	107	107	115
ADC 9 ADC-XF0	70	80	90	90	107	107	115

show chassis temperature-thresholds (MX2020 Router)

```
user@host> show chassis temperature-thresholds
```

	Fan speed		Yellow alarm		Red alarm		Fire Shutdown
	(degrees C)		(degrees C)		(degrees C)		(degrees C)
Item	Normal	High	Normal	Bad fan	Normal	Bad fan	Normal
Routing Engine 0	70	80	95	95	110	110	112
Routing Engine 1	70	80	95	95	110	110	112
CB 0 IntakeA-Zone0	60	65	78	75	85	80	95
CB 0 IntakeB-Zone1	60	65	78	75	85	80	95
CB 0 IntakeC-Zone0	60	65	78	75	85	80	95
CB 0 ExhaustA-Zone0	60	65	78	75	85	80	95
CB 0 ExhaustB-Zone1	60	65	78	75	85	80	95
CB 0 TCBC-Zone0	60	65	78	75	85	80	95
CB 1 IntakeA-Zone0	60	65	78	75	85	80	95
CB 1 IntakeB-Zone1	60	65	78	75	85	80	95
CB 1 IntakeC-Zone0	60	65	78	75	85	80	95
CB 1 ExhaustA-Zone0	60	65	78	75	85	80	95
CB 1 ExhaustB-Zone1	60	65	78	75	85	80	95
CB 1 TCBC-Zone0	60	65	78	75	85	80	95
SPMB 0 Intake	56	62	75	63	83	76	95

SPMB 1 Intake	56	62	75	63	83	76	95
SFB 0 Intake-Zone0	56	62	75	63	82	70	87
SFB 0 Exhaust-Zone1	56	62	75	63	82	70	87
SFB 0 IntakeA-Zone0	56	62	75	63	82	70	87
SFB 0 IntakeB-Zone1	56	62	75	63	82	70	87
SFB 0 Exhaust-Zone0	56	62	75	63	82	70	87
SFB 0 SFB-XF2-Zone1	70	80	90	90	107	107	115
SFB 0 SFB-XF1-Zone0	70	80	90	90	107	107	115
SFB 0 SFB-XF0-Zone0	70	80	90	90	107	107	115
SFB 1 Intake-Zone0	56	62	75	63	82	70	87
SFB 1 Exhaust-Zone1	56	62	75	63	82	70	87
SFB 1 IntakeA-Zone0	56	62	75	63	82	70	87
SFB 1 IntakeB-Zone1	56	62	75	63	82	70	87
SFB 1 Exhaust-Zone0	56	62	75	63	82	70	87
SFB 1 SFB-XF2-Zone1	70	80	90	90	107	107	115
SFB 1 SFB-XF1-Zone0	70	80	90	90	107	107	115
SFB 1 SFB-XF0-Zone0	70	80	90	90	107	107	115
SFB 2 Intake-Zone0	56	62	75	63	82	70	87
SFB 2 Exhaust-Zone1	56	62	75	63	82	70	87
SFB 2 IntakeA-Zone0	56	62	75	63	82	70	87
SFB 2 IntakeB-Zone1	56	62	75	63	82	70	87
SFB 2 Exhaust-Zone0	56	62	75	63	82	70	87
SFB 2 SFB-XF2-Zone1	70	80	90	90	107	107	115
SFB 2 SFB-XF1-Zone0	70	80	90	90	107	107	115
SFB 2 SFB-XF0-Zone0	70	80	90	90	107	107	115
SFB 3 Intake-Zone0	56	62	75	63	82	70	87
SFB 3 Exhaust-Zone1	56	62	75	63	82	70	87
SFB 3 IntakeA-Zone0	56	62	75	63	82	70	87
SFB 3 IntakeB-Zone1	56	62	75	63	82	70	87
SFB 3 Exhaust-Zone0	56	62	75	63	82	70	87
SFB 3 SFB-XF2-Zone1	70	80	90	90	107	107	115
SFB 3 SFB-XF1-Zone0	70	80	90	90	107	107	115
SFB 3 SFB-XF0-Zone0	70	80	90	90	107	107	115
SFB 4 Intake-Zone0	56	62	75	63	82	70	87
SFB 4 Exhaust-Zone1	56	62	75	63	82	70	87
SFB 4 IntakeA-Zone0	56	62	75	63	82	70	87
SFB 4 IntakeB-Zone1	56	62	75	63	82	70	87
SFB 4 Exhaust-Zone0	56	62	75	63	82	70	87
SFB 4 SFB-XF2-Zone1	70	80	90	90	107	107	115
SFB 4 SFB-XF1-Zone0	70	80	90	90	107	107	115
SFB 4 SFB-XF0-Zone0	70	80	90	90	107	107	115
SFB 5 Intake-Zone0	56	62	75	63	82	70	87
SFB 5 Exhaust-Zone1	56	62	75	63	82	70	87
SFB 5 IntakeA-Zone0	56	62	75	63	82	70	87
SFB 5 IntakeB-Zone1	56	62	75	63	82	70	87
SFB 5 Exhaust-Zone0	56	62	75	63	82	70	87
SFB 5 SFB-XF2-Zone1	70	80	90	90	107	107	115
SFB 5 SFB-XF1-Zone0	70	80	90	90	107	107	115
SFB 5 SFB-XF0-Zone0	70	80	90	90	107	107	115
SFB 6 Intake-Zone0	56	62	75	63	82	70	87
SFB 6 Exhaust-Zone1	56	62	75	63	82	70	87
SFB 6 IntakeA-Zone0	56	62	75	63	82	70	87
SFB 6 IntakeB-Zone1	56	62	75	63	82	70	87
SFB 6 Exhaust-Zone0	56	62	75	63	82	70	87
SFB 6 SFB-XF2-Zone1	70	80	90	90	107	107	115
SFB 6 SFB-XF1-Zone0	70	80	90	90	107	107	115
SFB 6 SFB-XF0-Zone0	70	80	90	90	107	107	115
SFB 7 Intake-Zone0	56	62	75	63	82	70	87
SFB 7 Exhaust-Zone1	56	62	75	63	82	70	87
SFB 7 IntakeA-Zone0	56	62	75	63	82	70	87
SFB 7 IntakeB-Zone1	56	62	75	63	82	70	87

SFB 7 Exhaust-Zone0	56	62	75	63	82	70	87
SFB 7 SFB-XF2-Zone1	70	80	90	90	107	107	115
SFB 7 SFB-XF1-Zone0	70	80	90	90	107	107	115
SFB 7 SFB-XF0-Zone0	70	80	90	90	107	107	115
FPC 0	55	60	75	65	90	80	95
FPC 1	55	60	75	65	90	80	95
FPC 2	55	60	75	65	90	80	95
FPC 3	55	60	75	65	90	80	95
FPC 4	55	60	75	65	90	80	95
FPC 5	55	60	75	65	90	80	95
FPC 6	55	60	75	65	90	80	95
FPC 7	55	60	75	65	90	80	95
FPC 8	55	60	75	65	90	80	95
FPC 9	55	60	75	65	90	80	95
FPC 10	55	60	75	65	90	80	95
FPC 11	55	60	75	65	90	80	95
FPC 12	55	60	75	65	90	80	95
FPC 13	55	60	75	65	90	80	95
FPC 14	55	60	75	65	90	80	95
FPC 15	55	60	75	65	90	80	95
FPC 16	55	60	75	65	90	80	95
FPC 17	55	60	75	65	90	80	95
FPC 18	55	60	75	65	90	80	95
FPC 19	55	60	75	65	90	80	95
ADC 0 Intake	56	62	75	63	83	76	95
ADC 0 Exhaust	56	62	75	63	83	76	95
ADC 0 ADC-XF1	70	80	90	90	107	107	115
ADC 0 ADC-XF0	70	80	90	90	107	107	115
ADC 1 Intake	56	62	75	63	83	76	95
ADC 1 Exhaust	56	62	75	63	83	76	95
ADC 1 ADC-XF1	70	80	90	90	107	107	115
ADC 1 ADC-XF0	70	80	90	90	107	107	115
ADC 2 Intake	56	62	75	63	83	76	95
ADC 2 Exhaust	56	62	75	63	83	76	95
ADC 2 ADC-XF1	70	80	90	90	107	107	115
ADC 2 ADC-XF0	70	80	90	90	107	107	115
ADC 3 Intake	56	62	75	63	83	76	95
ADC 3 Exhaust	56	62	75	63	83	76	95
ADC 3 ADC-XF1	70	80	90	90	107	107	115
ADC 3 ADC-XF0	70	80	90	90	107	107	115
ADC 4 Intake	56	62	75	63	83	76	95
ADC 4 Exhaust	56	62	75	63	83	76	95
ADC 4 ADC-XF1	70	80	90	90	107	107	115
ADC 4 ADC-XF0	70	80	90	90	107	107	115
ADC 5 Intake	56	62	75	63	83	76	95
ADC 5 Exhaust	56	62	75	63	83	76	95
ADC 5 ADC-XF1	70	80	90	90	107	107	115
ADC 5 ADC-XF0	70	80	90	90	107	107	115
ADC 6 Intake	56	62	75	63	83	76	95
ADC 6 Exhaust	56	62	75	63	83	76	95
ADC 6 ADC-XF1	70	80	90	90	107	107	115
ADC 6 ADC-XF0	70	80	90	90	107	107	115
ADC 7 Intake	56	62	75	63	83	76	95
ADC 7 Exhaust	56	62	75	63	83	76	95
ADC 7 ADC-XF1	70	80	90	90	107	107	115
ADC 7 ADC-XF0	70	80	90	90	107	107	115
ADC 8 Intake	56	62	75	63	83	76	95
ADC 8 Exhaust	56	62	75	63	83	76	95
ADC 8 ADC-XF1	70	80	90	90	107	107	115
ADC 8 ADC-XF0	70	80	90	90	107	107	115
ADC 9 Intake	56	62	75	63	83	76	95

ADC 9 Exhaust	56	62	75	63	83	76	95
ADC 9 ADC-XF1	70	80	90	90	107	107	115
ADC 9 ADC-XF0	70	80	90	90	107	107	115
ADC 10 Intake	56	62	75	63	83	76	95
ADC 10 Exhaust	56	62	75	63	83	76	95
ADC 10 ADC-XF1	70	80	90	90	107	107	115
ADC 10 ADC-XF0	70	80	90	90	107	107	115
ADC 11 Intake	56	62	75	63	83	76	95
ADC 11 Exhaust	56	62	75	63	83	76	95
ADC 11 ADC-XF1	70	80	90	90	107	107	115
ADC 11 ADC-XF0	70	80	90	90	107	107	115
ADC 12 Intake	56	62	75	63	83	76	95
ADC 12 Exhaust	56	62	75	63	83	76	95
ADC 12 ADC-XF1	70	80	90	90	107	107	115
ADC 12 ADC-XF0	70	80	90	90	107	107	115
ADC 13 Intake	56	62	75	63	83	76	95
ADC 13 Exhaust	56	62	75	63	83	76	95
ADC 13 ADC-XF1	70	80	90	90	107	107	115
ADC 13 ADC-XF0	70	80	90	90	107	107	115
ADC 14 Intake	56	62	75	63	83	76	95
ADC 14 Exhaust	56	62	75	63	83	76	95
ADC 14 ADC-XF1	70	80	90	90	107	107	115
ADC 14 ADC-XF0	70	80	90	90	107	107	115
ADC 15 Intake	56	62	75	63	83	76	95
ADC 15 Exhaust	56	62	75	63	83	76	95
ADC 15 ADC-XF1	70	80	90	90	107	107	115
ADC 15 ADC-XF0	70	80	90	90	107	107	115
ADC 16 Intake	56	62	75	63	83	76	95
ADC 16 Exhaust	56	62	75	63	83	76	95
ADC 16 ADC-XF1	70	80	90	90	107	107	115
ADC 16 ADC-XF0	70	80	90	90	107	107	115
ADC 17 Intake	56	62	75	63	83	76	95
ADC 17 Exhaust	56	62	75	63	83	76	95
ADC 17 ADC-XF1	70	80	90	90	107	107	115
ADC 17 ADC-XF0	70	80	90	90	107	107	115
ADC 18 Intake	56	62	75	63	83	76	95
ADC 18 Exhaust	56	62	75	63	83	76	95
ADC 18 ADC-XF1	70	80	90	90	107	107	115
ADC 18 ADC-XF0	70	80	90	90	107	107	115
ADC 19 Intake	56	62	75	63	83	76	95
ADC 19 Exhaust	56	62	75	63	83	76	95
ADC 19 ADC-XF1	70	80	90	90	107	107	115
ADC 19 ADC-XF0	70	80	90	90	107	107	115

show chassis temperature-thresholds (MX2020 Router with MPC4E)

```
user@host> show chassis temperature-thresholds
```

Fan speed	Yellow alarm (degrees C)		Red alarm (degrees C)		Fire Shutdown (degrees C)		(degrees C)
Item	Normal	High	Normal	Bad fan	Normal	Bad fan	Normal
Routing Engine 0	70	80	95	95	110	110	112
Routing Engine 1	70	80	95	95	110	110	112
CB 0 IntakeA-Zone0	60	65	78	75	85	80	95
CB 0 IntakeB-Zone1	60	65	78	75	85	80	95
CB 0 IntakeC-Zone0	60	65	78	75	85	80	95
CB 0 ExhaustA-Zone0	60	65	78	75	85	80	95
CB 0 ExhaustB-Zone1	60	65	78	75	85	80	95
CB 0 TCBC-Zone0	60	65	78	75	85	80	95
CB 1 IntakeA-Zone0	60	65	78	75	85	80	95
CB 1 IntakeB-Zone1	60	65	78	75	85	80	95

CB 1 IntakeC-Zone0	60	65	78	75	85	80	95
CB 1 ExhaustA-Zone0	60	65	78	75	85	80	95
CB 1 ExhaustB-Zone1	60	65	78	75	85	80	95
CB 1 TCBC-Zone0	60	65	78	75	85	80	95
SPMB 0 Intake	56	62	75	63	83	76	95
SPMB 1 Intake	56	62	75	63	83	76	95
SFB 0 Intake-Zone0	56	62	70	70	85	85	89
SFB 0 Exhaust-Zone1	56	62	70	70	85	85	89
SFB 0 IntakeA-Zone0	56	62	70	70	85	85	89
SFB 0 IntakeB-Zone1	56	62	70	70	85	85	89
SFB 0 Exhaust-Zone0	56	62	70	70	85	85	89
SFB 0 SFB-XF2-Zone1	70	75	90	85	95	90	100
SFB 0 SFB-XF1-Zone0	70	75	90	85	95	90	100
SFB 0 SFB-XF0-Zone0	70	75	90	85	95	90	100
SFB 1 Intake-Zone0	56	62	70	70	85	85	89
SFB 1 Exhaust-Zone1	56	62	70	70	85	85	89
SFB 1 IntakeA-Zone0	56	62	70	70	85	85	89
SFB 1 IntakeB-Zone1	56	62	70	70	85	85	89
SFB 1 Exhaust-Zone0	56	62	70	70	85	85	89
SFB 1 SFB-XF2-Zone1	70	75	90	85	95	90	100
SFB 1 SFB-XF1-Zone0	70	75	90	85	95	90	100
SFB 1 SFB-XF0-Zone0	70	75	90	85	95	90	100
SFB 2 Intake-Zone0	56	62	70	70	85	85	89
SFB 2 Exhaust-Zone1	56	62	70	70	85	85	89
SFB 2 IntakeA-Zone0	56	62	70	70	85	85	89
SFB 2 IntakeB-Zone1	56	62	70	70	85	85	89
SFB 2 Exhaust-Zone0	56	62	70	70	85	85	89
SFB 2 SFB-XF2-Zone1	70	75	90	85	95	90	100
SFB 2 SFB-XF1-Zone0	70	75	90	85	95	90	100
SFB 2 SFB-XF0-Zone0	70	75	90	85	95	90	100
SFB 3 Intake-Zone0	56	62	70	70	85	85	89
SFB 3 Exhaust-Zone1	56	62	70	70	85	85	89
SFB 3 IntakeA-Zone0	56	62	70	70	85	85	89
SFB 3 IntakeB-Zone1	56	62	70	70	85	85	89
SFB 3 Exhaust-Zone0	56	62	70	70	85	85	89
SFB 3 SFB-XF2-Zone1	70	75	90	85	95	90	100
SFB 3 SFB-XF1-Zone0	70	75	90	85	95	90	100
SFB 3 SFB-XF0-Zone0	70	75	90	85	95	90	100
SFB 4 Intake-Zone0	56	62	70	70	85	85	89
SFB 4 Exhaust-Zone1	56	62	70	70	85	85	89
SFB 4 IntakeA-Zone0	56	62	70	70	85	85	89
SFB 4 IntakeB-Zone1	56	62	70	70	85	85	89
SFB 4 Exhaust-Zone0	56	62	70	70	85	85	89
SFB 4 SFB-XF2-Zone1	70	75	90	85	95	90	100
SFB 4 SFB-XF1-Zone0	70	75	90	85	95	90	100
SFB 4 SFB-XF0-Zone0	70	75	90	85	95	90	100
SFB 5 Intake-Zone0	56	62	70	70	85	85	89
SFB 5 Exhaust-Zone1	56	62	70	70	85	85	89
SFB 5 IntakeA-Zone0	56	62	70	70	85	85	89
SFB 5 IntakeB-Zone1	56	62	70	70	85	85	89
SFB 5 Exhaust-Zone0	56	62	70	70	85	85	89
SFB 5 SFB-XF2-Zone1	70	75	90	85	95	90	100
SFB 5 SFB-XF1-Zone0	70	75	90	85	95	90	100
SFB 5 SFB-XF0-Zone0	70	75	90	85	95	90	100
SFB 6 Intake-Zone0	56	62	70	70	85	85	89
SFB 6 Exhaust-Zone1	56	62	70	70	85	85	89
SFB 6 IntakeA-Zone0	56	62	70	70	85	85	89
SFB 6 IntakeB-Zone1	56	62	70	70	85	85	89
SFB 6 Exhaust-Zone0	56	62	70	70	85	85	89
SFB 6 SFB-XF2-Zone1	70	75	90	85	95	90	100
SFB 6 SFB-XF1-Zone0	70	75	90	85	95	90	100

SFB 6 SFB-XF0-Zone0	70	75	90	85	95	90	100
SFB 7 Intake-Zone0	56	62	70	70	85	85	89
SFB 7 Exhaust-Zone1	56	62	70	70	85	85	89
SFB 7 IntakeA-Zone0	56	62	70	70	85	85	89
SFB 7 IntakeB-Zone1	56	62	70	70	85	85	89
SFB 7 Exhaust-Zone0	56	62	70	70	85	85	89
SFB 7 SFB-XF2-Zone1	70	75	90	85	95	90	100
SFB 7 SFB-XF1-Zone0	70	75	90	85	95	90	100
SFB 7 SFB-XF0-Zone0	70	75	90	85	95	90	100
FPC 0	55	60	75	65	90	80	95
FPC 9	55	60	75	65	90	80	95
FPC 10	55	60	75	65	90	80	95
FPC 14	55	60	75	65	95	80	100
FPC 19	55	60	75	65	90	80	95
ADC 0 Intake	50	55	60	60	65	65	80
ADC 0 Exhaust	50	55	60	60	65	65	80
ADC 0 ADC-XF1	70	75	90	85	95	90	100
ADC 0 ADC-XF0	70	75	90	85	95	90	100
ADC 9 Intake	50	55	60	60	65	65	80
ADC 9 Exhaust	50	55	60	60	65	65	80
ADC 9 ADC-XF1	70	75	90	85	95	90	100
ADC 9 ADC-XF0	70	75	90	85	95	90	100
ADC 10 Intake	50	55	60	60	65	65	80
ADC 10 Exhaust	50	55	60	60	65	65	80
ADC 10 ADC-XF1	70	75	90	85	95	90	100
ADC 10 ADC-XF0	70	75	90	85	95	90	100
ADC 14 Intake	50	55	60	60	65	65	80
ADC 14 Exhaust	50	55	60	60	65	65	80
ADC 14 ADC-XF1	70	75	90	85	95	90	100
ADC 14 ADC-XF0	70	75	90	85	95	90	100
ADC 19 Intake	50	55	60	60	65	65	80
ADC 19 Exhaust	50	55	60	60	65	65	80
ADC 19 ADC-XF1	70	75	90	85	95	90	100
ADC 19 ADC-XF0	70	75	90	85	95	90	100

show chassis temperature-thresholds (T4000 Core Routers)

```
user@host> show chassis temperature-thresholds
```

Item	Fan speed		Yellow alarm		Red alarm		Fire Shutdown
	(degrees C) Normal	(degrees C) High	(degrees C) Normal	(degrees C) Bad fan	(degrees C) Normal	(degrees C) Bad fan	(degrees C) Normal
Chassis default	48	54	65	55	75	65	100
Routing Engine 0	55	65	85	85	100	100	102
Routing Engine 1	55	65	85	85	100	100	102
FPC 0	63	68	75	70	90	83	95
FPC 3	63	68	75	70	90	83	95
FPC 5	56	62	75	63	83	76	95
FPC 6	63	68	75	70	90	83	95
SIB 0	64	70	76	72	87	84	95
SIB 1	64	70	76	72	87	84	95
SIB 2	64	70	76	72	87	84	95
SIB 3	64	70	76	72	87	84	95
SIB 4	64	70	76	72	87	84	95

show chassis temperature-thresholds (TX Matrix Plus Router)

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

```
-----
```

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)	
	Normal	High	Normal	Bad fan	Normal	Bad fan
Chassis default	48	54	65	55	75	65
Routing Engine 0	55	65	85	85	100	100
Routing Engine 1	55	65	85	85	100	100
SIB F13 0	64	70	76	72	90	84
SIB F13 3	64	70	76	72	90	84
SIB F13 6	64	70	76	72	90	84
SIB F13 8	64	70	76	72	90	84
SIB F13 11	64	70	76	72	90	84
SIB F13 12	64	70	76	72	90	84
SIB F2S 16	64	70	76	72	90	84
SIB F2S 17	64	70	76	72	90	84
SIB F2S 18	64	70	76	72	90	84
SIB F2S 19	64	70	76	72	90	84
SIB F2S 20	64	70	76	72	90	84
SIB F2S 21	64	70	76	72	90	84
SIB F2S 22	64	70	76	72	90	84
SIB F2S 23	64	70	76	72	90	84
SIB F2S 24	64	70	76	72	90	84
SIB F2S 25	64	70	76	72	90	84
SIB F2S 26	64	70	76	72	90	84
SIB F2S 27	64	70	76	72	90	84
SIB F2S 28	64	70	76	72	90	84
SIB F2S 29	64	70	76	72	90	84
SIB F2S 30	64	70	76	72	90	84
SIB F2S 31	64	70	76	72	90	84
SIB F2S 32	64	70	76	72	90	84
SIB F2S 33	64	70	76	72	90	84
SIB F2S 34	64	70	76	72	90	84
SIB F2S 35	64	70	76	72	90	84

lcc0-re0:

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)	
	Normal	High	Normal	Bad fan	Normal	Bad fan
Chassis default	48	54	65	55	75	65
Routing Engine 0	55	65	85	85	100	100
Routing Engine 1	55	65	85	85	100	100
FPC 1	56	62	75	63	83	76
FPC 3	56	62	75	63	83	76
FPC 4	56	62	75	63	83	76
FPC 6	56	62	75	63	83	76
FPC 7	56	62	75	63	83	76
SIB 0	48	54	65	60	80	75
SIB 1	48	54	65	60	80	75
SIB 2	48	54	65	60	80	75
SIB 3	48	54	65	60	80	75
SIB 4	48	54	65	60	80	75

lcc1-re0:

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)	
	Normal	High	Normal	Bad fan	Normal	Bad fan
Chassis default	48	54	65	55	75	65
Routing Engine 0	55	65	85	85	100	100
Routing Engine 1	55	65	85	85	100	100
FPC 1	56	62	75	63	83	76

```

FPC 3          56    62    75    63    83    76
FPC 4          56    62    75    63    83    76
FPC 6          56    62    75    63    83    76
...

