



Junos[®] OS

System Basics: Chassis-Level Features Configuration Guide

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Junos® OS System Basics: Chassis-Level Features Configuration Guide

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Supported Platforms

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

- M Series
- MX Series
- T Series
- J 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 [Junos OS CLI User Guide](#).

Documentation Conventions

Table 1 on page xix 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 xix 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 |

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

| Convention | Description | Examples |
|--------------------------------|--|---|
| <i>Italic text like this</i> | <ul style="list-style-type: none"> Introduces important new terms. Identifies book names. Identifies RFC and Internet draft titles. | <ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>Junos OS System Basics Configuration Guide</i> RFC 1997, <i>BGP Communities Attribute</i> |
| <i>Italic text like this</i> | Represents variables (options for which you substitute a value) in commands or configuration statements. | Configure the machine's domain name: [edit] root@# set system domain-name <i>domain-name</i> |
| Text like this | Represents names of configuration statements, commands, files, and directories; interface names; 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</i> <i>string2</i> <i>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. | |
| J-Web GUI Conventions | | |
| Bold text like this | Represents J-Web 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 J-Web selections. | In the configuration editor hierarchy, select Protocols>Ospf . |

Documentation Feedback

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

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

Requesting Technical Support

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

- [Router Chassis Configuration Overview on page 3](#)
- [Router Chassis Clocking and Synchronization Configuration Overview on page 9](#)
- [Router Chassis Network Services Configuration Overview on page 19](#)
- [TX Matrix and TX Matrix Plus Router Configuration Overview on page 23](#)

CHAPTER 1

Router Chassis Configuration Overview

- [Router Chassis Configuration Overview on page 3](#)
- [Port-Mirroring Instances Overview on page 7](#)

Router Chassis Configuration Overview

The JUNOS Software enables you to configure several properties of the router and many PIC-level features at the **[edit chassis]** hierarchy level. Some of the features are specific to specific M Series, MX Series, J Series, or T Series routers, while some others are common across all routers.

To configure router chassis properties, you can include the configuration statements available at the **[edit chassis]** hierarchy level:



NOTE: Statements at the **[edit chassis redundancy]** hierarchy level are described in the *JUNOS High Availability Configuration Guide*.

```
chassis {
  aggregated-devices {
    ethernet {
      device-count number;
      lacp {
        system-priority;
        link-protection;
      }
    }
    sonet {
      device-count number;
    }
  }
  alarm {
    interface-type {
      alarm-name (red | yellow | ignore);
    }
  }
  config-button {
    no-clear;
    no-rescue;
  }
}
```

```
craft-lockout;
fpc slot-number {
  allow-sram-parity-errors;
  port-mirror-instance port-mirroring-instance-name;
  power (off | on);
  sampling-instance;
  sanity-poll {
    retry-count number;
    on-error {
      raise-alarm;
      power (cycle | off);
      write-coredump;
    }
  }
}
pic pic-number {
  port-mirror-instance port-mirroring-instance-name;
  framing (t1 | e1);
  port port-number {
    speed (oc3-stm1 | oc12-stm4 | oc48-stm16);
  }
  adaptive-services {
    service-package (layer-2 | layer-3);
  }
  aggregate-ports;
  atm-cell-relay-accumulation;
  atm-l2circuit-mode (cell | aal5 | trunk trunk);
  vtmapping number;
  cel {
    e1 port-number {
      channel-group channel-number timeslots slot-number;
    }
  }
  ct3 {
    port port-number {
      t1 link-number {
        channel-group channel-number timeslots slot-number;
      }
    }
  }
  egress-policer-overhead bytes;
  framing (sdh | sonet);
  fru-poweron-sequence;
  idle-cell-format {
    itu-t;
    payload-pattern payload-pattern-byte;
  }
  ingress-policer-overhead bytes;
  linerate-mode;
  max-queues-per-interface (8 | 4);
  mlfr-uni-nni-bundles number;
  number-of-ports;
  no-concatenate;
  q-pic-large-buffer {
    large-scale;
    small-scale;
  }
}
```

```

red-buffer-occupancy {
    weighted-averaged [ instant-usage-weight-exponent weight-value ];
}
sparse-dlcis;
traffic-manager {
    egress-shaping-overhead number;
    ingress-shaping-overhead number;
    mode {
        egress-only;
        ingress-and-egress;
        session-shaping;
    }
}
tunnel-services {
    bandwidth (1g | 10g);
    vtmapping (itu-t | klm);
}
}
fpc-resync;
fpc-feb-connectivity {
    fpc slot-number feb (slot-number | none);
}
}
lcc number {
    fpc number {
        pic number {
            atm-cell-relay-accumulation;
            atm-l2circuit-mode (cell | aal5 | trunk trunk);
            framing (sdh | sonet);
            idle-cell-format {
                itu-t;
                payload-pattern payload-pattern-byte;
            }
            linerate-mode;
            max-queues-per-interface (8 | 4);
            no-concatenate;
            no-multi-rate;
            hash-key {
                family {
                    inet {
                        layer-3;
                        layer-4;
                        symmetric-hash {
                            complement;
                        }
                    }
                }
            }
            multiservice {
                source-mac;
                destination-mac;
                payload {
                    ip {
                        layer-3;
                        layer-4;
                    }
                }
            }
            symmetric-hash {
                complement;
            }
        }
    }
}

```

```
        }
      }
    }
  }
}
maximum-ecmp;
offline;
online-expected;
sampling-instance;
}
memory-enhanced {
  filter;
  route;
  vpn-label;
}
(packet-scheduling | no-packet-scheduling);
pem {
  minimum number;
}
no-concatenate;
redundancy {
  cfeb slot (always | preferred);
  failover {
    on-disk-failure
    on-loss-of-keepalives;
  }
  feb {
    redundancy-group group-name {
      feb slot-number (backup | primary);
      description description;
      no-auto-failover;
    }
  }
  port-mirror-instance port-mirroring-instance-name;
  graceful-switchover;
  keepalive-time seconds;
  routing-engine slot-number (master | backup | disabled);
  sfm slot-number (always | preferred);
  ssb slot-number (always | preferred);
}
network-services (ethernet | ip);
routing-engine {
  on-disk-failure {
    disk-failure-action (halt | reboot);
  }
}
sfm slot-number {
  power off;
}
sib {
  minimum number;
}
vrf-mtu-check;
vtmapping (itu-t | klm);
synchronization {
```

```

    signal-type (e1 | t1);
    switching-mode (revertive | non-revertive);
    y-cable-line-termination;
    transmitter-enable;
    validation-interval seconds;
    primary (external-a | external-b);
    secondary (external-a | external-b);
  }
}

```



NOTE: The configuration statements at the `[edit chassis lcc]` hierarchy level apply only to a routing matrix based on a TX Matrix router or a TX Matrix Plus router. For information about a routing matrix composed of a TX Matrix router and T640 routers, see [“TX Matrix Router and T640 Router Configuration Overview” on page 23](#) and the *TX Matrix Router Hardware Guide*. For information about a routing matrix composed of a TX Matrix Plus router and T1600 routers, see [“TX Matrix Plus Router and T1600 Router Configuration Overview” on page 28](#) and the *TX Matrix Plus Router Hardware Guide*.



NOTE: The `sanity-poll` configuration statement at the `[edit chassis fpc slot-number]` hierarchy level applies only to T Series routers. You can also configure `sanity-poll` for a routing matrix based on a TX Matrix router or TX Matrix Plus router at the `[edit chassis lcc number fpc number]` hierarchy level.

Related Documentation

- [Router Chassis Configuration Statements on page 191](#)

Port-Mirroring Instances Overview

You can configure port mirroring for IPv4 and IPv6 traffic on all M Series, T Series, and MX Series routers. In addition, on the M7i, M10i, M120, M320, and MX Series routers, you can configure port mirroring for Layer 2 VPLS traffic.

You configure global port mirroring by including the **port-mirroring** statement at the `[edit forwarding-options]` hierarchy level. Configuring port-mirroring properties globally results in the properties being applied system-wide to all the Packet Forwarding Engines and their respective ports.

On MX Series, M320, and M120 routers, you can configure named port-mirroring instances for Layer 2 VPLS traffic. Configuring port-mirroring instances enables you to customize each instance with different properties for input-sampling and port-mirroring output destinations, instead of having to use a single system-wide configuration for port mirroring.

You configure multiple port-mirroring instances by including the **instance port-mirroring-instance-name** statement at the `[edit forwarding-options port-mirroring]` hierarchy level. You can then associate individual port-mirroring instances with an FPC, PIC, or FEB (depending on the router).

For more information about configuring port mirroring on all routers, see the [Junos OS Policy Framework Configuration Guide](#). For more information on configuring port mirroring for Layer 2 VPLS traffic on MX Series routers, see the [Junos OS Layer 2 Configuration Guide](#).

**Related
Documentation**

- [Configuring Port-Mirroring Instances on MX Series 3D Universal Edge Routers on page 69](#)
- [Configuring Port-Mirroring Instances on M320 Routers on page 61](#)
- [Configuring Port-Mirroring Instances on M120 Routers on page 62](#)

CHAPTER 2

Router Chassis Clocking and Synchronization Configuration Overview

- [Interface and Router Clock Sources Overview on page 9](#)
- [Synchronous Ethernet Overview on page 11](#)
- [Synchronous Ethernet on 10-Gigabit Ethernet MIC Overview on page 13](#)
- [Ethernet Synchronization Message Channel Overview on page 16](#)

Interface and Router Clock Sources Overview

- [Interface and Router Clock Sources Description on page 9](#)
- [Configuring an External Synchronization Interface on page 10](#)

Interface and Router Clock Sources Description

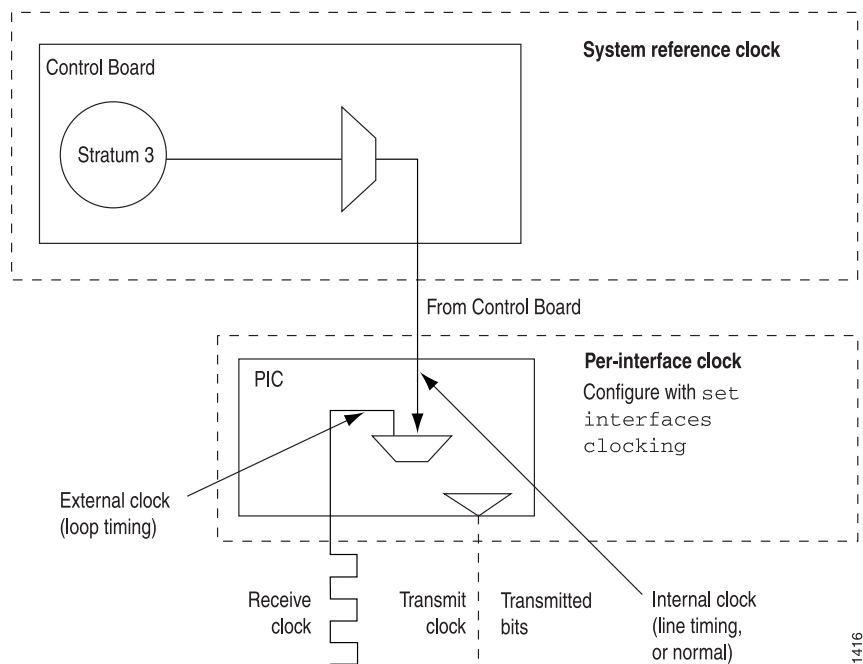
When configuring the router, you can configure the *transmit clock* on each interface; the transmit clock aligns each outgoing packet transmitted over the router's interfaces. For both the router and interfaces, the clock source can be the router's internal Stratum 3 clock, which resides on the control board, or an external clock that is received from the interface you are configuring. For example, interface A can transmit on interface A's received clock (external, loop timing) or the Stratum 3 clock (internal, line timing). Interface A cannot use a clock from any other source.

By default, each interface uses the router's internal Stratum 3 clock. To configure the clock source of each interface, include the **clocking** statement at the **[edit interfaces *interface-name*]** hierarchy level:

```
[edit interfaces interface-name]  
clocking (internal | external);
```

System reference clocks can be generated from different system components, depending on the router type. For example, [Figure 1 on page 10](#) illustrates the different clock sources on the M120 router.

Figure 1: M120 Router Clock Sources



Configuring an External Synchronization Interface

The M40e, M120, M320, T640, and T1600 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 the external source.

This feature can be configured for external primary and secondary interfaces that use Building Integrated Timing System (BITS) or SDH Equipment Timing Source (SETS) timing sources. When internal timing is set for SONET/SDH, Plesiochronous Digital Hierarchy (PDH), and digital hierarchy (DS1) interfaces on the Physical Interface Cards (PICs), the transmit clock of the interface is synchronized to BITS/SETS timing and traceable to timing within the network.

To configure external synchronization on M40e, M120, M320, T640, and T1600 routers, include the **synchronization** statement at the **[edit chassis]** hierarchy level.

For more information about the external synchronization interface, see [“Configuring the Junos OS to Support an External Clock Synchronization Interface for M Series and T Series Routers”](#) on page 119.

Related Documentation

- [Configuring the Junos OS to Support an External Clock Synchronization Interface for M Series and T Series Routers](#) on page 119
- [Synchronous Ethernet Overview](#) on page 11
- [Configuring an External Clock Synchronization Interface for MX Series Routers](#) on page 121

Synchronous Ethernet Overview

Synchronization is a key requirement for circuit (emulation) services and mobile radio access technologies. Traditionally, mobile networks utilized SONET/SDH technologies to backhaul voice and data traffic, and used 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) 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 3 on page 11](#) summarizes the first Junos OS release that supports Synchronous Ethernet on the various Juniper Networks routers and their components:

Table 3: Synchronous Ethernet Support on Junos OS

| Routers and Components | Junos OS Release |
|--|------------------|
| MX80 3D Universal Edge Routers | 10.4 |
| 10-Gigabit Ethernet MPC with SFP+ | 11.2R4 |
| MX5, MX10, MX40, 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 |
| 10-Gigabit Ethernet MIC with XFP in WAN-PHY framing mode | 10.4 |
| 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 |

The ingress clock monitoring feature is supported on all MX Series routers with the 16x10GE MPC. On these routers, the incoming Synchronous Ethernet signals cannot be monitored on the 16x10GE MPC but are monitored by other Modular Port Concentrators (MPCs) in the chassis. Therefore, you can use the 16x10GE 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 16x10GE 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 16x10GE 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” on page 13](#).

Starting with Junos OS Release 12.1, Synchronous Ethernet is supported on Juniper Networks PTX Series Packet Transport Switches. On the packet transport switches, 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.

Synchronous Ethernet is not supported in the following instances:

- Slot 10 on MX Series router chassis
- RJ-45 ports
- MPC3E with CFP
- 10-Gigabit Ethernet MPC with SFP+ in Junos OS Release 10.4.



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 the PTX Series Packet Transport Switches on page 124](#)
- [Configuring an External Clock Synchronization Interface for MX Series Routers on page 121](#)
- [Ethernet Synchronization Message Channel Overview on page 16](#)
- [Example: Configuring Framing Mode for Synchronous Ethernet on MX Series Routers with 10-Gigabit Ethernet MIC on page 127](#)
- `request chassis synchronization mode`
- [Synchronous Ethernet on 10-Gigabit Ethernet MIC Overview on page 13](#)
- `synchronization`

Synchronous Ethernet on 10-Gigabit Ethernet MIC Overview

Synchronous Ethernet (ITU-T G.8261) is a physical layer technology that functions regardless of the network load. Synchronous Ethernet supports hop-by-hop frequency transfer, where all interfaces on the trail must support Synchronous Ethernet.

Starting with Junos OS Release 11.4, the 10-Gigabit Ethernet MIC with XFP supports Synchronous Ethernet in LAN-PHY framing mode. Prior to Junos OS Release 11.4, Synchronous Ethernet was supported only in WAN-PHY framing mode on the 10-Gigabit Ethernet MICs with XFP.

You can configure a MIC in LAN-PHY framing mode by configuring all the constituent logical PICs in the same LAN-PHY framing mode on MX80, MX240, MX480, and MX960 routers.

You can also alternatively configure a MIC in WAN-PHY framing mode on MX80, MX240, MX480, and MX960 routers by configuring all the constituent logical PICs in the same WAN-PHY framing mode in any one of the following configurations:

- No framing mode configured on all the constituent logical PICs of the MIC.
- Incompatible framing mode configured on constituent logical PICs of the MIC.
- No framing mode configured on some of the constituent logical PICs of the MIC.



NOTE: All the logical PICs in a single MIC must be configured in the same framing mode.

You can also configure the framing mode at the interface level and at the PIC level. For more information about configuring the framing mode at the PIC level and at the interface level, see [“Example: Configuring Framing Mode for Synchronous Ethernet on MX Series Routers with 10-Gigabit Ethernet MIC” on page 127](#).

When the PIC-level framing type is changed between LAN mode and non-LAN mode on a MIC:

- The Forwarding Engine Board (FEB) is restarted in the case of the built-in MIC (4-port 10-Gigabit Ethernet MIC with XFP) on MX80 routers.
- Only the corresponding MIC is restarted in the case of the pluggable MIC (2-port 10-Gigabit Ethernet MIC with XFP) on MX80 routers.
- The entire MPC restarts in the case of MX240, MX480, and MX960 routers.



NOTE: By default, the PIC-level framing mode is set to WAN framing type, that is, e1 | e3 | sdh | sonet | t1 | t3. Synchronous Ethernet works on the 10-Gigabit Ethernet MIC with XFP in LAN-PHY mode only when the PIC-level framing configuration is configured to the lan framing type explicitly.

By default, the interface-level framing mode is set to lan-phy. For WAN-PHY operation, interface framing needs to be set to wan-phy framing explicitly.

Table 4 on page 14 summarizes the possible configuration combination for Synchronous Ethernet on the 10-Gigabit Ethernet MIC with XFP that are available at the interface level and the PIC level:

Table 4: Configuration Options

| Framing Configuration | | Operation | | |
|-----------------------|-------------------|-------------------------|-------------------------------------|---|
| PIC Level | Interface Level | Interface Status | Will Synchronous Ethernet Function? | Will Non-Synchronous Ethernet Functions Work? |
| LAN | LAN-PHY (Default) | Up | Yes | Yes |
| LAN | WAN-PHY | Down (Framing Conflict) | No | No |
| WAN (Default) | LAN-PHY (Default) | Up | No | Yes |
| WAN (Default) | WAN-PHY | Up | Yes | Yes |

The following cases and corresponding behaviors explain Table 4 on page 14 in detail.

- The PIC is being brought up online:

This case is applicable when either the MIC is restarted or when the MIC is being brought online by an operational command. In this case, the behavior can be presented as:

- No framing mode is configured for any or all of the constituent logical PICs of the MIC—The MIC is configured to operate in WAN-PHY framing mode as the WAN mode is the default mode.

Here, the WAN-PHY framing-based interfaces operate in normal state and provides Synchronous Ethernet services. However, the LAN-PHY framing-based interfaces operate normally but cannot provide Synchronous Ethernet services.

- All the constituent logical PICs of a MIC are configured in LAN-PHY mode—The MIC is configured to operate in LAN-PHY framing mode.

In this scenario, the WAN-PHY framing-based interfaces cannot operate in normal state. As a result, these interfaces are administratively brought down. The reason for the interface being in **admin-down** state is displayed as **Framing Conflict** in the

output of the **show interfaces** operational command. This is because the interface framing configuration (WAN-PHY) is in conflict with the PIC-level framing configuration of LAN-PHY. Because the interfaces are in **admin-down** state, neither the Synchronous Ethernet services nor other services are provided.

Alternatively, all the LAN-PHY framing-based interfaces can operate in normal state and can continue to provide any of the Synchronous Ethernet services.

- The PIC is already online:
 - In WAN-PHY framing mode—The interface framing configuration on the PIC has changed from WAN-PHY to LAN-PHY.
The interface continues to be operational for data transceiving purposes. However, it cannot provide any of the Synchronous Ethernet services.
 - In WAN-PHY framing mode—The interface framing configuration on the PIC has changed from LAN-PHY to WAN-PHY.
The interface continues to be operational for data transceiving purposes, and it can also provide Synchronous Ethernet services.
 - In LAN-PHY framing mode—The interface framing configuration on the PIC has changed from WAN-PHY to LAN-PHY.
The interface is operational for data transceiving purposes, and it can also provide Synchronous Ethernet services.
 - In LAN-PHY framing mode—The interface framing configuration on the PIC has changed from LAN-PHY to WAN-PHY.
The interface is down; therefore, it cannot provide any Synchronous Ethernet services.

Support for Synchronous Ethernet is limited in the following instances:

- Primary and secondary sources cannot be from the same MIC. Alternatively, only the port with the highest quality clock source from a given MIC is used for clock selection.
- Prior to Junos OS Release 11.4, Synchronous Ethernet was supported only in WAN-PHY framing mode on the 10-Gigabit Ethernet MICs with XFP.

Related Documentation

- [Clock Sources for the PTX Series Packet Transport Switches on page 124](#)
- [Configuring an External Clock Synchronization Interface for MX Series Routers on page 121](#)
- [Example: Configuring Framing Mode for Synchronous Ethernet on MX Series Routers with 10-Gigabit Ethernet MIC on page 127](#)
- [request chassis synchronization mode](#)
- [Synchronous Ethernet Overview on page 11](#)
- [synchronization](#)

Ethernet Synchronization Message Channel Overview

Ethernet Synchronization Message Channel (ESMC) is a logical communication channel. It transmits Synchronization Status Message (SSM) information, which is the quality level of the transmitting synchronous Ethernet equipment clock (EEC), by using ESMC protocol data units (PDUs). ESMC support is based on the ITU G.8264 specification.

A Synchronous Ethernet interface is configured to operate in the following modes:

- Nonsynchronous mode—In this mode, the Synchronous Ethernet interface does not process the ESMC message and does not extract the quality level information.
- Synchronous mode—In this mode, the Synchronous Ethernet interface processes the ESMC message and extracts the quality level information. While operating in synchronous mode, the ESMC messages transmit the quality level.

You can enable ESMC on a Synchronous Ethernet port by adding the port to a list of ESMC interfaces. The ESMC messages are transmitted through the port indicating the quality level of the clock it is capable of driving and the ESMC messages are received (if the other endpoint supports ESMC) with the quality level of the transmitting clock. The MPC receiving the ESMC messages on its configured Synchronous Ethernet ports extracts the quality level and transmits it to the Routing Engine. The clock selection algorithm on the Routing Engine collects the ESMC data from each of the ESMC-enabled ports to select the clock sources.