```

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

```

user@host> show chassis temperature-thresholds lcc 1
lcc1-re0:

```

```

-----
Item              Fan speed      Yellow alarm      Red alarm
                  (degrees C)      (degrees C)      (degrees C)
                  Normal   High   Normal   Bad fan   Normal   Bad fan
Chassis default   48    54    65    55    75    65
Routing Engine 0   55    65    85    85    100   100
Routing Engine 1   55    65    85    85    100   100
FPC 1             56    62    75    63    83    76
FPC 3             56    62    75    63    83    76
FPC 4             56    62    75    63    83    76
FPC 6             56    62    75    63    83    76
SIB 0             48    54    65    60    80    75
SIB 1             48    54    65    60    80    75
SIB 2             48    54    65    60    80    75
SIB 3             48    54    65    60    80    75
SIB 4             48    54    65    60    80    75

```

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

```

user@host> show chassis temperature-thresholds sfc 0
sfc0-re0:

```

```

-----
Item              Fan speed      Yellow alarm      Red alarm
                  (degrees C)      (degrees C)      (degrees C)
                  Normal   High   Normal   Bad fan   Normal   Bad fan
Chassis default   48    54    65    55    75    65
Routing Engine 0   55    65    85    85    100   100
Routing Engine 1   55    65    85    85    100   100
SIB F13 0         64    70    76    72    90    84
SIB F13 3         64    70    76    72    90    84
SIB F13 6         64    70    76    72    90    84
SIB F13 8         64    70    76    72    90    84
SIB F13 11        64    70    76    72    90    84
SIB F13 12        64    70    76    72    90    84
SIB F2S 16        64    70    76    72    90    84
SIB F2S 17        64    70    76    72    90    84
SIB F2S 18        64    70    76    72    90    84
SIB F2S 19        64    70    76    72    90    84
SIB F2S 20        64    70    76    72    90    84
SIB F2S 21        64    70    76    72    90    84
SIB F2S 22        64    70    76    72    90    84
SIB F2S 23        64    70    76    72    90    84
SIB F2S 24        64    70    76    72    90    84
SIB F2S 25        64    70    76    72    90    84
SIB F2S 26        64    70    76    72    90    84
SIB F2S 27        64    70    76    72    90    84
SIB F2S 28        64    70    76    72    90    84
SIB F2S 29        64    70    76    72    90    84
SIB F2S 30        64    70    76    72    90    84
SIB F2S 31        64    70    76    72    90    84
SIB F2S 32        64    70    76    72    90    84
SIB F2S 33        64    70    76    72    90    84

```

SIB F2S 34	64	70	76	72	90	84
SIB F2S 35	64	70	76	72	90	84

show chassis temperature-thresholds (TX Matrix Plus routers with 3D SIBs)

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

Shutdown	Fan speed		Yellow alarm		Red alarm		Fire
(degrees C)	(degrees C)		(degrees C)		(degrees C)		
Item	Normal	High	Normal	Bad fan	Normal	Bad fan	
Normal							
Chassis default	48	54	65	55	75	65	
100							
Routing Engine 0	70	75	90	87	102	97	
115							
Routing Engine 1	70	75	90	87	102	97	
115							
SIB F13 0 Board	60	65	78	75	85	80	
95							
SIB F13 0 XF Junction	70	75	82	74	105	100	
107							
SIB F13 4 Board	60	65	78	75	85	80	
95							
SIB F13 4 XF Junction	70	75	82	74	105	100	
107							
SIB F13 6 Board	60	65	78	75	85	80	
95							
SIB F13 6 XF Junction	70	75	82	74	105	100	
107							
SIB F2S 16 Board	60	65	78	75	85	80	
95							
SIB F2S 16 XF Junction	70	75	82	74	105	100	
107							
SIB F2S 17 Board	60	65	78	75	85	80	
95							
SIB F2S 17 XF Junction	70	75	82	74	105	100	
107							
SIB F2S 18 Board	60	65	78	75	85	80	
95							
SIB F2S 18 XF Junction	70	75	82	74	105	100	
107							
SIB F2S 19 Board	60	65	78	75	85	80	
95							
SIB F2S 19 XF Junction	70	75	82	74	105	100	
107							
SIB F2S 24 Board	60	65	78	75	85	80	
95							
SIB F2S 24 XF Junction	70	75	82	74	105	100	
107							
SIB F2S 25 Board	60	65	78	75	85	80	
95							
SIB F2S 25 XF Junction	70	75	82	74	105	100	
107							
SIB F2S 26 Board	60	65	78	75	85	80	
95							
SIB F2S 26 XF Junction	70	75	82	74	105	100	
107							
SIB F2S 27 Board	60	65	78	75	85	80	

```

95
SIB F2S 27 XF Junction      70    75      82      74      105      100
107

```

```

1cc0-re0:

```

```

-----
Shutdown                               Fan speed      Yellow alarm      Red alarm      Fire
                                      (degrees C)      (degrees C)      (degrees C)
Item                                  Normal  High  Normal  Bad fan  Normal  Bad fan
Chassis default                      48     54     65     55     75     65
Routing Engine 0                     55     65     85     85    100    100
FPC 0                                63     68     75     70     90     83
FPC 1                                56     62     75     63     83     76
FPC 7                                56     62     75     63     83     76
SIB 0                                64     70     76     72     87     84
SIB 0 ASIC Junction                  63     68     75     70    105    100
SIB 2                                64     70     76     72     87     84
SIB 2 ASIC Junction                  63     68     75     70    105    100
SIB 3                                64     70     76     72     87     84
SIB 3 ASIC Junction                  63     68     75     70    105    100

```

show chassis temperature-thresholds (QFX3500 Switch and QFX3600)

```

user@switch> show chassis temperature-thresholds

```

```

                                      Fan speed      Yellow alarm      Red alarm
                                      (degrees C)      (degrees C)      (degrees C)
Item                                  Normal  High  Normal  Bad fan  Normal  Bad fan
FPC Sensor TopLeft I                 48     56     53     43     56     46
FPC Sensor TopRight I                 46     54     51     41     54     44
FPC Sensor TopLeft E                  58     65     62     52     65     55
FPC Sensor TopRight E                 56     64     61     51     64     54
FPC Sensor TopMiddle I                 58     64     61     51     64     54
FPC Sensor TopMiddle E                 67     74     71     61     74     64
FPC Sensor Bottom I                   59     67     64     54     67     57
FPC Sensor Bottom E                   66     73     70     60     73     63
FPC Sensor Die Temp                   69     75     72     62     75     65
FPC Sensor Mgmt Brd I                 46     54     51     41     54     44
FPC Sensor Switch I                   56     63     60     50     63     53

```

show chassis temperature-thresholds interconnect-device (QFabric System)

```

user@switch> show chassis temperature-thresholds interconnect-device interconnect1

```

```

temperature-thresholds interconnect-device interconnect1
                                      Fan speed      Yellow alarm      Red alarm

```

Item	Normal	High	Normal	Bad fan	Normal	Bad fan
Chassis default	48	54	65	55	75	65

show chassis temperature-thresholds (PTX5000 Packet Transport Router)

```
user@switch> show chassis temperature-thresholds
```

```
user@switch> show chassis temperature-thresholds
```

Item	Fan speed (degrees C)		Yellow alarm (degrees C)		Red alarm (degrees C)		Fire Shutdown (degrees C)
	Normal	High	Normal	Bad fan	Normal	Bad fan	Normal
Routing Engine 0	70	75	90	87	102	97	115
Routing Engine 1	70	75	90	87	102	97	115
CB 0 Exhaust A	60	65	78	75	85	80	95
CB 0 Exhaust B	60	65	78	75	85	80	95
CB 1 Exhaust A	60	65	78	75	85	80	95
CB 1 Exhaust B	20	25	65	60	80	75	100
FPC 1 Exhaust A	60	65	78	75	85	80	95
FPC 1 Exhaust B	60	65	78	75	85	80	95
FPC 1 TL0	70	75	90	87	102	97	115
FPC 1 TQ0	70	75	90	87	102	97	115
FPC 1 TL1	70	75	90	87	102	97	115
FPC 1 TQ1	70	75	90	87	102	97	115
FPC 1 TL2	70	75	90	87	102	97	115
FPC 1 TQ2	70	75	90	87	102	97	115
FPC 1 TL3	70	75	90	87	102	97	115
FPC 1 TQ3	70	75	90	87	102	97	115
FPC 2 Exhaust A	60	65	78	75	85	80	95
FPC 2 Exhaust B	60	65	78	75	85	80	95
FPC 2 TL0	70	75	90	87	102	97	115
FPC 2 TQ0	70	75	90	87	102	97	115
FPC 2 TL1	70	75	90	87	102	97	115
FPC 2 TQ1	70	75	90	87	102	97	115
FPC 2 TL2	70	75	90	87	102	97	115
FPC 2 TQ2	70	75	90	87	102	97	115
FPC 2 TL3	70	75	90	87	102	97	115
FPC 2 TQ3	70	75	90	87	102	97	115
PIC 2/0 Ambient	60	65	78	75	85	80	95
PIC 2/0 cfp-2/0/1	60	65	70	67	75	72	85
PIC 2/1 Ambient	60	65	78	75	85	80	95
SIB 0 Exhaust	60	65	78	75	85	80	95
SIB 0 Junction	70	75	90	87	102	97	115
SIB 1 Exhaust	60	65	78	75	85	80	95
SIB 1 Junction	70	75	90	87	102	97	115
SIB 2 Exhaust	60	65	78	75	85	80	95
SIB 2 Junction	70	75	90	87	102	97	115
SIB 3 Exhaust	60	65	78	75	85	80	95
SIB 3 Junction	70	75	90	87	102	97	115
SIB 4 Exhaust	60	65	78	75	85	80	95
SIB 4 Junction	70	75	90	87	102	97	115
SIB 5 Exhaust	60	65	78	75	85	80	95
SIB 5 Junction	70	75	90	87	102	97	115
SIB 6 Exhaust	60	65	78	75	85	80	95
SIB 6 Junction	70	75	90	87	102	97	115
SIB 7 Exhaust	60	65	78	75	85	80	95
SIB 7 Junction	70	75	90	87	102	97	115
SIB 8 Exhaust	60	65	78	75	85	80	95
SIB 8 Junction	70	75	90	87	102	97	115

show chassis temperature-thresholds (MX Routers with Media Services Blade [MSB])

```

user@switch> show chassis temperature-thresholds
  Fan speed      Yellow alarm      Red alarm      Fire Shutdown
                (degrees C)      (degrees C)      (degrees C)
(degrees C)
Item
Normal
Chassis default      48      54      65      55      75      65
100
Routing Engine 0      70      80      95      95      110      110
112
Routing Engine 1      70      80      95      95      110      110
112
FPC 0      55      60      75      65      90      80
95
FPC 1      55      60      75      65      90      80
95
FPC 2      55      60      75      65      90      80
95
FPC 4      55      60      75      65      90      80
95
FPC 5      55      60      75      65      90      80
95

```

show chassis zones (PTX Series Packet Transport Routers)

Syntax	<code>show chassis zones</code> <code><detail></code>
Release Information	Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Routers.
Description	(PTX5000 Packet Transport Router only) Display the status of the two cooling system zones of the chassis. Zone 0 consists of the Routing Engine, Control Board, SIB, PMB, and the CCG, and is cooled by the vertical fan tray. Zone 1 consists of the eight (0–7) FPCs, and their respective PICs, and is cooled by the horizontal fan trays. The vertical fan tray is located at the front of the chassis. One horizontal fan tray is located at the front top of the chassis, and another is located at the front bottom of the chassis.
Options	detail —(Optional) Display status of each FRU and fan belonging to the cooling system zones.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show chassis fan on page 528 • show chassis temperature-thresholds on page 748
List of Sample Output	show chassis zones (PTX5000 Packet Transport Router) on page 766 show chassis zones detail (PTX5000 Packet Transport Router) on page 767
Output Fields	Table 41 on page 766 lists the output fields for the show chassis zones detail command.

Table 41: show chassis zones detail Output Fields

Field Name	Field Description
Item	Chassis component: <ul style="list-style-type: none"> • (PTX Series Packet Transport Routers)—Information about the chassis, Routing Engines, Control Boards (CBs), Switch Interface Boards (SIBs), PICs, and Flexible PIC Concentrators (FPCs).
Status	Status of the specified item. Status can be OK , Absent , or Offline .
Measurement	Fan tray speed utilization in percentage.

Sample Output

show chassis zones (PTX5000 Packet Transport Router)

```

user@host> show chassis zones
ZONE 0 Status
  Driving FRU          Routing Engine 1
  Temperature          62 degrees C / 143 degrees F
  Condition             OK
  Num Fans Missing      0

```

```

    Num Fans Failed      0
    Fan Duty Cycle      0

ZONE 1 Status
  Driving FRU           FPC 0 TL0
  Temperature           71 degrees C / 159 degrees F
  Condition             OK
  Num Fans Missing      0
  Num Fans Failed       0
  Fan Duty Cycle        0

```

show chassis zones detail (PTX5000 Packet Transport Router)

```

user@host> show chassis zones detail
ZONE 0 Status
Item                Status                Measurement
CB 0                OK
CB 1                OK
Routing Engine 0    OK
Routing Engine 1    OK
SIB 0               OK
SIB 1               OK
SIB 2               OK
SIB 3               OK
SIB 4               OK
SIB 5               Absent
SIB 6               Absent
SIB 7               Absent
SIB 8               Absent
Fan Tray 0          OK                    Spinning at 30% fan tray speed

ZONE 1 Status
Item                Status                Measurement
FPC 0               OK
FPC 1               OK
FPC 2               OK
FPC 3               OK
FPC 4               OK
FPC 5               Absent
FPC 6               Offline
FPC 7               OK
Fan Tray 1          OK                    Spinning at 33% fan tray speed
Fan Tray 2          OK                    Spinning at 36% fan tray speed

```

show interfaces (PTX Series Packet Transport Routers)

Syntax	<code>show interfaces et-<i>fpc/pic/port</i></code> <code><brief detail extensive terse></code> <code><descriptions></code> <code><media></code> <code><snmp-index <i>snmp-index</i>></code> <code><statistics></code>
Release Information	Command introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Routers.
Description	(PTX Series Packet Transport Routers only) Display status information about the specified Ethernet interface.
Options	<code>et-<i>fpc/pic/port</i></code> —Display standard information about the specified Ethernet interface. <code>brief detail extensive terse</code> —(Optional) Display the specified level of output. <code>descriptions</code> —(Optional) Display interface description strings. <code>media</code> —(Optional) Display media-specific information about network interfaces. <code>snmp-index <i>snmp-index</i></code> —(Optional) Display information for the specified SNMP index of the interface. <code>statistics</code> —(Optional) Display static interface statistics.
Required Privilege Level	view
List of Sample Output	show interfaces brief (PTX5000 Packet Transport Router) on page 777 show interfaces extensive (PTX5000 Packet Transport Router) on page 778 show interfaces terse (PTX5000 Packet Transport Router) on page 779
Output Fields	See Table 42 on page 769 for the output fields for the show interfaces (PTX Series Packet Transport Routers) command.

Table 42: show interfaces PTX Series Output Fields

Field Name	Field Description	Level of Output
Physical Interface		
Physical interface	Name of the physical interface.	All levels
Enabled	State of the interface. Possible values are described in the “Enabled Field” section under <i>Common Output Fields Description</i> .	All levels
Interface index	Index number of the physical interface, which reflects its initialization sequence.	detail extensive none
SNMP ifIndex	SNMP index number for the physical interface.	detail extensive none
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive
Link-level type	Encapsulation being used on the physical interface.	All levels
MTU	Maximum transmission unit size on the physical interface.	All levels
Speed	Speed at which the interface is running.	All levels
BPDU Error	Bridge protocol data unit (BPDU) errors (if any).	All levels
MAC-Rewrite	MAC Rewrite errors (if any).	All levels
Loopback	Loopback status: Enabled or Disabled . If loopback is enabled, type of loopback: Local or Remote .	All levels
Source filtering	Source filtering status: Enabled or Disabled .	All levels
Flow control	Flow control status: Enabled or Disabled .	All levels
Device flags	Information about the physical device. Possible values are described in the “Device Flags” section under <i>Common Output Fields Description</i> .	All levels
Interface flags	Information about the interface. Possible values are described in the “Interface Flags” section under <i>Common Output Fields Description</i> .	All levels
Link flags	Information about the link. Possible values are described in the “Links Flags” section under <i>Common Output Fields Description</i> .	All levels
CoS queues	Number of CoS queues configured.	detail extensive none
Hold-times	Current interface hold-time up and hold-time down, in milliseconds.	detail extensive
Current address	Configured MAC address.	detail extensive none
Hardware address	Hardware MAC address.	detail extensive none

Table 42: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
Last flapped	Date, time, and how long ago the interface went from down to up. The format is Last flapped: year-month-day hour:minute:second:timezone (hour:minute:second ago) . For example, Last flapped: 2002-04-26 10:52:40 PDT (04:33:20 ago) .	detail extensive none
Statistics last cleared	Time when the statistics for the interface were last set to zero.	detail extensive
Traffic statistics	<p>Number and rate of bytes and packets received and transmitted on the physical interface.</p> <ul style="list-style-type: none"> • Input bytes—Number of bytes received on the interface. • Output bytes—Number of bytes transmitted on the interface. • Input packets—Number of packets received on the interface. • Output packets—Number of packets transmitted on the interface. <p>NOTE: Input bytes and output bytes are counted as layer 3 packet length.</p>	detail extensive
Input errors	<p>Input errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> • 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. 	extensive

Table 42: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
Output errors	<p>Output errors on the interface. The following paragraphs explain the counters whose meaning might not be obvious:</p> <ul style="list-style-type: none"> • Carrier transitions—Number of times the interface has gone from down to up. This number does not normally increment quickly, increasing only when the cable is unplugged, the far-end system is powered down and then up, or another problem occurs. If the number of carrier transitions increments quickly (perhaps once every 10 seconds), the cable, the far-end system, or the PIC or PIM is malfunctioning. • Errors—Sum of the outgoing frame aborts and FCS errors. • Drops—Number of packets dropped by the output queue of the I/O Manager ASIC. If the interface is saturated, this number increments once for every packet that is dropped by the ASIC's RED mechanism. • Collisions—Number of Ethernet collisions. The Gigabit Ethernet PIC supports only full-duplex operation, so for Gigabit Ethernet PICs, this number should always remain 0. If it is nonzero, there is a software bug. • Aged packets—Number of packets that remained in shared packet SDRAM so long that the system automatically purged them. The value in this field should never increment. If it does, it is most likely a software bug or possibly malfunctioning hardware. • FIFO errors—Number of FIFO errors in the send direction as reported by the ASIC on the PIC. If this value is ever nonzero, the PIC is probably malfunctioning. • HS link CRC errors—Number of errors on the high-speed links between the ASICs responsible for handling the router interfaces. • MTU errors—Number of packets whose size exceeded the MTU of the interface. • Resource errors—Sum of transmit drops. 	extensive
Egress queues	Total number of egress queues supported on the specified interface.	detail extensive
Queue counters (Egress)	<p>CoS queue number and its associated user-configured forwarding class name.</p> <ul style="list-style-type: none"> • Queued packets—Number of queued packets. • Transmitted packets—Number of transmitted packets. • Dropped packets—Number of packets dropped by the ASIC's RED mechanism. 	detail extensive
Ingress queues	Total number of ingress queues supported on the specified interface.	extensive
Queue counters (Ingress)	<p>CoS queue number and its associated user-configured forwarding class name.</p> <ul style="list-style-type: none"> • Queued packets—Number of queued packets. • Transmitted packets—Number of transmitted packets. • Dropped packets—Number of packets dropped by the ASIC's RED mechanism. 	extensive

Table 42: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
Active alarms and Active defects	<p>Ethernet-specific defects that can prevent the interface from passing packets. When a defect persists for a certain amount of time, it is promoted to an alarm. Based on the router configuration, an alarm can ring the red or yellow alarm bell on the router, or turn on the red or yellow alarm LED on the craft interface. These fields can contain the value None or Link.</p> <ul style="list-style-type: none"> • None—There are no active defects or alarms. • Link—Interface has lost its link state, which usually means that the cable is unplugged, the far-end system has been turned off, or the PIC is malfunctioning. 	detail extensive none
MAC statistics	<p>Receive and Transmit statistics reported by the PIC's MAC subsystem, including the following:</p> <ul style="list-style-type: none"> • Total octets and total packets—Total number of octets and packets. • Unicast packets, Broadcast packets, and Multicast packets—Number of unicast, broadcast, and multicast packets. • CRC/Align errors—Total number of packets received that had a length (excluding framing bits, but including FCS octets) of between 64 and 1518 octets, inclusive, and had either a bad FCS with an integral number of octets (FCS Error) or a bad FCS with a nonintegral number of octets (Alignment Error). • FIFO error—Number of FIFO errors that are reported by the ASIC on the PIC. If this value is ever nonzero, the PIC or a cable is probably malfunctioning. • MAC control frames—Number of MAC control frames. • MAC pause frames—Number of MAC control frames with pause operational code. • Oversized frames—Number of frames that exceed 1518 octets. • Jabber frames—Number of frames that were longer than 1518 octets (excluding framing bits, but including FCS octets), and had either an FCS error or an alignment error. This definition of jabber is different from the definition in IEEE-802.3 section 8.2.1.5 (10BASE5) and section 10.3.1.4 (10BASE2). These documents define jabber as the condition in which any packet exceeds 20 ms. The allowed range to detect jabber is from 20 ms to 150 ms. • Fragment frames—Total number of packets that were less than 64 octets in length (excluding framing bits, but including FCS octets), and had either an FCS error or an alignment error. Fragment frames normally increment because both runts (which are normal occurrences caused by collisions) and noise hits are counted. • VLAN tagged frames—Number of frames that are VLAN tagged. The system uses the TPID of 0x8100 in the frame to determine whether a frame is tagged or not. • Code violations—Number of times an event caused the PHY to indicate "Data reception error" or "invalid data symbol error." 	extensive

Table 42: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
Filter statistics	<p>Receive and Transmit statistics reported by the PIC's MAC address filter subsystem. The filtering is done by the content-addressable memory (CAM) on the PIC. The filter examines a packet's source and destination MAC addresses to determine whether the packet should enter the system or be rejected.</p> <ul style="list-style-type: none"> • Input packet count—Number of packets received from the MAC hardware that the filter processed. • Input packet rejects—Number of packets that the filter rejected because of either the source MAC address or the destination MAC address. • Input DA rejects—Number of packets that the filter rejected because the destination MAC address of the packet is not on the accept list. It is normal for this value to increment. When it increments very quickly and no traffic is entering the router from the far-end system, either there is a bad ARP entry on the far-end system, or multicast routing is not on and the far-end system is sending many multicast packets to the local router (which the router is rejecting). • Input SA rejects—Number of packets that the filter rejected because the source MAC address of the packet is not on the accept list. The value in this field should increment only if source MAC address filtering has been enabled. If filtering is enabled, if the value increments quickly, and if the system is not receiving traffic that it should from the far-end system, it means that the user-configured source MAC addresses for this interface are incorrect. • Output packet count—Number of packets that the filter has given to the MAC hardware. • Output packet pad count—Number of packets the filter padded to the minimum Ethernet size (60 bytes) before giving the packet to the MAC hardware. Usually, padding is done only on small ARP packets, but some very small IP packets can also require padding. If this value increments rapidly, either the system is trying to find an ARP entry for a far-end system that does not exist or it is misconfigured. • Output packet error count—Number of packets with an indicated error that the filter was given to transmit. These packets are usually aged packets or are the result of a bandwidth problem on the FPC hardware. On a normal system, the value of this field should not increment. • CAM destination filters, CAM source filters—Number of entries in the CAM dedicated to destination and source MAC address filters. There can only be up to 64 source entries. If source filtering is disabled, which is the default, the values for these fields should be 0. 	extensive

Table 42: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
Autonegotiation information	<p>Information about link autonegotiation.</p> <ul style="list-style-type: none"> • Negotiation status: <ul style="list-style-type: none"> • Incomplete—Ethernet interface has the speed or link mode configured. • No autonegotiation—Remote Ethernet interface has the speed or link mode configured, or does not perform autonegotiation. • Complete—Ethernet interface is connected to a device that performs autonegotiation and the autonegotiation process is successful. • Link partner status—OK when Ethernet interface is connected to a device that performs autonegotiation and the autonegotiation process is successful. • Link partner: <ul style="list-style-type: none"> • Link mode—Depending on the capability of the attached Ethernet device, either Full-duplex or Half-duplex. • Flow control—Types of flow control supported by the remote Ethernet device. For Fast Ethernet interfaces, the type is None. For Gigabit Ethernet interfaces, types are Symmetric (link partner supports PAUSE on receive and transmit), Asymmetric (link partner supports PAUSE on transmit), and Symmetric/Asymmetric (link partner supports both PAUSE on receive and transmit or only PAUSE receive). • Remote fault—Remote fault information from the link partner—Failure indicates a receive link error. OK indicates that the link partner is receiving. Negotiation error indicates a negotiation error. Offline indicates that the link partner is going offline. • Local resolution—Information from the link partner: <ul style="list-style-type: none"> • Flow control—Types of flow control supported by the remote Ethernet device. For Gigabit Ethernet interfaces, types are Symmetric (link partner supports PAUSE on receive and transmit), Asymmetric (link partner supports PAUSE on transmit), and Symmetric/Asymmetric (link partner supports both PAUSE on receive and transmit or only PAUSE receive). • Remote fault—Remote fault information. Link OK (no error detected on receive), Offline (local interface is offline), and Link Failure (link error detected on receive). 	extensive
Packet Forwarding Engine configuration	<p>Information about the configuration of the Packet Forwarding Engine:</p> <ul style="list-style-type: none"> • Destination slot—FPC slot number. 	extensive

Table 42: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
CoS information	<p>Information about the CoS queue for the physical interface.</p> <ul style="list-style-type: none"> • CoS transmit queue—Queue number and its associated user-configured forwarding class name. • Bandwidth %—Percentage of bandwidth allocated to the queue. • Bandwidth bps—Bandwidth allocated to the queue (in bps). • Buffer %—Percentage of buffer space allocated to the queue. • Buffer usec—Amount of buffer space allocated to the queue, in microseconds. This value is nonzero only if the buffer size is configured in terms of time. • Priority—Queue priority: low or high. • Limit—Displayed if rate limiting is configured for the queue. Possible values are none and exact. If exact is configured, the queue transmits only up to the configured bandwidth, even if excess bandwidth is available. If none is configured, the queue transmits beyond the configured bandwidth if bandwidth is available. 	extensive
Logical Interface		
Logical interface	Name of the logical interface.	All levels
Index	Index number of the logical interface, which reflects its initialization sequence.	detail extensive none
SNMP ifIndex	SNMP interface index number for the logical interface.	detail extensive none
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive
Flags	Information about the logical interface. Possible values are described in the “Logical Interface Flags” section under <i>Common Output Fields Description</i> .	All levels

Table 42: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
VLAN-Tag	<p>Rewrite profile applied to incoming or outgoing frames on the outer (Out) VLAN tag or for both the outer and inner (In) VLAN tags.</p> <ul style="list-style-type: none"> • push—An outer VLAN tag is pushed in front of the existing VLAN tag. • pop—The outer VLAN tag of the incoming frame is removed. • swap—The outer VLAN tag of the incoming frame is overwritten with the user-specified VLAN tag information. • push—An outer VLAN tag is pushed in front of the existing VLAN tag. • push-push—Two VLAN tags are pushed in from the incoming frame. • swap-push—The outer VLAN tag of the incoming frame is replaced by a user-specified VLAN tag value. A user-specified outer VLAN tag is pushed in front. The outer tag becomes an inner tag in the final frame. • swap-swap—Both the inner and the outer VLAN tags of the incoming frame are replaced by the user-specified VLAN tag value. • pop-swap—The outer VLAN tag of the incoming frame is removed, and the inner VLAN tag of the incoming frame is replaced by the user-specified VLAN tag value. The inner tag becomes the outer tag in the final frame. • pop-pop—Both the outer and inner VLAN tags of the incoming frame are removed. 	brief detail extensive none
Demux	<p>IP demultiplexing (demux) value that appears if this interface is used as the demux underlying interface. The output is one of the following:</p> <ul style="list-style-type: none"> • Source Family Inet • Destination Family Inet 	detail extensive none
Encapsulation	Encapsulation on the logical interface.	All levels
Protocol	Protocol family. Possible values are described in the “Protocol Field” section under <i>Common Output Fields Description</i> .	detail extensive none
MTU	Maximum transmission unit size on the logical interface.	detail extensive none
Maximum labels	Maximum number of MPLS labels configured for the MPLS protocol family on the logical interface.	detail extensive none
Traffic statistics	<p>Number and rate of bytes and packets received and transmitted on the specified interface set.</p> <ul style="list-style-type: none"> • Input bytes, Output bytes—Number of bytes received and transmitted on the interface set • Input packets, Output packets—Number of packets received and transmitted on the interface set. <p>NOTE: Input bytes and output bytes are counted as layer 3 packet length.</p>	detail extensive
IPv6 transit statistics	Number of IPv6 transit bytes and packets received and transmitted on the logical interface if IPv6 statistics tracking is enabled.	extensive
Local statistics	Number and rate of bytes and packets destined to the router.	extensive

Table 42: show interfaces PTX Series Output Fields (*continued*)

Field Name	Field Description	Level of Output
Transit statistics	Number and rate of bytes and packets transiting the switch.	extensive
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive
Route Table	Route table in which the logical interface address is located. For example, 0 refers to the routing table inet.0.	detail extensive none
Flags	Information about protocol family flags. Possible values are described in the “Family Flags” section under <i>Common Output Fields Description</i> .	detail extensive
Donor interface	(Unnumbered Ethernet) Interface from which an unnumbered Ethernet interface borrows an IPv4 address.	detail extensive none
Preferred source address	(Unnumbered Ethernet) Secondary IPv4 address of the donor loopback interface that acts as the preferred source address for the unnumbered Ethernet interface.	detail extensive none
Input Filters	Names of any input filters applied to this interface. If you specify a precedence value for any filter in a dynamic profile, filter precedence values appear in parentheses next to all interfaces.	detail extensive
Output Filters	Names of any output filters applied to this interface. If you specify a precedence value for any filter in a dynamic profile, filter precedence values appear in parentheses next to all interfaces.	detail extensive
Mac-Validate Failures	Number of MAC address validation failures for packets and bytes. This field is displayed when MAC address validation is enabled for the logical interface.	detail extensive none
Addresses, Flags	Information about the address flags. Possible values are described in the “Addresses Flags” section under <i>Common Output Fields Description</i> .	detail extensive none
<i>protocol-family</i>	Protocol family configured on the logical interface. If the protocol is inet , the IP address of the interface is also displayed.	brief
Flags	Information about flags (possible values are described in the “Addresses Flags” section under <i>Common Output Fields Description</i> .	detail extensive none
Destination	IP address of the remote side of the connection.	detail extensive none
Local	IP address of the logical interface.	detail extensive none
Broadcast	Broadcast address of the logical interlace.	detail extensive none
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive

Sample Output

show interfaces brief (PTX5000 Packet Transport Router)

```
user@host> show interfaces brief et-7/0/0
```

```
Physical interface: et-7/0/0, Enabled, Physical link is Up
Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, Loopback: Disabled, Source
filtering: Disabled, Flow control: Enabled
Device flags   : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Link flags     : None
```

show interfaces extensive (PTX5000 Packet Transport Router)

```
user@host> show interfaces et-7/0/0 extensive
Physical interface: et-7/0/0, Enabled, Physical link is Up
Interface index: 168, SNMP ifIndex: 501, Generation: 171
Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, BPDU Error: None,
MAC-REWRITE Error: None, Loopback: Disabled, Source filtering: Disabled, Flow
control: Enabled
Device flags   : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Link flags     : None
CoS queues     : 8 supported, 8 maximum usable queues
Hold-times     : Up 0 ms, Down 0 ms
Current address: 88:e0:f3:3b:de:43, Hardware address: 88:e0:f3:3b:de:43
Last flapped   : 2012-01-18 11:48:24 PST (01:51:00 ago)
Statistics last cleared: 2012-01-18 13:38:54 PST (00:00:30 ago)
Traffic statistics:
Input bytes   : 0                      0 bps
Output bytes  : 0                      0 bps
Input packets : 0                      0 pps
Output packets: 0                      0 pps
IPv6 transit statistics:
Input bytes   : 0
Output bytes  : 0
Input packets : 0
Output packets: 0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0, FIFO errors: 0,
Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Egress queues: 8 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped packets

0 best-effort        0                      0                      0
1 expedited-fo       0                      0                      0
2 assured-forw       0                      0                      0
3 network-cont       0                      0                      0

Queue number:      Mapped forwarding classes
0                  best-effort
1                  expedited-forwarding
2                  assured-forwarding
3                  network-control
Active alarms : None
Active defects : None
MAC statistics:
Total octets      Receive      Transmit
Total packets     0            0
```

```

Unicast packets          0          0
Broadcast packets        0          0
Multicast packets        0          0
CRC/Align errors         0          0
FIFO errors              0          0
MAC control frames       0          0
MAC pause frames         0          0
Oversized frames         0
Jabber frames            0
Fragment frames          0
VLAN tagged frames       0
Code violations           0
Filter statistics:
  Input packet count      0
  Input packet rejects    0
  Input DA rejects        0
  Input SA rejects        0
  Output packet count     0
  Output packet pad count 0
  Output packet error count 0
  CAM destination filters: 0, CAM source filters: 0
Autonegotiation information:
  Negotiation status: Incomplete
Packet Forwarding Engine configuration:
  Destination slot: 7
CoS information:
  Direction : Output
  CoS transmit queue      Bandwidth      Buffer Priority
Limit
      0 best-effort      95      95000000000      95      usec      0      low
none
      3 network-control  5       500000000      5       0      low
none
Interface transmit statistics: Disabled

```

show interfaces terse (PTX5000 Packet Transport Router)

```

user@host> show interfaces terse
Interface      Admin Link Proto  Local      Remote
et-2/0/0       up    up
et-2/0/1       up    up
et-2/0/2       up    up
et-2/0/3       up    up
et-2/0/4       up    up
et-2/0/5       up    down
et-2/0/6       up    up
et-2/0/7       up    up
et-2/0/8       up    up
et-2/0/9       up    down
et-2/0/10      up    up
et-2/0/11      up    up
et-2/0/12      up    up
et-2/0/13      up    down
et-2/0/14      up    up
et-2/0/15      up    up
et-2/0/16      up    up
et-2/0/17      up    down
et-2/0/18      up    down
et-2/0/19      up    up
et-2/0/20      up    down

```

et-2/0/21	up	up	
et-2/0/22	up	down	
et-2/0/23	up	up	
et-2/1/0	up	up	
et-2/1/1	up	up	
et-2/1/2	up	up	
et-2/1/3	up	up	
et-2/1/4	up	up	
et-2/1/5	up	up	
et-2/1/6	up	up	
et-2/1/7	up	up	
et-2/1/8	up	up	
et-2/1/9	up	up	
et-2/1/10	up	up	
et-2/1/11	up	up	
et-2/1/12	up	up	
et-2/1/13	up	up	
et-2/1/14	up	up	
et-2/1/15	up	up	
et-2/1/16	up	up	
et-2/1/17	up	up	
et-2/1/18	up	up	
et-2/1/19	up	up	
et-2/1/20	up	up	
et-2/1/21	up	up	
et-2/1/22	up	up	
et-2/1/23	up	up	
et-5/0/0	up	up	
et-5/0/0.0	up	up	ccc
et-5/0/0.32767	up	up	multiservice
et-5/0/1	up	up	
et-5/0/2	up	up	
et-5/0/3	up	down	
et-5/0/4	up	down	
et-5/0/5	up	up	
et-5/0/5.0	up	up	ccc
et-5/0/5.32767	up	up	multiservice
et-5/0/6	up	up	
et-5/0/7	up	up	
et-5/0/8	up	down	
et-5/0/9	up	up	
et-5/0/10	up	up	
et-5/0/11	up	up	
et-5/0/12	up	up	
et-5/0/13	up	down	
et-5/0/14	up	down	
et-5/0/15	up	up	
et-5/0/16	up	up	
et-5/0/17	up	up	
et-5/0/18	up	up	
et-5/0/19	up	up	
et-5/0/20	up	down	
et-5/0/21	up	down	
et-5/0/22	up	up	
et-5/0/23	up	up	
et-5/1/0	up	up	
et-5/1/1	up	up	
et-7/0/0	up	up	
et-7/0/1	up	up	
et-7/0/2	up	up	
et-7/0/3	up	up	


```

et-7/0/4          up    up
et-7/0/5          up    up
et-7/0/6          up    up
et-7/0/7          up    up
et-7/0/8          up    up
et-7/0/9          up    up
et-7/0/10         up    down
et-7/0/11         up    down
et-7/0/12         up    down
et-7/0/13         up    down
et-7/0/14         up    down
et-7/0/15         up    down
et-7/0/16         up    down
et-7/0/17         up    down
et-7/0/18         up    down
et-7/0/19         up    down
et-7/0/20         up    down
et-7/0/21         up    down
et-7/0/22         up    down
et-7/0/23         up    down
dsc               up    up
em0               up    up
em0.0             up    up    inet    192.168.177.61/25
gre               up    up
ipip              up    up
ixgbe0            up    up
ixgbe0.0          up    up    inet    10.0.0.4/8
                                   128.0.0.1/2
                                   128.0.0.4/2
                                   inet6   fe80::200:fff:fe00:4/64
                                   fec0::a:0:0:4/64
                                   tnp      0x4
ixgbe1            up    up
ixgbe1.0          up    up    inet    10.0.0.4/8
                                   128.0.0.1/2
                                   128.0.0.4/2
                                   inet6   fe80::200:1ff:fe00:4/64
                                   fec0::a:0:0:4/64
                                   tnp      0x4
lo0               up    up
lo0.0             up    up    inet    10.255.177.61    --> 0/0
                                   127.0.0.1      --> 0/0
                                   iso
47.0005.80ff.f800.0000.0108.0001.0102.5517.7061
                                   inet6   abcd::10:255:177:61
                                   fe80::ee9e:cd0f:fc02:b01e
lo0.16384         up    up    inet    127.0.0.1      --> 0/0
lo0.16385         up    up    inet
lsi               up    up
mtun              up    up
pimd              up    up
pime              up    up
tap               up    up

```

show interfaces extensive

Syntax show interfaces extensive

Release Information Command introduced before Junos OS Release 7.4.
Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.

Description Display extensive information about all interfaces configured on the router.



NOTE:

- At some times, the cumulative byte counters displayed with the `show interfaces extensive` command on the 10-Gigabit Ethernet MPC with SFP+ is not always increasing and cumulative and does not give the correct results. There is a time lag in collecting these statistics, during which the display might decrease or go from a nonzero number to zero. Eventually, the counter will display the correct result.
 - When the `show interfaces extensive` command is executed on a router with an MPC or a T4000 Type 5 FPC, the *Input packet rejects* counter of the *Filter statistics* field also displays statistics related to the following packet errors:
 - Invalid VLAN range
 - Tagged packet received on an untagged interface
 - When the `show interfaces extensive` command is executed on an interface that is configured on a T4000 Type 5 FPC, the *IPv6 transit statistics* field displays:
 - Total statistics (sum of transit and local statistics) at the physical interface level
 - Transit statistics at the logical interface level
 - When the `show interfaces extensive` command is executed on an aggregate interface in a T1600 Core Router, the *IPv6 Input bytes* is displayed for an aggregate interface. However, the *IPv6 Input bytes* is always zero on a member link of an aggregated bundle even when there are IPv6 transit traffic on the member link. This is because the logical interface index of the aggregate logical interface is updated but not the logical interface of the member links in the channel lookup table.
-

Options This command has no options.

Required Privilege Level view

List of Sample Output

- [show interfaces extensive \(Circuit Emulation\) on page 783](#)
- [show interfaces extensive \(Fast Ethernet\) on page 783](#)
- [show interfaces extensive \(Gigabit Ethernet\) on page 785](#)
- [show interfaces extensive \(10-Gigabit Ethernet\) on page 786](#)
- [show interfaces extensive \(IQ2 and IQ2E\) on page 788](#)
- [show interfaces extensive \(100-Gigabit Ethernet Type 4 PIC with CFP\) on page 791](#)
- [show interfaces extensive \(PTX5000 Packet Transport Router\) on page 793](#)
- [show interfaces extensive \(T4000 Routers with Type 5 FPCs\) on page 795](#)
- [show interfaces extensive \(Aggregated Ethernet\) on page 796](#)

Output Fields For more information, see the output fields table for the particular interface type in which you are interested. For information about destination class and source class statistics, see the “Destination Class Field” section and the “Source Class Field” section under *Common Output Fields Description*. For sample output for specific interfaces, see the other topics in this collection.

Sample Output

show interfaces extensive (Circuit Emulation)

If a Circuit Emulation (CE) PIC is configured for SAToP pseudowire, then pseudowire statistics are displayed in the CE information section of the show interface extensive output. If SAToP pseudowire is not configured on the CE PIC, then all the CE information counters will be displayed as 0 (zero).

```
user@host> show interface t1-0/0/0 extensive
Physical interface :t1-0/0/0, Enabled, Physical Link : Up
    Interface index:61441
    Speed : 1.54 Mbps, Loopback: Disabled
    Operational state : Enabled,    Encapsulation : Trans
    Encoding : b8zs,    Framing : unframe,    Build-out : 0-30
    Inversion : enable,    Clock source : master
    Description :
    Traffic statistics:
    T1 media:           Seconds
    ES                   1643
    SES                  1643

    CE Info             Packets           Bytes
    CE Rx               : 2395529         306627712
    CE Tx               : 2396259         306721152
    CE Rx Drop:         0                 0
    CE Tx Drop:         0                 0

    CE Overrun  Events: 0
    CE Underrun Events: 0
```

Sample Output

show interfaces extensive (Fast Ethernet)

```
user@host> show interfaces fe-0/2/1 extensive
Physical interface: fe-0/2/0, Enabled, Physical link is Up
    Interface index: 129, SNMP ifIndex: 23, Generation: 130
    Link-level type: Ethernet, MTU: 1514, Speed: 100mbps, Loopback: Disabled,
    Source filtering: Disabled, Flow control: Enabled
    Device flags   : Present Running
```

```

Interface flags: SNMP-Traps Internal: 0x4000
CoS queues      : 4 supported, 4 maximum usable queues
Hold-times      : Up 0 ms, Down 0 ms
Current address: 00:90:69:91:c4:3e, Hardware address: 00:90:69:91:c4:3e
Last flapped    : 2006-04-16 23:00:41 PDT (02:08:05 ago)
Statistics last cleared: 2006-04-16 21:42:00 PDT (03:26:46 ago)
Traffic statistics:
Input bytes :          17539          152 bps
Output bytes :          92968          224 bps
Input packets:           348           0 pps
Output packets:         1349           0 pps
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0,
L3 incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0,
FIFO errors: 0, Resource errors: 0
Output errors:
Carrier transitions: 3, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,

FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Egress queues: 4 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped packets

0 best-effort          66              66              0
1 expedited-fo         0              0              0
2 assured-forw         0              0              0
3 network-cont        1283           1283           0

Active alarms : None
Active defects : None
MAC statistics:
Total octets          24721          105982
Total packets         348           1349
Unicast packets       347           430
Broadcast packets     1            37
Multicast packets     0           882
CRC/Align errors      0            0
FIFO errors           0            0
MAC control frames    0            0
MAC pause frames      0            0
Oversized frames      0
Jabber frames         0
Fragment frames       0
VLAN tagged frames    0
Code violations        0
Filter statistics:
Input packet count    348
Input packet rejects  0
Input DA rejects      0
Input SA rejects      0
Output packet count    1349
Output packet pad count 0
Output packet error count 0
CAM destination filters: 3, CAM source filters: 0
Autonegotiation information:
Negotiation status: Complete
Link partner:
Link mode: Full-duplex, Flow control: None, Remote fault: OK
Packet Forwarding Engine configuration:

```

```

Destination slot: 0
CoS information:
  CoS transmit queue      Bandwidth      Buffer      Priority      Limit

                                %      bps      %      usec
0 best-effort             95      95000000  95      0              low      none
3 network-control         5       5000000   5       0              low      none
Logical interface fe-0/2/0.0 (Index 66) (SNMP ifIndex 46) (Generation 133)
Flags: SNMP-Traps Encapsulation: ENET2
Protocol inet, MTU: 1500, Generation: 142, Route table: 0
Flags: DCU, SCU-out

                                Packets      Bytes
Destination class      (packet-per-second)  (bits-per-second)
    silv1_new           0              0
    (                   0) (                   0)
    silv2_new           0              0
    (                   0) (                   0)
    silv_misc           0              0
    (                   0) (                   0)
    silver0             0              0
    (                   0) (                   0)
    silver2             0              0
    (                   0) (                   0)
    silver3             0              0
    (                   0) (                   0)
    silver4             0              0
    (                   0) (                   0)
    silver5             0              0
    (                   0) (                   0)
    silver6             0              0
    (                   0) (                   0)
    silver7             0              0
    (                   0) (                   0)
    silver9             0              0
    (                   0) (                   0)

                                Packets      Bytes
Source class      (packet-per-second)  (bits-per-second)
    gold1          0              0
    (               0) (               0)
    gold2          16600          1062400
    (               0) (               0)
    gold3          0              0
    (               0) (               0)

Addresses, Flags: Is-Preferred Is-Primary
Destination: 12.1.1/24, Local: 12.1.1.1, Broadcast: 12.1.1.255,
Generation: 150

```

Sample Output

show interfaces extensive (Gigabit Ethernet)

```
user@host> show interfaces ge-5/0/0.0 extensive
```

```

Logical interface ge-5/0/0.0 (Index 71) (SNMP ifIndex 1930) (Generation 139)
Flags: SNMP-Traps 0x4000 Encapsulation: ENET2
Traffic statistics:
  Input bytes :          0
  Output bytes :         42
  Input packets:          0
  Output packets:         1
Local statistics:

```

```

Input bytes : 0
Output bytes : 42
Input packets: 0
Output packets: 1
Transit statistics:
Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets: 0 0 pps
Output packets: 0 0 pps
Output Filters: f-any
Protocol inet, MTU: 1500, Generation: 155, Route table: 0
Output Filters: f-inet,
Addresses, Flags: Is-Preferred Is-Primary
Destination: 10.11.1/24, Local: 10.11.1.1, Broadcast: 10.11.1.255,
Generation: 170
Protocol multiservice, MTU: Unlimited, Generation: 156, Route table: 0
Flags: Is-Primary
Policer: Input: __default_arp_policer__

```

Sample Output

show interfaces extensive (10-Gigabit Ethernet)

```
user@host> show interfaces xe-2/1/0 extensive
```

```

Physical interface: xe-2/1/0, Enabled, Physical link is Up
Interface index: 258, SNMP ifIndex: 762, Generation: 2046
Link-level type: Ethernet, MTU: 1514, LAN-PHY mode, Speed: 10Gbps, BPDU Error:
None, Loopback: None, Source filtering: Disabled,
Flow control: Enabled
Device flags : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Link flags : None
CoS queues : 8 supported, 8 maximum usable queues
Hold-times : Up 0 ms, Down 0 ms
Current address: 00:1d:b5:f8:6d:eb, Hardware address: 00:1d:b5:f8:6d:eb
Last flapped : 2011-12-17 00:19:02 PST (07:36:37 ago)
Statistics last cleared: 2011-12-17 07:55:24 PST (00:00:15 ago)
Traffic statistics:
Input bytes : 110000 0 bps
Output bytes : 0 0 bps
Input packets: 1000 0 pps
Output packets: 0 0 pps
IPv6 transit statistics:
Input bytes : 110000
Output bytes : 0
Input packets: 1000
Output packets: 0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
incompletes: 0, L2 channel errors: 0,
L2 mismatch timeouts: 0, FIFO errors: 0, Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0, HS link CRC errors: 0,
MTU errors: 0, Resource errors: 0
Egress queues: 8 supported, 4 in use
Queue counters: Queued packets Transmitted packets Dropped packets

0 best-effort 0 0 0

```

```

1 expedited-fo          0          0          0
2 assured-forw          0          0          0
3 network-cont          0          0          0

Queue number:           Mapped forwarding classes
0                       best-effort
1                       expedited-forwarding
2                       assured-forwarding
3                       network-control

Active alarms : None
Active defects : None
PCS statistics           Seconds
  Bit errors             0
  Errored blocks         0
MAC statistics:          Receive      Transmit
  Total octets           128000        0
  Total packets          1000          0
  Unicast packets        1000          0
  Broadcast packets      0            0
  Multicast packets      0            0
  CRC/Align errors       0            0
  FIFO errors            0            0
  MAC control frames     0            0
  MAC pause frames       0            0
  Oversized frames       0
  Jabber frames          0
  Fragment frames        0
  VLAN tagged frames     0
  Code violations         0
Filter statistics:
  Input packet count     1000
  Input packet rejects   0
  Input DA rejects       0
  Input SA rejects       0
  Output packet count    0
  Output packet pad count 0
  Output packet error count 0
  CAM destination filters: 0, CAM source filters: 0
Packet Forwarding Engine configuration:
  Destination slot: 2
CoS information:
  Direction : Output
  CoS transmit queue     Bandwidth      Buffer Priority
Limit
                                %      bps      %      usec
0 best-effort              95      9500000000  95      0      low
none
3 network-control          5      500000000   5      0      low
none
Interface transmit statistics: Disabled

Logical interface xe-2/1/0.0 (Index 83) (SNMP ifIndex 1677) (Generation 10082)

Flags: SNMP-Traps 0x4004000 Encapsulation: ENET2
Traffic statistics:
  Input bytes :          110000
  Output bytes :           0
  Input packets:          1000

```

```

Output packets:                0
IPv6 transit statistics:
  Input bytes :                55000
  Output bytes :                0
  Input packets:              500
  Output packets:             0
Local statistics:
  Input bytes :                55000
  Output bytes :                0
  Input packets:              500
  Output packets:             0
Transit statistics:
  Input bytes :                55000          0 bps
  Output bytes :                0            0 bps
  Input packets:              500            0 pps
  Output packets:             0            0 pps
IPv6 transit statistics:
  Input bytes :                55000
  Output bytes :                0
  Input packets:              500
  Output packets:             0
Protocol inet6, MTU: 1500, Generation: 23739, Route table: 0
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: 2001:1000:abcd:2312:1432:abcd:1234:0/112, Local:
2001:1000:abcd:2312:1432:abcd:1234:1234
  Generation: 506
  Addresses, Flags: Is-Preferred
    Destination: fe80::/64, Local: fe80::21d:b5ff:fe8:6deb
Protocol multiservice, MTU: Unlimited, Generation: 508
Generation: 23740, Route table: 0
  Policer: Input: __default_arp_policer__

```

Sample Output

show interfaces extensive (IQ2 and IQ2E)

```

user@host> show interfaces ge-3/2/2 extensive
Physical interface: ge-3/2/2, Enabled, Physical link is Up
  Interface index: 156, SNMP ifIndex: 548, Generation: 159
  Link-level type: Ethernet, MTU: 1518, Speed: 1000mbps, BPDU Error: None,
MAC-REWRITE Error: None, Loopback: Disabled, Source filtering: Disabled,
  Flow control: Enabled, Auto-negotiation: Enabled, Remote fault: Online
  Device flags : Present Running
  Interface flags: SNMP-Traps Internal: 0x4000
  CoS queues : 8 supported, 8 maximum usable queues
  Schedulers : 128
  Hold-times : Up 0 ms, Down 0 ms
  Current address: 00:14:f6:12:86:fa, Hardware address: 00:14:f6:12:86:fa
  Last flapped : 2010-03-17 04:03:11 PDT (00:45:30 ago)
  Statistics last cleared: Never
Traffic statistics:
  Input bytes :                1716096          0 bps
  Output bytes :                1716448          0 bps
  Input packets:              13407            0 pps
  Output packets:             13411            0 pps
IPv6 total statistics:
  Input bytes :                1716096
  Output bytes :                1716096
  Input packets:              13407
  Output packets:             13407
Ingress traffic statistics at Packet Forwarding Engine:

```



```

Input bytes :          1716096          0 bps
Input packets:         13407          0 pps
Drop bytes :           0          0 bps
Drop packets:          0          0 pps
Input errors:
  Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0,
L3 incompletes: 0, L2 channel errors: 1, L2 mismatch timeouts: 0, FIFO errors:
0,
  Resource errors: 0
Output errors:
  Carrier transitions: 1, Errors: 0, Drops: 0, Collisions: 0, Aged packets:
0, FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Ingress queues: 8 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped
packets
0 0 best-effort          13407          13407
0 1 expedited-fo          0          0
0 2 assured-forw          0          0
0 3 network-cont          0          0
0
Egress queues: 8 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped
packets
0 0 best-effort          13407          13407
0 1 expedited-fo          0          0
0 2 assured-forw          0          0
0 3 network-cont          4          4
0
Active alarms : None
Active defects : None
MAC statistics:
Total octets          1716096          1716448
Total packets          13407          13411
Unicast packets          13407          13407
Broadcast packets          0          0
Multicast packets          0          4
CRC/Align errors          0          0
FIFO errors            0          0
MAC control frames          0          0
MAC pause frames          0          0
Oversized frames          0
Jabber frames           0
Fragment frames          0
VLAN tagged frames          0
Code violations          0
Filter statistics:
Input packet count          13407
Input packet rejects          0
Input DA rejects            0
Input SA rejects            0
Output packet count          13411
Output packet pad count          0
Output packet error count          0
CAM destination filters: 0, CAM source filters: 0
Autonegotiation information:

```

```

Negotiation status: Complete
Link partner:
  Link mode: Full-duplex, Flow control: None, Remote fault: OK
Local resolution:
  Flow control: Symmetric, Remote fault: Link OK
Packet Forwarding Engine configuration:
  Destination slot: 3
CoS information:
  Direction : Output
  CoS transmit queue          Bandwidth          Buffer Priority
Limit
      0 best-effort           95          950000000    95          usec          low
none
      3 network-control       5           500000000     5           0            low
none
  Direction : Input
  CoS transmit queue          Bandwidth          Buffer Priority
Limit
      0 best-effort           95          950000000    95          usec          low
none
      3 network-control       5           500000000     5           0            low
none

```

```

Logical interface ge-3/2/2.0 (Index 83) (SNMP ifIndex 6080) (Generation
148)

```

```

Flags: SNMP-Traps 0x4000 VLAN-Tag [ 0x8100.100 ] Encapsulation: ENET2

```

```

Traffic statistics:

```

```

Input bytes : 0
Output bytes : 336
Input packets: 0
Output packets: 4

```

```

IPv6 total statistics:

```

```

Input bytes : 1716096
Output bytes : 1716096
Input packets: 13407
Output packets: 13407

```

```

Local statistics:

```

```

Input bytes : 0
Output bytes : 336
Input packets: 0
Output packets: 4

```

```

Transit statistics:

```

```

Input bytes : 0          0 bps
Output bytes : 0          0 bps
Input packets: 0          0 pps
Output packets: 0          0 pps

```

```

IPv6 total statistics:

```

```

Input bytes : 1716096
Output bytes : 1716096
Input packets: 13407
Output packets: 13407

```

```

Protocol inet6, MTU: 1500, Generation: 159, Route table: 0

```

```

Flags: Is-Primary

```

```

Addresses, Flags: Is-Default Is-Primary

```

```

Destination: Unspecified, Local: 2000::2

```

```

Generation: 146

```

```

Addresses, Flags: Is-Preferred

```

```

Destination: fe80::/64, Local: fe80::214:f600:6412:86fa

```

```

Protocol multiservice, MTU: Unlimited, Generation: 148

```

```

Generation: 160, Route table: 0
Policer: Input: __default_arp_policer__

Logical interface ge-3/2/2.32767 (Index 84) (SNMP ifIndex 6081) (Generation
149)
Flags: SNMP-Traps 0x4000 VLAN-Tag [ 0x0000.0 ] Encapsulation: ENET2
Traffic statistics:
  Input bytes : 0
  Output bytes : 0
  Input packets: 0
  Output packets: 0
Local statistics:
  Input bytes : 0
  Output bytes : 0
  Input packets: 0
  Output packets: 0
Transit statistics:
  Input bytes : 0 0 bps
  Output bytes : 0 0 bps
  Input packets: 0 0 pps
  Output packets: 0 0 pps
Protocol multiservice, MTU: Unlimited, Generation: 161, Route table: 0
Flags: None
Policer: Input: __default_arp_policer__

```

Sample Output

show interfaces extensive (100-Gigabit Ethernet Type 4 PIC with CFP)

```

user@host> show interfaces et-0/0/0:0 extensive
Physical interface: et-0/0/0:0, Enabled, Physical link is Down
  Interface index: 156, SNMP ifIndex: 516, Generation: 163
  Link-level type: Ethernet, MTU: 9192, Speed: 50000mbps, BPDU Error: None,
MAC-REWRITE Error: None,
  Loopback: Disabled, Source filtering: Disabled, Flow control: Enabled
  Device flags : Present Running Down
  Interface flags: Hardware-Down SNMP-Traps Internal: 0x4000
  Link flags : None
  CoS queues : 8 supported, 8 maximum usable queues
  Hold-times : Up 0 ms, Down 0 ms
  Current address: 00:aa:aa:aa:aa:00, Hardware address: 00:21:59:5c:48:00
  Last flapped : 2010-01-07 16:36:49 PST (18:02:35 ago)
  Statistics last cleared: Never
Traffic statistics:
  Input bytes : 0 0 bps
  Output bytes : 0 0 bps
  Input packets: 0 0 pps
  Output packets: 0 0 pps
IPv6 transit statistics:
  Input bytes : 0
  Output bytes : 0
  Input packets: 0
  Output packets: 0
Input errors:
  Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
incompletes: 0,
  L2 channel errors: 0, L2 mismatch timeouts: 0, FIFO errors: 0, Resource errors:
0
Output errors:
  Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0,

```

HS link CRC errors: 0, MTU errors: 0, Resource errors: 0

Egress queues: 8 supported, 8 in use

Queue counters:	Queued packets	Transmitted packets	Dropped packets
0 DEFAULT, NC-	0	0	0
1 REALTIME	0	0	0
2 PRIVATE, NC-	0	0	0
3 CONTROL	1253	1253	0
4 BC-H, CLASS_	0	0	0
5 BC-M, CLASS_	0	0	0
6 IA, CLASS_V_	0	0	0
7 CLASS_S_OUTP	0	0	0

Queue	Mapped Forwarding Class
0	DEFAULT, NC-Q0
1	REALTIME
2	PRIVATE, NC-Q1
3	CONTROL
4	BC-H, CLASS-Q4
5	BC-M, CLASS-Q5
6	IA, CLASS_V_OUTPUT
7	CLASS_S_OUTPUT

Active alarms : None

Active defects : None

MAC statistics:	Receive	Transmit
Total octets	0	0
Total packets	0	0
Unicast packets	0	0
Broadcast packets	0	0
Multicast packets	0	0
CRC/Align errors	0	0
FIFO errors	0	0
MAC control frames	0	0
MAC pause frames	0	0
Oversized frames	0	0
Jabber frames	0	0
Fragment frames	0	0
VLAN tagged frames	0	0
Code violations	0	0

Packet Forwarding Engine configuration:

Destination slot: 0

CoS information:

Direction : Output

CoS transmit queue	Bandwidth	Buffer	Priority	Limit
	%	bps	%	usec
0 best-effort	95	47500000000	95	0
3 network-control	5	2500000000	5	0

Logical interface et-0/0/0:0.0 (Index 68) (SNMP ifIndex 546) (Generation 161)