The clock selection process supports revertive and nonrevertive modes. When the clock selection process has selected two clock sources—a primary and a secondary—and the active primary clock source degrades over a period of time and then improves again, this primary clock source again becomes the active clock source only if revertive mode is enabled. If nonrevertive mode is set and the secondary clock source is currently active (due to a previous degradation of primary clock source), the primary clock source is not reactivated even after its quality improves.

The clock selection is based on the following three operational modes:

- Forced free-run—In this mode, you can set the clock source either from a free-run local oscillator or from an external qualified clock. For MX80 routers, the free-run clock is provided by the local oscillator. For MX240, MX480, and MX960 routers, the free-run clock is provided by the Switching Control Board (SCB).
- Forced holdover—This mode is an internal state the synchronous Ethernet Equipment Clock (EEC) goes into, when an upstream clock source that the system locks on to is no longer available. You cannot configure this mode because it is an internal state.
- Automatic selection—In this mode, the system chooses up to two best upstream clock sources. The system then uses the clock recovered from one of the sources to generate a frequency of 19.44 MHz and clock the transmit side of the Ethernet interfaces. If no upstream clock with acceptable good quality is available or if the system is configured in free-run mode, the system uses the internal clock. Automatic clock selection is based on the quality level, priority, signal fail, and external commands.

For more information about clock selection, see [“Configuring an External Clock Synchronization Interface for MX Series Routers” on page 121](#).

The synchronous EEC is in free-run mode when the chassis is switched on or restarted. When a synchronous EEC locks on to an upstream reference clock source at least once for a continuous period of 60 seconds, the EEC will have stored sufficient Synchronous Ethernet data in a replay holdover buffer. In case of failure of a reference clock source, the system goes to holdover mode and uses the replay data in the holdover buffer to service the downstream Synchronous Ethernet clients.

When a Modular Port Concentrator (MPC) with an EEC restarts (because of either a system crash or a manual restart), the holdover buffer data gets erased. Therefore, downstream Synchronous Ethernet clients cannot be serviced. This is also applicable when a new MPC containing an EEC is inserted into the system.

In a practical deployment scenario, the status display of holdover mode is invalid only when the chassis is switched on or restarted.

When an MPC containing an EEC is restarted or a new MPC containing an EEC is inserted into a system that is (already) in holdover mode, the EEC on this MPC cannot be considered to be in holdover mode because it does not have any Synchronous Ethernet replay information in its holdover data buffer. Therefore, you must first fix the system holdover issue before attempting to service the downstream Synchronous Ethernet clients on this MPC. To accomplish this, you must find a suitable upstream reference clock source and let the synchronous EEC lock on to this upstream reference clock source, and then service the downstream Synchronous Ethernet clients on this MPC.

**Related
Documentation**

- [Synchronous Ethernet Overview on page 11](#)
- [Configuring an External Clock Synchronization Interface for MX Series Routers on page 121](#)
- [Clock Sources for the PTX Series Packet Transport Switches on page 124](#)
- [synchronization](#)
- [request chassis synchronization mode](#)
- [show chassis synchronization on page 674](#)

CHAPTER 3

Router Chassis Network Services Configuration Overview

- [Network Services Mode Overview on page 19](#)
- [Restrictions on Junos OS Ethernet Network Services Mode and Enhanced Ethernet Network Services Mode Features for MX Series Routers on page 21](#)

Network Services Mode Overview

MX Series 3D Universal Edge Routers can be configured to run in IP Network Services mode, Enhanced IP Network Services mode, Ethernet Network Services mode, or Enhanced Ethernet Network Services mode. Each network services mode defines how the chassis recognizes and uses certain modules.



NOTE: You can use either Enhanced IP Network Services mode or Enhanced Ethernet Network Services mode to improve the scaling and performance specific to routing filters in a subscriber access network that uses statically configured subscriber interfaces. For more information about using enhanced network services modes with firewall filters, see [Firewall Filters and Enhanced Network Services Mode Overview](#) in the *Junos OS Subscriber Access Configuration Guide*.

When configuring chassis network services on the router, keep the following considerations in mind:

- You must configure a router chassis that has only MPC-3D-16XGE-SFPP modules installed for Ethernet Network Services mode or Enhanced Ethernet Network Services mode.
- You can configure a router chassis with only MPC-3D-16XGE-SFPP-R-B modules installed for any network services mode. However, this configuration requires installing the appropriate license if you want to use IP Network Services mode or Enhanced IP Network Services mode. However, this configuration requires installing the licensed copies of the IP Network Services mode or Enhanced IP Network Services mode. The licenses for these services are paper licenses.

- You must configure a router chassis that has both MPC-3D-16XGE-SFPP and MPC-3D-16XGE-SFPP-R-B modules installed for Ethernet Network Services mode or Enhanced Ethernet Network Services mode.



NOTE: If Dense Port Concentrators (DPCs) in Ethernet Network Services mode or Enhanced Ethernet Network Services mode are up and running, you cannot configure the system for IP Network Services mode. You must first disable any Ethernet Network Services mode DPCs before switching to IP Network Services mode.

Table 5 on page 20 explains the different module functions when you configure the router chassis for different network services modes.

Table 5: Network Services Mode Functions

| Configuration Upon Boot or Configuration Change | Module Function |
|--|--|
| IP Network Services mode (default; upon boot) | All modules except DPCE-X and DPCE-X-Q modules are powered on. |
| Ethernet Network Services mode (upon boot) | <p>All modules are powered on. However, operating in Ethernet Network Services mode restricts certain BGP protocol functions and does not support Layer 3 VPN, unicast RPF, and source and destination class usage (SCU and DCU) functions. In addition, the number of externally configured filter terms is restricted to 64K.</p> <p>Ethernet Network Services mode provides support for only Layer 2.5 functions.</p> |
| Enhanced IP Network Services mode (upon boot) | <p>Only Trio MPCs and MS-DPCs are powered on.</p> <p>NOTE: Only Multiservices DPCs (MS-DPCs) are powered on with the enhanced network services mode options. No other DPCs function with the enhanced network services mode options.</p> |
| Enhanced Ethernet Network Services mode (upon boot) | <p>Only Trio MPCs and MS-DPCs are powered on. All restrictions for operating in Ethernet Network Services mode apply.</p> <p>NOTE: Only Multiservices DPCs (MS-DPCs) are powered on with the enhanced network services mode options. No other DPCs function with the enhanced network services mode options.</p> |
| Change from IP Network Services mode to Ethernet Network Services mode | DPCE-X and DPCE-X-Q modules are powered on; no reboot is required. No impact to Trio MPCs or MS-DPCs. |
| Change from Ethernet Network Services mode to IP Network Services mode | Invalid modification; no commit occurs; a warning message indicating any FPCs (along with their slot location) must be offline before switching to other network services; no impact to Trio MPCs or MS-DPCs. |

Table 5: Network Services Mode Functions (*continued*)

| Configuration Upon Boot or Configuration Change | Module Function |
|--|---|
| Change from Enhanced IP Network Services mode to Enhanced Ethernet Network Services mode | No reboot is required; no impact to Trio MPCs or MS-DPCs. |
| Change from IP Network Services mode to Enhanced IP Network Services mode | Reboot required. |
| Change from Ethernet Network Services mode to Enhanced Ethernet Network Services mode | Reboot required. |

The details of Layer 2.5 support for Ethernet Network Services mode are shown in [Table 6 on page 21](#).

Related Documentation

- Firewall Filters and Enhanced Network Services Mode Overview in the [Junos OS Subscriber Access Configuration Guide](#).
- [Table 6 on page 21](#)

Restrictions on Junos OS Ethernet Network Services Mode and Enhanced Ethernet Network Services Mode Features for MX Series Routers

[Table 6 on page 21](#) lists Junos OS feature restrictions when running in Ethernet Network Services mode or Enhanced Ethernet Network Services mode.

Table 6: Restricted Software Features in Ethernet Network Services Mode

| Software Feature | Restriction in Ethernet Network Services Mode |
|--|--|
| BGP | <ul style="list-style-type: none"> • BGP allows only family L2 VPN to provide IP control plane support. • Data plane support applies only to Ethernet and MPLS. • BGP does not support inet, inet6, inet-vpn, and inet6-vpn |
| L3VPN | Layer 3 VPN is not available. |
| Unicast RPF | Unicast reverse-path forwarding is disabled. |
| Source and destination class usage (SCU and DCU) | Source and Destination Class Usage is disabled. |
| Filter terms | The number of externally configured filter terms is restricted to 64 KB. |
| Prefixes | The number of supported prefixes is restricted to 32 K. |



NOTE: MX Series routers supporting Layer 2.5 functions work as full-scale routers and they support interior gateway protocol (IGP), multicast routing protocols, and other routing features. The restrictions applicable on these routers are that the number of routes is limited and you cannot use BGP.

**Related
Documentation**

- [Network Services Mode Overview on page 19](#)
- [Configuring Junos OS to Run a Specific Network Services Mode in MX Series Routers on page 79](#)

CHAPTER 4

TX Matrix and TX Matrix Plus Router Configuration Overview

- [TX Matrix Router and T640 Router Configuration Overview on page 23](#)
- [TX Matrix Router Chassis and Interface Names on page 26](#)
- [TX Matrix Plus Router and T1600 Router Configuration Overview on page 28](#)
- [TX Matrix Plus Router Chassis and Interface Names on page 32](#)

TX Matrix Router and T640 Router Configuration Overview

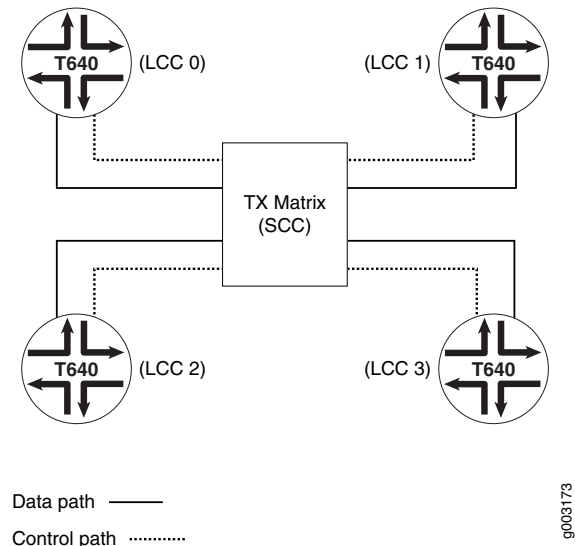
This topic provides an overview of configuring the TX Matrix router and T640 routers.

- [TX Matrix Router and T640 Router-Based Routing Matrix Overview on page 23](#)
- [Running Different Junos OS Releases on the TX Matrix Router and T640 Routers on page 24](#)
- [TX Matrix Router Software Upgrades and Reinstallation on page 25](#)
- [TX Matrix Router Rebooting Process on page 25](#)
- [Committing Configurations on the TX Matrix Router on page 25](#)
- [TX Matrix and T640 Router Configuration Groups on page 26](#)
- [Routing Matrix System Log Messages on page 26](#)

TX Matrix Router and T640 Router-Based Routing Matrix Overview

A routing matrix is a multichassis architecture that consists of a TX Matrix router and from one to four T640 routers. From the perspective of the user interface, the routing matrix appears as a single router. The TX Matrix router controls all the T640 routers in the routing matrix, as shown in [Figure 2 on page 24](#).

Figure 2: Routing Matrix Composed of a TX Matrix Router and Four T640 Routers



You configure and manage the TX Matrix router and its T640 routers in the routing matrix through the CLI on the TX Matrix router. This means that the configuration file on the TX Matrix router is used for the entire routing matrix.

Because all configuration, troubleshooting, and monitoring are performed through the TX Matrix router, we do not recommend accessing its T640 routers directly (through the console port or management Ethernet [fxp0]). If you do, the following messages appear when you first start the CLI through a T640 router:

```
% cli
warning: This chassis is a Line Card Chassis (LCC) in a multichassis system.
warning: Use of interactive commands should be limited to debugging.
warning: Normal CLI access is provided by the Switch Card Chassis (SCC).
warning: Use 'request routing-engine login scc' to log into the SCC.
{master}
```

These messages appear because any configuration you commit on a T640 router is not propagated to the TX Matrix router or other T640 routers in the routing matrix. For details, see [“Committing Configurations on the TX Matrix Router”](#) on page 25.

Running Different Junos OS Releases on the TX Matrix Router and T640 Routers

On a routing matrix, if you elect to run different Junos OS Releases on the TX Matrix router and T640 Routing Engines, a change in Routing Engine mastership can cause one or all T640 routers to be logically disconnected from the TX Matrix router.



NOTE: The routing matrix supports Release 7.0 and later versions of the Junos OS. All the master Routing Engines on the routing matrix must use the same software version. For information about hardware and software requirements, see the *TX Matrix Router Hardware Guide*.

TX Matrix Router Software Upgrades and Reinstallation

By default, when you upgrade or reinstall software on the TX Matrix router, the new software image is distributed to the connected T640 routers. Software installed on a primary TX Matrix router is distributed to all connected primary T640 routers and the backup is distributed to all connected backup routers.

TX Matrix Router Rebooting Process

When you reboot the TX Matrix router master Routing Engine, all the master Routing Engines in the connected T640 routers reboot. In addition, you can selectively reboot the master Routing Engine or any of the connected T640 routers.

Committing Configurations on the TX Matrix Router

In a routing matrix composed of a TX Matrix router and T640 routers, all configuration must be performed on the TX Matrix router. Any configuration you commit on a T640 router is not propagated to the TX Matrix router or other T640 routers. Only configuration changes you commit on the TX Matrix router are propagated to all T640 routers. A commit on a TX Matrix router overrides any changes you commit on a T640 router.

If you issue the **commit** command, you commit the configuration to all the master Routing Engines in the routing matrix.

```
user@host# commit
scc-re0:
configuration check succeeds
lcc0-re0:
commit complete
lcc1-re0:
commit complete
scc-re0:
commit complete
```



NOTE: If a commit operation fails on any node, then the commit operation is not completed for the entire TX Matrix router.

If you issue the **commit synchronize** command on the TX Matrix router, you commit the configuration to all the master and backup Routing Engines in the routing matrix.

```
user@host# commit synchronize
scc-re0:
configuration check succeeds
lcc0-re1:
commit complete
lcc0-re0:
commit complete
lcc1-re1:
commit complete
lcc1-re0:
commit complete
scc-re1:
```

```
commit complete
scc-re0:
commit complete
```

TX Matrix and T640 Router Configuration Groups

For routers that include two Routing Engines, you can specify two special group names—**re0** and **re1**. These two special group names apply to the Routing Engines in slots 0 and 1 of the TX Matrix router. In addition, the routing matrix supports group names for the Routing Engines for each T640 router: **lcc *n*-re0** and **lcc *n*-re1**. *n* identifies a T640 router from 0 through 3.

Routing Matrix System Log Messages

You configure the T640 routers to forward their system log messages to the TX Matrix router at the **[edit system syslog host scc-master]** hierarchy level. For information about how to configure system log messages in a routing matrix, see Junos OS System Log Configuration Overview and Configuring System Logging for a TX Matrix Router.

Related Documentation

- [Using the Junos OS to Configure a T640 Router Within a Routing Matrix on page 37](#)

TX Matrix Router Chassis and Interface Names

The output from some CLI commands uses the terms SCC and **scc** (for *switch-card chassis*) to refer to the TX Matrix router. Similarly the terms LCC, and **lcc** as a prefix (for *line-card chassis*) refer to a T640 router in a routing matrix.

T640 routers are assigned LCC index numbers, 0 through 3, depending on the hardware setup of the routing matrix. A routing matrix can have up to four T640 routers, and each T640 router has up to eight FPCs. Therefore, the routing matrix can have up to 32 FPCs (0 through 31). The FPCs are configured at the **[edit chassis lcc *number*]** hierarchy level.

In the Junos OS CLI, an interface name has the following format:

type-fpc/pic/port

When you specify the FPC number, the Junos OS determines which T640 router contains the specified FPC based on the following assignment:

- On LCC 0, FPC hardware slots 0 through 7 correspond to FPC software numbers 0 through 7.
- On LCC 1, FPC hardware slots 0 through 7 correspond to FPC software numbers 8 through 15.
- On LCC 2, FPC hardware slots 0 through 7 correspond to FPC software numbers 16 through 23.
- On LCC 3, FPC hardware slots 0 through 7 correspond to FPC software numbers 24 through 31.

To convert FPC numbers in the T640 routers to the correct FPC in a routing matrix, use the conversion chart shown in [Table 7 on page 27](#). You can use the converted FPC number to configure the interfaces on the TX Matrix router in your routing matrix.

Table 7: T640 to Routing Matrix FPC Conversion Chart

| FPC Numbering | T640 Routers | | | | | | | |
|-------------------------------------|--------------|----|----|----|----|----|----|----|
| LCC 0 | | | | | | | | |
| T640 FPC Slots | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Routing Matrix FPC Slots Equivalent | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| LCC 1 | | | | | | | | |
| T640 FPC Slots | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Routing Matrix FPC Slots Equivalent | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| LCC 2 | | | | | | | | |
| T640 FPC Slots | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Routing Matrix FPC Slots Equivalent | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| LCC 3 | | | | | | | | |
| T640 FPC Slots | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Routing Matrix FPC Slots Equivalent | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |

Some examples include:

- In a routing matrix that contains **lcc 0** through **lcc 2**, **so-20/0/1** refers to FPC slot **4** of **lcc 2**.
- If you have a Gigabit Ethernet interface installed in FPC slot **7**, PIC slot **0**, port **0** of T640 router **LCC 3**, you can configure this interface on the TX Matrix router by including the **ge-31/0/0** statement at the **[edit interfaces]** hierarchy level.

```
[edit]
interfaces {
  ge-31/0/0 {
    unit 0 {
      family inet {
        address ip-address;
      }
    }
  }
}
```

- Related Documentation**
- [Using the Junos OS to Configure a T640 Router Within a Routing Matrix on page 37](#)

TX Matrix Plus Router and T1600 Router Configuration Overview

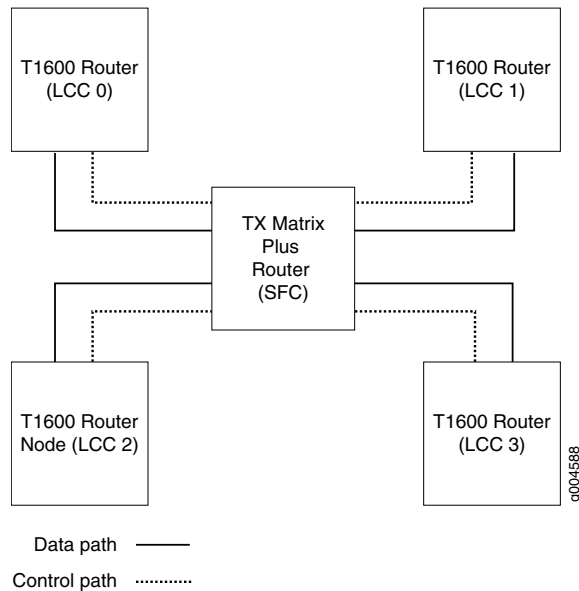
This topic provides an overview of configuring the TX Matrix Plus router and T1600 routers.

- [TX Matrix Plus Router and T1600 Router-Based Routing Matrix Overview on page 28](#)
- [Running Different Junos OS Releases on the TX Matrix Plus Router and T1600 Routers on page 29](#)
- [TX Matrix Plus Router Software Upgrades and Reinstallation on page 30](#)
- [TX Matrix Plus Router Rebooting Process on page 30](#)
- [TX Matrix Plus Router Routing Engine Rebooting Sequence on page 30](#)
- [TX Matrix Plus Router Management Ethernet Interfaces on page 30](#)
- [TX Matrix Plus Router Internal Ethernet Interfaces on page 30](#)
- [Routing Matrix-Based T1600 Router Internal Ethernet Interfaces on page 30](#)
- [Committing Configurations on the TX Matrix Plus Router on page 31](#)
- [Routing Matrix Configuration Groups on page 32](#)
- [Routing Matrix System Log Messages on page 32](#)

TX Matrix Plus Router and T1600 Router-Based Routing Matrix Overview

A routing matrix based on a TX Matrix Plus router is a multichassis architecture that consists of a TX Matrix Plus router and from one to four T1600 routers. From the perspective of the user interface, the routing matrix appears as a single router. The TX Matrix Plus router (or switch-fabric chassis (SFC)) controls all the T1600 routers (or line-card chassis (LCC)) in the routing matrix, as shown in [Figure 3 on page 29](#).

Figure 3: Routing Matrix Composed of a TX Matrix Plus Router and Four T1600 Routers



You configure and manage the TX Matrix Plus router and its T1600 routers in the routing matrix through the CLI on the TX Matrix Plus router. This means that the configuration file on the TX Matrix Plus router is used for the entire routing matrix.

Because all configuration, troubleshooting, and monitoring are performed through the TX Matrix Plus router, we do not recommend accessing its T1600 routers directly (through the console port or management Ethernet interface [em0]). If you do, the following messages appear when you first start the CLI through a T1600 router:

```
% cli
warning: This chassis is a Line Card Chassis (LCC) in a multichassis system.
warning: Use of interactive commands should be limited to debugging.
warning: Normal CLI access is provided by the Switch Fabric Chassis (SFC).
warning: Please logout and log into the SFC to use CLI.
```

These messages appear because any configuration you commit on a T1600 router is not propagated to the TX Matrix Plus router or other T1600 routers in the routing matrix. For details, see [“Committing Configurations on the TX Matrix Plus Router” on page 31](#).

Running Different Junos OS Releases on the TX Matrix Plus Router and T1600 Routers

On a routing matrix composed of a TX Matrix Plus router and T1600 routers, if you elect to run different Junos OS Releases on the TX Matrix Plus router and T1600 Routing Engines, a change in Routing Engine mastership can cause one or all T1600 routers to be logically disconnected from the TX Matrix Plus router.



NOTE: All the master Routing Engines on the routing matrix must use the same Junos OS version. For information about hardware and software requirements, see the *TX Matrix Plus Router Hardware Guide*.

TX Matrix Plus Router Software Upgrades and Reinstallation

By default, when you upgrade or reinstall software on the TX Matrix Plus router, the new software image is distributed to the connected T1600 routers. Software installed on a primary TX Matrix Plus router is distributed to all connected primary T1600 routers and the backup is distributed to all connected backup routers.