Flags: Deviet-Down SNMP-Traps Encapsulation: ENET2

Traffic statistics:

```

Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Local statistics:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Transit statistics:
Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets: 0 0 pps
Output packets: 0 0 pps
Protocol inet, MTU: 9178, Generation: 220, Route table: 0
Addresses, Flags: Dest-route-down Is-Preferred Is-Primary
Destination: 210.160.0/24, Local: 210.160.0.1, Broadcast: 210.160.0.255,
Generation: 192
Protocol mpls, MTU: 9166, Maximum labels: 3, Generation: 221, Route table: 0

Protocol multiservice, MTU: Unlimited, Generation: 222, Route table: 0
Policer: Input: __default_arp_policer

```

Sample Output

show interfaces extensive (PTX5000 Packet Transport Router)

```

user@host> show interfaces et-7/0/0 extensive
Physical interface: et-7/0/0, Enabled, Physical link is Up
Interface index: 168, SNMP ifIndex: 501, Generation: 171
Link-level type: Ethernet, MTU: 1514, Speed: 10Gbps, BPDU Error: None,
MAC-REWRITE Error: None,
Loopback: Disabled, Source filtering: Disabled, Flow control: Enabled
Device flags : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Link flags : None
CoS queues : 8 supported, 8 maximum usable queues
Hold-times : Up 0 ms, Down 0 ms
Current address: 88:e0:f3:3b:de:43, Hardware address: 88:e0:f3:3b:de:43
Last flapped : 2012-01-18 11:48:24 PST (01:47:08 ago)
Statistics last cleared: Never
Traffic statistics:
Input bytes : 3583014 0 bps
Output bytes : 758050 0 bps
Input packets: 17740 0 pps
Output packets: 3418 0 pps
IPv6 transit statistics:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
incompletes: 0,
L2 channel errors: 0, L2 mismatch timeouts: 0, FIFO errors: 0, Resource errors:
0
Output errors:
Carrier transitions: 1, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0,
HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Egress queues: 8 supported, 4 in use

```

```

Queue counters:      Queued packets  Transmitted packets      Dropped packets

0 best-effort        252                252                0

1 expedited-fo       0                  0                  0

2 assured-forw       0                  0                  0

3 network-cont       6196               6196               0

Queue number:        Mapped forwarding classes
0                    best-effort
1                    expedited-forwarding
2                    assured-forwarding
3                    network-control

Active alarms : None
Active defects : None

MAC statistics:
Total octets         4108825
Total packets        21166
Unicast packets      14824
Broadcast packets    3
Multicast packets    6339
CRC/Align errors     0
FIFO errors          0
MAC control frames   0
MAC pause frames     0
Oversized frames     0
Jabber frames        0
Fragment frames      0
VLAN tagged frames   16091
Code violations       0

Filter statistics:
Input packet count    9
Input packet rejects  9
Input DA rejects      9
Input SA rejects      0
Output packet count   0
Output packet pad count 0
Output packet error count 0
CAM destination filters: 0, CAM source filters: 0

Autonegotiation information:
Negotiation status: Incomplete

Packet Forwarding Engine configuration:
Destination slot: 7

CoS information:
Direction : Output
CoS transmit queue    Bandwidth      Buffer Priority
Limit                 %      bps      %      usec      low
0 best-effort         95    9500000000  95      0      low
none
3 network-control     5     500000000  5       0      low
none

Interface transmit statistics: Disabled

```

Sample Output

show interfaces extensive (T4000 Routers with Type 5 FPCs)

The output fields for the **show interfaces *interface* extensive** command remains the same for 12-port 10-Gigabit Ethernet LAN/WAN PIC with SFP+ (PF-12XGE-SFPP), 24-port 10-Gigabit Ethernet LAN/WAN PIC with SFP+ (PF-24XGE-SFPP), and 100-Gigabit Ethernet Type 5 PIC with CFP (PF-1CGE-CFP).

```

user@host> show interfaces xe-4/0/0 extensive
Physical interface: xe-4/0/0, Enabled, Physical link is Up
  Interface index: 200, SNMP ifIndex: 592, Generation: 203
  Link-level type: Ethernet, MTU: 1514, LAN-PHY mode, Speed: 10Gbps, BPDU Error:
None, Loopback: None, Source filtering: Disabled, Flow control: Enabled
  Device flags      : Present Running
  Interface flags:  SNMP-Traps Internal: 0x4000
  Link flags       : None
  CoS queues       : 8 supported, 8 maximum usable queues
  Hold-times       : Up 0 ms, Down 0 ms
  Current address:  00:12:1e:37:53:f8, Hardware address: 00:12:1e:37:53:f8
  Last flapped     : 2013-06-03 16:01:56 PDT (06:04:07 ago)
  Statistics last cleared: Never
  Traffic statistics:
    Input bytes  :                0                0 bps
    Output bytes :                0                0 bps
    Input packets:                0                0 pps
    Output packets:              0                0 pps
  IPv6 transit statistics:
    Input bytes  :                0
    Output bytes :                0
    Input packets:                0
    Output packets:              0
  Input errors:
    Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0, FIFO errors: 0,
Resource errors: 0
  Output errors:
    Carrier transitions: 1, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
  Egress queues: 8 supported, 4 in use
  Queue counters:      Queued packets  Transmitted packets      Dropped packets

    0 best-effort              0                0                0
    1 expedited-fo              0                0                0
    2 assured-forw              0                0                0
    3 network-cont              0                0                0

  Queue number:      Mapped forwarding classes
    0                best-effort
    1                expedited-forwarding
    2                assured-forwarding
    3                network-control
  Active alarms  : None
  Active defects : None
  PCS statistics                Seconds
    Bit errors                0
    Errored blocks            0

```

```

MAC statistics:
Total octets          Receive      Transmit
Total packets        0          0
Unicast packets      0          0
Broadcast packets    0          0
Multicast packets    0          0
CRC/Align errors     0          0
FIFO errors          0          0
MAC control frames   0          0
MAC pause frames     0          0
Oversized frames     0
Jabber frames        0
Fragment frames      0
VLAN tagged frames   0
Code violations       0

Filter statistics:
Input packet count    0
Input packet rejects  0
Input DA rejects      0
Input SA rejects      0
Output packet count   0
Output packet pad count 0
Output packet error count 0
CAM destination filters: 0, CAM source filters: 0

Packet Forwarding Engine configuration:
Destination slot: 0 (0x00)

CoS information:
Direction : Output
CoS transmit queue      Bandwidth      Buffer Priority Limit
                        %      bps      %      usec
0 best-effort           95  9500000000  95      0      low  none
3 network-control       5   500000000    5      0      low  none

Preclassifier statistics:
Traffic Class      Received Packets  Transmitted Packets  Dropped Packets

real-time          0          0          0
network-control    0          0          0
best-effort        0          0          0

Interface transmit statistics: Disabled

```

Sample Output

show interfaces extensive (Aggregated Ethernet)

```

user@host> show interfaces ae0 extensive
Physical interface: ae0, Enabled, Physical link is Up
Interface index: 199, SNMP ifIndex: 570, Generation: 202
Link-level type: Ethernet, MTU: 1514, Speed: 2Gbps, BPDU Error: None,
MAC-REWRITE Error: None, Loopback: Disabled, Source filtering: Disabled,
Flow control: Disabled, Minimum links needed: 1, Minimum bandwidth needed: 0
Device flags   : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Current address: 2c:6b:f5:d1:0f:c0, Hardware address: 2c:6b:f5:d1:0f:c0
Last flapped   : 2012-06-06 23:33:03 PDT (00:00:58 ago)
Statistics last cleared: Never
Traffic statistics:
Input bytes :          18532          1984 bps
Output bytes :           0          0 bps
Input packets:          158           2 pps
Output packets:           0           0 pps
IPv6 transit statistics:

```



```

Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Dropped traffic statistics due to STP State:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Policed discards:
0,
Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0, Resource errors:
0
Ingress queues: 8 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped packets

0 best-effort          0                0                0

1 expedited-fo         0                0                0

2 assured-forw         0                0                0

3 network-cont         0                0                0

Egress queues: 8 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped packets

0 best-effort          57               57                0

1 expedited-fo         0                0                0

2 assured-forw         0                0                0

3 network-cont        63605            63605             0

Queue number:      Mapped forwarding classes
0                  best-effort
1                  expedited-forwarding
2                  assured-forwarding
3                  network-control

Logical interface ae0.0 (Index 331) (SNMP ifIndex 583) (Generation 142)
Flags: SNMP-Traps 0x4004000 Encapsulation: ENET2
Statistics      Packets      pps      Bytes      bps
Bundle:
Input :          149          2      17416      1984
Output:           0          0           0           0
Link:
ge-3/2/5.0
Input :          90          1      10100      992
Output:           0          0           0           0
ge-3/3/9.0
Input :          59          1       7316      992
Output:           0          0           0           0
LACP info:      Role          System          System      Port
Port  Port
key          priority          identifier  priority      number

```

```

    ge-3/2/5.0    Actor          100  00:00:00:00:00:01      127      1
1  ge-3/2/5.0    Partner        127  00:24:dc:98:67:c0      127      1    1
    ge-3/3/9.0    Actor          100  00:00:00:00:00:01      127      2
1  ge-3/3/9.0    Partner        127  00:24:dc:98:67:c0      127      2    1

LACP Statistics:      LACP Rx      LACP Tx      Unknown Rx      Illegal Rx
ge-3/2/5.0            38          137           0              0
ge-3/3/9.0            36          139           0              0
Marker Statistics:   Marker Rx      Resp Tx      Unknown Rx      Illegal Rx
ge-3/2/5.0            0            0            0              0
ge-3/3/9.0            0            0            0              0
Protocol inet, MTU: 1500, Generation: 169, Route table: 0
  Flags: Sendbcst-pkt-to-re
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: 1.1.1/24, Local: 1.1.1.2, Broadcast: 1.1.1.255, Generation:
153
Protocol multiservice, MTU: Unlimited, Generation: 170, Route table: 0
  Flags: Is-Primary
  Policer: Input: __default_arp_policer__

```

show interfaces filters

Syntax	<code>show interfaces filters</code> <code><interface-name></code>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced on PTX Series Packet Transport Routers for Junos OS Release 12.1.
Description	Display all firewall filters that are installed on each interface in a system.
Options	none —Display filter information about all interfaces. interface-name —(Optional) Display filter information about a particular interface.
Additional Information	For information about how to configure firewall filters, see the <i>Routing Policy Feature Guide for Routing Devices</i> . For related operational mode commands, see the <i>Junos OS Operational Mode Commands</i> .
Required Privilege Level	view
List of Sample Output	show interfaces filters on page 800 show interfaces filters interface-name on page 800 show interfaces filters (PTX Series Packet Transport Routers) on page 800
Output Fields	Table 43 on page 799 lists the output fields for the show interfaces filters command. Output fields are listed in the approximate order in which they appear.

Table 43: show interfaces filters Output Fields

Field Name	Field Description
Interface	Name of the interface.
Admin	Interface state: up or down .
Link	Link state: up or down .
Proto	Protocol configured on the interface.
Input Filter	Names of any firewall filters to be evaluated when packets are received on the interface, including any filters attached through activation of dynamic service.
Output Filter	Names of any firewall filters to be evaluated when packets are transmitted on the interface, including any filters attached through activation of dynamic service.

Sample Output

show interfaces filters

```

user@host> show interfaces filters
Interface      Admin Link Proto Input Filter      Output Filter
ge-0/0/0       up    up    inet
ge-0/0/0.0     up    up    iso
ge-5/0/0       up    up
ge-5/0/0.0     up    up    any      f-any
               inet     f-inet
               multiservice
gr-0/3/0       up    up
ip-0/3/0       up    up
mt-0/3/0       up    up
pd-0/3/0       up    up
pe-0/3/0       up    up
vt-0/3/0       up    up
at-1/0/0       up    up
at-1/0/0.0     up    up    inet
               iso
at-1/1/0       up    down
at-1/1/0.0     up    down    inet
               iso
....

```

show interfaces filters interface-name

```

user@host> show interfaces filters so-2/1/0
Interface      Admin Link Proto Input Filter      Output Filter
so-2/1/0       up    down
so-2/1/0.0     up    down    inet    goop    outfilter
               iso
               inet6    v6in    v6out

user@host > show interfaces filters ge-3/0/1
Interface      Admin Link Proto Input Filter      Output Filter
ge-3/0/1       up    up
ge-3/0/1.0     up    up    inet    F1-ge-3/0/1.0-in    F2-ge-3/0/1.0-out
               inet    F3-ge-3/0/1.0-in

```

show interfaces filters (PTX Series Packet Transport Routers)

```

user@host > show interfaces filters em0
Interface      Admin Link Proto Input Filter      Output Filter
em0            up    up
em0.0          up    up    inet

```

show interfaces (M Series and T Series Routers, and PTX Series Packet Transport Routers Management and Internal Ethernet)

Syntax	<pre>show interfaces <i>interface-name</i> <brief detail extensive terse> <descriptions> <media> <snmp-index <i>snmp-index</i>> <statistics></pre>
Syntax (PTX Series Packet Transport Routers)	<pre>show interfaces <i>interface-name</i> <brief detail extensive terse> <descriptions> <statistics></pre>
Release Information	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced on PTX Series Packet Transport Routers for Junos OS Release 12.1.</p>
Description	(M Series, T Series, TX Matrix Plus, and PTX Series devices only) Display status information about the management Ethernet and internal Ethernet interfaces.
Options	<p>interface-name—Specify one of the following management interface names: fxp0, fxp1, fxp2, ixgbe0, ixgbe1, bcm0, em0, or em1. For supported Ethernet interface by chassis and Routing Engine, see <i>Supported Routing Engines by Chassis</i>.</p> <p>brief detail extensive terse—(Optional) Display the specified level of output.</p> <p>descriptions—(Optional) Display interface description strings.</p> <p>media—(Optional) Display media-specific information.</p> <p>snmp-index <i>snmp-index</i>—(Optional) Display information for the specified SNMP index of the interface.</p> <p>statistics—(Optional) Display static interface statistics.</p>
Required Privilege Level	view
List of Sample Output	<p>show interfaces brief (Management Ethernet) on page 805</p> <p>show interfaces (Management Ethernet) on page 805</p> <p>show interfaces (Management Ethernet [TX Matrix Plus Router]) on page 805</p> <p>show interfaces (Management Ethernet [PTX Series Packet Transport Routers]) on page 806</p> <p>show interfaces detail (Management Ethernet) on page 806</p> <p>show interfaces detail (Management Ethernet [TX Matrix Plus Router]) on page 807</p> <p>show interfaces detail (Management Ethernet [PTX Packet Transport Routers]) on page 807</p> <p>show interfaces extensive (Management Ethernet) on page 808</p> <p>show interfaces extensive (Management Ethernet [TX Matrix Plus Router]) on page 809</p>

[show interfaces extensive \(Management Ethernet \[PTX Series Packet Transport Routers\]\) on page 810](#)
[show interfaces brief \(Management Ethernet\) on page 810](#)
[show interfaces brief \(Management Ethernet \[TX Matrix Plus Router\]\) on page 811](#)
[show interfaces brief \(Management Ethernet \[PTX Series Packet Transport Routers\]\) on page 811](#)
[show interfaces \(Internal Ethernet\) on page 811](#)
[show interfaces \(Internal Ethernet \[TX Matrix Plus Router\]\) on page 812](#)
[show interfaces detail \(Internal Ethernet\) on page 812](#)
[show interfaces detail \(Internal Ethernet \[TX Matrix Plus Router\]\) on page 813](#)
[show interfaces extensive \(internal Ethernet\) on page 814](#)
[show interfaces extensive \(internal Ethernet \[TX Matrix Plus Router\]\) on page 815](#)

Output Fields Table 44 on page 802 lists the output fields for the **show interfaces** (management) command on the M Series routers, T Series routers, TX Matrix Plus routers, and PTX Series Packet Transport Routers. Output fields are listed in the approximate order in which they appear.

Table 44: M Series and T Series Router Management and Internal Ethernet show interfaces Output Fields

Field Name	Field Description	Level of Output
Physical Interface		
Physical interface	Name of the physical interface.	All levels
Enabled	State of the interface. Possible values are described in the “Enabled Field” section under <i>Common Output Fields Description</i> .	All levels
Interface index	Physical interface index number, which reflects its initialization sequence.	detail extensive none
SNMP ifIndex	SNMP index number for the physical interface.	detail extensive none
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive
Type	Type of interface.	All levels
Link-level type	Encapsulation type used on the physical interface.	All levels
MTU	Maximum transmission unit (MTU)—Size of the largest packet to be transmitted.	All levels
Clocking	Reference clock source of the interface.	All levels
Speed	Network speed on the interface.	All levels
Device flags	Information about the physical device. Possible values are described in the “Device Flags” section under <i>Common Output Fields Description</i> .	All levels
Interface flags	Information about the interface. Possible values are described in the “Interface Flags” section under <i>Common Output Fields Description</i> .	All levels

Table 44: M Series and T Series Router Management and Internal Ethernet show interfaces Output Fields (*continued*)

Field Name	Field Description	Level of Output
Link type	Data transmission type.	detail extensive none
Link flags	Information about the link. Possible values are described in the “Link Flags” section under <i>Common Output Fields Description</i> .	detail extensive
Physical info	Information about the physical interface.	detail extensive
Hold-times	Current interface hold-time up and hold-time down. Value is in milliseconds.	detail extensive
Current address	Configured MAC address.	detail extensive none
Hardware address	Media access control (MAC) address of the interface.	detail extensive none
Alternate link address	Backup link address.	detail extensive
Last flapped	Date, time, and how long ago the interface went from down to up. The format is Last flapped: year-month-day hour:minute:second timezone (hour:minute:second ago) . For example, Last flapped: 2002-04-26 10:52:40 PDT (04:33:20 ago) .	detail extensive none
Input packets	Number of packets received on the physical interface.	None specified
Output packets	Number of packets transmitted on the physical interface.	None specified
Statistics last cleared	Time when the statistics for the interface were last set to zero.	detail extensive
Traffic statistics	<p>Number and rate of bytes and packets received and transmitted on the logical and physical interface.</p> <ul style="list-style-type: none"> • Input bytes, Output bytes—Number of bytes received and transmitted on the interface. • Input packets, Output packets—Number of packets received and transmitted on the interface. 	detail extensive
Input errors	<ul style="list-style-type: none"> • Errors—Input errors on the interface. • Drops—Number of packets dropped by the output queue of the I/O Manager ASIC. • Framing errors—Number of packets received with an invalid frame checksum (FCS). • Runts—Frames received smaller than the runt threshold. • Giants—Frames received larger than the giant threshold. • Policed Discards—Frames that the incoming packet match code discarded because they were not recognized or were not of interest. Usually, this field reports protocols that Junos does not support. • Resource errors—Sum of transmit drops. 	extensive

Table 44: M Series and T Series Router Management and Internal Ethernet show interfaces Output Fields (*continued*)

Field Name	Field Description	Level of Output
Output errors	<ul style="list-style-type: none"> • 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, possibly once every 10 seconds, the cable, the remote system, or the interface is malfunctioning. • Errors—Sum of 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 dropped by the ASIC RED mechanism. • Resource errors—Sum of transmit drops. 	extensive
Logical Interface		
Logical interface	Name of the logical interface	All levels
Index	Logical interface index number, which reflects its initialization sequence.	detail extensive none
SNMP ifIndex	Logical interface SNMP interface index number.	detail extensive none
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive
Flags	Information about the logical interface; values are described in the “Device Flags” section under <i>Common Output Fields Description</i> .	All levels
Encapsulation	Encapsulation on the logical interface.	detail extensive none
inet	IP address of the logical interface.	brief
Protocol	Protocol family configured on the logical interface (such as iso or inet6).	detail extensive none
MTU	MTU size on the logical interface.	detail extensive none
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive
Route table	Route table in which this address exists. For example, Route table:0 refers to inet.0.	detail extensive
Flags	Information about the protocol family flags. Possible values are described in the “Family Flags” section under <i>Common Output Fields Description</i> .	detail extensive none
Addresses, Flags	Information about address flags. Possible values are described in the “Addresses Flags” section under <i>Common Output Fields Description</i> .	detail extensive none
Destination	IP address of the remote side of the connection.	detail extensive none
Local	IP address of the logical interface.	detail extensive none

Table 44: M Series and T Series Router Management and Internal Ethernet show interfaces Output Fields (*continued*)

Field Name	Field Description	Level of Output
Broadcast	Broadcast address.	detail extensive none
Generation	Unique number for use by Juniper Networks technical support only.	detail extensive

Sample Output

show interfaces brief (Management Ethernet)

```

user@host> show interfaces fxp0 brief
Physical interface: fxp0, Enabled, Physical link is Up
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
  Speed: 100mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps

Logical interface fxp0.0
  Flags: SNMP-Traps Encapsulation: ENET2
  inet 192.168.70.143/21

```

show interfaces (Management Ethernet)

```

user@host> show interfaces fxp0
Physical interface: fxp0, Enabled, Physical link is Up
  Interface index: 1, SNMP ifIndex: 1
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 100mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Half-Duplex
  Current address: 00:a0:a5:56:01:89, Hardware address: 00:a0:a5:56:01:89
  Last flapped   : Never
  Input packets  : 80804
  Output packets : 1105

Logical interface fxp0.0 (Index 2) (SNMP ifIndex 13)
  Flags: SNMP-Traps Encapsulation: ENET2
  Protocol inet, MTU: 1500
  Flags: Is-Primary
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: 192.168.64/21, Local: 192.168.70.143,
    Broadcast: 192.168.71.255

```

show interfaces (Management Ethernet [TX Matrix Plus Router])

```

user@host> show interfaces em0
Physical interface: em0, Enabled, Physical link is Up
  Interface index: 8, SNMP ifIndex: 17
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 100mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Full-Duplex
  Current address: 00:80:f9:26:00:c0, Hardware address: 00:80:f9:26:00:c0
  Last flapped   : Never
  Input packets  : 1424
  Output packets : 5282

```

```
Logical interface em0.0 (Index 3) (SNMP ifIndex 18)
  Flags: SNMP-Traps Encapsulation: ENET2
  Input packets : 1424
  Output packets: 5282
  Protocol inet, MTU: 1500
  Flags: Is-Primary
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: 192.168.178.0/25, Local: 192.168.178.11, Broadcast:
    192.168.178.127
```

show interfaces (Management Ethernet [PTX Series Packet Transport Routers])

```
user@host> show interfaces em0
Physical interface: em0, Enabled, Physical link is Up
  Interface index: 8, SNMP ifIndex: 0
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Full-Duplex
  Current address: 00:80:f9:25:00:1b, Hardware address: 00:80:f9:25:00:1b
  Last flapped   : Never
  Input packets  : 212581
  Output packets : 71

    Logical interface em0.0 (Index 3) (SNMP ifIndex 0)
    Flags: SNMP-Traps Encapsulation: ENET2
    Input packets : 212551
    Output packets: 71
    Protocol inet, MTU: 1500
    Flags: Is-Primary
    Addresses, Flags: Is-Default Is-Preferred Is-Primary
      Destination: 192.168.3/24, Local: 192.168.3.30,
      Broadcast: 192.168.3.255
```

show interfaces detail (Management Ethernet)

```
user@host> show interfaces fxp0 detail
Physical interface: fxp0, Enabled, Physical link is Up
  Interface index: 1, SNMP ifIndex: 1, Generation: 0
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
  Speed: 100mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Half-Duplex
  Physical info   : Unspecified
  Hold-times     : Up 0 ms, Down 0 ms
  Current address: 00:a0:a5:56:01:89, Hardware address: 00:a0:a5:56:01:89
  Alternate link address: Unspecified
  Last flapped   : Never
  Statistics last cleared: Never
  Traffic statistics:
    Input bytes :          6484031
    Output bytes :          167503
    Input packets:          81008
    Output packets:         1110

  Logical interface fxp0.0 (Index 2) (SNMP ifIndex 13) (Generation 1)
    Flags: SNMP-Traps Encapsulation: ENET2
    Protocol inet, MTU: 1500, Generation: 6, Route table: 0
    Flags: Is-Primary
```

Addresses, Flags: Is-Preferred Is-Primary
 Destination: 192.168.64/21, Local: 192.168.70.143,
 Broadcast: 192.168.71.255, Generation: 1

show interfaces detail (Management Ethernet [TX Matrix Plus Router])

```
user@host> show interfaces em0 detail
Physical interface: em0, Enabled, Physical link is Up
  Interface index: 8, SNMP ifIndex: 17, Generation: 2
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
  Speed: 100mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Full-Duplex
  Physical info  : Unspecified
  Hold-times    : Up 0 ms, Down 0 ms
  Current address: 00:80:f9:26:00:c0, Hardware address: 00:80:f9:26:00:c0
  Alternate link address: Unspecified
  Last flapped   : Never
  Statistics last cleared: Never
  Traffic statistics:
    Input bytes   :          124351
    Output bytes  :        1353212
    Input packets :          1804
    Output packets:         5344
  IPv6 transit statistics:
    Input bytes   :           0
    Output bytes  :           0
    Input packets :           0
    Output packets:           0

Logical interface em0.0 (Index 3) (SNMP ifIndex 18) (Generation 1)
  Flags: SNMP-Traps Encapsulation: ENET2
  Traffic statistics:
    Input bytes   :          117135
    Output bytes  :        1331647
    Input packets :          1804
    Output packets:         5344
  Local statistics:
    Input bytes   :          117135
    Output bytes  :        1331647
    Input packets :          1804
    Output packets:         5344
  Protocol inet, MTU: 1500, Generation: 1, Route table: 0
  Flags: Is-Primary
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: 192.168.178.0/25, Local: 192.168.178.11, Broadcast:
    192.168.178.127, Generation: 1
```

show interfaces detail (Management Ethernet [PTX Packet Transport Routers])

```
user@host> show interfaces detail em0
Physical interface: em0, Enabled, Physical link is Up
  Interface index: 8, SNMP ifIndex: 0, Generation: 3
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,

  Speed: 1000mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Full-Duplex
  Physical info  : Unspecified
```

```
Hold-times      : Up 0 ms, Down 0 ms
Current address: 00:80:f9:25:00:1b, Hardware address: 00:80:f9:25:00:1b
Alternate link address: Unspecified
Last flapped    : Never
Statistics last cleared: Never
Traffic statistics:
  Input bytes :          15255909
  Output bytes :             4608
  Input packets:          214753
  Output packets:             72
IPv6 transit statistics:
  Input bytes :          0
  Output bytes :          0
  Input packets:          0
  Output packets:          0

Logical interface em0.0 (Index 3) (SNMP ifIndex 0) (Generation 1)
Flags: SNMP-Traps Encapsulation: ENET2
Traffic statistics:
  Input bytes :          14394630
  Output bytes :             3024
  Input packets:          214723
  Output packets:             72
Local statistics:
  Input bytes :          14394630
  Output bytes :             3024
  Input packets:          214723
  Output packets:             72
Protocol inet, MTU: 1500, Generation: 1, Route table: 0
Flags: Is-Primary
Addresses, Flags: Is-Default Is-Preferred Is-Primary
  Destination: 192.168.3/24, Local: 192.168.3.30,
  Broadcast: 192.168.3.255, Generation: 1
```

show interfaces extensive (Management Ethernet)

```
user@host> show interfaces fxp0 extensive
Physical interface: fxp0, Enabled, Physical link is Up
Interface index: 1, SNMP ifIndex: 1, Generation: 0
Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
Speed: 100mbps
Device flags      : Present Running
Interface flags: SNMP-Traps
Link type        : Half-Duplex
Physical info     : Unspecified
Hold-times       : Up 0 ms, Down 0 ms
Current address: 00:a0:a5:56:01:89, Hardware address: 00:a0:a5:56:01:89
Alternate link address: Unspecified
Last flapped     : Never
Statistics last cleared: Never
Traffic statistics:
  Input bytes :          6678904
  Output bytes :          169657
  Input packets:          83946
  Output packets:          1127
Input errors:
  Errors: 12, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0,
  Policed discards: 0, Resource errors: 0
Output errors:
  Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0,
  Resource errors: 0
```

```

Logical interface fxp0.0 (Index 2) (SNMP ifIndex 13) (Generation 1)
  Flags: SNMP-Traps Encapsulation: ENET2
  Protocol inet, MTU: 1500, Generation: 6, Route table: 0
  Flags: Is-Primary
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: 192.168.64/21, Local: 192.168.70.143,
    Broadcast: 192.168.71.255, Generation: 1

```

show interfaces extensive (Management Ethernet [TX Matrix Plus Router])

```
user@host> show interfaces em0 extensive
```

```

Physical interface: em0, Enabled, Physical link is Up
  Interface index: 8, SNMP ifIndex: 17, Generation: 2
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
  Speed: 100mbps
  Device flags      : Present Running
  Interface flags: SNMP-Traps
  Link type        : Full-Duplex
  Physical info    : Unspecified
  Hold-times       : Up 0 ms, Down 0 ms
  Current address: 00:80:f9:26:00:c0, Hardware address: 00:80:f9:26:00:c0
  Alternate link address: Unspecified
  Last flapped     : Never
  Statistics last cleared: Never
  Traffic statistics:
    Input bytes :          127120
    Output bytes :        1357414
    Input packets:           1843
    Output packets:         5372
  IPv6 transit statistics:
    Input bytes :            0
    Output bytes :            0
    Input packets:            0
    Output packets:           0
  Input errors:
    Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Policed discards:
  0, Resource errors: 0
  Output errors:
    Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0, Resource errors:
  0

```

```

Logical interface em0.0 (Index 3) (SNMP ifIndex 18) (Generation 1)
  Flags: SNMP-Traps Encapsulation: ENET2
  Traffic statistics:
    Input bytes :          119748
    Output bytes :        1335719
    Input packets:           1843
    Output packets:         5372
  Local statistics:
    Input bytes :          119748
    Output bytes :        1335719
    Input packets:           1843
    Output packets:         5372
  Protocol inet, MTU: 1500, Generation: 1, Route table: 0
  Flags: Is-Primary
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: 192.168.178.0/25, Local: 192.168.178.11, Broadcast:
  192.168.178.127, Generation: 1

```

show interfaces extensive (Management Ethernet [PTX Series Packet Transport Routers])

```
user@host> show interfaces extensive em0
Physical interface: em0, Enabled, Physical link is Up
  Interface index: 8, SNMP ifIndex: 0, Generation: 3
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,

  Speed: 1000mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Full-Duplex
  Physical info  : Unspecified
  Hold-times     : Up 0 ms, Down 0 ms
  Current address: 00:80:f9:25:00:1b, Hardware address: 00:80:f9:25:00:1b
  Alternate link address: Unspecified
  Last flapped   : Never
  Statistics last cleared: Never
  Traffic statistics:
    Input bytes   :          15236459
    Output bytes  :           4608
    Input packets :         214482
    Output packets:           72
  IPv6 transit statistics:
    Input bytes   :           0
    Output bytes  :           0
    Input packets :           0
    Output packets:           0
  Input errors:
  Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0,
  Policed discards: 0, Resource errors: 0
  Output errors:
  Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0,
  Resource errors: 0

  Logical interface em0.0 (Index 3) (SNMP ifIndex 0) (Generation 1)
  Flags: SNMP-Traps Encapsulation: ENET2
  Traffic statistics:
    Input bytes   :         14376264
    Output bytes  :          3024
    Input packets :         214452
    Output packets:           72
  Local statistics:
    Input bytes   :         14376264
    Output bytes  :          3024
    Input packets :         214452
    Output packets:           72
  Protocol inet, MTU: 1500, Generation: 1, Route table: 0
  Flags: Is-Primary
  Addresses, Flags: Is-Default Is-Preferred Is-Primary
    Destination: 192.168.3/24, Local: 192.168.3.30,
    Broadcast: 192.168.3.255, Generation: 1
```

show interfaces brief (Management Ethernet)

```
user@host> show interfaces fxp1 brief
Physical interface: fxp1, Enabled, Physical link is Up
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
  Speed: 100mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
```

```

Logical interface fxp1.0
  Flags: SNMP-Traps Encapsulation: ENET2
  inet 10.0.0.4/8
  inet6 fe80::200:ff:fe00:4/64
        fec0::10:0:0:4/64
  tnp 4

```

show interfaces brief (Management Ethernet [TX Matrix Plus Router])

```

user@host> show interfaces em0 brief
Physical interface: em0, Enabled, Physical link is Up
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
Speed: 100mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps

Logical interface em0.0
  Flags: SNMP-Traps Encapsulation: ENET2
  inet 192.168.178.11/25

```

show interfaces brief (Management Ethernet [PTX Series Packet Transport Routers])

```

user@host> show interfaces em0 brief
Physical interface: em0, Enabled, Physical link is Up
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,

Speed: 1000mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps

Logical interface em0.0
  Flags: SNMP-Traps Encapsulation: ENET2
  inet 192.168.3.30/24

```

```

root@aboslutely> show interfaces em0 terse
Interface      Admin Link Proto  Local      Remote
em0            up    up
em0.0          up    up  inet    192.168.3.30/24

```

show interfaces (Internal Ethernet)

```

user@host> show interfaces fxp1
Physical interface: fxp1, Enabled, Physical link is Up
  Interface index: 2, SNMP ifIndex: 2
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 100mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Full-Duplex
  Current address: 02:00:00:00:00:04, Hardware address: 02:00:00:00:00:04
  Last flapped   : Never
  Input packets  : 30655
  Output packets : 33323

Logical interface fxp1.0 (Index 3) (SNMP ifIndex 14)
  Flags: SNMP-Traps Encapsulation: ENET2
  Protocol inet, MTU: 1500
    Flags: Is-Primary
    Addresses, Flags: Is-Default Is-Preferred Is-Primary
      Destination: 10/8, Local: 10.0.0.4, Broadcast: 10.255.255.255
  Protocol inet6, MTU: 1500
    Flags: Is-Primary
    Addresses, Flags: Is-Preferred

```

```
        Destination: fe80::/64, Local: fe80::200:ff:fe00:4
Addresses, Flags: Is-Default Is-Preferred Is-Primary
        Destination: fec0::/64, Local: fec0::10:0:0:4
Protocol tnp, MTU: 1500
Flags: Primary, Is-Primary
Addresses
Local: 4
```

show interfaces (Internal Ethernet [TX Matrix Plus Router])

```
user@host> show interfaces ixgbe0
Physical interface: ixgbe0, Enabled, Physical link is Up
  Interface index: 2, SNMP ifIndex: 116
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Full-Duplex
  Current address: 02:00:00:22:00:04, Hardware address: 02:00:00:22:00:04
  Last flapped   : Never
    Input packets : 2301738
    Output packets: 3951155

Logical interface ixgbe0.0 (Index 4) (SNMP ifIndex 117)
  Flags: SNMP-Traps Encapsulation: ENET2
  Input packets : 2301595
  Output packets: 3951155
  Protocol inet, MTU: 1500
    Flags: Is-Primary
    Addresses, Flags: Is-Preferred
      Destination: 10/8, Local: 10.34.0.4, Broadcast: 10.255.255.255
    Addresses, Flags: Primary Is-Default Is-Preferred Is-Primary
      Destination: 128/2, Local: 162.0.0.4, Broadcast: 191.255.255.255
  Protocol inet6, MTU: 1500
    Flags: Is-Primary
    Addresses, Flags: Is-Preferred
      Destination: fe80::/64, Local: fe80::200:ff:fe22:4
    Addresses, Flags: Is-Default Is-Preferred Is-Primary
      Destination: fec0::/64, Local: fec0::a:22:0:4
  Protocol tnp, MTU: 1500
    Flags: Primary, Is-Primary
    Addresses
      Local: 0x22000004
```

show interfaces detail (Internal Ethernet)

```
user@host> show interfaces fxp1 detail
Physical interface: fxp1, Enabled, Physical link is Up
  Interface index: 2, SNMP ifIndex: 2, Generation: 1
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
  Speed: 100mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Full-Duplex
  Physical info   : Unspecified
  Hold-times     : Up 0 ms, Down 0 ms
  Current address: 02:00:00:00:00:04, Hardware address: 02:00:00:00:00:04
  Alternate link address: Unspecified
  Last flapped   : Never
  Statistics last cleared: Never
  Traffic statistics:
    Input bytes :          2339969
```



```

Output bytes :          15880707
Input packets:          30758
Output packets:         33443

Logical interface fxp1.0 (Index 3) (SNMP ifIndex 14) (Generation 2)
Flags: SNMP-Traps Encapsulation: ENET2
Protocol inet, MTU: 1500, Generation: 7, Route table: 1
  Flags: Is-Primary
  Addresses, Flags: Is-Default Is-Preferred Is-Primary
    Destination: 10/8, Local: 10.0.0.4, Broadcast: 10.255.255.255,
    Generation: 3
  Protocol inet6, MTU: 1500, Generation: 8, Route table: 1
    Flags: Is-Primary
    Addresses, Flags: Is-Preferred
      Destination: fe80::/64, Local: fe80::200:ff:fe00:4,
      Broadcast: Unspecified, Generation: 5
    Addresses, Flags: Is-Default Is-Preferred Is-Primary
      Destination: fec0::/64, Local: fec0::10:0:0:4, Broadcast: Unspecified,
      Generation: 7
  Protocol tnp, MTU: 1500, Generation: 9, Route table: 1
    Flags: Primary, Is-Primary
    Addresses, Flags: None
      Destination: Unspecified, Local: 4, Broadcast: Unspecified,
      Generation: 8

```

show interfaces detail (Internal Ethernet [TX Matrix Plus Router])

```

user@host> show interfaces ixgbe0 detail
Physical interface: ixgbe0, Enabled, Physical link is Up
  Interface index: 2, SNMP ifIndex: 116, Generation: 3
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
  Speed: 1000mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Full-Duplex
  Physical info  : Unspecified
  Hold-times     : Up 0 ms, Down 0 ms
  Current address: 02:00:00:22:00:04, Hardware address: 02:00:00:22:00:04
  Alternate link address: Unspecified
  Last flapped   : Never
  Statistics last cleared: Never
  Traffic statistics:
    Input bytes :          238172825
    Output bytes:          1338948955
    Input packets:         2360984
    Output packets:        4061512
  IPv6 transit statistics:
    Input bytes :          0
    Output bytes:          0
    Input packets:         0
    Output packets:        0

Logical interface ixgbe0.0 (Index 4) (SNMP ifIndex 117) (Generation 2)
Flags: SNMP-Traps Encapsulation: ENET2
Traffic statistics:
  Input bytes :          228720309
  Output bytes :          1261387447
  Input packets:         2360841
  Output packets:        4061512
  IPv6 transit statistics:
    Input bytes :          0

```

```

        Output bytes :           0
        Input  packets:           0
        Output packets:           0
Local statistics:
    Input bytes :       228720309
    Output bytes :       1261387447
    Input  packets:       2360841
    Output packets:       4061512
Protocol inet, MTU: 1500, Generation: 2, Route table: 1
    Flags: Is-Primary
    Addresses, Flags: Is-Preferred
        Destination: 10/8, Local: 10.34.0.4, Broadcast: 10.255.255.255, Generation:
2
        Addresses, Flags: Primary Is-Default Is-Preferred Is-Primary
        Destination: 128/2, Local: 162.0.0.4, Broadcast: 191.255.255.255,
Generation: 3
    Protocol inet6, MTU: 1500, Generation: 3, Route table: 1
    Flags: Is-Primary
    Addresses, Flags: Is-Preferred
        Destination: fe80::/64, Local: fe80::200:ff:fe22:4
Generation: 4
    Addresses, Flags: Is-Default Is-Preferred Is-Primary
        Destination: fec0::/64, Local: fec0::a:22:0:4
    Protocol tnp, MTU: 1500, Generation: 5
    Generation: 4, Route table: 1
    Flags: Primary, Is-Primary
    Addresses, Flags: None
        Destination: Unspecified, Local: 0x22000004, Broadcast: Unspecified,
Generation: 6

```

show interfaces extensive (internal Ethernet)

```

user@host> show interfaces fxp1 extensive
Physical interface: fxp1, Enabled, Physical link is Up
    Interface index: 2, SNMP ifIndex: 2, Generation: 1
    Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
    Speed: 100mbps
    Device flags   : Present Running
    Interface flags: SNMP-Traps
    Link type      : Full-Duplex
    Physical info  : Unspecified
    Hold-times     : Up 0 ms, Down 0 ms
    Current address: 02:00:00:00:00:04, Hardware address: 02:00:00:00:00:04
    Alternate link address: Unspecified
    Last flapped   : Never
    Statistics last cleared: Never
    Traffic statistics:
        Input bytes :       2349897
        Output bytes :       15888605
        Input  packets:       30896
        Output packets:       33607
    Input errors:
        Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0,
        Policed discards: 0, Resource errors: 0
    Output errors:
        Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0,
        Resource errors: 0

    Logical interface fxp1.0 (Index 3) (SNMP ifIndex 14) (Generation 2)
        Flags: SNMP-Traps Encapsulation: ENET2
        Protocol inet, MTU: 1500, Generation: 7, Route table: 1

```

```

Flags: Is-Primary
Addresses, Flags: Is-Default Is-Preferred Is-Primary
  Destination: 10/8, Local: 10.0.0.4, Broadcast: 10.255.255.255,
  Generation: 3
Protocol inet6, MTU: 1500, Generation: 8, Route table: 1
Flags: Is-Primary
Addresses, Flags: Is-Preferred
  Destination: fe80::/64, Local: fe80::200:ff:fe00:4,
  Broadcast: Unspecified, Generation: 5
Addresses, Flags: Is-Default Is-Preferred Is-Primary
  Destination: fec0::/64, Local: fec0::10:0:0:4, Broadcast: Unspecified,
  Generation: 7
Protocol tnp, MTU: 1500, Generation: 9, Route table: 1
Flags: Primary, Is-Primary
Addresses, Flags: None
  Destination: Unspecified, Local: 4, Broadcast: Unspecified,
  Generation: 8

```

show interfaces extensive (internal Ethernet [TX Matrix Plus Router])

```

user@host> show interfaces ixgbe0 extensive
Physical interface: ixgbe0, Enabled, Physical link is Up
  Interface index: 2, SNMP ifIndex: 116, Generation: 3
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Clocking: Unspecified,
  Speed: 1000mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Full-Duplex
  Physical info   : Unspecified
  Hold-times     : Up 0 ms, Down 0 ms
  Current address: 02:00:00:22:00:04, Hardware address: 02:00:00:22:00:04
  Alternate link address: Unspecified
  Last flapped   : Never
  Statistics last cleared: Never
  Traffic statistics:
    Input bytes   :          242730780
    Output bytes  :          1348312269
    Input packets :          2398737
    Output packets:          4133510
  IPv6 transit statistics:
    Input bytes   :          0
    Output bytes  :          0
    Input packets :          0
    Output packets:          0
  Input errors:
    Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Policed discards:
0, Resource errors: 0
  Output errors:
    Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0, Resource errors:
0

Logical interface ixgbe0.0 (Index 4) (SNMP ifIndex 117) (Generation 2)
Flags: SNMP-Traps Encapsulation: ENET2
Traffic statistics:
  Input bytes   :          233127252
  Output bytes  :          1269350897
  Input packets :          2398594
  Output packets:          4133510
  IPv6 transit statistics:
    Input bytes   :          0
    Output bytes  :          0

```

```
Input packets:          0
Output packets:         0
Local statistics:
Input bytes :           233127252
Output bytes :          1269350897
Input packets:          2398594
Output packets:          4133510
Protocol inet, MTU: 1500, Generation: 2, Route table: 1
  Flags: Is-Primary
  Addresses, Flags: Is-Preferred
    Destination: 10/8, Local: 10.34.0.4, Broadcast: 10.255.255.255, Generation:
2
    Addresses, Flags: Primary Is-Default Is-Preferred Is-Primary
      Destination: 128/2, Local: 162.0.0.4, Broadcast: 191.255.255.255,
Generation: 3
  Protocol inet6, MTU: 1500, Generation: 3, Route table: 1
    Flags: Is-Primary
    Addresses, Flags: Is-Preferred
      Destination: fe80::/64, Local: fe80::200:ff:fe22:4
Generation: 4
    Addresses, Flags: Is-Default Is-Preferred Is-Primary
      Destination: fec0::/64, Local: fec0::a:22:0:4
  Protocol tnp, MTU: 1500, Generation: 5
  Generation: 4, Route table: 1
    Flags: Primary, Is-Primary
    Addresses, Flags: None
      Destination: Unspecified, Local: 0x22000004, Broadcast: Unspecified,
Generation: 6
```

show interfaces mac-database (Gigabit Ethernet)

Syntax	<code>show interfaces mac-database (ge-fpc/pic/port ge-fpc/pic/port.n) <mac-address mac-address></code>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced on PTX Series Packet Transport Routers for Junos OS Release 12.1.
Description	(M Series, T Series, MX Series routers, and PTX Series Packet Transport Routers only) Display media access control (MAC) address information for the specified Gigabit Ethernet interface.
Options	<p>ge-fpc/pic/port—Display MAC addresses that have been learned on all logical interfaces on a particular physical interface.</p> <p>ge-fpc/pic/port.n—Display MAC addresses that have been learned on a particular logical interface.</p> <p>mac-address mac-address—(Optional) Display detailed MAC address statistics, including policer information.</p>
Additional Information	On IQ2 PIC interfaces, the default value for maximum retention of entries in the MAC address table has changed, for cases in which the table is not full. The new holding time is 12 hours. The previous retention time of 3 minutes is still in effect when the table is full.
Required Privilege Level	view
List of Sample Output	show interfaces mac-database (All MAC Addresses on a Port) on page 819 show interfaces mac-database (All MAC Addresses on a Service) on page 820 show interfaces mac-database mac-address on page 820
Output Fields	Table 45 on page 817 lists the output fields for the show interfaces mac-database command. Output fields are listed in the approximate order in which they appear.

Table 45: show interfaces mac-database Output Fields

Field Name	Field Description
Physical Interface	
Physical interface	Name of the physical interface.
Enabled	State of the physical interface. Possible values are described in the "Enabled Field" section under <i>Common Output Fields Description</i> .
Interface index	Physical interface index number, which reflects its initialization sequence.
SNMP ifIndex	SNMP index number for the physical interface.
Description	Description and name of the interface.

Table 45: show interfaces mac-database Output Fields (*continued*)

Field Name	Field Description
Link-level type	Encapsulation being used on the physical interface.
MTU	MTU size on the physical interface.
Speed	Speed at which the interface is running.
Loopback	Whether loopback is enabled and the type of loopback: local or remote .
Source filtering	Whether source filtering is configured.
Flow control	Whether flow control is enabled or disabled.
Device flags	Information about the physical device. Possible values are described in the “Device Flags” section under <i>Common Output Fields Description</i> .
Interface flags	Information about the interface. Possible values are described in the “Links Flags” section under <i>Common Output Fields Description</i> .
Link flags	Information about the link. Possible values are described in the “Device Flags” section under <i>Common Output Fields Description</i> .
Logical Interface	
Logical interface	Name of the logical interface.
Index	Logical interface index number, which reflects its initialization sequence.
SNMP ifIndex	Logical interface SNMP interface index number.
Flags	Information about the logical interface (possible values are described in the “Logical Interface Flags” section under <i>Common Output Fields Description</i>).
Encapsulation	Encapsulation on the logical interface.
MAC address, Input frames, Input bytes, Output frames, Output bytes	MAC address and corresponding number of input frames, input bytes, output frames, and output bytes.
Number of MAC addresses	Number of MAC addresses configured.

Table 45: show interfaces mac-database Output Fields (*continued*)

Field Name	Field Description
Policer Statistics	<p>(Displayed for mac-address option only) Display information about policers applied to a logical interface-MAC pair.</p> <ul style="list-style-type: none"> • Policer type—Type of policer that is out of spec with respect to the configuration. It can be one or more of the following: <ul style="list-style-type: none"> • Input premium—Number of high-priority rating out-of-spec frames or bytes received. • Output premium—Number of high-priority rating out-of-spec frames or bytes sent. • Input aggregate—Total number of out-of-spec frames or bytes received. • Output aggregate—Total number of out-of-spec frames or bytes sent. • Discarded Frames—Number of discarded frames. • Discarded Bytes—Number of discarded bytes.

Sample Output

show interfaces mac-database (All MAC Addresses on a Port)

```

user@host> show interfaces mac-database xe-0/3/3
Physical interface: xe-0/3/3, Enabled, Physical link is Up
  Interface index: 372, SNMP ifIndex: 788
  Link-level type: Ethernet, MTU: 1514, LAN-PHY mode, Speed: 10Gbps, Loopback:
None, Source filtering: Disabled, Flow control: Enabled
  Device flags      : Present Running
  Interface flags: SNMP-Traps Internal: 0x4000
  Link flags       : None

Logical interface xe-0/3/3.0 (Index 364) (SNMP ifIndex 829)
  Flags: SNMP-Traps 0x4004000 Encapsulation: ENET2
MAC address      Input frames  Input bytes  Output frames  Output bytes
00:00:00:00:00:00      1           56           0             0
00:00:c0:01:01:02     7023810     323095260    0             0
00:00:c0:01:01:03     7023810     323095260    0             0
00:00:c0:01:01:04     7023810     323095260    0             0
00:00:c0:01:01:05     7023810     323095260    0             0
00:00:c0:01:01:06     7023810     323095260    0             0
00:00:c0:01:01:07     7023810     323095260    0             0
00:00:c0:01:01:08     7023809     323095214    0             0
00:00:c0:01:01:09     7023809     323095214    0             0
00:00:c0:01:01:0a     7023809     323095214    0             0
00:00:c0:01:01:0b     7023809     323095214    0             0
00:00:c8:01:01:02     30424784    1399540064    37448598      1722635508
00:00:c8:01:01:03     30424784    1399540064    37448598      1722635508
00:00:c8:01:01:04     30424716    1399536936    37448523      1722632058
00:00:c8:01:01:05     30424789    1399540294    37448598      1722635508
00:00:c8:01:01:06     30424788    1399540248    37448597      1722635462
00:00:c8:01:01:07     30424783    1399540018    37448597      1722635462
00:00:c8:01:01:08     30424783    1399540018    37448596      1722635416
00:00:c8:01:01:09      8836796     406492616     8836795       406492570
00:00:c8:01:01:0a     30424712    1399536752    37448521      1722631966
00:00:c8:01:01:0b     30424715    1399536890    37448523      1722632058
Number of MAC addresses : 21

```

show interfaces mac-database (All MAC Addresses on a Service)

```

user@host> show interfaces mac-database xe-0/3/3
Logical interface xe-0/3/3.0 (Index 364) (SNMP ifIndex 829)
  Flags: SNMP-Traps 0x4004000 Encapsulation: ENET2
  MAC address      Input frames   Input bytes   Output frames  Output bytes
00:00:00:00:00:00      1             56            0              0
00:00:c0:01:01:02    7023810       323095260     0              0
00:00:c0:01:01:03    7023810       323095260     0              0
00:00:c0:01:01:04    7023810       323095260     0              0
00:00:c0:01:01:05    7023810       323095260     0              0
00:00:c0:01:01:06    7023810       323095260     0              0
00:00:c0:01:01:07    7023810       323095260     0              0
00:00:c0:01:01:08    7023809       323095214     0              0
00:00:c0:01:01:09    7023809       323095214     0              0
00:00:c0:01:01:0a    7023809       323095214     0              0
00:00:c0:01:01:0b    7023809       323095214     0              0
00:00:c8:01:01:02    31016568      1426762128    38040381       1749857526
00:00:c8:01:01:03    31016568      1426762128    38040382       1749857572
00:00:c8:01:01:04    31016499      1426758954    38040306       1749854076
00:00:c8:01:01:05    31016573      1426762358    38040381       1749857526
00:00:c8:01:01:06    31016573      1426762358    38040381       1749857526
00:00:c8:01:01:07    31016567      1426762082    38040380       1749857480
00:00:c8:01:01:08    31016567      1426762082    38040379       1749857434
00:00:c8:01:01:09    9428580       433714680     9428580        433714680
00:00:c8:01:01:0a    31016496      1426758816    38040304       1749853984
00:00:c8:01:01:0b    31016498      1426758908    38040307       1749854122

```

show interfaces mac-database mac-address


```

user@host> show interfaces mac-database xe-0/3/3 mac-address 00:00:c8:01:01:09
Physical interface: xe-0/3/3, Enabled, Physical link is Up
  Interface index: 372, SNMP ifIndex: 788
  Link-level type: Ethernet, MTU: 1514, LAN-PHY mode, Speed: 10Gbps, Loopback:
None, Source filtering: Disabled, Flow control: Enabled
  Device flags   : Present Running
  Interface flags: SNMP-Traps Internal: 0x4000
  Link flags     : None

Logical interface xe-0/3/3.0 (Index 364) (SNMP ifIndex 829)
  Flags: SNMP-Traps 0x4004000 Encapsulation: ENET2
MAC address: 00:00:c8:01:01:09, Type: Configured,
  Input bytes   : 202324652
  Output bytes  : 202324560
  Input frames  : 4398362
  Output frames : 4398360
Policer statistics:
Policer type    Discarded frames   Discarded bytes
Output aggregate      3992386           183649756

```


show interfaces media

Syntax	show interfaces media
Release Information	Command introduced before Junos OS Release 7.4. Command introduced on PTX Series Packet Transport Routers for Junos OS Release 12.1.
Description	Display media-specific information about all configured network interfaces.
	<div>  <p>NOTE: <code>show interfaces media</code> lists details for all interfaces, whereas <code>show interfaces media interface-name</code> lists details only for the specified interface.</p> </div>
Options	This command has no options.
Additional Information	Output from both the <code>show interfaces interface-name detail</code> and the <code>show interfaces interface-name extensive</code> commands includes all the information displayed in the output from the <code>show interfaces media</code> command.
Required Privilege Level	view
List of Sample Output	show interfaces media (SONET/SDH) on page 821 show interfaces media (PTX Series Packet Transport Routers) on page 822
Output Fields	<p>The output from the <code>show interfaces media</code> command includes fields that display interface media-specific information. These fields are also included in the <code>show interfaces interface-name</code> command for each particular interface type, and the information provided in the fields is unique to each interface type.</p> <p>One field unique to the <code>show interfaces media</code> command is interface-type errors (for example, SONET errors). This field appears for channelized E3, channelized T3, channelized OC, E1, E3, SONET, T1, and T3 interfaces. The information provided in this output field is also provided in the output from the <code>show interfaces interface-name</code> command. (For example, for SONET interfaces, these fields are SONET section, SONET line, and SONET path). For a description of errors, see the chapter with the particular interface type in which you are interested.</p>

Sample Output

show interfaces media (SONET/SDH)

The following example displays the output fields unique to the `show interfaces media` command for a SONET interface (with no level of output specified):

```
user@host> show interfaces media so-4/1/2
Physical interface: so-4/1/2, Enabled, Physical link is Up
  Interface index: 168, SNMP ifIndex: 495
  Link-level type: PPP, MTU: 4474, Clocking: Internal, SONET mode, Speed: OC48,
```

```
Loopback: None, FCS: 16, Payload scrambler: Enabled
Device flags : Present Running
Interface flags: Point-To-Point SNMP-Traps 16384
Link flags : Keepalives
Keepalive settings: Interval 10 seconds, Up-count 1, Down-count 3
Keepalive: Input: 1783 (00:00:00 ago), Output: 1786 (00:00:08 ago)
LCP state: Opened
NCP state: inet: Not-configured, inet6: Not-configured, iso: Not-configured,
mpls: Not-configured
CHAP state: Not-configured
CoS queues : 8 supported
Last flapped : 2005-06-15 12:14:59 PDT (04:31:29 ago)
Input rate : 0 bps (0 pps)
Output rate : 0 bps (0 pps)
SONET alarms : None
SONET defects : None
SONET errors:
    BIP-B1: 121, BIP-B2: 916, REI-L: 0, BIP-B3: 137, REI-P: 16747, BIP-BIP2: 0
Received path trace: routerb so-1/1/2
Transmitted path trace: routera so-4/1/2
```

show interfaces media (PTX Series Packet Transport Routers)

```
user@host> show interfaces media em0
Physical interface: em0, Enabled, Physical link is Up
    Interface index: 8, SNMP ifIndex: 0
    Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps
    Device flags : Present Running
    Interface flags: SNMP-Traps
    Link type : Full-Duplex
    Current address: 00:80:f9:25:00:1b, Hardware address: 00:80:f9:25:00:1b
    Last flapped : Never
    Input packets : 215151
    Output packets: 72
```

show interfaces policers

Syntax	show interfaces policers <interface-name>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced on PTX Series Packet Transport Routers for Junos OS Release 12.1.
Description	Display all policers that are installed on each interface in a system.
Options	none —Display policer information about all interfaces. interface-name —(Optional) Display filter information about a particular interface.
Additional Information	For information about how to configure policers, see the <i>Junos Policy Framework Configuration Guide</i> . For related operational mode commands, see the <i>Junos Routing Protocols and Policies Command Reference</i> .
Required Privilege Level	view
List of Sample Output	show interfaces policers on page 824 show interfaces policers interface-name on page 824 show interfaces policers (PTX Series Packet Transport Routers) on page 824
Output Fields	Table 46 on page 823 lists the output fields for the show interfaces policers command. Output fields are listed in the approximate order in which they appear.