TX Matrix Plus Router Rebooting Process

When you reboot the TX Matrix Plus router master Routing Engine, all the master Routing Engines in the connected T1600 routers reboot. In addition, you can selectively reboot the master Routing Engine or any of the connected T1600 routers.

TX Matrix Plus Router Routing Engine Rebooting Sequence

The Routing Engines on the TX Matrix Plus router (or switch-fabric chassis) and T1600 routers (or line-card chassis) in the routing matrix boot from the storage media in this order: the USB device (if present), the CompactFlash card (if present), the disk (if present) in slot 1, and then the LAN.

TX Matrix Plus Router Management Ethernet Interfaces

The management Ethernet interface used for the TX Matrix Plus router and the T1600 routers in a routing matrix is **em0**. This interface provides an out-of-band method for connecting to the routers in the routing matrix. The Junos OS automatically creates the router's management Ethernet interface, **em0**. To use **em0** as a management port, you must configure its logical port, **em0.0**, with a valid IP address.



NOTE:

- The Routing Engines in the TX Matrix Plus router and in the T1600 routers configured in a routing matrix do not support the management Ethernet interface **fxp0** or the internal Ethernet interfaces **fxp1** or **fxp2**.
 - Automated scripts that have been developed for standalone T1600 routers (T1600 routers not configured in a routing matrix) might contain references to the **fxp0**, **fxp1**, or **fxp2** interfaces. Before reusing the scripts on T1600 routers in a routing matrix, edit any command lines that reference the T1600 router management Ethernet interface **fxp0** by replacing "**fxp0**" with "**em0**".
-

TX Matrix Plus Router Internal Ethernet Interfaces

On a TX Matrix Plus router, the Routing Engine (RE-TXP-SFC) and Control Board (TXP-CB) function as a unit, or host subsystem. For each host subsystem in the router, the Junos OS automatically creates two internal Ethernet interfaces, **ixgbe0** and **ixgbe1**, for the two 10-Gigabit Ethernet ports on the Routing Engine.

Routing Matrix-Based T1600 Router Internal Ethernet Interfaces

On a T1600 router configured in a routing matrix, the Routing Engine (RE-TXP-LCC) and Control Board (LCC-CB) function as a unit, or host subsystem. For each host subsystem

in the router, the Junos OS automatically creates two internal Ethernet interfaces, **bcm0** and **em1**, for the two Gigabit Ethernet ports on the Routing Engine.

For more information about the management Ethernet interface and internal Ethernet interfaces on a TX Matrix Plus router and T1600 routers configured in a routing matrix, see the *Junos OS Network Interfaces Configuration Guide*.

Committing Configurations on the TX Matrix Plus Router

In a routing matrix composed of a TX Matrix Plus router and T1600 routers, all configuration must be performed on the TX Matrix Plus router. Any configuration you commit on a T1600 router is not propagated to the TX Matrix Plus router or other T1600 routers. Only configuration changes you commit on the TX Matrix Plus router are propagated to all T1600 routers. A commit on a TX Matrix Plus router overrides any changes you commit on a T1600 router.

If you issue the **commit** command, you commit the configuration to all the master Routing Engines in the routing matrix.

```
user@host# commit
sfc-re0:
configuration check succeeds
lcc0-re0:
commit complete
lcc1-re0:
commit complete
sfc-re0:
commit complete
```



NOTE: If a commit operation fails on any node, then the commit operation is not completed for the entire TX Matrix Plus router.

If you issue the **commit synchronize** command on the TX Matrix Plus router, you commit the configuration to all the master and backup Routing Engines in the routing matrix.

```
user@host# commit synchronize
sfc-re0:
configuration check succeeds
lcc0-re1:
commit complete
lcc0-re0:
commit complete
lcc1-re1:
commit complete
lcc1-re0:
commit complete
sfc-re1:
commit complete
sfc-re0:
commit complete
```

Routing Matrix Configuration Groups

For routers that include two Routing Engines, you can specify two special group names—**re0** and **re1**. These two special group names apply to the Routing Engines in slots 0 and 1 of the TX Matrix Plus router. In addition, the routing matrix supports group names for the Routing Engines for each T1600 router: **lcc *n*-re0** and **lcc *n*-re1**. *n* identifies a T1600 router from 0 through 3.

Routing Matrix System Log Messages

You configure the T1600 routers to forward their system log messages to the TX Matrix Plus router at the **[edit system syslog host sfc0-master]** hierarchy level. For information about how to configure system log messages on a routing matrix based on the TX Matrix Plus router or the T1600 routers, see *Configuring System Logging for a TX Matrix Plus Router*.

Related Documentation

- [Using the Junos OS to Configure a T1600 Router Within a Routing Matrix on page 53](#)
- [TX Matrix Plus Router Chassis and Interface Names on page 32](#)
- [Configuring the Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform on page 55](#)

TX Matrix Plus Router Chassis and Interface Names

The output from some CLI commands uses the terms SFC and **sfc** (for *switch-fabric chassis*) to refer to the TX Matrix Plus router. Similarly the terms LCC, and **lcc** as a prefix (for *line-card chassis*) refer to a T1600 router in a routing matrix composed of a TX Matrix Plus router and T1600 routers.

T1600 routers are assigned LCC index numbers, 0 through 3, depending on the hardware setup of the routing matrix. The current supported configuration of the routing matrix, can have up to four T1600 routers, and each T1600 router has up to eight FPCs. Therefore, the routing matrix can have up to 32 FPCs (0 through 31). The FPCs are configured at the **[edit chassis lcc *number*]** hierarchy level.

In the Junos OS CLI, an interface name has the following format:

type-fpc/pic/port

When you specify the FPC number, the Junos OS determines which T1600 router contains the specified FPC based on the following assignment:

- On LCC 0, FPC hardware slots 0 through 7 correspond to FPC software numbers 0 through 7.
- On LCC 1, FPC hardware slots 0 through 7 correspond to FPC software numbers 8 through 15.

- On LCC 2, FPC hardware slots 0 through 7 correspond to FPC software numbers 16 through 23.
- On LCC 3, FPC hardware slots 0 through 7 correspond to FPC software numbers 24 through 31.

To convert FPC numbers in the T1600 routers to the correct FPC in a routing matrix, use the conversion chart shown in [Table 8 on page 33](#). You can use the converted FPC number to configure the interfaces on the TX Matrix Plus router in your routing matrix.

Table 8: T1600 Router to Routing Matrix FPC Conversion Chart

| FPC Numbering | T1600 Routers | | | | | | | |
|-------------------------------------|---------------|----|----|----|----|----|----|----|
| LCC 0 | | | | | | | | |
| T1600 Router FPC Slots | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Routing Matrix FPC Slots Equivalent | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| LCC 1 | | | | | | | | |
| T1600 Router FPC Slots | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Routing Matrix FPC Slots Equivalent | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| LCC 2 | | | | | | | | |
| T1600 Router FPC Slots | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Routing Matrix FPC Slots Equivalent | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| LCC 3 | | | | | | | | |
| T1600 Router FPC Slots | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Routing Matrix FPC Slots Equivalent | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |

For example, in a routing matrix that contains **lcc 0** through **lcc 2**, **so-20/0/1** refers to FPC slot 4 of **lcc 2**.

Related Documentation

- [TX Matrix Plus Router and T1600 Router Configuration Overview on page 28](#)
- [Using the Junos OS to Configure a T1600 Router Within a Routing Matrix on page 53](#)
- [Configuring the Junos OS to Enable the TX Matrix Plus Router to Generate an Alarm If a T1600 Router Stays Offline on page 54](#)

PART 2

Configuration

- [Configuring TX Matrix Chassis-Level Features on page 37](#)
- [Configuring TX Matrix Plus Chassis-Level Features on page 53](#)
- [Configuring M Series Chassis-Level Features on page 61](#)
- [Configuring MX Series Chassis-Level Features on page 69](#)
- [Configuring J Series Chassis-Level Features on page 81](#)
- [Configuring PIC-Specific Features on page 85](#)
- [Configuring Resynchronization of FPC Sequence Numbers when a new FPC is Brought Online on page 101](#)
- [Configuring Chassis Settings to Support Aggregated Devices on page 103](#)
- [Configuring Chassis Settings to Support Load Balancing on page 107](#)
- [Configuring Chassis Settings to Support Channelized Interfaces on page 111](#)
- [Configuring Chassis Settings to Support Adaptive Services Interfaces on page 117](#)
- [Configuring Chassis Settings to Support External Clock Synchronization on page 119](#)
- [Configuring Chassis Settings to Support ATM Devices on page 131](#)
- [Configuring Chassis Settings for Routing Engines and Packet Forwarding Engines on page 135](#)
- [Configuring Chassis Settings for the Craft Interface on page 145](#)
- [Configuring Chassis Settings for PEMs on page 147](#)
- [Configuring Chassis Settings for Alarms on page 149](#)
- [Examples on page 185](#)
- [Configuration Statements on page 191](#)

CHAPTER 5

Configuring TX Matrix Chassis-Level Features

- [Using the Junos OS to Configure a T640 Router Within a Routing Matrix on page 37](#)
- [Configuring the Junos OS to Upgrade and Downgrade Switch Interface Boards on a TX Matrix Router on page 38](#)
- [Configuring the Junos OS to Enable the TX Matrix Router to Generate an Alarm If a T640 Router Stays Offline on page 39](#)
- [FIB Localization Overview on page 40](#)
- [Configuring FIB Localization on page 41](#)
- [Example: Configuring Packet Forwarding Engine FIB Localization on page 47](#)

Using the Junos OS to Configure a T640 Router Within a Routing Matrix

A routing matrix composed of a TX Matrix router and T640 routers supports the same chassis configuration statements as a standalone router (except **cel**, **ct3**, **mlfr-uni-nni-bundles**, **sparse-dlcis**, and **vtmapping**). By including the **lcc** statement at the **[edit chassis]** hierarchy level, you configure PIC-specific features, such as framing, on specific T640 routers. In addition, a routing matrix has two more chassis configuration statements, **online-expected** and **offline**.

To configure a T640 router that is connected to a TX Matrix router, include the **lcc** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
lcc number;
```

number can be 0 through 3.

To configure a T640 router within a routing matrix, include the following statements at the **[edit chassis lcc *number*]** hierarchy level:

```
[edit chassis lcc number]
fpc slot-number { # Use the hardware FPC slot number
pic pic-number {
  atm-cell-relay-accumulation;
  atm-l2circuit-mode (cell | aal5 | trunk trunk);
  framing (sdh | sonet);
  idle-cell-format {
```

```
itu-t;
  payload-pattern payload-pattern-byte;
}
max-queues-per-interface (8 | 4);
no-concatenate;
}
offline;
online-expected;
q-pic-large-buffer {
  large-scale;
}
```



NOTE: For the FPC slot number, specify the actual hardware slot number (numbered 0 through 7) as labeled on the T640 router chassis. Do not use the corresponding software FPC number shown in [Table 7 on page 27](#).

For information about how to configure the **online-expected** and **offline** configuration statements, see “[Configuring the Junos OS to Enable the TX Matrix Router to Generate an Alarm If a T640 Router Stays Offline](#)” on page 39.

**Related
Documentation**

- [TX Matrix Router and T640 Router Configuration Overview on page 23](#)
- [TX Matrix Router Chassis and Interface Names on page 26](#)
- [Configuring the Junos OS to Upgrade and Downgrade Switch Interface Boards on a TX Matrix Router on page 38](#)
- [Configuring the Junos OS to Enable the TX Matrix Router to Generate an Alarm If a T640 Router Stays Offline on page 39](#)

Configuring the Junos OS to Upgrade and Downgrade Switch Interface Boards on a TX Matrix Router

The Junos OS does not support mixed mode operation of Switch Interface Boards (SIBs). To successfully upgrade 1.0 SIBs to 2.0 SIBs in a TX Matrix environment, you must force all newly installed 2.0 SIBs to operate in 1.0 mode until the upgrade is complete.

1. [Configuring the Junos OS to Upgrade Switch Interface Boards on a TX Matrix Router on page 38](#)
2. [Configuring the Junos OS to Downgrade Switch Interface Boards on a TX Matrix Router on page 39](#)

Configuring the Junos OS to Upgrade Switch Interface Boards on a TX Matrix Router

To configure the TX Matrix router to support a SIB upgrade, include the **fabric upgrade-mode** statement at the **[edit chassis]** hierarchy level and commit the changes to update the configuration. Configuration changes that you commit on the TX Matrix router are propagated to all T640 routers in a routing matrix.

```
[edit chassis]
user@host# set chassis fabric upgrade-mode
```

```
user@host# commit
```

The **fabric upgrade-mode** statement instructs the newly installed 2.0 boards to operate in 1.0 mode. When all 1.0 boards have been replaced by 2.0 boards, remove the **fabric upgrade-mode** statement from the configuration hierarchy, and commit the changes again.

```
[edit chassis]
user@host# delete chassis fabric upgrade-mode
user@host# commit
```

In the TX Matrix routing environment, use the **request chassis sib (offline | online)** command sequence to power cycle the newly installed 2.0 SIBs. Power cycling is not needed in a single chassis T640 environment.

```
user@host> request chassis sib offline slot slot-number
user@host> request chassis sib online slot slot-number
```

As the system discovers each new board, the 2.0 ASIC enables 2.0 features, and the upgrade is complete.

Configuring the Junos OS to Downgrade Switch Interface Boards on a TX Matrix Router

To downgrade your 2.0 SIBs to 1.0 SIBs, follow the upgrade procedure. When you replace the first 2.0 SIB with a 1.0 SIB, the system operates in a downgraded 1.0 mode until all 2.0 SIBs are replaced, and the newly installed 1.0 SIBs are power cycled using a **request chassis sib (offline | online)** command sequence.



NOTE: The TX Matrix switch fabric supports 2.0 SIBs for enabling Gigabit FPC-4 and Type 4 PICs. Gigabit FPC-4 devices are not compatible with 1.0 SIBs. Therefore, if you are planning to downgrade from 2.0 SIBs to 1.0 SIBs, you must take all Gigabit FPC-4 devices offline to ensure that the link between the new SIBs and the FPC does not fail.

Related Documentation

- [TX Matrix Router and T640 Router Configuration Overview on page 23](#)
- [Using the Junos OS to Configure a T640 Router Within a Routing Matrix on page 37](#)

Configuring the Junos OS to Enable the TX Matrix Router to Generate an Alarm If a T640 Router Stays Offline

By default, the Junos OS enables all the T640 routers in the routing matrix to come online. The Junos OS also allows you to configure all the T640 routers so that if they do not come online, an alarm is sent by the TX Matrix router.

To configure this alarm, include the **online-expected** statement at the **[edit chassis lcc *number*]** hierarchy level:

```
[edit chassis lcc number]
online-expected;
```

If you do not want a T640 router to be part of the routing matrix, you can configure it to be offline. This is useful when you are performing maintenance on a T640 router. When the T640 router is ready to come back online, delete the **offline** configuration statement.

To configure a T640 router so that it is offline, include the **offline** statement at the **[edit chassis lcc *number*]** hierarchy level:

```
[edit chassis lcc number]  
offline;
```



NOTE: If you do not configure the **online-expected** or **offline** statement, any T640 router that is part of the routing matrix is allowed to come online. However, if a T640 router does not come online, the TX Matrix router does not generate an alarm.

**Related
Documentation**

- [TX Matrix Router and T640 Router Configuration Overview on page 23](#)
- [Using the Junos OS to Configure a T640 Router Within a Routing Matrix on page 37](#)

FIB Localization Overview

On Juniper Networks routers, the forwarding table on the Packet Forwarding Engine, also referred to as forwarding information base (FIB), maintains the complete set of active IPv4 (inet) and IPv6 (inet6) routes. In Junos OS Release 11.4 and later, you can configure FIB localization for a Packet Forwarding Engine. FIB-localization characterizes Packet Forwarding Engines in a router as either “FIB-remote” or “FIB-local”.

FIB-local Packet Forwarding Engines install all routes from the default inet and inet6 route tables into the Packet Forwarding Engine forwarding hardware. FIB-remote Packet Forwarding Engines do not install all the routes for the inet and inet6 routing tables. However, they do maintain local and multicast routes.

FIB-remote Packet Forwarding Engines create a default (0/0) route in the Packet Forwarding Engine forwarding hardware for the inet and inet6 table. The default route references a next-hop or a unilist of next-hops that identify the FIB-local Packet Forwarding Engines that can perform full IP table lookups for received packets.

FIB-remote Packet Forwarding Engines forward received packets to the set of FIB-local Packet Forwarding Engines. The FIB-local Packet Forwarding Engines then perform full IP longest-match lookup on the destination address and forward the packet appropriately. The packet might be forwarded out of an egress interface on the same FIB-local Packet Forwarding Engine that performed the lookup or an egress interface on a different FIB-local or FIB-remote Packet Forwarding Engine. The packet might also be forwarded out of an FPC where FIB localization is not configured. The packet might also be received locally at the Routing Engine.

When FIB localization is configured on a router with some Flexible PIC Concentrators (FPCs) being FIB-remote and some others being FIB-local, packets arriving on the interface

of the FIB-remote FPC are forwarded to one of the FIB-local FPCs for route lookup and forwarding.

The advantage of configuring FIB localization is that it enables upgrading the hardware forwarding table capacity of FIB-local Packet Forwarding Engines while not requiring upgrades to the FIB-remote Packet Forwarding Engines. In a typical network deployment, FIB-local Packet Forwarding Engines are core-facing, while FIB-remote Packet Forwarding Engines are edge-facing. The FIB-remote Packet Forwarding Engines also load-balance traffic over the available set of FIB-local Packet Forwarding Engines.

FIB localization is currently supported on T320, T640, and T1600 routers.

**Related
Documentation**

- [Example: Configuring Packet Forwarding Engine FIB Localization on page 42](#)

Configuring FIB Localization

- [FIB Localization Overview on page 41](#)
- [Example: Configuring Packet Forwarding Engine FIB Localization on page 42](#)
- [Configuration Statements on page 46](#)

FIB Localization Overview

On Juniper Networks routers, the forwarding table on the Packet Forwarding Engine, also referred to as forwarding information base (FIB), maintains the complete set of active IPv4 (inet) and IPv6 (inet6) routes. In Junos OS Release 11.4 and later, you can configure FIB localization for a Packet Forwarding Engine. FIB-localization characterizes Packet Forwarding Engines in a router as either “FIB-remote” or “FIB-local”.

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FIB-remote Packet Forwarding Engines create a default (0/0) route in the Packet Forwarding Engine forwarding hardware for the inet and inet6 table. The default route references a next-hop or a unilist of next-hops that identify the FIB-local Packet Forwarding Engines that can perform full IP table lookups for received packets.

FIB-remote Packet Forwarding Engines forward received packets to the set of FIB-local Packet Forwarding Engines. The FIB-local Packet Forwarding Engines then perform full IP longest-match lookup on the destination address and forward the packet appropriately. The packet might be forwarded out of an egress interface on the same FIB-local Packet Forwarding Engine that performed the lookup or an egress interface on a different FIB-local or FIB-remote Packet Forwarding Engine. The packet might also be forwarded out of an FPC where FIB localization is not configured. The packet might also be received locally at the Routing Engine.

When FIB localization is configured on a router with some Flexible PIC Concentrators (FPCs) being FIB-remote and some others being FIB-local, packets arriving on the interface

of the FIB-remote FPC are forwarded to one of the FIB-local FPCs for route lookup and forwarding.

The advantage of configuring FIB localization is that it enables upgrading the hardware forwarding table capacity of FIB-local Packet Forwarding Engines while not requiring upgrades to the FIB-remote Packet Forwarding Engines. In a typical network deployment, FIB-local Packet Forwarding Engines are core-facing, while FIB-remote Packet Forwarding Engines are edge-facing. The FIB-remote Packet Forwarding Engines also load-balance traffic over the available set of FIB-local Packet Forwarding Engines.

FIB localization is currently supported on T320, T640, and T1600 routers.

Example: Configuring Packet Forwarding Engine FIB Localization

This example shows how to configure Packet Forwarding Engine FIB localization.

- [Requirements on page 42](#)
- [Overview on page 42](#)
- [Configuration on page 42](#)
- [Verification on page 44](#)

Requirements

Before you begin:

1. Configure device interfaces and loopback interface addresses.
2. Configure static routes.
3. Configure OSPF and OSPFv3 and make sure that OSPF adjacencies and OSPF routes to loopback addresses are established.

This example uses the following hardware and software components:

- A T320, T640, or T1600 router.
- Junos OS Release 11.4 or later running on the router.

Overview

In this example, you configure the chassis for IPv4 and IPv6 routes and FIB localization on Router R0 and then configure the edge-facing Packet Forwarding Engines on FPC0 as **fib-remote** and the core-facing Packet Forwarding Engines on FPC1 and FPC2 as **fib-local**. You then configure a routing policy named **fib-policy** with the **no-route-localize** option to ensure that all routes from a specified route filter are installed on the FIB-remote FPC.

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.


```

R0    set chassis fpc 0 route-localization fib-remote
      set chassis fpc 1 route-localization fib-local
      set chassis fpc 2 route-localization fib-local
      set chassis route-localization inet
      set chassis route-localization inet6
      set policy-options policy-statement fib-policy term a from route-filter 4.4.4.4/32 exact
      set policy-options policy-statement fib-policy term a then no-route-localize
      set policy-options policy-statement fib-policy term b from route-filter fec0:4444::4/128
        exact
      set policy-options policy-statement fib-policy term b then no-route-localize
      set policy-options policy-statement fib-policy then accept

```

Step-by-Step Procedure The following example requires you to navigate various levels in the configuration hierarchy. For information about navigating the CLI, see the [Junos OS CLI User Guide](#).

To configure Packet Forwarding Engine FIB localization:

1. Configure route localization or FIB localization for IPv4 and IPv6 traffic.


```

[edit chassis]
user@R0# set route-localization inet
user@R0# set route-localization inet6

```
2. Configure the Packet Forwarding Engine of an FPC as either **fib-local** or **fib-remote**.


```

[edit chassis]
user@R0# set fpc 0 route-localization fib-remote
user@R0# set fpc 1 route-localization fib-local
user@R0# set fpc 2 route-localization fib-local

```
3. Configure the routing policy by including the **no-route-localize** statement to enable the forwarding table policy to mark route prefixes such that the routes are installed into forwarding hardware on the FIB-remote Packet Forwarding Engines.


```

[edit policy-options]
user@R0# set policy-statement fib-policy term a from route-filter 4.4.4.4/32 exact
user@R0# set policy-statement fib-policy term a then no-route-localize
user@R0# set policy-statement fib-policy term b from route-filter fec0:4444::4/128
  exact
user@R0# set policy-statement fib-policy term b then no-route-localize
user@host# set policy-statement fib-policy then accept

```



NOTE: At least, one Packet Forwarding Engine must be configured as **fib-local** for the commit operation to be successful. If you do not configure **fib-local** for the Packet Forwarding Engine, the CLI displays an appropriate error message and the commit fails.

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

```

user@R0# show chassis
fpc 0 {

```

```
    route-localization fib-remote;
  }
  fpc 1 {
    route-localization fib-local;
  }
  fpc 2 {
    route-localization fib-local;
  }
  route-localization {
    inet;
    inet6;
  }

user@R0# show policy-options
policy-statement fib-policy {
  term a {
    from {
      route-filter 4.4.4.4/32 exact;
    }
    then no-route-localize;
  }
  term b {
    from {
      route-filter fec0:4444::4/128 exact;
    }
    then no-route-localize;
  }
  then accept;
}
}
```

Verification

Confirm that the configuration is working properly.

- [Verifying Policy Configuration on page 44](#)
- [Verifying FIB-Localization Configuration on page 45](#)
- [Verifying Routes After the Policy Is Applied on page 45](#)

Verifying Policy Configuration

Purpose Verify that the configured policy exists.

Action Issue the **show policy fib-policy** command to check that the configured policy *fib-policy* exists.

```
user@R0> show policy fib-policy
Policy fib-policy:
  Term a:
    from
      route filter:
        4.4.4.4/32 exact
    then no-route-localize
  Term b:
    from
      route filter:
```

```

        fec0:4444::4/128 exact
    then no-route-localize
Term unnamed:
    then accept

```

Verifying FIB-Localization Configuration

Purpose Verify FIB-localization configuration details by using the **show route localization** and **show route localization detail** commands.

Action user@R0> **show route localization**
 FIB localization ready FPCs (and FIB-local Forwarding Engine addresses)
 FIB-local: FPC2(4,5)
 FIB-remote: FPC0, FPC1
 Normal: FPC3, FPC4, FPC5, FPC6, FPC7

user@R0> **show route localization detail**
 FIB localization ready FPCs (and FIB-local Forwarding Engine addresses)
 FIB-local: FPC2(4,5)
 FIB-remote: FPC0, FPC1
 Normal: FPC3, FPC4, FPC5, FPC6, FPC7
 FIB localization configuration
 Protocols: inet, inet6
 FIB-local: FPC2
 FIB-remote: FPC0, FPC1
 Forwarding Engine addresses
 FPC0: 1
 FPC1: 2
 FPC2: 4, 5
 FPC3: 6
 FPC4: 8
 FPC5: 11
 FPC6: 13
 FPC7: 15

Verifying Routes After the Policy Is Applied

Purpose Verify that routes with the **no-route-localize** policy option are installed on the fib-remote FPC.

Action user@R0> **show route 4.4.4.4/32 extensive**

```

inet.0: 30 destinations, 30 routes (29 active, 0 holddown, 1 hidden)
4.4.4.4/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 4.4.4.4/32 -> {130.168.0.2 Flags no-localize}
                               ^^^^^^^^^^^^^^^^^^^^^^^
    *Static Preference: 5
      Next hop type: Router, Next hop index: 629
    Next-hop reference count: 3
    Next hop: 130.168.0.2 via ge-1/0/4.0, selected
    State: <Active Int="">
    Age: 10:33
    Task: RT
    Announcement bits (1): 0-KRT
    AS path: I</Active
>

```

Configuration Statements

fib-local

| | |
|----------------------------|--|
| Syntax | fib-local; |
| Hierarchy Level | [edit chassis fpc <i>fpc-number</i> route-localization] |
| Release Information | Statement introduced in Junos OS Release 11.4. |
| Description | Configure the Packet Forwarding Engine on an FPC as FIB-local. |



NOTE: At least, one Packet Forwarding Engine must be configured as fib-local for the commit operation to be successful. If you do not configure fib-local for the Packet Forwarding Engine, the CLI displays an appropriate error message and the commit fails.

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

fib-remote

| | |
|---------------------------------|---|
| Syntax | fib-remote; |
| Hierarchy Level | [edit chassis fpc <i>fpc-number</i> route-localization] |
| Release Information | Statement introduced in Junos OS Release 11.4. |
| Description | Configure the Packet Forwarding Engine on an FPC as FIB-remote. |
| Required Privilege Level | interface—To view this statement in the configuration. interface-control—To add this statement to the configuration. |

no-route-localize

| | |
|---------------------------------|---|
| Syntax | no-route-localize; |
| Hierarchy Level | [edit policy-options policy-statement <i>policy-name</i> term <i>term-name</i> then] |
| Release Information | Statement introduced in Junos OS Release 11.4. |
| Description | Enforce installation of routes on all FIB-remote Packet Forwarding Engines. |
| Required Privilege Level | routing—To view this statement in the configuration. routing-control—To add this statement to the configuration. |

route-localization

| | |
|---------------------------------|---|
| Syntax | route-localization { inet; inet6; } |
| Hierarchy Level | [edit chassis] |
| Release Information | Statement introduced in Junos OS Release 11.4. |
| Description | Configure FIB localization for IPv4 and IPv6 routes. |
| Options | inet —Configure FIB localization for IPv4 routes. inet6 —Configure FIB localization for IPv6 routes. |
| Required Privilege Level | interface —To view this statement in the configuration. interface-control —To add this statement to the configuration. |

Example: Configuring Packet Forwarding Engine FIB Localization

This example shows how to configure Packet Forwarding Engine FIB localization.

- [Requirements on page 47](#)
- [Overview on page 47](#)
- [Configuration on page 48](#)
- [Verification on page 49](#)

Requirements

Before you begin:

1. Configure device interfaces and loopback interface addresses.
2. Configure static routes.
3. Configure OSPF and OSPFv3 and make sure that OSPF adjacencies and OSPF routes to loopback addresses are established.

This example uses the following hardware and software components:

- A T320, T640, or T1600 router.
- Junos OS Release 11.4 or later running on the router.

Overview

In this example, you configure the chassis for IPv4 and IPv6 routes and FIB localization on Router R0 and then configure the edge-facing Packet Forwarding Engines on FPC0 as **fib-remote** and the core-facing Packet Forwarding Engines on FPC1 and FPC2 as

fib-local. You then configure a routing policy named **fib-policy** with the **no-route-localize** option to ensure that all routes from a specified route filter are installed on the FIB-remote FPC.

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.

```
RO    set chassis fpc 0 route-localization fib-remote
      set chassis fpc 1 route-localization fib-local
      set chassis fpc 2 route-localization fib-local
      set chassis route-localization inet
      set chassis route-localization inet6
      set policy-options policy-statement fib-policy term a from route-filter 4.4.4.4/32 exact
      set policy-options policy-statement fib-policy term a then no-route-localize
      set policy-options policy-statement fib-policy term b from route-filter fec0:4444::4/128
        exact
      set policy-options policy-statement fib-policy term b then no-route-localize
      set policy-options policy-statement fib-policy then accept
```

Step-by-Step Procedure The following example requires you to navigate various levels in the configuration hierarchy. For information about navigating the CLI, see the [Junos OS CLI User Guide](#).

To configure Packet Forwarding Engine FIB localization:

1. Configure route localization or FIB localization for IPv4 and IPv6 traffic.

```
[edit chassis]
user@R0# set route-localization inet
user@R0# set route-localization inet6
```
2. Configure the Packet Forwarding Engine of an FPC as either **fib-local** or **fib-remote**.

```
[edit chassis]
user@R0# set fpc 0 route-localization fib-remote
user@R0# set fpc 1 route-localization fib-local
user@R0# set fpc 2 route-localization fib-local
```
3. Configure the routing policy by including the **no-route-localize** statement to enable the forwarding table policy to mark route prefixes such that the routes are installed into forwarding hardware on the FIB-remote Packet Forwarding Engines.

```
[edit policy-options]
user@R0# set policy-statement fib-policy term a from route-filter 4.4.4.4/32 exact
user@R0# set policy-statement fib-policy term a then no-route-localize
user@R0# set policy-statement fib-policy term b from route-filter fec0:4444::4/128
  exact
user@R0# set policy-statement fib-policy term b then no-route-localize
user@host# set policy-statement fib-policy then accept
```



NOTE: At least, one Packet Forwarding Engine must be configured as **fib-local** for the commit operation to be successful. If you do not configure **fib-local** for the Packet Forwarding Engine, the CLI displays an appropriate error message and the commit fails.

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

```
user@R0# show chassis
fpc 0 {
    route-localization fib-remote;
}
fpc 1 {
    route-localization fib-local;
}
fpc 2 {
    route-localization fib-local;
}
route-localization {
    inet;
    inet6;
}

user@R0# show policy-options
policy-statement fib-policy {
    term a {
        from {
            route-filter 4.4.4.4/32 exact;
        }
        then no-route-localize;
    }
    term b {
        from {
            route-filter fec0:4444::4/128 exact;
        }
        then no-route-localize;
    }
    then accept;
}
}
```

Verification

Confirm that the configuration is working properly.

- [Verifying Policy Configuration on page 50](#)
- [Verifying FIB-Localization Configuration on page 50](#)
- [Verifying Routes After the Policy Is Applied on page 50](#)

Verifying Policy Configuration

Purpose Verify that the configured policy exists.

Action Issue the **show policy fib-policy** command to check that the configured policy *fib-policy* exists.

```
user@R0> show policy fib-policy
Policy fib-policy:
  Term a:
    from
      route filter:
        4.4.4.4/32 exact
    then no-route-localize
  Term b:
    from
      route filter:
        fec0:4444::4/128 exact
    then no-route-localize
  Term unnamed:
    then accept
```

Verifying FIB-Localization Configuration

Purpose Verify FIB-localization configuration details by using the **show route localization** and **show route localization detail** commands.

Action **user@R0> show route localization**
FIB localization ready FPCs (and FIB-local Forwarding Engine addresses)
FIB-local: FPC2(4,5)
FIB-remote: FPC0, FPC1
Normal: FPC3, FPC4, FPC5, FPC6, FPC7

```
user@R0> show route localization detail
FIB localization ready FPCs (and FIB-local Forwarding Engine addresses)
  FIB-local: FPC2(4,5)
  FIB-remote: FPC0, FPC1
  Normal: FPC3, FPC4, FPC5, FPC6, FPC7
FIB localization configuration
  Protocols: inet, inet6
  FIB-local: FPC2
  FIB-remote: FPC0, FPC1
Forwarding Engine addresses
  FPC0: 1
  FPC1: 2
  FPC2: 4, 5
  FPC3: 6
  FPC4: 8
  FPC5: 11
  FPC6: 13
  FPC7: 15
```

Verifying Routes After the Policy Is Applied

Purpose Verify that routes with the **no-route-localize** policy option are installed on the fib-remote FPC.

Action user@R0> show route 4.4.4.4/32 extensive

```
inet.0: 30 destinations, 30 routes (29 active, 0 holddown, 1 hidden)
4.4.4.4/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 4.4.4.4/32 -> {130.168.0.2 Flags no-localize}
                               ^^^^^^^^^^^^^^^^^^^^^^^
      *Static Preference: 5
        Next hop type: Router, Next hop index: 629
        Next-hop reference count: 3
        Next hop: 130.168.0.2 via ge-1/0/4.0, selected
        State: <Active Int="">
Age: 10:33
Task: RT
Announcement bits (1): 0-KRT
AS path: I</Active
>
```

- Related Documentation**
- [FIB Localization Overview on page 40](#)
 - [fib-local on page 46](#)
 - [fib-remote on page 46](#)
 - [no-route-localize on page 46](#)
 - [route-localization on page 47](#)

CHAPTER 6

Configuring TX Matrix Plus Chassis-Level Features

- [Using the Junos OS to Configure a T1600 Router Within a Routing Matrix on page 53](#)
- [Configuring the Junos OS to Enable the TX Matrix Plus Router to Generate an Alarm If a T1600 Router Stays Offline on page 54](#)
- [Configuring the Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform on page 55](#)

Using the Junos OS to Configure a T1600 Router Within a Routing Matrix

A routing matrix composed of a TX Matrix Plus router and T1600 routers supports the same chassis configuration statements as a standalone router (except **ce1**, **ct3**, **mlfr-uni-nni-bundles**, **sparse-dlcis**, and **vtmapping**). By including the **lcc** statement at the **[edit chassis]** hierarchy level, you configure PIC-specific features, such as framing, on specific T1600 routers. In addition, a TX Matrix Plus router has two more chassis configuration statements, **online-expected** and **offline**.

To configure a T1600 router that is connected to a TX Matrix Plus router, include the **lcc** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
lcc number;
```

number can be 0 through 3.

To configure a T1600 router within a routing matrix, include the following statements at the **[edit chassis lcc *number*]** hierarchy level:

```
[edit chassis lcc number]
fpc slot-number { # Use the hardware FPC slot number
pic pic-number {
  atm-cell-relay-accumulation;
  atm-l2circuit-mode (cell | aal5 | trunk trunk);
  framing (sdh | sonet);
  idle-cell-format {
    itu-t;
    payload-pattern payload-pattern-byte;
  }
  max-queues-per-interface (8 | 4);
```

```
no-concatenate;  
}  
offline;  
online-expected;  
q-pic-large-buffer {  
    large-scale;  
}
```



NOTE: For the FPC slot number, specify the actual hardware slot number (numbered 0 through 7) as labeled on the T1600 router chassis. Do not use the corresponding software FPC number shown in the [“TX Matrix Plus Router Chassis and Interface Names”](#) on page 32.

For information about how to configure the **online-expected** and **offline** configuration statements, see [“Configuring the Junos OS to Enable the TX Matrix Plus Router to Generate an Alarm If a T1600 Router Stays Offline”](#) on page 54.

**Related
Documentation**

- [TX Matrix Plus Router and T1600 Router Configuration Overview](#) on page 28
- [TX Matrix Plus Router Chassis and Interface Names](#) on page 32
- [Configuring the Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform](#) on page 55

Configuring the Junos OS to Enable the TX Matrix Plus Router to Generate an Alarm If a T1600 Router Stays Offline

By default, the Junos OS enables all the T1600 routers in the routing matrix to come online. The Junos OS also enables you to configure all the T1600 routers so that if they do not come online, an alarm is sent by the TX Matrix Plus router.

To configure this alarm, include the **online-expected** statement at the **[edit chassis lcc *number*]** hierarchy level:

```
[edit chassis lcc number]  
online-expected;
```

If you do not want a T1600 router to be part of the routing matrix, you can configure it to be offline. This is useful when you are performing maintenance on a T1600 router. When the T1600 router is ready to come back online, delete the **offline** configuration statement.

To configure a T1600 router so that it is offline, include the **offline** statement at the **[edit chassis lcc *number*]** hierarchy level:

```
[edit chassis lcc number]  
offline;
```



NOTE: If you do not configure the online-expected or offline statement, any T1600 router that is part of the routing matrix is allowed to come online. However, if a T1600 router does not come online, the TX Matrix Plus router does not generate an alarm.

Related Documentation

- [TX Matrix Plus Router and T1600 Router Configuration Overview on page 28](#)
- [Using the Junos OS to Configure a T1600 Router Within a Routing Matrix on page 53](#)
- [Configuring the Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform on page 55](#)

Configuring the Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform

This topic provides an overview of the T1600 router configuration in order to upgrade it to the LCC0 of a newly configured TX Matrix Plus routing platform. The TX Matrix Plus routing platform consists of one TX Matrix Plus router that acts as the switch-fabric chassis (SFC) and from one to four T1600 routers that act as the line-card chassis (LCC). To perform the in-service upgrade, manually upgrade the Switch Interface Boards (SIBs), Control Boards (CBs) and Routing Engines of the T1600 router, and connect the upgraded T1600 router to the corresponding components of the TX Matrix Plus router with fiber-optic cables. When the SIBs of the T1600 router are upgraded and the data plane connection between the SFC and LCC is set up, the traffic flows in and out of the TX Matrix Plus routing platform through the data plane. When you upgrade the Routing Engines and CBs, the control plane connectivity between the SFC and LCC is set up. For information about the hardware and the installation requirements, see the *TX Matrix Plus Router Hardware Guide*.

This section discusses the following procedures to upgrade a standalone T1600 router to the LCC0 of a TX Matrix Plus routing platform:

- [Preparing the Configuration File and Upgrading the Junos OS on the T1600 Router and SFC on page 56](#)
- [Configuring the Junos OS for Upgrading SIBs on the T1600 Router and Connecting It to the SFC on page 56](#)
- [Upgrading CBs and Routing Engines of the T1600 Router for Control Plane Connectivity on page 58](#)
- [Changing the Management Ethernet Interface Name for the T1600 Router on page 58](#)
- [Transferring Control of the T1600 Router \(LCC0\) to the SFC on page 58](#)
- [Adding a New T1600 Router to the TX Matrix Plus Routing Platform on page 59](#)
- [Downgrading a T1600 Router from the LCC of a TX Matrix Routing Platform to a Standalone T1600 Router on page 59](#)

Preparing the Configuration File and Upgrading the Junos OS on the T1600 Router and SFC

To prepare the configuration file and upgrade the Junos OS, follow these steps:

1. Save and archive a copy of the active configuration of the T1600 router.
2. Update the active configuration to make it applicable to the LCC.
3. Transfer the file configuration to the SFC (to be applied later).
4. Upgrade the T1600 router and SFC with Junos OS Release 10.1 or later, and reboot.

Configuring the Junos OS for Upgrading SIBs on the T1600 Router and Connecting It to the SFC

Upgrade the Control Boards (CBs) and Routing Engines of the T1600 router by replacing the T-CBs with LCC-CBs and RE 2000 with LCC-RE. To configure the T1600 router to support a SIB upgrade and connect it to the SFC, follow these steps:

1. Issue the **fabric upgrade-mode** CLI command at the **[edit chassis]** hierarchy level and commit the changes to update the configuration. This change in the configuration enables the T1600 chassis to be upgraded with the TXP-T1600 SIBs.

```
[edit]
user@host# set chassis fabric upgrade-mode
user@host# commit
```

You must also modify the configuration of the SFC by including **fabric upgrade-mode** statement at the **[edit chassis]** hierarchy level and commit the configuration on the SFC.

2. Take the backup SIB-I-T1600 offline by issuing the **request chassis sib slot slot-number offline** command.

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

3. Replace the offline SIB-I-T1600 with SIB-TXP-T1600.
4. Bring the replaced SIB-TXP-T1600 online, by issuing the **request chassis sib slot slot-number online** command.

```
user@host> request chassis sib slot 0 online
```

The T1600 router automatically updates the links between the replaced SIB-TXP-T1600 and the Flexible PIC Concentrators (FPCs).

5. Establish the data plane connectivity by connecting the SIB-TXP-T1600 on the T1600 router to the ABS-SIB-F13 on the SFC with fiber-optic cables and configuring both routers (T1600 and SFC) for transmitting and receiving traffic on the TX Matrix Plus routing platform. Use the following CLI commands, to manually update the link between the T1600 router and SFC before the data plane is activated:
 - To configure the SFC to receive traffic from the T1600 router, issue the **request chassis sib f13 train-link-receive slot *SFC-SIB-F13-slot-num*** command.

SFC-SIB-F13-slot-num is the slot in the SFC chassis where the ABS-SIB-F13 must be manually connected to SIB-TXP-T1600 in a slot (from 0 through 4) on the T1600 router. You can configure this for a value of 0, 3, 6, 8, or 11.
 - To configure the T1600 router to receive traffic from the SFC, issue the **request chassis sib train-link-receive slot *LCC-SIB-ST-SIB-L-slot-num*** command.

LCC-SIB-ST-SIB-L-slot-num is the slot in the T1600 router chassis where SIB-TXP-T1600 must be manually connected to ABS-SIB-F13 in a slot (0, 3, 6, 8 or 11) on the SFC. You can configure this to be a value in the range from 0 through 4.
 - To configure the SFC to transmit traffic to the T1600 router, issue the **request chassis sib f13 train-link-transmit slot *SFC-SIB-F13-slot-num*** command.

SFC-SIB-F13-slot-num is the slot in the SFC chassis where the ABS-SIB-F13 must be manually connected to SIB-TXP-T1600 in a slot (from 0 through 4) on the T1600 router. You can configure this for a value of 0, 3, 6, 8, or 11.
 - To configure the T1600 router to transmit traffic to the SFC, issue the **request chassis sib train-link-transmit slot *LCC-SIB-ST-SIB-L-slot-num*** command.

LCC-SIB-ST-SIB-L-slot-num is the slot in the T1600 router chassis where SIB-TXP-T1600 must be manually connected to ABS-SIB-F13 in a slot (0, 3, 6, 8 or 11) on the SFC. You can configure this to be a value in the range from 0 through 4.
6. Using the SIB LEDs, manually verify the link between the T1600 router and the SFC. The FPCs will send traffic using the SIB-TXP-T1600 and ABS-SIB-F13.
7. Repeat Steps 2 through 4 for all the SIB-I-T1600s.
8. When all the SIBs are upgraded, delete the fabric upgrade-mode statement from the configuration hierarchy, and commit the changes on both the T1600 router and the SFC.

[edit chassis]

```
user@host# delete chassis fabric upgrade-mode
user@host# commit
```



WARNING: You must upgrade the CBs and the Routing Engines of the T1600 router before you upgrade the SIBs.

Upgrading CBs and Routing Engines of the T1600 Router for Control Plane Connectivity

The CBs and the Routing Engines of the T1600 router are upgraded by replacing the T-CBs with LCC-CBs and RE-2000 with LCC-RE. To establish the control plane connectivity, connect the Ethernet cables from the T1600 router to the SFC. For more information about hardware requirements, see the *TX Matrix Plus Router Hardware Guide*.

Changing the Management Ethernet Interface Name for the T1600 Router

The Junos OS automatically configures management Ethernet interfaces for both the master and the backup Routing Engines, **fxp0**. However, after you upgrade both Routing Engines (master and backup), you must change the management Ethernet interface name to **em0**.

To change the management Ethernet interface name for the master Routing Engine, include the **interfaces em0** statement at the **[edit groups re0]** hierarchy level.

```
[edit groups re0]
user@host# set interfaces em0
user@host# commit
```



WARNING: If you do not change the management Ethernet interface from **fxp0** to **em0** for each upgraded LCC-RE, you cannot access the router remotely through services such as Telnet, SSH, and so on.