Table 46: show interfaces policers Output Fields

Field Name	Field Description
Interface	Name of the interface.
Admin	Interface state: up or down .
Link	Link state: up or down .
Proto	Protocol configured on the interface.
Input Policer	Policer to be evaluated when packets are received on the interface. It has the format <i>interface-name-in-policer</i> .
Output Policer	Policer to be evaluated when packets are transmitted on the interface. It has the format <i>interface-name-out-policer</i> .

Sample Output

show interfaces policers

```
user@host> show interfaces policers
Interface      Admin Link Proto Input Policer      Output Policer
ge-0/0/0       up    up   inet
ge-0/0/0.0     up    up   iso
gr-0/3/0       up    up
ip-0/3/0       up    up
mt-0/3/0       up    up
pd-0/3/0       up    up
pe-0/3/0       up    up
...
so-2/0/0       up    up
so-2/0/0.0     up    up   inet so-2/0/0.0-in-policer so-2/0/0.0-out-policer
so-2/0/0.0     up    up   iso
so-2/1/0       up    down
...
```

show interfaces policers interface-name

```
user@host> show interfaces policers so-2/1/0
Interface      Admin Link Proto Input Policer      Output Policer
so-2/1/0       up    down
so-2/1/0.0     up    down inet so-2/1/0.0-in-policer so-2/1/0.0-out-policer
so-2/1/0.0     up    down iso
so-2/1/0.0     up    down inet6
```

show interfaces policers (PTX Series Packet Transport Routers)

```
user@host> show interfaces policers em0
Interface      Admin Link Proto Input Policer      Output Policer
em0            up    up
em0.0          up    up
em0.0          inet
```

show interfaces routing summary

Syntax	show interfaces routing summary <interface-name> <logical-system (all logical-system-name)>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 12.1x48 for PTX Series Packet Transport Routers.
Description	Display a summary of the state of the router interfaces. Use this command for performing router diagnostics only, when you are determining whether the routing protocols and the Junos OS differ about the state of an interface.
Options	<p>none—Display summary information about the state of all router interfaces on all logical systems.</p> <p>interface-name—(Optional) Name of a specific interface.</p> <p>logical-system (all logical-system-name)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Additional Information	For information about how to configure routing protocols, see the <i>Junos OS Routing Protocols Library for Routing Devices</i> . For information about related operational mode commands for routing instances and protocols, see the <i>Junos OS Operational Mode Commands</i> .
Required Privilege Level	view
List of Sample Output	show interfaces routing summary on page 826 show interfaces routing summary (TX Matrix Plus Router) on page 826 show interfaces routing summary (PTX5000 Packet Transport Routers) on page 827
Output Fields	Table 47 on page 825 lists the output fields for the show interfaces routing summary command. Output fields are listed in the approximate order in which they appear.

Table 47: show interfaces routing summary Output Fields

Field Name	Field Description
<i>n</i> physical interfaces	Number of routing interfaces and number of interfaces in the up state.
<i>n</i> protocol protocol interfaces	Type and number of routing protocols and number of related interfaces in the up state.
Interface	Logical interface name.
Index	Logical interface index number, which reflects its initialization sequence.

Table 47: show interfaces routing summary Output Fields (*continued*)

Field Name	Field Description
Metric	Metric value for the interface.
Trans	Number of times the interface has transitioned from Down to Up .
Status	Interface status (Up or Down) and type.

Sample Output

show interfaces routing summary

```

user@host> show interfaces routing summary
14 physical interfaces (12 up)
  11 INET protocol addresses (11 up)
  6 ISO protocol addresses (4 up)
  3 MPLS protocol addresses (3 up)
  3 CCC protocol addresses (3 up)
Interface  Index  Metric  Trans.  Status
so-5/0/3.0   15      0        0  Broadcast PointToPoint Multicast
so-5/0/2.0   14      0        0  Up Broadcast PointToPoint Multicast
so-5/0/1.0   13      0        5  Up Broadcast PointToPoint Multicast
so-5/0/0.0   12      0        2  Up Broadcast PointToPoint Multicast
so-1/2/0.0   11      0        0  Broadcast PointToPoint Multicast
so-1/1/0.0   10      0        5  Up Broadcast PointToPoint Multicast
at-1/0/0.6    9      0        0  Up Broadcast PointToPoint Multicast
at-1/0/0.5    8      0        0  Up Broadcast PointToPoint Multicast
at-1/0/0.4    7      0        0  Up Broadcast PointToPoint Multicast
at-1/0/0.3    6      0        0  Up Broadcast PointToPoint Multicast
at-1/0/0.2    5      0        0  Up Broadcast PointToPoint Multicast
at-1/0/0.0    4      0        0  Up Broadcast PointToPoint Multicast
lo0.0         3      0        0  Up Broadcast Loopback Multicast
fxp1.0        2      0        1  Up Broadcast Multicast
fxp0.0        1      0        0  Up Broadcast Multicast

```

show interfaces routing summary (TX Matrix Plus Router)

```

user@host> show interfaces routing summary
9 physical interfaces (9 up)
  11 INET protocol addresses (11 up)
  6 MPLS protocol addresses (6 up)
  4 INET6 protocol addresses (4 up)

Interface      Index  Metric  Trans.  Status
ge-23/0/8.0    73     0        0  Up Broadcast Multicast
ge-23/0/7.0    72     0        0  Up Broadcast Multicast
ge-23/0/6.0    71     0        0  Up Broadcast Multicast
ge-7/0/9.0     69     0        0  Up Broadcast Multicast
ge-15/0/9.0    70     0        0  Up Broadcast Multicast
xe-6/1/1.0     68     0        0  Up Broadcast Multicast
lo0.16385      66     0        0  Up Broadcast Loopback Multicast
lo0.16384      65     0        0  Up Broadcast Loopback Multicast
lo0.0          64     0        0  Up Broadcast Loopback Multicast
ixgbe1.0       5      0        0  Up Broadcast Multicast
ixgbe0.0       4      0        0  Up Broadcast Multicast
em0.0          3      0        0  Up Broadcast Multicast

```

show interfaces routing summary (PTX5000 Packet Transport Routers)

```
user@host> show interfaces routing summary
```

```
7 physical interfaces (68 up)
```

```
7 INET protocol addresses (7 up)
```

```
2 CCC protocol addresses (2 up)
```

```
4 INET6 protocol addresses (4 up)
```

Interface	Index	Metric	Trans. Status
lo0.16385	66	0	0 Up Broadcast Loopback Multicast
lo0.16384	64	0	0 Up Broadcast Loopback Multicast
lo0.0	65	0	0 Up Broadcast Loopback Multicast
ixgbe1.0	5	0	0 Up Broadcast Multicast
ixgbe0.0	4	0	0 Up Broadcast Multicast
et-5/0/5.32767	72	0	0 Up Broadcast Multicast
et-5/0/5.0	68	0	0 Up Broadcast Multicast
et-5/0/0.32767	67	0	0 Up Broadcast Multicast
et-5/0/0.0	71	0	0 Up Broadcast Multicast
em0.0	3	0	0 Up Broadcast Multicast

show interfaces statistics

Syntax	<code>show interfaces statistics <i>interface-name</i> <detail></code>
Release Information	Command introduced before Junos OS Release 7.4. 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 Routers.
Description	Display static interface statistics, such as errors.
Options	<i>interface-name</i> —Name of an interface. <i>detail</i> —(Optional) Display detailed output.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none">• clear interfaces statistics
List of Sample Output	show interfaces statistics (Fast Ethernet) on page 828 show interfaces statistics (Gigabit Ethernet PIC—Egress) on page 829 show interfaces statistics detail (Aggregated Ethernet) on page 831 show interfaces statistics detail (Aggregated Ethernet—Ingress) on page 832 show interfaces statistics detail (Aggregated Ethernet—Egress) on page 833 show interfaces statistics (SONET/SDH) on page 835 show interfaces statistics (Aggregated SONET/SDH—Ingress) on page 836 show interfaces statistics (Aggregated SONET/SDH—Egress) on page 837 show interfaces statistics (PTX Series Packet Transport Routers) on page 838 show interfaces statistics (ACX Series routers) on page 838
Output Fields	Output from both the <code>show interfaces <i>interface-name</i> detail</code> and the <code>show interfaces <i>interface-name</i> extensive</code> commands include all the information displayed in the output from the <code>show interfaces statistics</code> command. For more information, see the particular interface type in which you are interested. For information about destination class and source class statistics, see the “Destination Class Field” section and the “Source Class Field” section under <i>Common Output Fields Description</i> . For information about the input errors and output errors, see <i>Fast Ethernet and Gigabit Ethernet Counters</i> .

Sample Output

show interfaces statistics (Fast Ethernet)

```
user@host> show interfaces fe-1/3/1 statistics
Physical interface: fe-1/3/1, Enabled, Physical link is Up
Interface index: 144, SNMP ifIndex: 1042
Description: ford fe-1/3/1
Link-level type: Ethernet, MTU: 1514, Speed: 100mbps, Loopback: Disabled,
Source filtering: Disabled, Flow control: Enabled
Device flags   : Present Running
```



```

Interface flags: SNMP-Traps Internal: 0x4000
CoS queues      : 4 supported, 4 maximum usable queues
Current address: 00:90:69:93:04:dc, Hardware address: 00:90:69:93:04:dc
Last flapped    : 2006-04-18 03:08:59 PDT (00:01:24 ago)
Statistics last cleared: Never
Input rate      : 0 bps (0 pps)
Output rate     : 0 bps (0 pps)
Input errors: 0, Output errors: 0
Active alarms   : None
Active defects  : None
Logical interface fe-1/3/1.0 (Index 69) (SNMP ifIndex 50)
  Flags: SNMP-Traps Encapsulation: ENET2
  Protocol inet, MTU: 1500
    Flags: Is-Primary, DCU, SCU-in

      Destination class      Packets      Bytes
                        (packet-per-second) (bits-per-second)
                        silver1      0      0
                        (      0) (      0)
                        silver2      0      0
                        (      0) (      0)
                        silver3      0      0
                        (      0) (      0)
Addresses, Flags: Is-Default Is-Preferred Is-Primary
  Destination: 10.27.245/24, Local: 10.27.245.2,
  Broadcast: 10.27.245.255
  Protocol iso, MTU: 1497
  Flags: Is-Primary

```

show interfaces statistics (Gigabit Ethernet PIC—Egress)

```

user@host> show interfaces ge-5/2/0 statistics detail
Physical interface: ge-5/2/0, Enabled, Physical link is Up
  Interface index: 146, SNMP ifIndex: 519, Generation: 149
  Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps, BPDU Error: None,
  MAC-REWRITE Error: None, Loopback: Disabled,
  Source filtering: Disabled, Flow control: Enabled, Auto-negotiation: Enabled,
  Remote fault: Online
  Device flags   : Present Running
  Interface flags: SNMP-Traps Internal: 0x4000
  Link flags     : None
  CoS queues     : 8 supported, 8 maximum usable queues
  Hold-times     : Up 0 ms, Down 0 ms
  Current address: 00:1d:b5:61:d9:74, Hardware address: 00:1d:b5:61:d9:74
  Last flapped   : 2009-11-11 11:24:00 PST (09:23:08 ago)
  Statistics last cleared: 2009-11-11 17:50:58 PST (02:56:10 ago)
  Traffic statistics:
    Input bytes :      271524      0 bps
    Output bytes :    37769598    352 bps
    Input packets:      3664      0 pps
    Output packets:    885790      0 pps
  IPv6 transit statistics:
    Input bytes :           0
    Output bytes :    16681118
    Input packets:           0
    Output packets:    362633
  Multicast statistics:
    IPv4 multicast statistics:
      Input bytes :      112048      0 bps
      Output bytes :    20779920      0 bps
      Input packets:       1801      0 pps
      Output packets:    519498      0 pps

```

```

IPv6 multicast statistics:
  Input bytes :          156500          0 bps
  Output bytes :         16681118        0 bps
  Input packets:           1818          0 pps
  Output packets:        362633          0 pps
Input errors:
  Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0, L3
incompletes: 0, L2 channel errors: 0,
  L2 mismatch timeouts: 0, FIFO errors: 0, Resource errors: 0
Output errors:
  Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0,
  Resource errors: 0
Egress queues: 8 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped packets

  0 best-effort          882558          882558          0
  1 expedited-fo           0              0              0
  2 assured-forw          0              0              0
  3 network-cont         3232          3232          0

Active alarms : None
Active defects : None

Logical interface ge-5/2/0.0 (Index 71) (SNMP ifIndex 573) (Generation 135)
Flags: SNMP-Traps 0x4000 Encapsulation: ENET2
Egress accounting overhead: 100
Ingress accounting overhead: 90
Traffic statistics:
  Input bytes :          271524
  Output bytes :         37769598
  Input packets:           3664
  Output packets:        885790
IPv6 transit statistics:
  Input bytes :           0
  Output bytes :         16681118
  Input packets:           0
  Output packets:        362633
Local statistics:
  Input bytes :          271524
  Output bytes :         308560
  Input packets:           3664
  Output packets:         3659
Transit statistics:
  Input bytes :           0          0 bps
  Output bytes :        37461038        0 bps
  Input packets:           0          0 pps
  Output packets:        882131          0 pps
IPv6 transit statistics:
  Input bytes :           0
  Output bytes :         16681118
  Input packets:           0
  Output packets:        362633
Multicast statistics:
IPv4 multicast statistics:
  Input bytes :          112048          0 bps
  Output bytes :        20779920          0 bps
  Input packets:           1801          0 pps

```

```

Output packets:          519498          0 pps
IPV6 multicast statistics:
Input bytes :            156500          0 bps
Output bytes :           16681118        0 bps
Input packets:           1818           0 pps
Output packets:          362633          0 pps
Protocol inet, MTU: 1500, Generation: 151, Route table: 0
Addresses, Flags: Is-Preferred Is-Primary
Destination: 40.40.40.0/30, Local: 40.40.40.2, Broadcast: 40.40.40.3,
Generation: 167
Protocol inet6, MTU: 1500, Generation: 152, Route table: 0
Addresses, Flags: Is-Preferred Is-Primary
Destination: ::40.40.40.0/126, Local: ::40.40.40.2
Generation: 169
Addresses, Flags: Is-Preferred
Destination: fe80::/64, Local: fe80::21d:b5ff:fe61:d974
Protocol multiservice, MTU: Unlimited, Generation: 171
Generation: 153, Route table: 0
Policer: Input: __default_arp_policer__

```

show interfaces statistics detail (Aggregated Ethernet)

```

user@host> show interfaces ae0 detail
Physical interface: ae0, Enabled, Physical link is Up
Interface index: 186, SNMP ifIndex: 111, Generation: 187
Link-level type: Ethernet, MTU: 1514, Speed: 2000mbps, Loopback: Disabled,
Source filtering: Disabled, Flow control: Disabled, Minimum links needed: 1,
Minimum bandwidth needed: 0
Device flags : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Current address: 00:90:69:0b:2f:f0, Hardware address: 00:90:69:0b:2f:f0
Last flapped : Never
Statistics last cleared: 2006-12-23 03:04:16 PST (01:16:24 ago)
Traffic statistics:
Input bytes :            28544          0 bps
Output bytes :            39770          0 bps
Input packets:             508          0 pps
Output packets:            509          0 pps
Input bytes :            IPv6 28544
Output bytes :            IPv6 0
Input packets:            IPv6 508
Output packets:            IPv6 0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0,
Policed discards: 0, Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0,
Resource errors: 0

Logical interface ae0.0 (Index 67) (SNMP ifIndex 139) (Generation 145)
Flags: SNMP-Traps Encapsulation: ENET2
Statistics      Packets      pps      Bytes      bps
Bundle:
Input :          508          0      28544          0
Output:          509          0      35698          0
Link:
ge-3/3/8.0
Input :          508          0      28544          0
Output:           0          0           0          0
ge-3/3/9.0

```

```

      Input :           0           0           0           0
      Output:           0           0           0           0
      Marker Statistics:  Marker Rx      Resp Tx      Unknown Rx      Illegal Rx
      ge-3/3/8.0         0             0             0             0
      ge-3/3/9.0         0             0             0             0
      Egress queues: 8 supported, 8 in use
      Queue counters:      Queued packets  Transmitted packets      Dropped packets

      0 best-effort         0             0             0
      1 expedited-fo       0             0             0
      2 assured-forw       0             0             0
      3 network-cont       0             0             0

      Protocol inet, MTU: 1500, Generation: 166, Route table: 0
      Flags: None
      Addresses, Flags: Is-Preferred Is-Primary
      Destination: 10.1.1/24, Local: 10.1.1.1, Broadcast: 10.1.1.255,
      Generation: 159
      Protocol inet6, MTU: 1500, Generation: 163, Route table: 0
      Flags: Is-Primary
      Addresses, Flags: Is-Preferred
      Destination: fe80::/64, Local: fe80::206:5bff:fe05:c321,
      Broadcast: Unspecified, Generation: 161

```

show interfaces statistics detail (Aggregated Ethernet—Ingress)

```

user@host> show interfaces statistics detail ae0 | no-more
Physical interface: ae0, Enabled, Physical link is Up
  Interface index: 128, SNMP ifIndex: 504, Generation: 278
  Link-level type: Ethernet, MTU: 1514, Speed: 1Gbps, BPDU Error: None, MAC-REWRITE
  Error: None, Loopback: Disabled,
  Source filtering: Disabled, Flow control: Disabled, Minimum links needed: 1,
  Minimum bandwidth needed: 0
  Device flags   : Present Running
  Interface flags: SNMP-Traps Internal: 0x4000
  Current address: 00:1d:b5:61:db:f0, Hardware address: 00:1d:b5:61:db:f0
  Last flapped   : 2009-11-09 03:30:23 PST (00:01:28 ago)
  Statistics last cleared: 2009-11-09 03:26:18 PST (00:05:33 ago)
  Traffic statistics:
    Input bytes :           544009602           54761856 bps
    Output bytes :             3396           0 bps
    Input packets:           11826292           148809 pps
    Output packets:             42           0 pps
  IPv6 transit statistics:
    Input bytes :           350818604
    Output bytes :             0
    Input packets:           7626488
    Output packets:             0
  Input errors:
    Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Policed discards:
    0, Resource errors: 0
  Output errors:
    Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0, Resource errors:
    0
  Ingress queues: 8 supported, 4 in use
  Queue counters:      Queued packets  Transmitted packets      Dropped packets

      0 best-effort         0             0             0

```

```

1 expedited-fo          0          0          0
2 assured-forw          0          0          0
3 network-cont          0          0          0

Egress queues: 8 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped packets

0 best-effort          21          21          0
1 expedited-fo          0          0          0
2 assured-forw          0          0          0
3 network-cont          451         451          0

Logical interface ae0.0 (Index 70) (SNMP ifIndex 574) (Generation 177)
Flags: SNMP-Traps 0x4000 Encapsulation: ENET2
Statistics      Packets      pps      Bytes      bps
Bundle:
  Input :      11826292      148809      544009602      54761856
  Output:         42         0          3396         0
Link:
  ge-5/2/0.0
    Input :      11826292      148809      544009602      54761856
    Output:         42         0          3396         0
Marker Statistics:  Marker Rx      Resp Tx      Unknown Rx      Illegal Rx
ge-5/2/0.0          0          0          0          0
Protocol inet, MTU: 1500, Generation: 236, Route table: 0
Addresses, Flags: Is-Preferred Is-Primary
Destination: 30.30.30.0/30, Local: 30.30.30.2, Broadcast: 30.30.30.3,
Generation: 310
Protocol inet6, MTU: 1500, Generation: 237, Route table: 0
Addresses, Flags: Is-Preferred Is-Primary
Destination: ::30.30.30.0/126, Local: ::30.30.30.2
Generation: 312
Addresses, Flags: Is-Preferred
Destination: fe80::/64, Local: fe80::21d:b5ff:fe61:dbf0
Protocol multiservice, MTU: Unlimited, Generation: 314
Generation: 238, Route table: 0
Policer: Input: __default_arp_policer__

```

show interfaces statistics detail (Aggregated Ethernet—Egress)

```

user@host> show interfaces statistics detail ae0 | no-more
Physical interface: ae0, Enabled, Physical link is Up
Interface index: 128, SNMP ifIndex: 501, Generation: 319
Link-level type: Ethernet, MTU: 1514, Speed: 1Gbps, BPDU Error: None, MAC-REWRITE
Error: None, Loopback: Disabled,
Source filtering: Disabled, Flow control: Disabled, Minimum links needed: 1,
Minimum bandwidth needed: 0
Device flags : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Current address: 00:1f:12:c2:37:f0, Hardware address: 00:1f:12:c2:37:f0
Last flapped : 2009-11-09 03:30:24 PST (00:02:42 ago)
Statistics last cleared: 2009-11-09 03:26:42 PST (00:06:24 ago)
Traffic statistics:
Input bytes :          440          0 bps

```

```

Output bytes :          1047338120          54635848 bps
Input packets:           7              0 pps
Output packets:        22768200          148466 pps
IPv6 transit statistics:
  Input bytes :          288
  Output bytes :        723202616
  Input packets:         4
  Output packets:       15721796
Input errors:
  Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Policed discards:
0, Resource errors: 0
Output errors:
  Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0, Resource errors:
0
Ingress queues: 8 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped packets

  0 best-effort              0              0              0
  1 expedited-fo             0              0              0
  2 assured-forw             0              0              0
  3 network-cont             0              0              0

Egress queues: 8 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped packets

  0 best-effort        201985796          201985796          0
  1 expedited-fo         0              0              0
  2 assured-forw         0              0              0
  3 network-cont         65              65              0

Logical interface ae0.0 (Index 72) (SNMP ifIndex 505) (Generation 204)
Flags: SNMP-Traps 0x4000 Encapsulation: ENET2
Statistics      Packets      pps      Bytes      bps
Bundle:
  Input :          7          0          440          0
  Output:        22768200    148466    1047338120    54635848
Link:
  ge-2/1/6.0
    Input :          7          0          440          0
    Output:        22768200    148466    1047338120    54635848
Marker Statistics:  Marker Rx      Resp Tx      Unknown Rx      Illegal Rx
ge-2/1/6.0          0              0              0              0
Protocol inet, MTU: 1500, Generation: 291, Route table: 0
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: 30.30.30.0/30, Local: 30.30.30.1, Broadcast: 30.30.30.3,
Generation: 420
  Protocol inet6, MTU: 1500, Generation: 292, Route table: 0
    Addresses, Flags: Is-Preferred Is-Primary
      Destination: ::/26, Local: ::30.30.30.1
Generation: 422
    Addresses, Flags: Is-Preferred
      Destination: fe80::/64, Local: fe80::21f:12ff:fec2:37f0
Protocol multiservice, MTU: Unlimited, Generation: 424

```

Generation: 293, Route table: 0
 Policer: Input: __default_arp_policer__

show interfaces statistics (SONET/SDH)

```

user@host> show interfaces statistics detail so-3/0/0 | no-more
Physical interface: so-3/0/0, Enabled, Physical link is Up
  Interface index: 133, SNMP ifIndex: 538, Generation: 283
  Link-level type: PPP, MTU: 4474, Clocking: Internal, SONET mode, Speed: OC192,
  Loopback: None, FCS: 16, Payload scrambler: Enabled
  Device flags   : Present Running
  Interface flags: Point-To-Point SNMP-Traps Internal: 0x4000
  Link flags     : Keepalives
  Hold-times    : Up 0 ms, Down 0 ms
  Keepalive settings: Interval 10 seconds, Up-count 1, Down-count 3
  Keepalive statistics:
    Input : 13 (last seen 00:00:04 ago)
    Output: 14 (last sent 00:00:02 ago)
  LCP state: Opened
  NCP state: inet: Opened, inet6: Opened, iso: Not-configured, mpls: Not-configured

  CHAP state: Closed
  PAP state: Closed
  CoS queues   : 8 supported, 8 maximum usable queues
  Last flapped : 2009-11-09 02:52:34 PST (01:12:39 ago)
  Statistics last cleared: 2009-11-09 03:58:54 PST (00:06:19 ago)
  Traffic statistics:
    Input bytes   :          2559160294          54761720 bps
    Output bytes  :           10640          48 bps
    Input packets :          55633975          148809 pps
    Output packets:           216          0 pps
  IPv6 transit statistics:
    Input bytes   :          647922328
    Output bytes  :           0
    Input packets :          14085269
    Output packets:           0
  Input errors:
    Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Bucket drops:
0, Policed discards: 0, L3 incompletes: 0,
    L2 channel errors: 0, L2 mismatch timeouts: 0, HS link CRC errors: 0, HS link
FIFO overflows: 0
  Output errors:
    Carrier transitions: 0, Errors: 0, Drops: 0, Aged packets: 0, HS link FIFO
underflows: 0, MTU errors: 0
  Egress queues: 8 supported, 4 in use
  Queue counters:
    Queued packets  Transmitted packets  Dropped packets

    0 best-effort          4              4              0
    1 expedited-fo         0              0              0
    2 assured-forw         0              0              0
    3 network-cont        213            213              0

  SONET alarms   : None
  SONET defects  : None

  Logical interface so-3/0/0.0 (Index 72) (SNMP ifIndex 578) (Generation 182)
  Flags: Point-To-Point SNMP-Traps 0x4000 Encapsulation: PPP
  Protocol inet, MTU: 4470, Generation: 244, Route table: 0

```

```

Addresses, Flags: Is-Preferred Is-Primary
Destination: 30.30.30.0/30, Local: 30.30.30.2, Broadcast: 30.30.30.3,
Generation: 322
Protocol inet6, MTU: 4470, Generation: 245, Route table: 0
Addresses, Flags: Is-Preferred Is-Primary
Destination: ::30.30.30.0/126, Local: ::30.30.30.2
Generation: 324
Addresses, Flags: Is-Preferred
Destination: fe80::/64, Local: fe80::2a0:a5ff:fe61:9264
Generation: 326

```

show interfaces statistics (Aggregated SONET/SDH—Ingress)

```

user@host> show interfaces statistics detail as0 | no-more
Physical interface: as0, Enabled, Physical link is Up
Interface index: 132, SNMP ifIndex: 534, Generation: 282
Link-level type: PPP, MTU: 4474, Speed: OC192, Minimum links needed: 1, Minimum
bandwidth needed: 0
Device flags   : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Link flags     : Keepalives
Keepalive settings: Interval 10 seconds, Up-count 1, Down-count 3
Last flapped   : 2009-11-09 03:45:53 PST (00:09:38 ago)
Statistics last cleared: 2009-11-09 03:48:17 PST (00:07:14 ago)
Traffic statistics:
Input bytes :          2969786332          54761688 bps
Output bytes :             11601              0 bps
Input packets:          64560636          148808 pps
Output packets:             225              0 pps
IPv6 transit statistics:
Input bytes :      2086013152
Output bytes :              0
Input packets:      45348114
Output packets:              0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Policed discards:
0, Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0, Resource errors:
0
Egress queues: 8 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped packets

0 best-effort          3              3              0

1 expedited-fo         0              0              0

2 assured-forw         0              0              0

3 network-cont        222            222              0

Logical interface as0.0 (Index 71) (SNMP ifIndex 576) (Generation 179)
Flags: Point-To-Point SNMP-Traps 0x4000 Encapsulation: PPP
Statistics      Packets      pps      Bytes      bps
Bundle:
Input :      64560550      148808      2969785300      54761688
Output:           139           0          10344           0
Link:
so-3/0/0.0
Input :      64560550      148808      2969785300      54761688