Transferring Control of the T1600 Router (LCC0) to the SFC

To transfer control from a T1600 router to the SFC, follow these steps:

1. Manually set the M/S switch on both replaced CBs of the T1600 router to M (multichassis).
2. Configure the T1600 router as LCC0 by including the **lcc number** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
user@host> set lcc number
```



NOTE: When you upgrade the other T1600 routers to LCC, you must set the LCC number from 1 to 3.

3. After you configure the LCC0, reboot it for the changes to take effect. This rebooting process establishes the forwarding state of the new LCC in the TX Matrix Plus routing platform by bringing up the SIBs automatically. For more information on hardware connectivity for the control plane, see the *TX Matrix Plus Router Hardware Guide*.

Adding a New T1600 Router to the TX Matrix Plus Routing Platform

The in-service upgrade of new operational T1600 routers to LCC1, LCC2, and LCC3 using the Junos OS CLI is not supported. To add a second LCC to the TX Matrix Plus routing platform, follow these steps:

1. Upgrade both the CBs and Routing Engines on the T1600 router. For details, see [“Upgrading CBs and Routing Engines of the T1600 Router for Control Plane Connectivity” on page 58](#).
2. Upgrade the T1600 router with the same version of the Junos OS as on the SFC.
3. Upgrade the SIBs of the T1600 router and connect the new SIBs to the SFC. For details, see [“Configuring the Junos OS for Upgrading SIBs on the T1600 Router and Connecting It to the SFC” on page 56](#).
4. Connect Ethernet links of the control plane from the T1600 router to the SFC.
5. Reboot the T1600 router. After rebooting, the router becomes a part of the TX Matrix Plus routing platform and is connected to the SFC on the control plane.

Downgrading a T1600 Router from the LCC of a TX Matrix Routing Platform to a Standalone T1600 Router

To downgrade any LCC to a standalone T1600 router, follow these steps:

1. Transfer the control to the LCC from the SFC:
 - a. Roll back the configuration of the SFC and LCC to the configuration before the T1600 router was added and commit the configuration. For more information about configuring the T1600 router to LCC, see [“Preparing the Configuration File and Upgrading the Junos OS on the T1600 Router and SFC” on page 56](#).
 - b. Manually set the M/S switch to single-chassis on the T1600 router on both CBs.
 - c. Reboot both the master and backup Routing Engines on the T1600.
2. Downgrade the SIBs of the LCC and remove the data plane connections:
 - a. Take the spare SIB-TXP-T1600 on the LCC offline by issuing the **request chassis sib slot slot-number offline** command.

```
user@host> request chassis sib slot 0 offline
```
 - b. Remove the data plane connections from the SIB-TXP-T1600 to the SFC.
 - c. Replace the SIB-TXP-T1600 with SIB-I-T1600 and bring it online.
 - d. Repeat these steps for all SIB-TXP-T1600s.
3. Remove the control plane connectivity by disconnecting the Ethernet cables of the control plane from the T1600 router to the SFC.

The LCC becomes a standalone T1600 router out of the TX Matrix Plus routing platform.

CHAPTER 7

Configuring M Series Chassis-Level Features

- [Configuring Port-Mirroring Instances on M320 Routers on page 61](#)
- [Configuring Port-Mirroring Instances on M120 Routers on page 62](#)
- [Configuring the Junos OS to Enable MTU Path Check for a Routing Instance on M Series Routers on page 62](#)
- [Configuring the Junos OS to Enable an M160 Router to Operate in Packet Scheduling Mode on page 64](#)
- [Configuring the Junos OS to Make an SFM Stay Offline on page 64](#)
- [Configuring the Junos OS to Support FPC to FEB Connectivity on M120 Routers on page 65](#)
- [Configuring the Junos OS to Support Eight Queues on IQ Interfaces for T Series and M320 Routers on page 67](#)
- [Configuring the Junos OS to Support Entry-Level Configuration on an M320 Router with a Minimum Number of SIBs and PIMs on page 68](#)

Configuring Port-Mirroring Instances on M320 Routers

You can associate only one port-mirroring instance with a specific FPC on an M320 router.

To associate a port-mirroring instance with a specific FPC, include the **port-mirror-instance** *port-mirroring-instance-name* statement at the **[edit chassis fpc slot-number]** hierarchy level:

```
[edit chassis]
fpc slot-number {
  port-mirror-instance port-mirroring-instance-name;
}
```

The properties of the port-mirroring instance associated with an FPC override any global port-mirroring properties (configured by including the **port-mirroring** statement at the **[edit forwarding-options]** hierarchy level.)

**NOTE:**

- Layer 2 VPLS port mirroring is supported only for Enhanced III FPCs on M320 routers.
- Ensure that the *port-mirroring-instance-name* specified at the [edit chassis fpc slot-number] hierarchy level matches the *port-mirroring-instance-name* configured at the [edit forwarding-options port-mirroring instance port-mirroring-instance-name] hierarchy level.

Related Documentation

- [Port-Mirroring Instances Overview on page 7](#)

Configuring Port-Mirroring Instances on M120 Routers

You can associate only one port-mirroring instance with a specific FEB on an M120 router.

To associate a port-mirroring instance with a FEB, include the **port-mirror-instance** *port-mirroring-instance-name* statement at the [edit chassis feb slot-number] hierarchy level:

```
[edit chassis]
feb slot-number {
  port-mirror-instance port-mirroring-instance-name;
}
```

The properties of the port-mirroring instance associated with the FEB override any global port-mirroring properties (configured by including the **port-mirroring** statement at the [edit forwarding-options] hierarchy level.)



NOTE: In a FEB redundancy group, you must associate a port-mirroring instance only with the primary FEB. During failover or switchover, the port-mirroring instance is automatically associated with the backup FEB that fails over or switches over as the primary FEB.

For information about configuring FPC-to-FEB connectivity on an M120 router, see [“Configuring the Junos OS to Support FPC to FEB Connectivity on M120 Routers” on page 65](#).

Related Documentation

- [Port-Mirroring Instances Overview on page 7](#)

Configuring the Junos OS to Enable MTU Path Check for a Routing Instance on M Series Routers

By default, the maximum transmission unit (MTU) check for routing instance is disabled on M Series routers (except the M120 and M320 routers), and enabled for all T Series and J Series routers.



NOTE: The MTU check is automatically present for interfaces belonging to the main router.

On M Series routers (except the M120 and M320 routers) you can configure MTU path checks on the outgoing interface for unicast traffic routed on a virtual private network (VPN) routing and forwarding (VRF) routing instance. When you enable MTU check, the router sends an Internet Control Message Protocol (ICMP) message when the size of a unicast packet traversing a VRF routing instance or virtual-router routing instance has exceeded the MTU size and when an IP packet is set to "do not fragment". The ICMP message uses the routing instance local address as its source address.

For an MTU check to work in a routing instance, you must include the **vrf-mtu-check** statement at the **[edit chassis]** hierarchy level and assign at least one interface containing an IP address to the routing instance.

To configure path MTU checks, complete the following tasks:

1. [Enabling MTU Check for a Routing Instance on page 63](#)
2. [Assigning an IP Address to an Interface in the Routing Instance on page 63](#)

Enabling MTU Check for a Routing Instance

To enable MTU check for a routing instance, include the **vrf-mtu-check** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
vrf-mtu-check;
```

Assigning an IP Address to an Interface in the Routing Instance

To assign an IP address to an interface in the VRF or virtual-router routing instance, configure the local address for that routing instance. A local address is any IP address derived from an interface that is assigned to the routing instance.

To assign an interface to a routing instance, include the **interface** statement at the **[edit routing-instances *routing-instance-name*]** hierarchy level:

```
[edit routing-instances routing-instance-name]
interface interface-name;
```

To configure an IP address for a loopback interface, include the **address** statement at the **[edit interfaces *interface-name* unit *logical-unit-number* family inet]** hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number family inet]
address address;
```



NOTE: If you are assigning Internet Protocol Security (IPsec) or generic routing encapsulation (GRE) tunnel interfaces without IP addresses in the routing instance, include a loopback interface to the routing instance. To do this, include the `lo0.n` option at the `[edit routing-instances routing-instance-name interface]` hierarchy level. *n* cannot be 0, because `lo0.0` is reserved for the main router (and not appropriate for use with routing instances). Also, an IP address must be assigned to this loopback interface in order to work. To set an IP address for a loopback interface, include the `address` statement at the `[edit interfaces lo0 unit logical-unit-number family inet]` hierarchy level.

Configuring the Junos OS to Enable an M160 Router to Operate in Packet Scheduling Mode

By default, packet scheduling is disabled on M160 Routers. To configure a router to operate in packet-scheduling mode, include the **packet-scheduling** statement at the `[edit chassis]` hierarchy level:

```
[edit chassis]
packet-scheduling;
```

To explicitly disable the **packet-scheduling** statement, include the **no-packet-scheduling** statement at the `[edit chassis]` hierarchy level:

```
[edit chassis]
no-packet-scheduling;
```

When you enable packet-scheduling mode, the Packet Director application-specific integrated circuit (ASIC) schedules packet dispatches to compensate for transport delay differences. This preserves the interpacket gaps as the packets are distributed from the Packet Director ASIC to the Packet Forwarding Engine.

Whenever you change the configuration for packet-scheduling, the system stops all SFMs and FPCs and restarts them in the new mode.



NOTE: Packet scheduling is for M160 routers only.

Configuring the Junos OS to Make an SFM Stay Offline

By default, if you use the **request chassis sfm** CLI command to take a Switching and Forwarding Module (SFM) offline, the SFM attempts to restart when you enter a **commit** CLI command. To prevent a restart, you can configure an SFM to stay offline. This feature is useful for repair situations.

To configure an SFM to stay offline, include the **sfm** statement at the `[edit chassis]` hierarchy level:

```
[edit chassis]
sfm slot-number {
```

```
power off;
}
```

- **slot number**—Slot number in which the SFM is installed.
- **power off**—Take the SFM offline and configure it to remain offline.

For example, the following statement takes an SFM in slot 3 offline:

```
[edit chassis]
sfm 3 power off;
```

Use the **show chassis sfm** CLI command to confirm the offline status:

```
user@host# show chassis sfm
```

| Slot | State | Temp (C) | CPU Utilization (%) | | Memory Utilization (%) | | |
|------|---------|------------------------------|---------------------|-----------|------------------------|------|--------|
| | | | Total | Interrupt | DRAM (MB) | Heap | Buffer |
| 0 | Online | 34 | 2 | 0 | 64 | 16 | 47 |
| 1 | Online | 38 | 2 | 0 | 64 | 16 | 47 |
| 2 | Online | 42 | 2 | 0 | 64 | 16 | 47 |
| 3 | Offline | --- Configured power off --- | | | | | |

To bring the SFM back online, delete the **edit chassis sfm** statement and then commit the configuration.

Related Documentation

- [Router Chassis Configuration Statements on page 191](#)

Configuring the Junos OS to Support FPC to FEB Connectivity on M120 Routers

The M120 router supports six Forwarding Engine Boards (FEBs) and six Flexible PIC Concentrators (FPCs). The supported FPCs include:

- Two compact FPCs:
 - OC192 compact FPC (supported only on the D4 chip-based compact FPC)
 - 10-Gigabit Ethernet compact FPC
- Up to four Type 1, Type 2, or Type 3 FPCs

On the M120 router, you can map a connection between any FPC and any FEB. This capability allows you to configure resources for a chassis that contains empty slots, supporting configurations where the FPC and FEB pairs are not in slot order. You do not have to populate every empty slot position, but you must configure a FEB for every FPC.

If you do not want to map a connection between an FPC and a FEB, you must explicitly configure the FPC not to connect to the FEB. To do so, include the **none** option at the **[edit chassis fpc-feb-connectivity fpc number feb]** hierarchy level. If you do not configure FPC and FEB connectivity, it is automatically assigned in the following order: FPC 0 to FEB 0, FPC 1 to FEB 1, and so on.

For each FEB, you can map a maximum of two Type 1 FPCs or one Type 2, Type 3, or compact FPC.

The following restrictions apply when you configure FPC and FEB connectivity:

- When an FPC is configured not to connect to any FEB, interfaces on that FPC are not created.
- If a PIC comes online, but the FEB to which the FPC is configured to connect is not online, the physical interfaces for the PIC are not created. For example, PIC 1 on FPC 2 comes online. The configuration specifies that FPC 2 connects to FEB 3. If FEB 3 is not online at the time PIC 1 comes online, the physical interfaces corresponding to PIC 1 on FPC 2 are not created. If FEB 3 subsequently comes online, the physical interfaces are created.
- If a FEB is brought offline or removed, any interfaces on the FPCs connected to the FEB are deleted. If the FEB is subsequently brought back online, the interfaces are restored.
- FPCs and FEBs might reboot following a change in the FPC and FEB connectivity configuration. If an FPC connects to a different FEB as a result of the configuration change, the FPC is rebooted following the commit. As a result of the reboot, interfaces on the FPC are deleted.
- If a FEB connects to a different FPC or set of FPCs after a connectivity configuration change, the FEB is rebooted. The exception is if the FEB is already connected to one or two Type 1 FPCs and the change only results in the FEB being connected either to one additional or one fewer Type 1 FPC.

To configure a connection between an FPC and a FEB, include the **fpc-feb-connectivity** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
fpc-feb-connectivity {
  fpc number feb (slot-number | none);
}
```

For **fpc number**, enter a value from 0 through 5. For **feb slot-number**, enter a value from 0 through 5 or **none**. The **none** option disconnects the FPC from the FEB.

To view the current FPC and FEB mapping and the status of each FPC and FEB, issue the **show chassis fpc-feb-connectivity** operational mode command. For more information, see the [Junos System Basics and Services Command Reference](#).



NOTE: FPC-to-FEB connectivity is supported only on the M120 router.

In this example, FPC 3 is already mapped to FEB 3 by default. You are also mapping a connection between FPC 2 and FEB 3.

```
[edit chassis]
fpc-feb-connectivity {
  fpc 2 feb 3;
}
```

However, this configuration results in a mismatch between the FPC type and the FEB type. For example, FPC 3 is not a Type 1 FPC. You can map only one FPC that is not a Type 1 FPC to a FEB. Use the **fpc-feb-connectivity** statement to explicitly disconnect FPC 3 from FEB 3. To do so, include the **none** option at the **[edit chassis fpc-feb-connectivity fpc number feb]** hierarchy level:


```
[edit chassis]
fpc-feb-connectivity {
  fpc 2 feb 3;
  fpc 3 feb none;
}
```

Related Documentation

- [Configuring the Junos OS to Support an External Clock Synchronization Interface for M Series and T Series Routers on page 119](#)
- [Configuring Port-Mirroring Instances on M120 Routers on page 62](#)

Configuring the Junos OS to Support Eight Queues on IQ Interfaces for T Series and M320 Routers

By default, IQ PICs on T Series and M320 routers are restricted to a maximum of four egress queues per interface. To configure a maximum of eight egress queues on IQ 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 (8 | 4);
```

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 (8 | 4);
```



NOTE: The configuration at the **[edit class-of-service]** hierarchy level must also 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.

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.

- Related Documentation**
- [Configuring the Junos OS to Support ILMI for Cell Relay Encapsulation on an ATM2 IQ PIC on page 92](#)
 - [Configuring the Junos OS to Enable Larger Delay Buffers for T1, E1, and DS0 Interfaces Configured on Channelized IQ PICs on page 94](#)

Configuring the Junos OS to Support Entry-Level Configuration on an M320 Router with a Minimum Number of SIBs and PIMs

An M320 router can include an entry-level configuration with a minimum number of SIBs and PEMs. With this configuration, the router may have fewer than four SIBs or four PEMs.

To prevent unwanted alarms from occurring with this entry-level configuration, include the **pem minimum** and **sib minimum** statements at the **[edit chassis]** hierarchy level:

```
[edit chassis]
pem {
    minimum number;
}
sib {
    minimum number;
}
```

minimum *number* can be 0 through 3. With this configuration, SIB absent or PEM absent alarms are generated only if the SIB or PEM count falls below the minimum specified. For example, set this number to 2 for an entry-level configuration with 2 Switch Interface Boards and 2 Power Entry Modules.

- Related Documentation**
- [Configuring Port-Mirroring Instances on M320 Routers on page 61](#)
 - [Configuring the Junos OS to Support an External Clock Synchronization Interface for M Series and T Series Routers on page 119](#)
 - [Configuring the Junos OS to Support Eight Queues on IQ Interfaces for T Series and M320 Routers on page 67](#)

CHAPTER 8

Configuring MX Series Chassis-Level Features

- [Configuring Port-Mirroring Instances on MX Series 3D Universal Edge Routers on page 69](#)
- [Configuring PIC-Level Symmetrical Hashing for Load Balancing on 802.3ad LAGs for MX Series Routers on page 70](#)
- [16-Port 10-Gigabit Ethernet MPC on MX Series Routers \(16x10GE 3D MPC\) Overview on page 72](#)
- [Configuring the Number of Active Ports on a 16-Port 10-Gigabit Ethernet MPC on MX Series Routers on page 73](#)
- [Configuring Tunnel Interfaces on an MX Series Router with a 16x10GE 3D MPC on page 74](#)
- [MPC3E on MX Series Routers Overview on page 75](#)
- [Configuring Tunnel Interfaces on MX-Series Routers with the MPC3E on page 77](#)
- [Configuring the Power-On Sequence for DPCs on MX Series Routers with the Enhanced AC PEM on page 78](#)
- [Configuring the Junos OS to Support Layer 2 Services on MX Series 3D Universal Edge Routers with MS-DPCs on page 78](#)
- [Configuring the Junos OS to Enable Session Offloading on MX Series 3D Universal Edge Routers with MS-DPCs on page 79](#)
- [Configuring Junos OS to Run a Specific Network Services Mode in MX Series Routers on page 79](#)

Configuring Port-Mirroring Instances on MX Series 3D Universal Edge Routers

You can configure port-mirroring instances both at the DPC level and at the PIC level on MX Series routers, as described in the following topics:

- [Configuring Port-Mirroring Instances at the DPC Level on page 69](#)
- [Configuring Port-Mirroring Instances at the PIC Level on page 70](#)

Configuring Port-Mirroring Instances at the DPC Level

A port-mirroring instance configured at the FPC level for the DPC is bound to all the Packet Forwarding Engines on the DPC.

To associate a port-mirroring instance with a specific DPC and its Packet Forwarding Engines, include the **port-mirror-instance** *port-mirroring-instance-name* statement at the **[edit chassis fpc slot-number]** hierarchy level:

```
[edit chassis]
fpc slot-number {
  port-mirror-instance port-mirroring-instance-name;
}
```

The properties of the port-mirroring instance associated with the DPC override any global port-mirroring properties (configured by including the **port-mirroring** statement at the **[edit forwarding-options]** hierarchy level).

Configuring Port-Mirroring Instances at the PIC Level

For MX Series routers, there is a one-to-one mapping of Packet Forwarding Engines and PICs. Therefore, a port-mirroring instance configured at the PIC level is bound to its Packet Forwarding Engines and ports.

To associate a port-mirroring instance with a specific Packet Forwarding Engine, include the **port-mirror-instance** *port-mirroring-instance-name* statement at the **[edit chassis fpc slot-number pic slot-number]** hierarchy level:

```
[edit chassis]
fpc slot-number {
  port-mirror-instance port-mirroring-instance-name-a;
  pic slot-number {
    port-mirror-instance port-mirroring-instance-name-b;
  }
}
```

The properties of the port-mirroring instance associated with the PIC override the properties of the port-mirroring instance associated with the DPC (configured by including the **port-mirroring** *port-mirroring-instance-name* statement at the **[edit chassis fpc slot-number]** hierarchy level).

For more information about configuring port mirroring for Layer 2 VPLS traffic on MX Series routers, see the *Junos MX Series Ethernet Services Routers Layer 2 Configuration Guide*.

Configuring PIC-Level Symmetrical Hashing for Load Balancing on 802.3ad LAGs for MX Series Routers

Symmetrical hashing for load balancing on an 802.3ad Link Aggregation Group (LAG) is useful when two MX Series routers (for example, Router A and Router B) are connected transparently through Deep Packet Inspection (DPI) devices over a LAG bundle. The DPI devices keep track of traffic flows in both the forward and reverse directions.

If symmetrical hashing is configured, the reverse flow of traffic is also directed through the same child link on the LAG and is bound to flow through the same DPI device. This enables proper accounting on the DPI of the traffic in both the forward and reverse flows.

If symmetrical hashing is not configured, a different child link on the LAG might be chosen for the reverse flow of traffic through a different DPI device. This results in incomplete information about the forward and reverse flows of traffic on the DPI device leading to incomplete accounting of the traffic by the DPI device.

Symmetrical hashing is computed based on fields like source address and destination address. You can configure symmetrical hashing both at the chassis level and the PIC level for load balancing based on Layer 2, Layer 3, and Layer 4 data unit fields for family inet (IPv4 protocol family) and multiservice (switch or bridge) traffic. Symmetrical hashing configured at the chassis level is applicable to the entire router, and is inherited by all its PICs and Packet Forwarding Engines. Configuring PIC-level symmetrical hashing provides you more granularity at the Packet Forwarding Engine level.

For the two routers connected through the DPI devices over a LAG bundle, you can configure **symmetric-hash** on one router and **symmetric-hash complement** on the remote-end router or vice-versa.

To configure symmetrical hashing at the chassis level, include the **symmetric-hash** or the **symmetric-hash complement** statements at the **[edit forwarding-options hash-key family]** hierarchy level. For information about configuring symmetrical hashing at the chassis level and configuring the link index, see the [Junos OS Network Interfaces Configuration Guide](#) and the [Junos OS VPNs Configuration Guide](#).



NOTE: On MX Series DPCs, configuring symmetrical hashing at the PIC level refers to configuring symmetrical hashing at the Packet Forwarding Engine level.

To configure symmetrical hashing at the PIC level on the inbound traffic interface (where traffic enters the router), include the **symmetric-hash** or **symmetric-hash complement** statement at the **[edit chassis fpc slot-number pic pic-number hash-key]** hierarchy level:

```
[edit chassis fpc slot-number pic pic-number hash-key]
family multiservice {
  source-mac;
  destination-mac;
  payload {
    ip {
      layer-3 (source-ip-only | destination-ip-only);
      layer-4;
    }
  }
  symmetric-hash {
    complement;
  }
}

family inet {
  layer-3;
  layer-4;
  symmetric-hash {
    complement;
  }
}
```

```
}
```

**NOTE:**

- PIC-level symmetrical hashing overrides the chassis-level symmetrical hashing configured at the [edit chassis forwarding-options hash-key] hierarchy level.
- Symmetrical hashing for load balancing on 802.3ad Link Aggregation Groups is currently supported for the VPLS, INET and bridged traffic only.
- Any change in the hash-key configuration requires rebooting the FPC for the changes to take effect.
- Hash key configuration on a PIC or Packet Forwarding Engine can be either in the “symmetric hash” or the “symmetric hash complement” mode, but not both at the same time.