```



```

Output:          139          0          10344          0
Protocol inet, MTU: 4470, Generation: 240, Route table: 0
Addresses, Flags: Is-Preferred Is-Primary
Destination: 30.30.30.0/30, Local: 30.30.30.2, Broadcast: 30.30.30.3,
Generation: 316
Protocol inet6, MTU: 4470, Generation: 241, Route table: 0
Addresses, Flags: Is-Preferred Is-Primary
Destination: ::30.30.30.0/126, Local: ::30.30.30.2
Generation: 318
Addresses, Flags: Is-Preferred
Destination: fe80::/64, Local: fe80::2a0:a5ff:fe61:9264
Generation: 320

```

show interfaces statistics (Aggregated SONET/SDH—Egress)

```

user@host> show interfaces statistics detail as0 | no-more
Physical interface: as0, Enabled, Physical link is Up
Interface index: 132, SNMP ifIndex: 565, Generation: 323
Link-level type: PPP, MTU: 4474, Speed: OC192, Minimum links needed: 1, Minimum
bandwidth needed: 0
Device flags   : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Link flags     : Keepalives
Keepalive settings: Interval 10 seconds, Up-count 1, Down-count 3
Last flapped   : 2009-11-09 03:43:37 PST (00:12:48 ago)
Statistics last cleared: 2009-11-09 03:48:54 PST (00:07:31 ago)
Traffic statistics:
Input bytes   :          11198          392 bps
Output bytes  :      3101452132      54783448 bps
Input packets :          234          0 pps
Output packets:      67422937      148868 pps
IPv6 transit statistics:
Input bytes   :          5780
Output bytes  :      2171015678
Input packets :          72
Output packets:      47195993
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Giants: 0, Policed discards:
0, Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, MTU errors: 0, Resource errors:
0
Egress queues: 8 supported, 4 in use
Queue counters:      Queued packets  Transmitted packets      Dropped packets

0 best-effort          67422830          67422830          0

1 expedited-fo          0          0          0

2 assured-forw          0          0          0

3 network-cont          90          90          0

Logical interface as0.0 (Index 71) (SNMP ifIndex 548) (Generation 206)
Flags: Point-To-Point SNMP-Traps 0x4000 Encapsulation: PPP
Statistics      Packets      pps      Bytes      bps
Bundle:
Input :          144          0          10118          392
Output:      67422847      148868      3101450962      54783448
Link:

```

```

so-0/1/0.0
  Input :          144          0          10118          392
  Output:        67422847      148868      3101450962      54783448
Protocol inet, MTU: 4470, Generation: 295, Route table: 0
Addresses, Flags: Is-Preferred Is-Primary
  Destination: 30.30.30.0/30, Local: 30.30.30.1, Broadcast: 30.30.30.3,
Generation: 426
Protocol inet6, MTU: 4470, Generation: 296, Route table: 0
Addresses, Flags: Is-Preferred Is-Primary
  Destination: ::/26, Local: ::30.30.30.1
Generation: 428
Addresses, Flags: Is-Preferred
  Destination: fe80::/64, Local: fe80::2a0:a5ff:fe63:1d0a
Generation: 429

```

show interfaces statistics (PTX Series Packet Transport Routers)

```

user@host> show interfaces statistics em0
Physical interface: em0, Enabled, Physical link is Up
  Interface index: 8, SNMP ifIndex: 0
  Type: Ethernet, Link-level type: Ethernet, MTU: 1514, Speed: 1000mbps
  Device flags   : Present Running
  Interface flags: SNMP-Traps
  Link type      : Full-Duplex
  Current address: 00:80:f9:25:00:1b, Hardware address: 00:80:f9:25:00:1b
  Last flapped   : Never
  Statistics last cleared: Never
Input packets : 212620
Output packets: 71
  Input errors: 0, Output errors: 0

  Logical interface em0.0 (Index 3) (SNMP ifIndex 0)
  Flags: SNMP-Traps Encapsulation: ENET2
  Input packets : 212590
  Output packets: 71
  Protocol inet, MTU: 1500
  Flags: Is-Primary
  Addresses, Flags: Is-Default Is-Preferred Is-Primary
    Destination: 192.168.3/24, Local: 192.168.3.30,
    Broadcast: 192.168.3.255

```

show interfaces statistics (ACX Series routers)

```

user@host> show interfaces statistics ge-0/1/7
Physical interface: ge-0/1/7, Enabled, Physical link is Down
  Interface index: 151, SNMP ifIndex: 524
  Link-level type: Ethernet, Media type: Copper, MTU: 1514, Link-mode: Full-duplex,
  Speed: 1000mbps, BPDU Error: None, MAC-REWRITE Error: None, Loopback: Disabled,

  Source filtering: Disabled, Flow control: Enabled, Auto-negotiation: Enabled,
  Remote fault: Online
  Device flags   : Present Running Down
  Interface flags: Hardware-Down SNMP-Traps Internal: 0x0
  Link flags     : None
  CoS queues     : 8 supported, 8 maximum usable queues
  Current address: 84:18:88:c1:49:a3, Hardware address: 84:18:88:c1:49:a3
  Last flapped   : 2012-05-11 04:25:28 PDT (2d 20:23 ago)
  Statistics last cleared: 2012-05-13 23:07:23 PDT (01:41:25 ago)
  Input rate     : 0 bps (0 pps)
  Output rate    : 0 bps (0 pps)
  Input errors: 0, Output errors: 0

```

```
Active alarms : LINK
Active defects : LINK
Interface transmit statistics: Disabled
```

show interfaces terse

Syntax	show interfaces terse
Release Information	Command introduced before Junos OS Release 7.4. Command introduced on PTX Series Packet Transport Routers for Junos OS Release 12.1.
Description	Display summary information about interfaces.
Options	This command has no options.
Additional Information	Interfaces are always displayed in numerical order, from the lowest to the highest FPC slot number. Within that slot, the lowest PIC slot is shown first. On an individual PIC, the lowest port number is always first.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> <i>Examples: Configuring Logical System Interfaces</i>
List of Sample Output	show interfaces terse on page 841 show interfaces terse (TX Matrix Plus Router) on page 841 show interfaces terse (PTX Series Packet Transport Routers) on page 842
Output Fields	Table 48 on page 840 lists the output fields for the show interfaces terse command. Output fields are listed in the approximate order in which they appear.

Table 48: show interfaces terse Output Fields

Field Name	Field Description
Interface	Interface name.
Admin	Whether the interface is turned on (up) or off (down).
Link	Link state: up or down .
Proto	Protocol family configured on the logical interface. A logical interface on a router that supports Ethernet OAM always shows the multiservice protocol.
Local	Local IP address of the logical interface.
Remote	Remote IP address of the logical interface.

Sample Output

show interfaces terse

```

user@host> show interfaces terse
Interface           Admin Link Proto  Local          Remote
t1-0/1/0:0          up   up
t1-0/1/0:0.0        up   up   inet   192.168.220.18/30
t1-0/1/0:1          up   up
t1-0/1/0:2          up   up
t1-0/1/0:3          up   up
at-1/0/0            up   up
at-1/0/1            up   up
dsc                 up   up
fxp0                up   up
fxp0.0              up   up   inet   192.168.71.249/21
fxp1                up   up
fxp1.0              up   up   inet   10.0.0.4/8
                    tnp   4
gre                 up   up
ipip                up   up
lo0                 up   up
lo0.0               up   up   inet   10.0.1.4        --> 0/0
                    127.0.0.1       --> 0/0
lo0.16385           up   up   inet
lsi                 up   up
mtun                up   up

```

show interfaces terse (TX Matrix Plus Router)

```

user@host> show interfaces terse
Interface           Admin Link Proto  Local          Remote
xe-0/0/0            up   up
xe-0/0/1            up   up
xe-0/0/2            up   up
xe-0/0/3            up   up
xe-6/0/0            up   up
xe-6/0/1            up   up
xe-6/0/2            up   up
xe-6/0/3            up   up
xe-6/1/0            up   up
xe-6/1/1            up   up
xe-6/1/2            up   up
xe-6/1/3            up   up
so-0/0/0            up   up
so-0/0/0.0          up   up   inet   1.1.1.1/30
ge-1/3/0.0          up   up   inet   --> 0/0
ge-7/0/0            up   up
ge-7/0/0.0          up   up   inet   2.15.1.1/30
ge-7/0/0.1          up   up   inet   2.15.1.5/30
ge-7/0/0.2          up   up   inet   2.15.1.9/30
ge-7/0/0.3          up   up   inet   2.15.1.13/30
ge-7/0/0.4          up   up   inet   2.15.1.17/30
ge-7/0/0.5          up   up   inet   2.15.1.21/30
...
em0                 up   up
em0.0               up   up   inet   192.168.178.11/25
gre                 up   up

```

```

      ipip                up    up
      ixgbe0              up    up
      ixgbe0.0            up    up    inet    10.34.0.4/8
                                           162.0.0.4/2
                                           inet6   fe80::200:ff:fe22:4/64
                                           fec0::a:22:0:4/64
                                           tnp      0x22000004

      ixgbe1              up    up
      ixgbe1.0            up    up    inet    10.34.0.4/8
                                           162.0.0.4/2
                                           inet6   fe80::200:1ff:fe22:4/64
                                           fec0::a:22:0:4/64
                                           tnp      0x22000004

```

show interfaces terse (PTX Series Packet Transport Routers)

```

user@host> show interfaces em0 terse

```

Interface	Admin	Link	Proto	Local	Remote
em0	up	up			
em0.0	up	up	inet	192.168.3.30/24	

show services rpm active-servers

Syntax	show services rpm active-servers
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.
Description	Display the protocols and corresponding ports for which a router or switch is configured as a real-time performance monitoring (RPM) server.
Options	This command has no options.
Required Privilege Level	view
List of Sample Output	show services rpm active-servers on page 843
Output Fields	Table 49 on page 843 lists the output fields for the show services rpm active-servers command. Output fields are listed in the approximate order in which they appear.

Table 49: show services rpm active-servers Output Fields

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

Sample Output

show services rpm active-servers

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

show services rpm history-results

Syntax	<pre>show services rpm history-results <brief detail> <owner <i>owner</i>> <since <i>time</i>> <test <i>name</i>></pre>
Release Information	<p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Command introduced in Junos OS Release 13.2 for PTX Series Packet Transport Routers.</p>
Description	Display standard information about the results of the last 50 probes for each real-time performance monitoring (RPM) instance.
Options	<p>none—Display the results of the last 50 probes for all RPM instances.</p> <p>brief detail—(Optional) Display the specified level of output.</p> <p>owner <i>owner</i>—(Optional) Display information for the specified probe owner.</p> <p>since <i>time</i>—(Optional) Display information from the specified time. Specify time as <i>yyyy-mm-dd.hh:mm:ss</i>.</p> <p>test <i>name</i>—(Optional) Display information for the specified test.</p>
Required Privilege Level	view
List of Sample Output	<p>show services rpm history-results on page 845</p> <p>show services rpm history-results detail on page 845</p>
Output Fields	Table 50 on page 844 lists the output fields for the show services rpm history-results command. Output fields are listed in the approximate order in which they appear.

Table 50: show services rpm history-results Output Fields

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

Table 50: show services rpm history-results Output Fields (*continued*)

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

Sample Output

show services rpm history-results

```

user@host> show services rpm history-results
      Owner, Test                Probe received                Round trip time
p1, t1                          Wed Aug 12 01:02:35 2009          315 usec
p1, t1                          Wed Aug 12 01:02:36 2009          266 usec
p1, t1                          Wed Aug 12 01:02:37 2009          314 usec
p1, t1                          Wed Aug 12 01:02:38 2009          388 usec
p1, t1                          Wed Aug 12 01:02:39 2009          316 usec
p1, t1                          Wed Aug 12 01:02:40 2009          271 usec
p1, t1                          Wed Aug 12 01:02:41 2009          314 usec
p1, t1                          Wed Aug 12 01:02:42 2009          1180 usec

```

show services rpm history-results detail

```

user@host> show services rpm history-results detail
Owner: p1, Test: t1, Probe type: icmp-ping-timestamp
Probe results:
  Response received, Wed Aug 12 01:02:35 2009,
  Client and server hardware timestamps
  Rtt: 315 usec
Results over current test:
  Probes sent: 1, Probes received: 1, Loss percentage: 0
Measurement: Round trip time
  Samples: 1, Minimum: 315 usec, Maximum: 315 usec, Average: 315 usec,
  Peak to peak: 0 usec, Stddev: 0 usec, Sum: 315 usec

```

Owner: p1, Test: t1, Probe type: icmp-ping-timestamp
Probe results:
Response received, Wed Aug 12 01:02:36 2009,
Client and server hardware timestamps
Rtt: 266 usec, Round trip jitter: -50 usec,
Round trip interarrival jitter: 3 usec
Results over current test:
Probes sent: 2, Probes received: 2, Loss percentage: 0
Measurement: Round trip time
Samples: 2, Minimum: 266 usec, Maximum: 315 usec, Average: 291 usec,
Peak to peak: 49 usec, Stddev: 24 usec, Sum: 581 usec
Measurement: Negative round trip jitter
Samples: 1, Minimum: 50 usec, Maximum: 50 usec, Average: 50 usec,
Peak to peak: 0 usec, Stddev: 0 usec, Sum: 50 usec

Owner: p1, Test: t1, Probe type: icmp-ping-timestamp
Probe results:
Response received, Wed Aug 12 01:02:37 2009,
Client and server hardware timestamps
Rtt: 314 usec, Round trip jitter: 49 usec,
Round trip interarrival jitter: 6 usec
Results over current test:
Probes sent: 3, Probes received: 3, Loss percentage: 0
Measurement: Round trip time
Samples: 3, Minimum: 266 usec, Maximum: 315 usec, Average: 298 usec,
Peak to peak: 49 usec, Stddev: 23 usec, Sum: 895 usec
Measurement: Positive round trip jitter
Samples: 1, Minimum: 49 usec, Maximum: 49 usec, Average: 49 usec,
Peak to peak: 0 usec, Stddev: 0 usec, Sum: 49 usec
Measurement: Negative round trip jitter
Samples: 1, Minimum: 50 usec, Maximum: 50 usec, Average: 50 usec,
Peak to peak: 0 usec, Stddev: 0 usec, Sum: 50 usec

Owner: p1, Test: t1, Probe type: icmp-ping-timestamp
Probe results:
Response received, Wed Aug 12 01:02:38 2009,
Client and server hardware timestamps
Rtt: 388 usec, Round trip jitter: 74 usec,
Round trip interarrival jitter: 10 usec
Results over current test:
Probes sent: 4, Probes received: 4, Loss percentage: 0
Measurement: Round trip time
Samples: 4, Minimum: 266 usec, Maximum: 388 usec, Average: 321 usec,
Peak to peak: 122 usec, Stddev: 44 usec, Sum: 1283 usec
Measurement: Positive round trip jitter
Samples: 2, Minimum: 49 usec, Maximum: 74 usec, Average: 62 usec,
Peak to peak: 25 usec, Stddev: 12 usec, Sum: 123 usec
Measurement: Negative round trip jitter
Samples: 1, Minimum: 50 usec, Maximum: 50 usec, Average: 50 usec,
Peak to peak: 0 usec, Stddev: 0 usec, Sum: 50 usec

show services rpm probe-results

Syntax	show services rpm probe-results <owner <i>owner</i> > <test <i>name</i> >
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 13.2 for PTX Series Packet Transport Series Routers.
Description	Display the results of the most recent real-time performance monitoring (RPM) probes.
Options	none —Display all results of the most recent RPM probes. owner <i>owner</i> —(Optional) Display information for the specified probe owner. test <i>name</i> —(Optional) Display information for the specified test.
Required Privilege Level	view
List of Sample Output	show services rpm probe-results on page 850 show services rpm probe-results (BGP Neighbor Discovery) on page 851
Output Fields	Table 51 on page 847 lists the output fields for the show services rpm probe-results command. Output fields are listed in the approximate order in which they appear.

Table 51: show services rpm probe-results Output Fields

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

Table 51: show services rpm probe-results Output Fields (*continued*)

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

Table 51: show services rpm probe-results Output Fields (*continued*)

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

Sample Output

show services rpm probe-results

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

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

```

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

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

```

show services rpm probe-results (BGP Neighbor Discovery)

```

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

```

Measurement: Round trip time
Minimum: 529 usec, Maximum: 662 usec, Average: 585 usec,
Jitter: 133 usec, Stddev: 53 usec

PART 4

Troubleshooting

- [Troubleshooting Procedures on page 855](#)

CHAPTER 19

Troubleshooting Procedures

show chassis alarms

Syntax	show chassis alarms
Syntax (TX Matrix Routers)	show chassis alarms <lcc <i>number</i> scc>
Syntax (TX Matrix Plus Routers)	show chassis alarms <lcc <i>number</i> sfc <i>number</i> >
Syntax (MX Series Routers)	show chassis alarms <all-members> <local> <member <i>member-id</i> >
Syntax (MX104, MX2010, and MX2020 3D Universal Edge Routers)	show chassis alarms
Syntax (QFX Series)	show chassis alarms <interconnect-device <i>name</i> > <node-device <i>name</i> >
Syntax (PTX Series Packet Transport Routers)	show chassis alarms
Syntax (ACX Series Universal Access Routers)	show chassis alarms
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. sfc option for the TX Matrix Plus router introduced in Junos OS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 12.1 for the PTX Series Packet Transport Routers. Command introduced in Junos OS Release 12.2 for the ACX Series Universal Access Routers. Command introduced in Junos OS Release 12.3 for MX2020 3D Universal Edge Routers. Command introduced in Junos OS Release 12.3 for MX2010 3D Universal Edge Routers. Command introduced in Junos OS Release 13.2 for MX104 3D Universal Edge Routers.
Description	Display information about the conditions that have been configured to trigger alarms.
Options	none —Display information about the conditions that have been configured to trigger alarms. all-members —(MX Series routers only) (Optional) Display information about alarm conditions for all the member routers of the Virtual Chassis configuration.

interconnect-device *name*—(QFabric systems only) (Optional) Display information about alarm conditions for the Interconnect device.

lcc *number*—(TX Matrix router and TX Matrix Plus router 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—(MX Series routers only) (Optional) Display information about alarm conditions for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display information about alarm conditions for the specified member of the Virtual Chassis configuration. Replace *member-id* variable with a value of 0 or 1.

node-device *name*—(QFabric systems only) (Optional) Display information about alarm conditions for the Node device.

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

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

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

On routers, you can manually silence external devices connected to the alarm relay contacts by pressing the alarm cutoff button, located on the craft interface. Silencing the device does not remove the alarm messages from the display (if present on the router) or extinguish the alarm LEDs. In addition, new alarms that occur after you silence an external device reactivate the external device.

In Junos OS release 11.1 and later, alarms for fans also show the slot number of the fans in the CLI output.

In Junos OS Release 11.2 and later, the command output on EX8200 switches shows the detailed location (**Plane/FPC/PFE**) for link errors in the chassis.

In Junos OS Release 10.2 and later, an alarm is shown on T Series routers for a standby sonic clock generator (SCG) that is offline or absent.

You may often see the following error messages, in which only the error code is shown and no other information is provided:

Apr 12 08:04:10 send: red alarm set, device FPC 6, reason FPC 6 Major Errors - Error code: 257

Apr 12 08:04:19 send: red alarm set, device FPC 1, reason FPC 1 Major Errors - Error code: 559

To understand what CM_ALARM error codes mean, you need to first identify the structure of the CM Alarm codes. A CM_ALARM code has the following structure:

Bits:	Error type:
1-31	Major (1)
0	Minor (0)

According to the table above, the LSB (bit 0) identifies the **Error Type** (major alarm, if the bit is set and minor alarm if the bit is unset). The rest of the bits (1 - 31) identify the actual error code.

Take an example of the following error code, which was logged on a T1600:

Apr 12 08:04:10 send: red alarm set, device FPC 1, reason FPC 1 Major Errors - Error code: 559

First, you have to convert 559 to binary; that is **100010111**. The LSB in this case is 1, which means that this is a major alarm. After removing the LSB, you are left with **10001011**, which is equal to 279 in decimal. This is the actual error code, its meaning can be found from the following list:

Chip Type: L Chip	Code
CMALARM_LCHIP_LOUT_DESRD_PARITY_ERR	1
CMALARM_LCHIP_LOUT_DESRD_UNINIT_ERR	2
CMALARM_LCHIP_LOUT_DESRD_ILLEGALLINK_ERR	3
CMALARM_LCHIP_LOUT_DESRD_ILLEGALSIZESIZE_ERR	4
CMALARM_LCHIP_LOUT_HDRF_TOERR_ERR	5
CMALARM_LCHIP_LOUT_HDRF_PARITY_ERR	6
CMALARM_LCHIP_LOUT_HDRF_UCERR_ERR	7
CMALARM_LCHIP_LOUT_NLIF_CRCDROP_ERR	8

CMALARM_LCHIP_LOUT_NLIF_CRCERR_ERR	9
CMALARM_LCHIP_UCODE_TIMEOUT_ERR	10
CMALARM_LCHIP_LIN_SRCTL_ACCT_DROP_ERR	11
CMALARM_LCHIP_LIN_SRCTL_ACCT_ADDR_SIZE_ERR	12
CMALARM_LCHIP_SRAM_PARITY_ERR	13
CMALARM_LCHIP_UCODE_OVFLW_ERR	14
CMALARM_LCHIP_LOUT_HDRF_MTU_ERR	15

Chip Type: M Chip	Code
CMALARM_MCHIP_ECC_UNCORRECT_ERR	128

Chip Type: N Chip	Code
CMALARM_NCHIP_RDDMA_JBUS_TIMEOUT_ERR	256
CMALARM_NCHIP_RDDMA_FIFO_OVFLW_ERR	257
CMALARM_NCHIP_RDDMA_FIFO_UNFLW_ERR	258
CMALARM_NCHIP_RDDMA_SIZE_ERR	259
CMALARM_NCHIP_RDDMA_JBUS_CRC_ERR	260
CMALARM_NCHIP_WRDMA_PKTR_ERR	261
CMALARM_NCHIP_WRDMA_PKT_CRC_ERR	262
CMALARM_NCHIP_WRDMA_JBUS_TIMEOUT_ERR	263
CMALARM_NCHIP_WRDMA_FIFO_OVFLW_ERR	264
CMALARM_NCHIP_WRDMA_FIFO_UNFLW_ERR	265
CMALARM_NCHIP_WRDMA_PKT_LEN_ERR	266
CMALARM_NCHIP_WRDMA_JBUS_CRC_ERR	267
CMALARM_NCHIP_PKTR_DMA_AGE_ERR	268
CMALARM_NCHIP_PKTR_ICELLSIG_ERR	269
CMALARM_NCHIP_PKTR_FTTL_ERR	270

CMALARM_NCHIP_RODR_OFFSET_OVFLW_ERR	271
CMALARM_NCHIP_PKTR_TMO_CELL_ERR	272
CMALARM_NCHIP_PKTR_TMO_OUTRANGE_ERR	273
CMALARM_NCHIP_PKTR_MD_REQUEST_Q_OVFLW_ERR	274
CMALARM_NCHIP_PKTR_DMA_BUFFER_OVFLW_ERR	275
CMALARM_NCHIP_PKTR_GRT_OVFLW_ERR	276
CMALARM_NCHIP_FRQ_ERR	277
CMALARM_NCHIP_RODR_IN_Q_OVFLW_ERR	278
CMALARM_NCHIP_DBUF_CRC_ERR	279
<hr/>	
Chip Type: R Chip	Code
CMALARM_RCHIP_SRAM_PARITY_ERR	512
<hr/>	
Chip Type: R Chip	Code
CMALARM_ICHIP_WO_DESRD_ID_ERR	601
CMALARM_ICHIP_WO_DESRD_DATA_ERR	602
CMALARM_ICHIP_WO_DESRD_OFLOW_ERR	603
CMALARM_ICHIP_WO_HDRF_UCERR_ERR	604
CMALARM_ICHIP_WO_HDRF_MTUERR_ERR	605
CMALARM_ICHIP_WO_HDRF_PARITY_ERR	606
CMALARM_ICHIP_WO_HDRF_TOERR_ERR	607
CMALARM_ICHIP_WO_IP_CRC_ERR	608
CMALARM_ICHIP_WO_IP_INTER_ERR	609
CMALARM_ICHIP_WI_WAN_TIMEOUT_ERR	625
CMALARM_ICHIP_WI_FAB_TIMEOUT_ERR	626
CMALARM_ICHIP_RLDRAM_BIST_ERR	630
CMALARM_ICHIP_SDRAM_BIST_ERR	631

CMALARM_ICHIP_RLDRAM_PARITY_ERR	632
CMALARM_ICHIP_SDRAM_UNCORRECT_ERR	633
CMALARM_ICHIP_SDRAM_CORRECT_ERR	634
CMALARM_ICHIP_FUSE_DONE_ERR	635

According to the table above, the **279** error code corresponds to **CMALARM_NCHIP_DBUF_CRC_ERR**; this means that new CRC errors were seen on the NCHIP of this particular FPC, which is FPC as per the logs.

If you do not want to convert decimal to binary and vice versa, you may use the following shortcut:

For major alarms, the **Actual Error Code = (Error Code - 1)/2**, where **Error Code** is the code that you get in the log message. For example, if you get the following log:

Apr 12 08:04:10 send: red alarm set, device FPC 6, reason FPC 6 Major Errors - Error code: 257

Actual Error Code = $(257-1)/2 = 128$. Similarly, for minor alarms, Actual Error Code = $(\text{Error Code})/2$

Required Privilege Level view

Related Documentation

- *Configuring an Alarm Entry and Its Attributes*
- *Chassis Conditions That Trigger Alarms*

List of Sample Output

- [show chassis alarms \(Alarms Active\) on page 862](#)
- [show chassis alarms \(No Alarms Active\) on page 862](#)
- [show chassis alarms \(Fan Tray\) on page 862](#)
- [show chassis alarms \(MX104 Router\) on page 862](#)
- [show chassis alarms \(MX2010 Router\) on page 862](#)
- [show chassis alarms \(MX2020 Router\) on page 863](#)
- [show chassis alarms \(T4000 Router\) on page 863](#)
- [show chassis alarms \(Unreachable Destinations Present on a T Series Router\) on page 863](#)
- [show chassis alarms \(FPC Offline Due to Unreachable Destinations on a T Series Router\) on page 863](#)
- [show chassis alarms \(SCG Absent on a T Series Router\) on page 864](#)
- [show chassis alarms \(Alarms Active on a TX Matrix Router\) on page 864](#)
- [show chassis alarms \(TX Matrix Plus router with 3D SIBs\) on page 864](#)
- [show chassis alarms \(Alarms on a T4000 Router After the enhanced-mode Statement is Enabled\) on page 865](#)
- [show chassis alarms \(Backup Routing Engine\) on page 865](#)
- [show chassis alarms \(Alarms Active on the QFX Series\) on page 865](#)

[show chassis alarms node-device \(Alarms Active on the QFabric System\) on page 865](#)
[show chassis alarms \(Alarms Active on the QFabric System\) on page 866](#)
[show chassis alarms \(Alarms Active on an EX8200 Switch\) on page 866](#)
[show chassis alarms \(Alarms Active on a PTX5000 Packet Transport Router\) on page 866](#)
[show chassis alarms \(Alarms Active on an ACX2000 Universal Access Router\) on page 867](#)

Output Fields Table 14 on page 252 lists the output fields for the **show chassis alarms** command. Output fields are listed in the approximate order in which they appear.