Related Documentation

- [Examples: Configuring PIC-Level Symmetrical Hashing for Load Balancing on 802.3ad LAGs on MX Series Routers on page 185](#)
- family
- hash-key
- inet
- multiservice
- payload
- symmetric-hash

16-Port 10-Gigabit Ethernet MPC on MX Series Routers (16x10GE 3D MPC) Overview

In Junos OS Release 10.1 and later, MX960, MX480, and MX240 routers support the 16-port 10-Gigabit Ethernet MPC (16x10GE 3D MPC) with model numbers MPC-3D-16XGE-SFPP-R-B and MPC-3D-16XGE-SFPP. This MPC provides scalability in bandwidth, subscribers, and services capabilities of the routers.

The following are some of the key features of the 16x10GE 3D MPC:

- Contains 16 built-in 10-Gigabit Ethernet ports in groups of four each. It does not contain separate slots for Modular Interface Cards (MICs).
- Supports up to 120 Gbps of full-duplex traffic.
- Supports LAN-PHY mode at 10.3125 Gbps.



NOTE: The 16x10GE 3D MPC does not support WAN-PHY mode.

- Supports small form-factor pluggable transceivers of the SFP+ standard. For a list of supported SFPs, see the [MX Series 3D Universal Edge Routers Line Card Guide](#).

- Supports an effective line rate of twelve 10-Gigabit Ethernet ports. If all sixteen 10-Gigabit Ethernet ports are used, the line card is oversubscribed in the ratio of 4:3.
- Supports intelligent oversubscription services.
- Supports one full-duplex 10-Gigabit Ethernet tunnel interface for each Packet Forwarding Engine. .

For information about the supported and unsupported Junos OS features for this MPC, see “Protocols and Applications Supported by MX Series MPCs” in the [MX Series 3D Universal Edge Routers Line Card Guide](#).

Related Documentation

- 16x10GE MPC
- [MX Series 3D Universal Edge Routers Line Card Guide](#).
- [Configuring the Number of Active Ports on a 16-Port 10-Gigabit Ethernet MPC on MX Series Routers on page 73](#)
- [Configuring Junos OS to Run a Specific Network Services Mode in MX Series Routers on page 79](#)
- [Configuring Tunnel Interfaces on MX Series Routers](#)

Configuring the Number of Active Ports on a 16-Port 10-Gigabit Ethernet MPC on MX Series Routers

The Junos OS provides the **number-of-ports active-ports** configuration statement at the **[edit chassis fpc slot-number]** hierarchy level. This statement can be used for enabling or disabling the physical ports on the Packet Forwarding Engines of a 16-port 10-Gigabit Ethernet MPC (16x10GE 3D MPC). This configuration can be used for the following purposes:

- **Enabling Switch Control Board (SCB) redundancy**—For maximum bandwidth capabilities (12-port line-rate bandwidth), the 16x10GE 3D MPC uses all the available SCBs (three SCBs for an MX960 router, two SCBs for an MX480 or MX240 router) actively in the chassis.

If SCB redundancy (2+1 SCBs on an MX960 router or 1+1 SCB on an MX480 or MX240 router) is required, ports on the line card can be disabled by setting the number of usable ports per line card to 8. In such a case, the third and fourth ports (ports 0/2-3, 1/2-3, 2/2-3, 3/2-3) on every Packet Forwarding Engine are disabled.

- **Ensuring guaranteed bandwidth by preventing oversubscription**—The 16x10GE 3D MPC supports one 10-Gigabit Ethernet tunnel interface for each Packet Forwarding Engine. The effective line-rate bandwidth of the MPC is 12 ports because of an oversubscription ratio of 4:3. Therefore, configuring a tunnel interface might further result in the Packet Forwarding Engines being oversubscribed. To prevent such oversubscription and to ensure a guaranteed bandwidth, include the **number-of-ports** configuration statement to disable one or two ports per Packet Forwarding Engine.

To configure the number of active ports on the MPC, include the **number-of-ports active-ports** configuration statement at the **[edit chassis fpc slot-number]** hierarchy level:

```
[edit chassis fpc slot-number]
number-of-ports (8 | 12);
```

Specify either 8 or 12 ports using this statement. When eight active ports are configured, two ports per Packet Forwarding Engine are disabled, and the LEDs on the MPC are set to **yellow**. When you specify 12 active ports, one port per Packet Forwarding Engine is disabled and the corresponding LED is set to **yellow**. When you do not include this statement in the configuration, all 16 default ports on the MPC are active.

**NOTE:**

- Committing the configuration after including the **number-of-ports active-ports** configuration statement brings down the Ethernet interfaces for all the ports on the MPC before the ports configuration becomes active.
- A minimum of one high-capacity fan tray is necessary for meeting the cooling requirements of the MPC. The Junos OS generates a chassis Yellow alarm recommending fan tray upgrade for optimal performance, if the MX router chassis contains an old fan tray.

For more information about the 16x10GE 3D MPC, see the [MX Series 3D Universal Edge Routers Line Card Guide](#).

Related Documentation

- [16-Port 10-Gigabit Ethernet MPC on MX Series Routers \(16x10GE 3D MPC\) Overview on page 72](#)
- [Configuring Junos OS to Run a Specific Network Services Mode in MX Series Routers on page 79](#)
- [Configuring Tunnel Interfaces on MX Series Routers](#)
- [number-of-ports](#)

Configuring Tunnel Interfaces on an MX Series Router with a 16x10GE 3D MPC

MX960, MX480, and M240 routers support the 16-port 10-Gigabit Ethernet MPC (16x10GE 3D MPC) fixed configuration Field Replaceable Unit (FRU). Each Packet Forwarding Engine on a 16x10GE MPC can support a full-duplex 10Gbps tunnel without losing line-rate capacity. For example, a full-duplex 10Gbps tunnel can be hosted on a 10-Gigabit-Ethernet port, while two other 10-Gigabit-Ethernet ports on the same PFE can concurrently forward line-rate traffic.

To configure an MPC and its corresponding Packet Forwarding Engine to use tunneling services, include the **tunnel-services** statement at the **[edit chassis fpc slot-number pic pic-number]** hierarchy level. The Junos OS creates tunnel interfaces **gr-fpc/pic/port.0**, **vt-fpc/pic/port.0**, and so on. You also configure the amount of bandwidth reserved for tunnel services.

```
[edit chassis]
fpc slot-number {
  pic number {
    tunnel-services {
```



```

        bandwidth 10g;
    }
}

```

fpc slot-number is the slot number of the MPC. If two SCBs are installed, the range is 0 through 11. If three SCBs are installed, the range is 0 through 5 and 7 through 11.

pic number is the number of the Packet Forwarding Engine on the MPC. The range is 0 through 3.

bandwidth 10g is the amount of bandwidth to reserve for tunnel traffic on each Packet Forwarding Engine.

In the following example, you create tunnel interfaces on Packet Forwarding Engine 0 of MPC 4 with 10 Gbps of bandwidth reserved for tunnel traffic. With this configuration, the tunnel interfaces created are **gr-4/0/0**, **pe-4/0/0**, **pd-4/0/0**, **vt-4/0/0**, and so on.

```

[edit chassis]
fpc 4 pic 0 {
    tunnel-services {
        bandwidth 10g;
    }
}

```

Related Documentation

- [16-Port 10-Gigabit Ethernet MPC on MX Series Routers \(16x10GE 3D MPC\) Overview on page 72](#)
- [Configuring Junos OS to Run a Specific Network Services Mode in MX Series Routers on page 79](#)

MPC3E on MX Series Routers Overview

In Junos OS Release 12.1 and later, MX960, MX480, and MX240 routers support the MPC3E (MX-MPC3E-3D) with two MIC slots. The supported MICs are MIC-3D-1X100GE-CFP and MIC-3D-20GE-SFP, which are field replaceable units (FRUs). The MPC provides the connection between the customer's Ethernet interfaces and the routing fabric of the MX Series chassis. The MPC is inserted into a slot in a router. MICs provide the physical interface and are installed into the MPCs.

The MPC3E requires the Enhanced MX Switch Control Board for fabric redundancy. You can also continue to use existing SCBs without fabric redundancy. The MPC interoperates with existing MX Series line cards, including Dense Port Concentrators (DPCs) and Modular Port Concentrators (MPCs).

The MPC3E is based on a new Junos OS chipset for increased scalability for bandwidth, subscribers, and service capabilities of the routers.

The following are key features of the MPC3E:

- Supports 100-Gigabit Ethernet interfaces
- Supports two separate slots for MICs

- Supported MICs are MIC-3D-1X100GE-CFP and MIC-3D-20GE-SFP
- Supports one 100-Gigabit Ethernet port per MIC
- Supports up to 200 Gbps aggregate WAN bandwidth connectivity for the two MIC slots; the line card is oversubscribed in the ratio of 2:1.
- Supports one full-duplex 10-Gigabit tunnel interface for each Packet Forwarding Engine
- Supports intelligent oversubscription services

The MPC3E supports feature parity with the following Junos OS Release 10.4 software features:

- Basic Layer 2 features and virtual private LAN service (VPLS) functionality, except for Operation, Administration, and Maintenance (OAM)
- Layer 3 routing protocols
- MPLS
- Multicast forwarding
- Firewall filters and policers
- Class-of-service (CoS) support
- Tunnel support
- Interoperability with existing DPCs and MPCs

The MPC3E does not currently support these features:

- Fine-grained queuing and input queuing
- Unified in-service software upgrade (ISSU)
- Multilink services
- Internet Group Management Protocol (IGMP) snooping with bridging, integrated routing and bridging (IRB), or VPLS
- Intelligent hierarchical policers
- Layer 2 trunk port
- MPLS fast reroute (FRR) VPLS instance prioritization
- Precision time protocol (IEEE 1588)
- Synchronous Ethernet
- Flow monitoring and services
- Virtual chassis support

For information about the supported and unsupported Junos OS features for this MPC, see “Protocols and Applications Supported by the MX240, MX480, MX960 MPC3E” in the [MX Series 3D Universal Edge Routers Line Card Guide](#).

- Related Documentation**
- MPC3E MIC Overview
 - Protocols and Applications Supported by the MX240, MX480, MX960 MPC3E
 - [MX Series 3D Universal Edge Routers Line Card Guide](#).

Configuring Tunnel Interfaces on MX-Series Routers with the MPC3E

Because the MX Series routers do not support Tunnel Services PICs, you create tunnel interfaces on MX Series routers by including the following statements at the **[edit chassis]** hierarchy level:

```
[edit chassis]
fpc slot-number {
  pic number {
    tunnel-services {
      bandwidth (1g | 10g | 20g | 40g);
    }
  }
}
```

fpc slot-number is the slot number of the DPC, MPC, or MIC. On the MX80 router, the range is 0 through 1. On other MX series routers, if two SCBs are installed, the range is 0 through 11. If three SCBs are installed, the range is 0 through 5 and 7 through 11.

The **pic number** On MX80 routers, if the FPC is 0, the PIC number can only be 0. If the FPC is 1, the PIC range is 0 through 3. For all other MX series routers, the range is 0 through 3.

bandwidth (1g | 10g | 20g | 40g) is the amount of bandwidth to reserve for tunnel traffic on each Packet Forwarding Engine.



NOTE: When you use MPCs and MICs, tunnel interfaces are soft interfaces and allow as much traffic as the forwarding-path allows, so it is advantageous to setup tunnel services without artificially limiting traffic by use of the **bandwidth** option. However, you *must* specify **bandwidth** when configuring tunnel services for MX Series routers with DPCs or FPCs.

Bandwidth rates of 20 gigabits per second and 40 gigabits per second require use of an MX Series router with the 100-Gigabit Ethernet Modular Port Concentrator (MPC) and the 100-Gigabit CFP MIC.

1g indicates that 1 gigabit per second of bandwidth is reserved for tunnel traffic.

10g indicates that 10 gigabits per second of bandwidth is reserved for tunnel traffic.

20g indicates that 20 gigabits per second of bandwidth is reserved for tunnel traffic.

40g indicates that 40 gigabits per second of bandwidth is reserved for tunnel traffic.

If you specify a bandwidth that is not compatible, tunnel services are not activated. For example, you cannot specify a bandwidth of 1 Gbps for a Packet Forwarding Engine on a 10-Gigabit Ethernet 4-port DPC.

To verify that the tunnel interfaces have been created, issue the **show interfaces terse** operational mode command. For more information, see the *Junos Interfaces Command Reference*.

**Related
Documentation**

- [Example: Configuring Tunnel Interfaces on a Gigabit Ethernet 40-Port DPC on page 187](#)
- [Example: Configuring Tunnel Interfaces on a 10-Gigabit Ethernet 4-Port DPC on page 188](#)
- [Example: Configuring Tunnel Interfaces on the MPC3E on page 188](#)
- bandwidth
- tunnel-services
- [edit chassis] Hierarchy Level

Configuring the Power-On Sequence for DPCs on MX Series Routers with the Enhanced AC PEM

MX Series routers running Junos OS Release 10.0 and later support an enhanced AC Power Entry Module (PEM) to provide the necessary power infrastructure to support up to twelve higher-capacity DPCs with higher port density and slot capacity. To support the cooling requirements for the enhanced AC PEMs, the routers support enhanced fan trays and fans. The Junos OS enables you to configure the power-on sequence for the DPCs on an MX Series router chassis containing the new AC PEM. This enables you to redistribute the available power to the DPCs based on your requirements and the calculated power consumption of the DPCs. 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 DPCs. Issue the **show chassis power sequence** command to view details on the power-on sequence for the DPCs. For more information about these commands, see the *Junos OS System Basics and Services Command Reference*.

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

**Related
Documentation**

- fru-poweron-sequence

Configuring the Junos OS to Support Layer 2 Services on MX Series 3D Universal Edge Routers with MS-DPCs

The Junos OS supports Layer 2 link services on MX Series 3D Universal Edge routers with MS-DPCs and MX-FPCs with non-Ethernet IQE PICs that bundle PPP links from the Type

2 channelized SONET PICs. To enable the Layer 2 service packages such as LSQ interfaces, include the **service-package layer-2** statement at the **[edit chassis fpc slot-number pic pic-number adaptive-services]** hierarchy level:

```
[edit chassis fpc slot-number pic pic-number adaptive-services]
service-package (layer-2 | layer-3);
```

Configuring the supported link services such as Multilink PPP (MLPPP), Compressed Real-Time Transport Protocol (CRTP), real-time performance monitoring (RPM) is identical to configuring these link services for a multiservices PIC. For more information about Layer 2 link services, see the [Junos OS Services Interfaces Configuration Guide](#)

**Related
Documentation**

- [Configuring the Junos OS to Enable Service Packages on Adaptive Services Interfaces on page 117](#)

Configuring the Junos OS to Enable Session Offloading on MX Series 3D Universal Edge Routers with MS-DPCs

The Junos OS enables you to configure session offloading for Multiservices DPCs on MX Series routers. This enables Fast Update Filters (FUF) at the PIC level for a multiservices interface (**ms-fpc-pic-port**). To configure session offloading, include the **session-offload** statement at the **[edit chassis fpc slot-number pic number adaptive-services service-package extension-provider]** hierarchy level:

```
[edit chassis fpc slot-number pic number adaptive-services service-package
extension-provider]
session-offload;
```

Currently, session offloading is supported only for a maximum of one multiservices interface.



NOTE: When session offloading is enabled for a Multiservices PIC, we recommend that you limit dynamic application awareness features for Intrusion Detection and Prevention (IDP) only for that interface.

**Related
Documentation**

- session-offload

Configuring Junos OS to Run a Specific Network Services Mode in MX Series Routers

You can configure MX Series 3D Universal Edge Routers to run in different network services modes. Each network services mode defines how the chassis recognizes and uses certain modules.

To configure the network services mode of an MX Series router:

1. Access the chassis hierarchy.

```
[edit]
user@host# edit chassis
```

2. Specify the network services mode that you want the router to use.

[edit chassis]

user@host# **set network-services service**

**Related
Documentation**

- [Network Services Mode Overview on page 19](#)
- Firewall Filters and Enhanced Network Services Mode Overview in the *Junos OS Subscriber Access Configuration Guide*
- [Restrictions on Junos OS Ethernet Network Services Mode and Enhanced Ethernet Network Services Mode Features for MX Series Routers on page 21](#)
- [16-Port 10-Gigabit Ethernet MPC on MX Series Routers \(16x10GE 3D MPC\) Overview on page 72](#)
- network-services

CHAPTER 9

Configuring J Series Chassis-Level Features

- [Configuring the Junos OS to Prevent the Resetting of the Factory Default or Rescue Configuration During Current Configuration Failure on J Series Routers on page 81](#)
- [Configuring the Junos OS to Support the uPIM Mode on J Series Routers on page 82](#)
- [Configuring the Junos OS to Set a PIM Offline on J Series Routers on page 82](#)
- [Configuring the Junos OS to Disable Power Management on the J Series Chassis on page 83](#)
- [Configuring J Series Services Router Switching Interfaces on page 83](#)

Configuring the Junos OS to Prevent the Resetting of the Factory Default or Rescue Configuration During Current Configuration Failure on J Series Routers

On J Series Services Routers, if the current configuration fails, you can load a rescue configuration or the factory default configuration by pressing the **CONFIG** (Reset) button:

- **Rescue configuration**—When you press and quickly release the **CONFIG** button, the configuration LED blinks green and the rescue configuration is loaded and committed. The rescue configuration is user defined and must be set previously for this operation to be successful.
- **Factory defaults**—When you hold the **CONFIG** button for more than 15 seconds, the configuration LED blinks red and the router is set back to the factory default configuration.



CAUTION: When you set the router back to the factory default configuration, the current committed configuration and all previous revisions of the router's configuration are deleted.

To limit how the **CONFIG** button resets a router configuration, include one or both of the following statements at the **[edit chassis]** hierarchy level:

```
[edit chassis]
config-button {
  no-clear;
```

```
no-rescue;  
}
```

no-clear—Prevents resetting the router to the factory default configuration. You can still press and quickly release the button to reset to the rescue configuration (if one was set previously).

no-rescue—Prevents resetting the router to the rescue configuration. You can still press and hold the button for more than 15 seconds to reset to the factory default configuration.

When both the **no-clear** and **no-rescue** statements are present, the **CONFIG** button does not reset to either configuration.

Configuring the Junos OS to Support the uPIM Mode on J Series Routers

The 6-port, 8-port, and 16-port Gigabit Ethernet uPIMs used on the J Series routers (J2320, J2350, J4350, and J6350) support Layer 2 switching and can forward traffic at both Layer 2 (switching) and Layer 3 (routing). You can configure a uPIM to run in either routing mode (the default) or switching mode.

Routing mode provides the standard routing services. Switching mode allows traffic forwarding at both Layer 2 and Layer 3. At Layer 2, a uPIM can switch intra-LAN traffic from one LAN host to another, such as from one port on a uPIM to another on the same uPIM. At Layer 3, a uPIM can route traffic to WAN interfaces and other PIMs present on the chassis.

To configure the PIM mode, include the following statements at the **[edit chassis fpc]** hierarchy level:

```
[edit chassis]  
fpc fpc-slot {  
  pic pim-slot {  
    ethernet {  
      pic-mode (switching | routing);  
    }  
  }  
}
```

Related Documentation

- [Configuring the Junos OS to Set a PIM Offline on J Series Routers on page 82](#)
- [Configuring the Junos OS to Disable Power Management on the J Series Chassis on page 83](#)

Configuring the Junos OS to Set a PIM Offline on J Series Routers

On J Series routers, the system monitors the PIMs and verifies that a newly inserted PIM falls within the power capacity of the chassis. PIMs that fall outside of acceptable power ranges can be taken offline or disabled for power management purposes.

This operation differs from the **power-off** option used on non-J Series products.

To take a PIM offline, include the **offline** statement at the **[edit chassis fpc slot-number]** hierarchy level:


```
[edit chassis fpc slot-number]
offline;
```

**Related
Documentation**

- [Configuring the Junos OS to Support the uPIM Mode on J Series Routers on page 82](#)
- [Configuring the Junos OS to Disable Power Management on the J Series Chassis on page 83](#)

Configuring the Junos OS to Disable Power Management on the J Series Chassis

Instead of setting a PIM offline, the power management feature on a chassis can be disabled. The **disable-power-management** statement disables power management on the chassis and, when used, causes any PIMs disabled because of exceeding chassis power limits to come online.

It is important to consider power management carefully before enabling disabled PIMs. If the PIMs have been disabled because they exceeded power limits, they should not be enabled.

To disable power management on the J Series chassis, include the **disable-power-management** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
disable-power-management;
```

**Related
Documentation**

- [Configuring the Junos OS to Set a PIM Offline on J Series Routers on page 82](#)
- [Configuring the Junos OS to Support the uPIM Mode on J Series Routers on page 82](#)

Configuring J Series Services Router Switching Interfaces

In access switching mode, only one physical interface is configured for the entire Gigabit Ethernet uPIM. The single physical interface serves as a virtual router interface (VRI). Configuration of the physical port characteristics is done under the single physical interface.

To configure Gigabit Ethernet uPIM physical Ethernet interface properties, include the **switch-port** statement at the **[edit interfaces ge-pim /0/0 switch-options]** hierarchy level:

```
[edit interfaces ge-pim /0/0 switch-options]
switch-port port-number {
  (auto-negotiation | no-auto-negotiation);
  speed (10m | 100m | 1g);
  link-mode (full-duplex | half-duplex);
}
```

**Related
Documentation**

- [Example: Configuring J Series Services Router Switching Interfaces on page 188](#)

CHAPTER 10

Configuring PIC-Specific Features

- [Configuring the Junos OS to Make a Flexible PIC Concentrator Stay Offline on page 85](#)
- [Configuring the Junos OS to Enable SONET/SDH Framing for SONET/SDH PICs on page 86](#)
- [Configuring the Junos OS to Use ATM Cell-Relay Accumulation Mode on an ATM1 PIC on page 88](#)
- [Configuring the Junos OS to Support the Sparse DLCI Mode on Channelized STM1 or Channelized DS3 PICs on page 88](#)
- [Configuring the Junos OS to Enable a SONET PIC to Operate in Channelized \(Multiplexed\) Mode on page 89](#)
- [Configuring the Junos OS to Support Channel Groups and Time Slots for Channelized E1 PICs on page 90](#)
- [Ranges for Channelized E1 Interfaces Configuration on page 92](#)
- [Configuring the Junos OS to Support ILMI for Cell Relay Encapsulation on an ATM2 IQ PIC on page 92](#)
- [Configuring the Junos OS to Support the Link Services PIC on page 93](#)
- [Multiclass Extension for Multiple Classes of Service Using MLPPP \(RFC 2686\) on page 94](#)
- [Configuring the Junos OS to Enable Larger Delay Buffers for T1, E1, and DS0 Interfaces Configured on Channelized IQ PICs on page 94](#)
- [Maximum Delay Buffer with q-pic-large-buffer Statement Enabled on page 95](#)
- [Configuring a Policer Overhead on page 96](#)
- [Configuring a Port Speed on page 97](#)

Configuring the Junos OS to Make a Flexible PIC Concentrator Stay Offline

By default, a Flexible PIC Concentrator (FPC) is configured to restart after a system reboot. To configure an FPC to stay offline and prevent it from restarting, include the **power off** statement at the **[edit chassis fpc slot-number]** hierarchy level:

```
[edit chassis fpc slot-number]  
power off;
```



NOTE: You can use the `request chassis fpc operational mode` command to take an FPC offline, but the FPC attempts to restart when you enter a `commit` CLI command.

To bring an FPC online that is configured to stay offline and configure it to stay online, include the `power on` statement at the `[edit chassis fpc slot-number]` hierarchy level:

```
[edit chassis fpc slot-number]
power on;
```

**Related
Documentation**

- [Configuring the Junos OS to Make an SFM Stay Offline on page 64](#)
- [Router Chassis Configuration Statements on page 191](#)

Configuring the Junos OS to Enable SONET/SDH Framing for SONET/SDH PICs

In Junos OS Release 8.4 and later, the family of next-generation SONET Phase I PICs includes Type 1 and Type 2 PICs. Each PIC type has three varieties.

Type1 PICs include:

- 2-port OC3
- 4-port OC3
- 1-port OC12

Type 2 PICs include:

- 1-port OC48
- 4-port OC3
- 4-port OC12

The PICs are supported on Type 1 and Type 2 FPC interfaces. Hot-pluggable SFPs are used as optical transponders. The PICs provide unprecedented flexibility by allowing the user to configure a variety of modes on them through the configuration of concatenation/nonconcatenation and speed.

The 4-port OC48 PIC with SFP installed, the next-generation SONET/SDH PICs with SFP, and the 4-port OC192 PIC on M Series and T Series routers, support SONET or SDH framing on a per-port basis. This functionality allows you to mix SONET and SDH modes on interfaces on a single PIC.

For information about configuring port speed for concatenate mode on a next-generation PIC, see the *Junos OS Hardware Network Operations Guide*.

By default, SONET/SDH PICs use SONET framing. For a discussion of the differences between the two standards, see the *Junos Network Interfaces Configuration Guide*.

To configure a PIC to use SDH framing, include the **framing** statement at the **[edit chassis fpc slot-number pic pic-number]** hierarchy level, specifying the **sdh** option:

```
[edit chassis]
user@host# set fpc slot-number pic pic-number framing sdh
[edit chassis]
user@host# show
fpc slot-number {
  pic pic-number {
    framing sdh;
  }
}
```

On a TX Matrix or TX Matrix Plus router, include the **framing** statement at the **[edit chassis lcc number fpc slot-number pic pic-number]** hierarchy level, specifying the **sdh** option:

```
[edit chassis lcc number]
user@host# set fpc slot-number pic pic-number framing sdh
[edit chassis lcc number]
user@host# show
fpc slot-number {
  pic pic-number {
    framing sdh;
  }
}
```

To explicitly configure a PIC to use SONET framing, include the **framing** statement at the **[edit chassis fpc slot-number pic pic-number]** hierarchy level, specifying the **sonet** option:

```
[edit chassis]
user@host# set fpc slot-number pic pic-number framing sonet
[edit chassis]
user@host# show
fpc slot-number {
  pic pic-number {
    framing sonet;
  }
}
```

On a TX Matrix or TX Matrix Plus router, include the **framing** statement at the **[edit chassis lcc number fpc slot-number pic pic-number]** hierarchy level, specifying the **sonet** option:

```
user@host# set fpc slot-number pic pic-number framing sonet
[edit chassis lcc number]
user@host# show
fpc slot-number {
  pic pic-number {
    framing sonet;
  }
}
```

Related Documentation

- [TX Matrix Router and T640 Router Configuration Overview on page 23](#)
- [TX Matrix Plus Router and T1600 Router Configuration Overview on page 28](#)
- [Configuring the Junos OS to Enable a SONET PIC to Operate in Channelized \(Multiplexed\) Mode on page 89](#)

Configuring the Junos OS to Use ATM Cell-Relay Accumulation Mode on an ATM1 PIC

You can configure an Asynchronous Transfer Mode (ATM) 1 PIC to use cell-relay accumulation mode. In this mode, the incoming cells (one to eight cells) are packaged into a single packet and forwarded to the label-switched path (LSP). At the edge router, this packet is divided into individual cells and transmitted over the ATM interface.



NOTE: When you configure an ATM PIC to use cell-relay accumulation, all ports on the ATM PIC use cell-relay accumulation mode.

To configure an ATM PIC to use cell-relay accumulation mode, include the **atm-cell-relay-accumulation** statement at the **[edit chassis fpc slot-number pic pic-number]** hierarchy level:

```
[edit chassis fpc slot-number pic pic-number ]
atm-cell-relay-accumulation;
```

On a TX Matrix or TX Matrix Plus router, include the **atm-cell-relay-accumulation** 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]
atm-cell-relay-accumulation;
```

Related Documentation

- [Configuring the Junos OS to Enable ATM2 Intelligent Queuing Layer 2 Circuit Transport Mode on page 131](#)
- [Configuring the Junos OS to Support ILMI for Cell Relay Encapsulation on an ATM2 IQ PIC on page 92](#)
- [Configuring the Junos OS to Enable Idle Cell Format and Payload Patterns for ATM Devices on page 132](#)
- `atm-cell-relay-accumulation`

Configuring the Junos OS to Support the Sparse DLCI Mode on Channelized STM1 or Channelized DS3 PICs

By default, original channelized DS3 and original channelized STM1-to-E1 (or T1) interfaces can support a maximum of 64 data-link connection identifiers (DLCIs) per channel—as many as 1792 DLCIs per DS3 interface or 4032 DLCIs per STM1 interface (0 through 63).

In sparse DLCI mode, the full DLCI range (1 through 1022) is supported. This allows you to use circuit cross-connect (CCC) and translation cross-connect (TCC) features by means of Frame Relay on T1 and E1 interfaces.



NOTE: Sparse DLCI mode requires a Channelized STM1 or Channelized DS3 PIC.

DLCI 0 is reserved for Local Management Interface (LMI) signaling.

Channelized T3 (CT3) intelligent queuing (IQ) and STM1 IQ interfaces support a maximum of 64 DLCIs, numbered 0 through 1022, and therefore do not require sparse mode.

The CT3 PIC must use field-programmable gate array (FPGA) hardware revision 17 to run sparse DLCI mode.

To configure the router to use sparse DLCI mode, include the **sparse-dlcis** statement at the **[edit chassis fpc slot-number pic pic-number]** hierarchy level:

```
[edit chassis fpc slot-number pic pic-number ]
sparse-dlcis;
```

Related Documentation

- [Configuring the Junos OS to Enable a SONET PIC to Operate in Channelized \(Multiplexed\) Mode on page 89](#)
- [Configuring the Junos OS to Support Channelized DS3-to-DS0 Naming for Channel Groups and Time Slots on page 111](#)
- [Configuring the Junos OS to Support Channel Groups and Time Slots for Channelized E1 PICs on page 90](#)
- [Configuring the Junos OS to Support Channelized STM1 Interface Virtual Tributary Mapping on page 113](#)
- [Configuring the Junos OS to Enable Larger Delay Buffers for T1, E1, and DS0 Interfaces Configured on Channelized IQ PICs on page 94](#)

Configuring the Junos OS to Enable a SONET PIC to Operate in Channelized (Multiplexed) Mode

By default, SONET PICs (interfaces with names **so-fpc/pic/port**) operate in concatenated mode, a mode in which the bandwidth of the interface is in a single channel.

To configure a PIC to operate in channelized (multiplexed) mode, include the **no-concatenate** statement at the **[edit chassis fpc slot-number pic pic-number]** hierarchy level:

```
[edit chassis]
user@host# set fpc slot-number pic pic-number no-concatenate
[edit chassis]
user@host# show
fpc slot-number {
  pic pic-number {
    no-concatenate;
  }
}
```

On a TX Matrix or TX Matrix Plus router, include the **no-concatenate** statement at the **[edit chassis lcc *number* fpc *slot-number* pic *pic-number*]** hierarchy level:

```
[edit chassis lcc number]  
user@host# set fpc slot-number pic pic-number no-concatenate  
[edit chassis lcc number]  
user@host# show  
fpc slot-number {  
  pic pic-number {  
    no-concatenate;  
  }  
}
```

When configuring and displaying information about interfaces that are operating in channelized mode, you must specify the channel number in the interface name (***physical:channel***); for example, **so-2/2/0:0** and **so-2/2/0:1**.



NOTE: On SONET OC48 interfaces that are configured for channelized (multiplexed) mode, the **bytes e1-quiet** and **bytes f1** options in the **sonet-options** statement have no effect. The **bytes f2**, **bytes z3**, **bytes z4**, and **path-trace** options work correctly on channel 0. These bytes work in the transmit direction only on channels 1, 2, and 3.

The M160 four-port SONET/SDH OC12 PIC can run each of the OC12 links in concatenated mode only and requires a Type 2 M160 FPC. Similarly, the 4-port SONET/SDH OC3 PIC cannot run in nonconcatenated mode on any platform.

**Related
Documentation**

- [Configuring the Junos OS to Enable SONET/SDH Framing for SONET/SDH PICs on page 86](#)
- [Configuring the Junos OS to Support the Sparse DLCI Mode on Channelized STM1 or Channelized DS3 PICs on page 88](#)

Configuring the Junos OS to Support Channel Groups and Time Slots for Channelized E1 PICs

Each Channelized E1 PIC has 10 E1 ports that you can channelize to the *N*xDS0 level. Each E1 interface has 32 time slots (DS0), in which time slot 0 is reserved. You can combine one or more of these timeslots (DS-0) to create a channel group (*N*xDS-0). There can be a maximum of 32 channel groups per E1 interface. Thus, you can configure as many as 320 channel groups per PIC (10 ports x 32 channel groups per port).

To specify the DS0 channel group number in the interface name, include a colon (:) as a separator. For example, a Channelized E1 PIC might have the following physical and virtual interfaces:

```
ds-0/0/0:x
```


where *x* is a DS0 channel group ranging from 0 through 23. (See [Table 9 on page 92](#) for more information about ranges.)

You can use any of the values within the range available for *x*; you do not have to configure the links sequentially. The software applies the interface options you configure according to the following rules:

- You can configure the **e1-options** statement for channel group 0 only; for example, **ds-0/0/0:0**.
- There are no restrictions on changing the default **ds0-options**.
- If you delete a configuration you previously committed for channel group 0, the options return to the default values.

To configure the channel groups and time slots for a Channelized E1 interface, include the **channel-group** and **timeslots** statements at the **[edit chassis fpc slot-number pic pic-number ce1 e1 port-number]** hierarchy level:

```
[edit chassis fpc slot-number pic pic-number ce1 e1 port-number]
channel-group channel-number timeslots slot-number;
```



NOTE: If you commit the interface name but do not include the **[edit chassis]** configuration, the Channelized E1 PIC behaves like a standard E1 PIC: none of the DS0 functionality is accessible.



NOTE: The FPC slot range depends on the platform. The maximum range of 0 through 7 applies to M40 routers; for M20 routers, the range is 0 through 3; for M10 routers the range is 0 through 1; for M5 routers, the only applicable value is 0. The Channelized E1 PIC is not supported on M160 routers.

The theoretical maximum number of channel groups possible per PIC is $10 \times 24 = 240$. This is within the maximum bandwidth available.

There are 32 time slots on an E1 interface. You can designate any combination of time slots for usage.

To use time slots 1 through 10, designate **slot-number** as in this example:

```
[edit chassis fpc 1 pic 2 ce1 e1 6]
channel-group 3 timeslots 1-10;
```

To use time slots 1 through 5, time slot 10, and time slot 24, designate **slot-number** as in this example:

```
[edit chassis fpc 3 pic 0 ce1 e1 2]
channel-group 1 timeslots 1-5,10,24;
```

Do not include spaces in a list of time slot numbers.

For further information about these interfaces, see the [Junos Network Interfaces Configuration Guide](#).

- Related Documentation**
- [Ranges for Channelized E1 Interfaces Configuration on page 92](#)

Ranges for Channelized E1 Interfaces Configuration

Table 9 on page 92 shows the ranges for configuring channel groups and time slots for Channelized E1 Interfaces.

Table 9: Ranges for Channelized E1 Configuration

| Item | Variable | Range |
|-------------------|---------------------|------------------------------|
| FPC slot | <i>slot-number</i> | 0 through 7 (see note below) |
| PIC slot | <i>pic-number</i> | 0 through 3 |
| E1 port | <i>port-number</i> | 0 through 9 |
| DS0 channel group | <i>group-number</i> | 0 through 23 |
| Time slot | <i>slot-number</i> | 1 through 32 |



NOTE: The FPC slot range depends on the router. For the TX Matrix and TX Matrix Plus routers, the range is from 0 through 31. For M40, M40e, M160, M320, M120, and other T Series routers, the range is from 0 through 7. For M20 routers, the range is from 0 through 3. For M10 and M10i routers, the range is from 0 through 1. For M5 and M7i routers, the only applicable value is 0.

- Related Documentation**
- [Configuring the Junos OS to Support Channel Groups and Time Slots for Channelized E1 PICs on page 90](#)

Configuring the Junos OS to Support ILMI for Cell Relay Encapsulation on an ATM2 IQ PIC

Integrated Local Management Interface (ILMI) is supported on AAL5 interfaces, regardless of transport mode. To enable ILMI on interfaces with cell-relay encapsulation, you must configure an ATM2 IQ PIC to use Layer 2 circuit trunk transport mode.

To configure ILMI on an interface with cell-relay encapsulation, include the following statements:

```
[edit chassis fpc slot-number pic pic-number]
atm-l2circuit-mode trunk trunk;
[edit interfaces at-fpc/pic/port]
```

```

encapsulation atm-ccc-cell-relay;
atm-options {
    ilmi;
    pic-type atm2;
}
unit logical-unit-number {
    trunk-id number;
}

```

For an example on how to enable ILMI for cell relay, see the [Junos Network Interfaces Configuration Guide](#).

**Related
Documentation**

- [Configuring the Junos OS to Enable ATM2 Intelligent Queuing Layer 2 Circuit Transport Mode](#) on page 131

Configuring the Junos OS to Support the Link Services PIC

The Multilink Protocol enables you to split, recombine, and sequence datagrams across multiple logical data links. The goal of multilink operation is to coordinate multiple independent links between a fixed pair of systems, providing a virtual link with greater bandwidth than any of the members.

The Link Services PIC supports the following Multilink Protocol encapsulation types at the logical unit level:

- Multilink Point-to-Point Protocol (MLPPP)
- Multilink Frame Relay (MLFR FRF.15)

The Link Services PIC also supports the Multilink Frame Relay UNI and NNI (MLFR FRF.16) encapsulation type at the physical interface level.

MLFR (FRF.16) is supported on a channelized interface, **ls-fpc/pic/port:channel**, which denotes a single MLFR (FRF.16) bundle. For MLFR (FRF.16), multiple links are combined to form one logical link. Packet fragmentation and reassembly occur on a per-virtual circuit (VC) basis. Each bundle can support multiple VCs. The physical connections must be E1, T1, channelized DS3 to DS1, channelized DS3 to DS0, channelized E1, channelized STM 1, or channelized IQ interfaces.

The default number of bundles per Link Services PIC is 16, ranging from **ls-fpc/pic/port:0** to **ls-fpc/pic/port:15**.

To configure the number of bundles on a Link Services PIC, include the **mlfr-uni-nni-bundles** statement at the **[edit chassis fpc slot-number pic pic-number]** hierarchy level:

```

[edit chassis fpc slot-number pic pic-number]
mlfr-uni-nni-bundles number;

```

The maximum number of MLFR UNI NNI bundles each Link Services PIC can accommodate is 128. A link can associate with one link services bundle only.



NOTE: The Link Services PIC is not compatible with the M160 or T Series routers.

Related Documentation

- [Multiclass Extension for Multiple Classes of Service Using MLPPP \(RFC 2686\) on page 94](#)

Multiclass Extension for Multiple Classes of Service Using MLPPP (RFC 2686)

The multiclass extension to the MLPPP extension enables multiple classes of service using MLPPP. For more information, see RFC 2686, *The Multi-Class Extension to Multi-Link PPP*. The Junos OS PPP implementation does not support the negotiation of address field compression and protocol field compression PPP NCP options. The software always sends a full 4-byte PPP header.

Related Documentation

- [Configuring the Junos OS to Support the Link Services PIC on page 93](#)

Configuring the Junos OS to Enable Larger Delay Buffers for T1, E1, and DS0 Interfaces Configured on Channelized IQ PICs

By default, T1, E1, and NxDS0 interfaces configured on channelized IQ PICs are limited to 100,000 microseconds of delay buffer. (The default average packet size on the IQ PIC is 40 bytes.) For these interfaces, it might be necessary to configure a larger buffer size to prevent congestion and packet dropping.

To ensure traffic is queued and transmitted properly, you can configure a buffer size larger than the default maximum. To set the average packet size used to calculate the number of notification queue entries in the IQ PIC to 256 bytes, include the **q-pic-large-buffer large-scale** statement at the `[edit chassis fpc slot-number pic pic-number]` hierarchy level:

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

On a TX Matrix router or a TX Matrix Plus router, include the **q-pic-large-buffer large-scale** 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]
q-pic-large-buffer {
  large-scale;
}
```



NOTE: When you commit the configuration after including the **q-pic-large-buffer** statement for a PIC, the Junos OS temporarily takes the PIC offline and brings it back online before the new configuration is activated and becomes the current operational configuration.

This statement sets the maximum buffer size. (See [Table 10 on page 95](#).)

For information on configuring the buffer size, see the *Junos Class of Service Configuration Guide*.

**Related
Documentation**

- [Maximum Delay Buffer with q-pic-large-buffer Statement Enabled on page 95](#)

Maximum Delay Buffer with q-pic-large-buffer Statement Enabled

[Table 10 on page 95](#) lists the maximum delay buffer that can be configured for T1, E1, and DS0 interfaces configured on Channelized IQ PICs:

Table 10: Maximum Delay Buffer with q-pic-large-buffer Statement Enabled

| Platform, PIC, or Interface Type | Maximum Buffer Size |
|--|------------------------|
| With Large Buffer Sizes Not Enabled | |
| T Series and M320 routers | 50,000 microseconds |
| Other M Series routers | 200,000 microseconds |
| IQ PICs on all routers | 100,000 microseconds |
| Channelized T1/E1 interface on J Series Services Routers | 400,000 microseconds |
| With Large Buffer Sizes Enabled | |
| Channelized T3 and channelized OC3 DLCIs—Maximum sizes vary by shaping rate: | |
| With shaping rate from 64,000 through 255,999 bps | 4,000,000 microseconds |
| With shaping rate from 256,000 through 511,999 bps | 2,000,000 microseconds |
| With shaping rate from 512,000 through 1,023,999 bps | 1,000,000 microseconds |
| With shaping rate from 1,024,000 through 2,048,000 bps | 500,000 microseconds |
| With shaping rate from 2,048,001 bps through 10 Mbps | 400,000 microseconds |
| With shaping rate from 10,000,001 bps through 20 Mbps | 300,000 microseconds |
| With shaping rate from 20,000,001 bps through 30 Mbps | 200,000 microseconds |

Table 10: Maximum Delay Buffer with q-pic-large-buffer Statement Enabled (*continued*)

| Platform, PIC, or Interface Type | Maximum Buffer Size |
|---|------------------------|
| With shaping rate from 30,000,001 bps through 40 Mbps | 150,000 microseconds |
| With shaping rate up to 40,000,001 bps or higher | 100,000 microseconds |
| NxDSO IQ Interfaces—Maximum sizes vary by channel size: | |
| 1xDSO through 3xDSO | 4,000,000 microseconds |
| 4xDSO through 7xDSO | 2,000,000 microseconds |
| 8xDSO through 15xDSO | 1,000,000 microseconds |
| 16xDSO through 32xDSO | 500,000 microseconds |
| Other IQ interfaces | 500,000 microseconds |

Related Documentation

- [Configuring the Junos OS to Enable Larger Delay Buffers for T1, E1, and DSO Interfaces Configured on Channelized IQ PICs on page 94](#)

Configuring a Policer Overhead

Configuring a policer overhead allows you to control the rate of traffic sent or received on an interface. When you configure a policer overhead, the configured policer overhead value (bytes) is added to the length of the final Ethernet frame. This calculated length of frame is used to determine the policer or the rate limit action. Therefore, the policer overhead enables you to control the rate of traffic sent or received on an interface. You can configure the policer overhead to rate-limit queues and Layer 2 and MAC policers. The policer overhead and the shaping overhead can be configured simultaneously on an interface.

This feature is supported on M Series and T Series routers with IQ2 PICs or IQ2E PICs, and on MX Series DPCs.

To configure a policer overhead for controlling the rate of traffic sent or received on an interface:

1. In the **[edit chassis]** hierarchy level in configuration mode, create the interface on which to add the policer overhead to input or output traffic.

```
[edit chassis]
user@host# edit fpc fpc pic pic
```

For example:

```
[edit chassis]
```

```
user@host# edit fpc 0 pic 1
```

2. Configure the policer overhead to control the input or output traffic on the interface. You could use either statement or both the statements for this configuration.