Table 52: show chassis alarms Output Fields

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

Sample Output

show chassis alarms (Alarms Active)

```

user@host> show chassis alarms
3 alarms are currently active
Alarm time           Class  Description
2000-02-07 10:12:22 UTC Major fxp0: ethernet link down
2000-02-07 10:11:54 UTC Minor YELLOW ALARM - PEM 1 Removed
2000-02-07 10:11:03 UTC Minor YELLOW ALARM - Lower Fan Tray Removed

```

show chassis alarms (No Alarms Active)

```

user@host> show chassis alarms
No alarms are currently active

```

show chassis alarms (Fan Tray)

```

user@host> show chassis alarms
4 alarms currently active
Alarm time           Class  Description
2010-11-11 20:27:38 UTC Major Side Fan Tray 7 Failure
2010-11-11 20:27:13 UTC Minor Side Fan Tray 7 Overspeed
2010-11-11 20:27:13 UTC Major Side Fan Tray 5 Failure
2010-11-11 20:27:13 UTC Major Side Fan Tray 0 Failure

```

show chassis alarms (MX104 Router)

```

user@host >show chassis alarms
1 alarms currently active
Alarm time           Class  Description
2013-06-05 14:43:31 IST Minor Backup RE Active

```

show chassis alarms (MX2010 Router)

```

user@host> show chassis alarms

```

```

7 alarms currently active
Alarm time      Class Description
2012-08-07 00:46:06 PDT Major Fan Tray 2 Failure
2012-08-06 18:24:36 PDT Minor Redundant feed missing for PSM 6
2012-08-06 07:41:04 PDT Minor Redundant feed missing for PSM 8
2012-08-04 02:42:06 PDT Minor Redundant feed missing for PSM 5
2012-08-03 21:14:24 PDT Minor Loss of communication with Backup RE
2012-08-03 12:26:03 PDT Minor Redundant feed missing for PSM 4
2012-08-03 10:40:18 PDT Minor Redundant feed missing for PSM 7

```

show chassis alarms (MX2020 Router)

```

user@host> show chassis alarms
1 alarms currently active
Alarm time Class Description
2012-10-03 12:14:59 PDT Minor Plane 0 not online

```

show chassis alarms (T4000 Router)

```

user@host> show chassis alarms
9 alarms currently active
Alarm time      Class Description
2007-06-02 01:41:10 UTC Minor RE 0 Not Supported
2007-06-02 01:41:10 UTC Minor CB 0 Not Supported
2007-06-02 01:41:10 UTC Minor Mixed Master and Backup RE types
2007-05-30 19:37:33 UTC Major SPMB 1 not online
2007-05-30 19:37:29 UTC Minor Front Bottom Fan Tray Absent
2007-05-30 19:37:13 UTC Major PEM 1 Input Failure
2007-05-30 19:37:13 UTC Major PEM 0 Not OK
2007-05-30 19:37:03 UTC Major PEM 0 Improper for Platform
2007-05-30 19:37:03 UTC Minor Backup RE Active

```

show chassis alarms (Unreachable Destinations Present on a T Series Router)

```

user@host> show chassis alarms
10 alarms currently active
Alarm time      Class Description
2011-08-30 18:43:53 PDT Major FPC 7 has unreachable destinations
2011-08-30 18:43:53 PDT Major FPC 5 has unreachable destinations
2011-08-30 18:43:52 PDT Major FPC 3 has unreachable destinations
2011-08-30 18:43:52 PDT Major FPC 2 has unreachable destinations
2011-08-30 18:43:52 PDT Minor SIB 0 Not Online
2011-08-30 18:43:33 PDT Minor SIB 4 Not Online
2011-08-30 18:43:28 PDT Minor SIB 3 Not Online
2011-08-30 18:43:05 PDT Minor SIB 2 Not Online
2011-08-30 18:43:28 PDT Minor SIB 1 Not Online
2011-08-30 18:43:05 PDT Major PEM 1 Not Ok

```

show chassis alarms (FPC Offline Due to Unreachable Destinations on a T Series Router)

```

user@host> show chassis alarms
10 alarms currently active
Alarm time      Class Description
2011-08-30 18:43:53 PDT Major FPC 7 offline due to unreachable destinations
2011-08-30 18:43:53 PDT Major FPC 5 offline due to unreachable destinations
2011-08-30 18:43:52 PDT Major FPC 3 offline due to unreachable destinations
2011-08-30 18:43:52 PDT Major FPC 2 offline due to unreachable destinations
2011-08-30 18:43:52 PDT Minor SIB 0 Not Online
2011-08-30 18:43:33 PDT Minor SIB 4 Not Online
2011-08-30 18:43:28 PDT Minor SIB 3 Not Online
2011-08-30 18:43:05 PDT Minor SIB 2 Not Online

```

```

2011-08-30 18:43:28 PDT Minor SIB 1 Not Online
2011-08-30 18:43:05 PDT Major PEM 1 Not Ok

```

show chassis alarms (SCG Absent on a T Series Router)

```

user@host> show chassis alarms
4 alarms currently active
Alarm time          Class Description
2011-01-23 21:42:46 PST Major SCG 0 NO EXT CLK MEAS-BKUP SCG ABS

```

show chassis alarms (Alarms Active on a TX Matrix Router)

```

user@host> show chassis alarms
scc-re0:
-----
8 alarms currently active
Alarm time          Class Description
2004-08-05 18:43:53 PDT Minor LCC 0 Minor Errors
2004-08-05 18:43:53 PDT Minor SIB 3 Not Online
2004-08-05 18:43:52 PDT Major SIB 2 Absent
2004-08-05 18:43:52 PDT Major SIB 1 Absent
2004-08-05 18:43:52 PDT Major SIB 0 Absent
2004-08-05 18:43:33 PDT Major LCC 2 Major Errors
2004-08-05 18:43:28 PDT Major LCC 0 Major Errors
2004-08-05 18:43:05 PDT Minor LCC 2 Minor Errors
lcc0-re0:
-----
5 alarms currently active
Alarm time          Class Description
2004-08-05 18:43:53 PDT Minor SIB 3 Not Online
2004-08-05 18:43:49 PDT Major SIB 2 Absent
2004-08-05 18:43:49 PDT Major SIB 1 Absent
2004-08-05 18:43:49 PDT Major SIB 0 Absent
2004-08-05 18:43:28 PDT Major PEM 0 Not OK
lcc2-re0:
-----
5 alarms currently active
Alarm time          Class Description
2004-08-05 18:43:35 PDT Minor SIB 3 Not Online
2004-08-05 18:43:33 PDT Major SIB 2 Absent
2004-08-05 18:43:33 PDT Major SIB 1 Absent
2004-08-05 18:43:33 PDT Major SIB 0 Absent
2004-08-05 18:43:05 PDT Minor PEM 1 Absent

```

show chassis alarms (TX Matrix Plus router with 3D SIBs)

```

user@host> show chassis alarms
sfc0-re0:
-----
Alarm time          Class Description
2012-07-19 10:07:32 UTC Minor SIB F13 0 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F2S 0/6 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F2S 0/4 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F2S 0/2 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F2S 0/0 Temperature Warm
2012-07-19 10:07:07 UTC Minor SIB F13 6 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F2S 2/6 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F2S 2/4 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F2S 2/2 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F2S 2/0 Temperature Warm
2012-07-19 10:06:42 UTC Minor SIB F13 3 Temperature Warm
2012-07-19 10:06:17 UTC Minor Temperature Warm

```

```

2012-07-19 10:06:17 UTC Minor SIB F2S 1/6 Temperature Warm
2012-07-19 10:06:17 UTC Minor SIB F2S 1/4 Temperature Warm
2012-07-19 10:06:17 UTC Minor SIB F2S 1/2 Temperature Warm
2012-07-19 10:06:17 UTC Minor SIB F2S 1/0 Temperature Warm
lcc0-re0:

```

```

-----
Alarm time          Class Description
2012-07-19 10:04:13 UTC Minor Temperature Warm
2012-07-19 10:04:13 UTC Minor SIB 2 Temperature Warm
2012-07-19 10:04:13 UTC Minor SIB 1 Temperature Warm
2012-07-19 10:04:13 UTC Minor SIB 0 Temperature Warm

```

```
lcc2-re0:
```

```

-----
Alarm time          Class Description
2012-07-19 10:04:18 UTC Minor Temperature Warm
2012-07-19 10:04:18 UTC Minor SIB 2 Temperature Warm
2012-07-19 10:04:18 UTC Minor SIB 1 Temperature Warm
2012-07-19 10:04:18 UTC Minor SIB 0 Temperature Warm

```

show chassis alarms (Alarms on a T4000 Router After the enhanced-mode Statement is Enabled)

To enable improved virtual private LAN service (VPLS) MAC address learning on T4000 routers, you must include the **enhanced-mode** statement at the **[edit chassis network-services]** hierarchy level and reboot the router. When router reboots, only the T4000 Type 5 FPCs are required to be present on the router. If there are any other FPCs (apart from T4000 Type 5 FPCs) on the T4000 router, such FPCs become offline, and FPC misconfiguration alarms are generated. The **show chassis alarm** command output displays FPC misconfiguration (**FPC *fpc-slot* misconfig**) as the reason for the generation of the alarms.

```

user@host> show chassis alarms
2 alarms currently active
Alarm time          Class Description
2011-10-22 10:10:47 PDT Major FPC 1 misconfig
2011-10-22 10:10:46 PDT Major FPC 0 misconfig

```

show chassis alarms (Backup Routing Engine)

```

user@host> show chassis alarms
2 alarms are currently active
Alarm time          Class Description
2005-04-07 10:12:22 PDT Minor Host 1 Boot from alternate media
2005-04-07 10:11:54 PDT Major Host 1 compact-flash missing in Boot List

```

show chassis alarms (Alarms Active on the QFX Series)

```

user@switch> show chassis alarms
1 alarms currently active
Alarm time          Class Description
2012-03-05 2:10:24 UTC Major FPC 0 PEM 0 Airflow not matching Chassis Airflow

```

show chassis alarms node-device (Alarms Active on the QFabric System)

```

user@switch> show chassis alarms node-device ED3691
node-device ED3694
3 alarms currently active
Alarm time          Class Description
2011-08-24 16:04:15 UTC Major ED3694:fte-0/1/2: Link down

```

```
2011-08-24 16:04:14 UTC Major ED3694:fte-0/1/0: Link down
2011-08-24 14:21:14 UTC Major ED3694 PEM 0 is not supported/powered
```

show chassis alarms (Alarms Active on the QFabric System)

```
user@switch> show chassis alarms
IC-A0001:
-----
1 alarms currently active
Alarm time          Class Description
2011-08-24 16:04:15 UTC Minor Backup RE Active

ED3694:
-----
3 alarms currently active
Alarm time          Class Description
2011-08-24 16:04:15 UTC Major ED3694:fte-0/1/2: Link down
2011-08-24 16:04:14 UTC Major ED3694:fte-0/1/0: Link down
2011-08-24 14:21:14 UTC Major ED3694 PEM 0 is not supported/powered

SNG-0:
-----

NW-NG-0:
-----
1 alarms currently active
Alarm time          Class Description
2011-08-24 15:49:27 UTC Major ED3691 PEM 0 is not supported/powered
```

show chassis alarms (Alarms Active on an EX8200 Switch)

```
user@switch> show chassis alarms

6 alarms currently active
Alarm time          Class Description
2010-12-02 19:15:22 UTC Major Fan Tray Failure
2010-12-02 19:15:22 UTC Major Fan Tray Failure
2010-12-02 19:15:14 UTC Minor Check CB 0 Fabric Chip 1 on Plane/FPC/PFE: 1/5/0,
1/5/1, 1/5/2, 1/5/3, 1/7/0, 1/7/1, 1/7/2, 1/7/3, 2/5/0, 2/5/1, ...
2010-12-02 19:15:14 UTC Minor Check CB 0 Fabric Chip 0 on Plane/FPC/PFE: 1/5/0,
1/5/1, 1/5/2, 1/5/3, 1/7/0, 1/7/1, 1/7/2, 1/7/3, 2/5/0, 2/5/1, ...
2010-12-02 19:14:18 UTC Major PSU 1 Output Failure
2010-12-02 19:14:18 UTC Minor Loss of communication with Backup RE
```

show chassis alarms (Alarms Active on a PTX5000 Packet Transport Router)

```
user@switch> show chassis alarms

23 alarms currently active
Alarm time          Class Description
2011-07-12 16:22:05 PDT Minor No Redundant Power for Rear Chassis
2011-07-12 16:22:05 PDT Major PDU 0 PSM 1 Not OK
2011-07-12 16:21:57 PDT Minor No Redundant Power for Fan 0-2
2011-07-12 16:21:57 PDT Major PDU 0 PSM 0 Not OK
2011-07-12 15:56:06 PDT Major PDU 1 PSM 2 Not OK
2011-07-12 15:56:06 PDT Minor No Redundant Power for FPC 0-7
2011-07-12 15:56:06 PDT Major PDU 0 PSM 3 Not OK
2011-07-12 15:28:20 PDT Major PDU 0 PSM 2 Not OK
2011-07-12 15:19:14 PDT Minor Backup RE Active
```

show chassis alarms (Alarms Active on an ACX2000 Universal Access Router)

```
user@host> show chassis alarms
7 alarms currently active
Alarm time          Class  Description
2012-05-22 11:19:09 UTC Major  xe-0/3/1: Link down
2012-05-22 11:19:09 UTC Major  xe-0/3/0: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/7: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/6: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/3: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/2: Link down
2012-05-22 11:19:09 UTC Major  ge-0/1/1: Link down
```


PART 5

Index

- [Index on page 871](#)

Index

Symbols

#, comments in configuration statements.....	xviii
(), in syntax descriptions.....	xviii
100-Gigabit Ethernet	
configuration	
forwarding-mode.....	162
sa-multicast.....	198
forwarding-mode	
sa-multicast.....	198
100-Gigabit Ethernet PIC on Type 5 FPC	
configuration	
interoperability modes.....	44
sa-multicast.....	44
802.1Q VLANs	
mixed VLAN tagging.....	160
< >, in syntax descriptions.....	xviii
[], in configuration statements.....	xviii
{ }, in configuration statements.....	xviii
(pipe), in syntax descriptions.....	xviii

A

accept-source-mac statement.....	142
action-fpc-restart-disable statement.....	143
actions, nonterminating	
for firewall filters.....	107
actions, terminating	
for firewall filters.....	104
Active flow monitoring, version 9	
PTX series	
configuring.....	116
address class, source or destination	
firewall filter match conditions	
IPv4 traffic.....	83
IPv6 traffic.....	92
address, source or destination	
filter match conditions	
IPv6 traffic.....	92
firewall filter match conditions	
IPv4 traffic.....	83

aggregated Ethernet on PTX Series Packet	
Transport Routers	
configuring.....	23
alarms, displaying	
chassis.....	246, 856
aliases, forwarding-class.....	62

B

boot devices	
alternative media.....	35, 242
boot sequence	
M Series, MX Series, T Series, TX Matrix, TX	
Matrix Plus , and PTX Series routing	
engines.....	34, 241
braces, in configuration statements.....	xviii
brackets	
angle, in syntax descriptions.....	xviii
square, in configuration statements.....	xviii
bytes statement.....	143

C

CB	
environmental information, displaying.....	312
Ethernet switch, displaying port	
information.....	409
CCG	
operation of, controlling.....	232
operation, controlling.....	233
Centralized Clock Generator See CCG	
Centralized Clock Generator See CCG	
.....	330
chained composite next hops.....	3
chassis	
alarm conditions, displaying.....	246, 856
environmental information, displaying.....	258
Ethernet switch information, displaying.....	409
installed hardware, displaying.....	572
recovered-clock.....	195
serial numbers, displaying.....	572
switch fabric errors	
displaying.....	455
switch fabric status	
FPCs, displaying.....	460
switch fabric topology, displaying.....	506
synchronization source information,	
displaying.....	744
temperature threshold settings,	
displaying.....	748

class statement		encapsulation statement	
usage guidelines.....	62	logical interfaces.....	150
comments, in configuration statements.....	xviii	physical interface.....	154
configuring		environmental information	
action-fpc-restart-disable.....	50	CB, displaying.....	312
Control Board See CB		CCG, displaying	
conventions		330
text and syntax.....	xvii	chassis, displaying.....	259
CoS		FPC, displaying.....	332
drop profile.....	69	FPM, displaying.....	357
forwarding-class aliases.....	62	monitored temperatures, displaying.....	363
scheduling		PDUs, displaying.....	376
drop profile.....	69	Routing Engines, displaying.....	378
CoS features and limitations		SIB, displaying.....	383
PTX Series routers.....	81	Ethernet 802.1ag OAM on PTX Series Packet	
curly braces, in configuration statements.....	xviii	Transport Routers	
customer support.....	xix	configuring.....	22
contacting JTAC.....	xix	Ethernet 802.3ah OAM on PTX Series Packet	
		Transport Routers	
D		configuring.....	21
data-fill statement.....	144	Ethernet interfaces	
data-size statement.....	145	mixed VLAN tagging.....	160
default routing policy See PTX Series		status information, displaying	
degraded.....	146	internal.....	801
degraded-fabric-detection-enable statement.....	146	management.....	801
degraded-fpc-bad-plane-threshold		PTX Series.....	768
statement.....	147	Ethernet switch information, displaying.....	409
destination MAC address		external synchronization interface.....	30, 207
firewall filter match conditions			
Layer 2 CCC traffic.....	101	F	
disabling		fabric degradation	
FPC restart.....	50	traffic black hole.....	49
documentation		fec statement.....	159
comments on.....	xviii	firewall filters	
DPC poweron sequence		actions	
displaying for a router.....	710	nonterminating.....	107
drop-profile-map statement		terminating.....	104
usage guidelines.....	69	actions, nonterminating	
DSCP code point		firewall filters.....	107
firewall filter match condition		actions, terminating	
IPv4 traffic.....	83	firewall filters.....	104
dscp-code-point statement		displaying.....	799
RPM.....	148	flexible-vlan-tagging statement.....	160
E		font conventions.....	xvii
eight forwarding classes.....	62	forwarding class	
example configuration.....	67	firewall filter match conditions	
emergency boot device		IPv4 traffic.....	83
booting from.....	35, 242	IPv6 traffic.....	92
		Layer 2 CCC traffic.....	101

- forwarding classes
 - assigning multiple to a queue.....62
 - assigning multiple to single queue.....66
 - configuring up to 16.....62
 - example configuration.....67
 - overview.....13
- forwarding-class aliases.....62
- forwarding-class statement
 - usage guidelines.....62
- forwarding-classes statement.....161
 - usage guidelines.....62
- forwarding-mode statement.....162
- FPC
 - environmental information, displaying.....332
 - installed, displaying list.....573
 - operation of, controlling.....234
 - status, displaying.....542
 - switch fabric status, displaying.....455, 460
- FPC poweron sequence
 - displaying for a switch.....710
- FPC restart
 - disabling.....50
- FPM
 - environmental information, displaying.....357
- framing statement
 - 10-Gigabit Ethernet interfaces.....163
- fru-poweron-sequence statement.....164
 - usage guidelines.....34
- G**
 - Gigabit Ethernet interfaces
 - MAC database, displaying.....817
 - Gigabit Ethernet IQ PIC
 - traffic and MAC statistics.....768
- H**
 - hardware, installed, displaying.....572
 - history-size statement.....165
 - usage guidelines.....121
 - hold-interval statement
 - connectivity-fault management.....166
 - hosted-services
 - statement.....144, 165, 166, 198, 199, 213
- I**
 - inactivity-timeout statement
 - RPM.....167
 - install-to-fib
 - usage guidelines.....55
- Interface encapsulation on PTX Series Packet Transport Routers
 - configuring.....19
- interface names
 - conventions.....11
- interfaces
 - mixed VLAN tagging.....160
- internal Ethernet interface
 - status information, displaying.....801
- IPv4 traffic
 - match conditions
 - firewall filters.....83
- IPv6 traffic
 - match conditions
 - firewall filters.....92
- is-ma statement.....167
- J**
 - Junos OS
 - reinstalling.....35, 242
- L**
 - laser-enable statement.....168
 - Layer 2 CCC traffic
 - match conditions
 - firewall filter.....101
 - level statement.....168
 - line-loopback statement.....169
 - load balancing
 - per-prefix.....55
 - local-loopback statement.....169
 - logical interface scheduling.....188
 - logical interfaces
 - unit numbers.....12
 - logical-system statement
 - usage guidelines.....121
 - loss priority
 - firewall filter match conditions
 - IPv4 traffic.....83
 - IPv6 traffic.....92
 - Layer 2 CCC traffic.....101
 - loss-threshold statement.....170
- M**
 - MAC database, displaying.....817
 - MAC filtering on PTX Series Packet Transport Routers
 - configuring.....17
 - maintenance-domain statement.....171

manually	
comments on.....	xviii
match conditions for firewall filters	
IPv4 traffic.....	83
IPv6 traffic.....	92
Layer 2 CCC traffic.....	101
MPLS traffic.....	100
max-queues-per-interface statement	
usage guidelines.....	65
maximum-links command.....	172
media-specific interface information	
displaying.....	821
mixed VLAN tagging.....	160
monitored temperatures.....	363
monitored temperatures, environmental	
information, displaying.....	363
moving-average-size statement.....	173
MPLS	
chained composite next hops.....	3
MPLS traffic	
match conditions	
firewall filters.....	100
mtu statement.....	174
N	
name-format statement.....	176
no-install-to-fib	
usage guidelines.....	55
no-source-filtering statement.....	206
O	
oam statement.....	177
odu-delay-management statement.....	179
odu-ttim-action-enable statement.....	180
optics-options statement.....	181
bytes.....	143
fec.....	159
is-ma.....	167
laser-enable.....	168
line-loopback.....	169
local-loopback.....	169
odu-delay-management.....	179
odu-ttim-action-enable.....	180
otu-ttim-action-enable.....	183
prbs.....	189
preemptive-fast-reroute.....	189
rate.....	195
signal-degrade.....	204
trigger.....	216
tti.....	221
warning.....	224
otn-options statement.....	182
otu-ttim-action-enable statement.....	183
output statement	
port mirroring.....	184
overview	
forwarding classes.....	13
P	
parentheses, in syntax descriptions.....	xviii
PDU, environmental information, displaying.....	376
per-prefix load balancing.....	55
per-unit scheduling.....	188
per-unit-scheduler statement.....	188
physical interfaces	
mixed VLAN tagging.....	160
PICs	
installed, displaying list.....	573
status	
displaying FPCs and PICs.....	541
policers, interface information	
displaying.....	823
port mirroring	
PTX series	
configuring.....	116
port number (TCP or UDP), source or destination	
firewall filter match conditions	
IPv4 traffic.....	83
IPv6 traffic.....	92
port statement	
RPM.....	185
port-mirroring statement.....	186
Power Distribution Unit.....	376
power usage	
displaying for a router.....	698
prbs statement.....	189
preemptive-fast-reroute statement.....	189
Primary-level entry	
secondary-level entry.....	69
Primary-level entry only.....	69
probe-count statement.....	190
probe-interval statement.....	190
probe-limit statement.....	191
probe-server statement.....	192
probe-type statement.....	193
pseudowires	
mixed VLAN tagging.....	160

PTX Series	
configuring at the chassis level.....	34
default routing policy.....	55
PTX Series interfaces	
status information, displaying.....	768
PTX Series Packet Transport Router.....	3
PTX Series Packet Transport Router clock sources	
overview.....	27
PTX Series Packet Transport Router hardware	
overview.....	5
PTX Series Packet Transport Router interfaces	
overview.....	9
PTX Series routers	
CoS features and limitations.....	81
Q	
queue statement	
usage guidelines.....	62
queue-num statement	
usage guidelines.....	62
R	
rate statement.....	195
recovered-clock statement	
PTX Series.....	195
RED	
dropping packets.....	69
removable media	
booting from.....	35, 242
request chassis ccg command.....	232
request chassis clock master switch	
command.....	233
request chassis fpc command.....	234
request chassis synchronization switch	
command.....	238
restricted-queues statement	
usage guidelines.....	66
routers	
boot sequence	
M Series, MX Series, T Series, TX Matrix,	
TX Matrix Plus , and PTX Series routing	
engines.....	34, 241
Routing Engines	
environmental information, displaying.....	378
status, displaying.....	712
routing information	
interfaces	
summary, displaying.....	825
routing-instance statement	
RPM.....	196
routing-instances statement	
RPM.....	196
usage guidelines.....	122
RPM.....	119
example configuration.....	129
RPM services	
probe results	
history, displaying.....	844
recent, displaying.....	847
protocols and ports, displaying.....	843
rpm statement.....	197
S	
sa-multicast statement.....	198
scheduling	
drop profile.....	69
serial numbers, displaying.....	572
server-profile statement	
port mirroring.....	199
services statement	
RPM.....	200
short-name-format statement.....	203
show chassis alarms command.....	246, 856
show chassis environment cb command.....	312
show chassis environment ccg command.....	330
show chassis environment command.....	258
show chassis environment fpc command.....	332
show chassis environment fpm command.....	357
show chassis environment monitored	
command.....	363
show chassis environment pdu command.....	376
show chassis environment routing-engine	
command.....	378
show chassis environment sib command.....	383
show chassis ethernet-switch command.....	409
show chassis fabric degraded-fabric-reachability	
command.....	453
show chassis fabric errors command.....	455
show chassis fabric fpcs command.....	460
show chassis fabric topology command.....	506
show chassis fan command.....	528
show chassis fpc command.....	541
show chassis hardware command.....	572
show chassis power command.....	698, 710
show chassis routing-engine command.....	712
show chassis sibs command.....	733
show chassis synchronization command.....	744

show chassis temperature-thresholds	
command.....	748
show chassis zones command.....	766
show interfaces (M Series and T Series Management and Internal Ethernet)	
command.....	801
show interfaces (PTX Series Packet Transport Routers) command.....	768
show interfaces extensive command.....	782
show interfaces filters command.....	799
show interfaces mac-database (Gigabit Ethernet)	
command.....	817
show interfaces media command.....	821
show interfaces routing summary command.....	825
show interfaces statistics command.....	828
show interfaces terse command.....	840
show services rpm active-servers command.....	843
show services rpm history-results command.....	844
show services rpm probe-results command.....	847
SIB	
environmental information, displaying.....	383
information, displaying.....	733
status, displaying.....	733
switch fabric topology, displaying.....	506
signal-degrade statement.....	204
source-address statement	
RPM.....	204
source-address-filter statement.....	205
source-filtering statement.....	206
stacked VLAN-tag framing	
VLAN ID list.....	223
statistics	
interfaces	
displaying.....	828
support, technical See technical support	
switch fabric	
errors, displaying.....	455
status, displaying.....	460
switch fabric topology, displaying.....	506
synchronization source, displaying.....	744
synchronization statement	
M Series, T Series, and PTX Series.....	207
PTX Series	
usage guidelines.....	30
synchronized timing.....	207
Synchronous Ethernet	
overview.....	31
syntax conventions.....	xvii

T

tag protocol IDs on PTX Series Packet Transport	
Routers	
configuring.....	19
target statement.....	209
RPM.....	209
tcp statement	
RPM.....	209
technical support	
contacting JTAC.....	xix
test statement	
RPM.....	210
test-interval statement.....	211
thresholds statement	
RPM.....	212
traffic black hole	
fabric degradation.....	49
traps statement.....	214
trigger statement.....	216
tti statement.....	221
tx-power statement.....	222

U

udp statement	
RPM.....	222

V

VLAN	
queuing	
PTX Series.....	76
traffic shaping	
PTX Series.....	76
VLAN tagging on PTX Series Packet Transport	
Routers	
configuring.....	18
vlan-tags statement	
stacked VLAN tags.....	223
VPNs	
chained composite next hops.....	3

W

warning statement.....	224
wavelength statement.....	225