```
[edit chassis fpc fpc pic pic]
user@host# set ingress-policer-overhead bytes;
user@host# set egress-policer-overhead bytes;
```

For example:

```
[edit chassis fpc 0 pic 1]
user@host# set ingress-policer-overhead 10;
user@host# set egress-policer-overhead 20;
```

3. Verify the configuration:

```
[edit chassis]
user@host# show
fpc 0 {
  pic 1 {
    ingress-policer-overhead 10;
    egress-policer-overhead 20;
  }
}
```



NOTE: When the configuration for the policer overhead bytes on a PIC is changed, the PIC goes offline and then comes back online. In addition, the configuration in the CLI is on a per-PIC basis and, therefore, applies to all the ports on the PIC.

Related Documentation

- [egress-policer-overhead](#)
- [ingress-policer-overhead](#)

Configuring a Port Speed

Configuring a port speed allows you to enable rate-selectability on a per-port basis. When you configure a speed on a per-port basis, you can use the same MIC hardware as you upgrade your network from OC3 to OC12 or OC48 speeds.

This feature is supported on MX Series routers with SONET/SDH OC3/STM1 (Multi-Rate) MICs (MIC-3D-8OC3OC12-4OC48-SFP and MIC-3D-4OC3OC12-1OC48-SFP) and Channelized SONET/SDH OC3/STM1 (Multi-Rate) MICs with SFP (MIC-3D-8CHOC3-4CHOC12 and MIC-3D-4CHOC3-2CHOC12).

To configure a port speed on the chassis for enabling rate-selectability on a per-port basis:

1. At the **[edit chassis]** hierarchy level in configuration mode, specify the port and the port speed that need to be configured. You can use one of the following speed attributes for this configuration.

```
[edit chassis]
user@host# set fpc fpc-slot pic pic-number port port-number speed oc12-stm4 ;
user@host# set fpc fpc-slot pic pic-number port port-number speed oc3-stm1 ;
user@host# set fpc fpc-slot pic pic-number port port-number speed oc48-stm16 ;
```



NOTE: You can configure the oc12-stm4, oc3-stm1, and oc48-stm16 port speed options for SONET/SDH OC3/STM1 (Multi-Rate) MICs. However, for Channelized SONET/SDH OC3/STM1 (Multi-Rate) MICs with SFP, you can configure only the oc12-stm4 and oc3-stm1 port speed options.

For example:

```
[edit chassis]
user@host# set fpc 3 pic 0 port 0 speed oc12-stm4
```

2. Verify the configuration:

```
[edit chassis]
user@host# show
fpc 3 {
  pic 0 {
    port 0 {
      speed oc12-stm4;
    }
  }
}
```

By default, rate-selectability is enabled on MX Series routers with SONET/SDH OC3/STM1 (Multi-Rate) MICs and Channelized SONET/SDH OC3/STM1 (Multi-Rate) MICs with SFP. However, rate-selectability can be disabled only on the 8-port SONET/SDH OC3/STM1 (Multi-Rate) MIC.

To disable rate-selectability on the 8-port SONET/SDH OC3/STM1 (Multi-Rate) MIC:

1. At the **[edit chassis]** hierarchy level in configuration mode, disable rate-selectability by using the **no-multi-rate** statement.

```
[edit chassis]
user@host# set fpc fpc-slot pic pic-number no-multi-rate
```

For example:

```
[edit chassis]
user@host# set fpc 3 pic 0 no-multi-rate
```

2. Verify the configuration:

```
[edit chassis]
user@host# show
fpc 3 {
  pic 0 {
    no-multi-rate;
  }
}
```




NOTE: You can disable rate-selectability by using the `no-multi-rate` statement only on the 8-port SONET/SDH OC3/STM1 (Multi-Rate) MIC with SFP. The `no-multi-rate` statement has no effect on the 4-port SONET/SDH OC3/STM1 (Multi-Rate) MIC with SFP or on the Channelized SONET/SDH OC3/STM1 (Multi-Rate) MICs with SFP.

**Related
Documentation**

- [speed](#)
- [no-multi-rate](#)

CHAPTER 11

Configuring Resynchronization of FPC Sequence Numbers when a new FPC is Brought Online

- [Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online on page 101](#)

Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online

On M320, T320, T640, T1600, TX Matrix, and TX Matrix Plus routers, when you bring a Flexible PIC Concentrator (FPC) online, the sequence number on the FPC may not be synchronized with the other active FPCs in the router, which may result in the loss of a small amount of initial traffic.

To avoid any traffic loss, include the **fpc-resync** statement at the **[edit chassis]** hierarchy level. This ensures that the sequence numbers of the FPC that is brought online is resynchronized with the other active FPCs in the router.

```
[edit chassis]
fpc-resync;
```

Related Documentation

- [fpc-resync](#)

CHAPTER 12

Configuring Chassis Settings to Support Aggregated Devices

- [Configuring the Junos OS for Supporting Aggregated Devices on page 103](#)

Configuring the Junos OS for Supporting Aggregated Devices

Junos OS supports the aggregation of physical devices into defined virtual links, such as the link aggregation of Ethernet interfaces defined by the IEEE 802.3ad standard.

Tasks for configuring aggregated devices are:

1. [Configuring Virtual Links for Aggregated Devices on page 103](#)
2. [Configuring LACP Link Protection at the Chassis Level on page 104](#)
3. [Enabling LACP Link Protection on page 104](#)
4. [Configuring System Priority on page 105](#)

Configuring Virtual Links for Aggregated Devices

To define the virtual links, you need to specify the associations between physical and logical devices within the **[edit interfaces]** hierarchy, and assign the correct number of logical devices by including the **device-count** statement at the **[edit chassis aggregated-devices ethernet]** and **[edit chassis aggregated-devices sonet]** hierarchy levels:

```
[edit chassis]
aggregated-devices {
  ethernet {
    device-count number;
  }
  sonet {
    device-count number;
  }
}
```

The maximum number of Ethernet logical interfaces that you can configure is 128. On M Series and T Series routers, you can configure a maximum number of 128 aggregated interfaces. On MX Series routers, you can configure a maximum of 480 aggregated interfaces. The aggregated interfaces are numbered from **ae0** through **ae127** for M Series and T Series routers, and the aggregated interfaces (LAG bundles) are numbered from **ae0** through **ae479** on MX Series routers. The maximum number of SONET/SDH logical

interfaces is 16. The aggregated SONET/SDH interfaces are numbered from **as0** through **as15**.

Configuring LACP Link Protection at the Chassis Level

Link Aggregation Control Protocol (LACP) is one method of bundling several physical interfaces to form one logical interface. You can configure both VLAN-tagged and untagged aggregated Ethernet with or without LACP enabled. LACP exchanges are made between actors and partners. An actor is the local interface in an LACP exchange. A partner is the remote interface in an LACP exchange.

LACP link protection enables you to force active and standby links within an aggregated Ethernet. You configure LACP link protection by configuring the **link-protection** and **system-priority** statements at either the chassis or interface level and by configuring port priority at the interface level using the **port-priority** statement. Configuring LACP parameters at the chassis level results in all aggregated Ethernet interfaces using these values unless overridden by LACP configuration on a specific interface.

```
[edit chassis]
aggregated-devices {
  ethernet {
    lacp {
      link-protection {
        non-revertive;
      }
      system-priority priority;
    }
  }
}
```

You configure LACP link protection by using the **link-protection** and **system-priority** statements and define port priority at the port level using the **port-priority** statement. Configuring LACP parameters at the chassis level results in all aggregated Ethernet interfaces using the defined configuration unless overridden on a specific interface.



NOTE: LACP link protection also uses port priority. You can configure port priority at the Ethernet interface **[gigether-options]** hierarchy level using the **port-priority** statement. If you choose not to configure port priority, LACP link protection uses the default value for port priority (127). See the [Junos Network Interfaces Configuration Guide](#) for detailed information about LACP and how to configure it on individual aggregated Ethernet interfaces.

Enabling LACP Link Protection

To enable LACP link protection for aggregated Ethernet interfaces on the chassis, use the **link-protection** statement at the **[edit chassis aggregated-devices ethernet lacp]** hierarchy level:

```
[edit chassis aggregated-devices ethernet lacp]
link-protection {
  non-revertive;
```

```
}
```

By default, LACP link protection reverts to a higher-priority (lower-numbered) link when that higher-priority link becomes operational or a link is added to the aggregator that is determined to be higher in priority. However, you can suppress link calculation by adding the **non-revertive** statement to the LACP link protection configuration. In nonrevertive mode, once a link is active and collecting and distributing packets, the subsequent addition of a higher-priority (better) link does not result in a switch, and the current link remains active.



CAUTION: If both ends of an aggregator have LACP link protection enabled, make sure to configure both ends of the aggregator to use the same mode. Mismatching LACP link protection modes can result in lost traffic.

Configuring System Priority

To configure LACP system priority for aggregated Ethernet interfaces on the chassis, use the **system-priority** statement at the **[edit chassis aggregated-devices ethernet lacp]** hierarchy level:

```
[edit chassis aggregated-devices ethernet lacp]
system-priority priority;
```

The system priority is a 2-octet binary value that is part of the LACP system ID. The LACP system ID consists of the system priority as the two most-significant octets and the interface MAC address as the six least-significant octets. The system with the numerically lower value for system priority has the higher priority. By default, system priority is 127, with a range of 0 to 65535.

Configuring Chassis Settings to Support Load Balancing

- [Configuring ECMP Next Hops for RSVP and LDP LSPs for Load Balancing on page 107](#)

Configuring ECMP Next Hops for RSVP and LDP LSPs for Load Balancing

The Junos OS supports configurations of 16, 32, or 64 equal-cost multipath (ECMP) next hops for RSVP and LDP LSPs on M10i routers with an Enhanced CFEB, and M320, M120, MX Series, and T Series routers. For networks with high-volume traffic, this provides more flexibility to load-balance the traffic over as many as 64 LSPs.

To configure the maximum limit for ECMP next hops, include the **maximum-ecmp next-hops** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]
maximum-ecmp next-hops;
```

You can configure a maximum ECMP next-hop limit of **16**, **32**, or **64** using this statement. The default limit is **16**.

The following types of routes support the ECMP maximum next-hop configuration for as many as **64** ECMP gateways:

- Static IPv4 and IPv6 routes with direct and indirect next-hop ECMPs
- LDP ingress and transit routes learned through associated IGP routes
- RSVP ECMP next hops created for LSPs
- OSPF IPv4 and IPv6 route ECMPs
- ISIS IPv4 and IPv6 route ECMPs
- EBGP IPv4 and IPv6 route ECMPs
- IBGP (resolving over IGP routes) IPv4 and IPv6 route ECMPs

The enhanced ECMP limit of up to 64 ECMP next hops is also applicable for Layer 3 VPNs, Layer 2 VPNs, Layer 2 circuits, and VPLS services that resolve over an MPLS route, because the available ECMP paths in the MPLS route can also be used by such traffic.

**NOTE:**

The following FPCs on M320, T640, and T1600 routers only support 16 ECMP next hops:

- (M320, T640, and T1600 routers only) Enhanced II FPC1
- (M320, T640, and T1600 routers only) Enhanced II FPC2
- (M320 and T640 routers only) Enhanced II FPC3
- (T640 and T1600 routers only) FPC2
- (T640 and T1600 routers only) FPC3

If a maximum ECMP next-hop limit of 32 or 64 is configured on an M320, T640, or T1600 router with any of these FPCs installed, the Packet Forwarding Engines on these FPCs use only the first 16 ECMP next hops. For Packet Forwarding Engines on FPCs that support only 16 ECMP next hops, the Junos OS generates a system log message if a maximum ECMP next-hop limit of 32 or 64 is configured. However, for Packet Forwarding Engines on other FPCs installed on the router, a maximum configured ECMP limit of 32 or 64 ECMP next hops is applicable.



NOTE: If RSVP LSPs are configured with bandwidth allocation, for ECMP next hops with more than 16 LSPs, traffic is not distributed optimally based on bandwidths configured. Some LSPs with smaller allocated bandwidths receive more traffic than the ones configured with higher bandwidths. Traffic distribution does not strictly comply with the configured bandwidth allocation. This caveat is applicable to the following routers:

- T1600 and T640 routers with Enhanced Scaling FPC1, Enhanced Scaling FPC2, Enhanced Scaling FPC3, Enhanced Scaling FPC 4, and all Type 4 FPCs
- M320 routers with Enhanced III FPC1, Enhanced III FPC2, and Enhanced III FPC3
- MX Series routers with all types of FPCs and DPCs, excluding MPCs. This caveat is not applicable to MX Series routers with line cards based on the Junos Trio chipset.
- M120 routers with Type 1, Type 2, and Type 3 FPCs
- M10i routers with Enhanced CFEB

Next-hop cloning and permutations are disabled on T Series routers with Enhanced Scaling FPCs (Enhanced Scaling FPC1, Enhanced Scaling FPC2, Enhanced Scaling FPC3, and Enhanced Scaling FPC 4) that support enhanced load-balancing capability. As a result, memory utilization is reduced for a highly scaled system with a high number of

next hops on ECMP or aggregated interfaces. Next-hop cloning and permutations are also disabled on T Series routers with Type-4 FPCs.

To view the details of the ECMP next hops, issue the **show route** command. The **show route summary command** also shows the current configuration for the maximum ECMP limit. To view details of the ECMP LDP paths, issue the **traceroute mpls ldp** command.

Related Documentation

- [maximum-ecmp](#)

Configuring Chassis Settings to Support Channelized Interfaces

- [Configuring the Junos OS to Support Channelized DS3-to-DS0 Naming for Channel Groups and Time Slots on page 111](#)
- [Ranges for Channelized DS3-to-DS0 Configuration on page 112](#)
- [Configuring the Junos OS to Support Channelized STM1 Interface Virtual Tributary Mapping on page 113](#)
- [Configuring the Junos OS to Enable Channelization on DS3/E3 MIC on page 113](#)

Configuring the Junos OS to Support Channelized DS3-to-DS0 Naming for Channel Groups and Time Slots

You can configure 28 T1 channels per T3 interface. Each T1 link can have up to eight channel groups, and each channel group can hold any combination of DS0 time slots. To specify the T1 link and DS0 channel group number in the name, use colons (:) as separators. For example, a Channelized DS3-to-DS0 PIC might have the following physical and virtual interfaces:

`ds-0/0/0:x:y`

where *x* is a T1 link ranging from 0 through 27 and *y* is a DS0 channel group ranging from 0 through 7. (See [Table 11 on page 112](#) for more information about ranges.)

You can use any of the values within the range available for *x* and *y*; you do not have to configure the links sequentially. The software applies the interface options you configure according to the following rules:

- You can configure **t3-options** for t1 link 0 and channel group 0 only; for example, **ds-0/0/0:0:0**.
- You can configure **t1-options** for any t1 link value, but only for channel group 0; for example, **ds-0/0/0:x:0**.
- There are no restrictions on changing the default **ds0-options**.
- If you delete a configuration you previously committed for channel group 0, the options return to the default values.

To configure the channel groups and time slots for a channelized DS3 interface, include the **channel-group** and **timeslots** statements at the **[edit chassis fpc slot-number pic pic-number ct3 port port-number t1 link-number]** hierarchy level:

```
[edit chassis fpc slot-number pic pic-number ct3 port port-number t1 link-number]
channel-group channel-number timeslots slot-number;
```



NOTE: If you commit the interface name but do not include the **[edit chassis]** configuration, the Channelized DS3-to-DS0 PIC behaves like a Channelized DS3-to-DS1 PIC: none of the DS0 functionality is accessible.



NOTE: The FPC slot range depends on the platform. The maximum range of 0 through 7 applies to M40 routers; for M20 routers, the range is 0 through 3; for M10 routers the range is 0 through 1; for M5 routers, the only applicable value is 0. The Multichannel DS3 (Channelized DS3-to-DS0) PIC is not supported on M160 routers.

Bandwidth limitations restrict the interface to a maximum of 128 channel groups per T3 port, rather than the theoretical maximum of $8 \times 28 = 224$.

There are 24 time slots on a T1 interface. You can designate any combination of time slots for usage, but you can use each time slot number on only one channel group within the same T1 link.

To use time slots 1 through 10, designate **slot-number** as in this example:

```
[edit chassis fpc 0 pic 1 ct3 port 5 t1 22]
channel-group 7 timeslots 1-10;
```

To use time slots 1 through 5, time slot 10, and time slot 24, designate **slot-number** as in this example:

```
[edit chassis fpc 2 pic pic-number1 ct3 port 0 t1 8]
channel-group 4 timeslots 1-5,10,24;
```

Do not include spaces in the list of time slot numbers.

Related Documentation

- [Ranges for Channelized DS3-to-DS0 Configuration on page 112](#)

Ranges for Channelized DS3-to-DS0 Configuration

Table 11 on page 112 shows the ranges for each of the quantities in the preceding configuration.

Table 11: Ranges for Channelized DS3-to-DS0 Configuration

| Item | Variable | Range |
|----------|--------------------|------------------------------|
| FPC slot | slot-number | 0 through 7 (see note below) |

Table 11: Ranges for Channelized DS3-to-DS0 Configuration (*continued*)

| Item | Variable | Range |
|-------------------|---------------------|--------------|
| PIC slot | <i>pic-number</i> | 0 through 3 |
| Port | <i>port-number</i> | 0 through 1 |
| T1 link | <i>link-number</i> | 0 through 27 |
| DS0 channel group | <i>group-number</i> | 0 through 7 |
| time slot | <i>slot-number</i> | 1 through 24 |

- Related Documentation**
- [Configuring the Junos OS to Support Channelized DS3-to-DS0 Naming for Channel Groups and Time Slots on page 111](#)

Configuring the Junos OS to Support Channelized STM1 Interface Virtual Tributary Mapping

By default, virtual tributary mapping uses KLM mode. You can configure virtual tributary mapping to use KLM or ITU-T mode. On the original Channelized STM1 PIC, to configure virtual tributary mapping, include the **vtmapping** statement at the **[edit chassis fpc slot-number pic pic-number]** hierarchy level:

```
[edit chassis fpc slot-number pic pic-number]
  vtmapping (klm | itu-t);
```

For the Channelized STM1 PIC with IQ, you can configure virtual tributary mapping by including the **vtmapping** statement at the **[edit interfaces cau4 fpc slot-number pic pic-number sonet-options]** hierarchy level.

- Related Documentation**
- [Configuring the Junos OS to Support the Sparse DLCI Mode on Channelized STM1 or Channelized DS3 PICs on page 88](#)

Configuring the Junos OS to Enable Channelization on DS3/E3 MIC

By default, the DS3/E3 MIC functions in clear-channel mode. To enable the DS3/E3 MIC to function in channelized mode, you need to use the software license S-MIC-3D-8CHDS3. To enable channelization, set the **channelization** statement at the **[edit chassis fpc MPC-slot-number pic MIC-slot-number]** hierarchy level. You can use the **channelization** option to channelize only individual DS3 interfaces.



NOTE:

- You can configure the **channelization** statement to enable channelization for the DS3/E3 MIC only. Moreover, you can use the **channelization** statement only on MX Series routers with Queuing and Enhanced Queuing MPCs (MX-MPC1-3D-Q, MX-MPC2-3D-Q, and MX-MPC2-3D-EQ) or on MX80 routers. Configuring the **channelization** statement on other MPCs does not have any effect, and the MICs continue to operate in clear-channel mode.
 - Only clear-channel E3 mode is supported on the DS3/E3 MIC. Therefore, configuring the **channelization** statement does not impact the E3 functionality.
-

To configure channelization on the DS3/E3 MIC:

1. At the **[edit chassis]** hierarchy level in configuration mode, navigate to the hierarchy level that indicates the slot on which the DS3/E3 MIC is located.

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

For example, to navigate to the **[edit chassis fpc 1 pic 2]** hierarchy level:

```
[edit chassis]
user@host# edit fpc 1 pic 2
```

2. Configure the **channelization** statement.

```
[edit chassis fpc MPC-slot-number pic MIC-slot-number]
user@host# set channelization
```

For example:

```
[edit chassis fpc 1 pic 2]
user@host# set channelization
```

3. Verify the configuration by using the **show** command at the **[edit chassis]** hierarchy level:

```
[edit chassis]
user@host# show
fpc 1 {
  pic 2 {
    channelization;
  }
}
```

To enable the DS3/E3 MIC to function in clear-channel mode, you need to disable channelization. To do this, delete the **channelization** option at the **[chassis fpc MPC-slot-number pic MIC-slot-number]** hierarchy level.

To disable channelization on the DS3/E3 MIC:

1. At the **[edit chassis]** hierarchy level in configuration mode, navigate to the hierarchy level that indicates the slot on which the DS3/E3 MIC is located.


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

For example:

```
[edit chassis]
user@host# edit fpc 1 pic 2
```

2. Delete the **channelization** statement.

```
[edit chassis fpc MPC-slot-number pic MIC-slot-number]
user@host# delete channelization
```

For example:

```
[edit chassis fpc 1 pic 2]
user@host# delete channelization
```

Related Documentation

- [channelization](#)

Configuring Chassis Settings to Support Adaptive Services Interfaces

- [Configuring the Junos OS to Enable Service Packages on Adaptive Services Interfaces on page 117](#)

Configuring the Junos OS to Enable Service Packages on Adaptive Services Interfaces

For Adaptive Services (AS) PICs, MultiServices PICs, and the internal Adaptive Services Module (ASM) in the M7i platform, there are two service packages: Layer 2 and Layer 3. Both service packages are supported on all adaptive services interfaces, but you can enable only one service package per PIC, with the exception of the combined package supported on the ASM. On a single router, you can enable both service packages by installing two or more PICs on the platform.

You enable service packages per PIC, not per port. For example, if you configure the Layer 2 service package, the entire PIC uses the configured package. To enable a service package, include the **service-package** statement at the **[edit chassis fpc slot-number pic pic-number adaptive-services]** hierarchy level, and specify **layer-2** or **layer-3**:

```
[edit chassis fpc slot-number pic pic-number adaptive-services]
service-package (layer-2 | layer-3);
```

To determine which package an AS PIC supports, issue the **show chassis hardware** command: if the PIC supports the Layer 2 package, it is listed as **Link Services II**, and if it supports the Layer 3 package, it is listed as **Adaptive Services II**. To determine which package a MultiServices PIC supports, issue the **show chassis pic fpc-slot slot-number pic-slot slot-number** command. The **Package** field displays the value **layer-2** or **layer-3**.



NOTE: The ASM has a default option that combines the features available in the Layer 2 and Layer 3 service packages.

After you commit a change in the service package, the PIC is taken offline and then brought back online immediately. You do not need to manually take the PIC offline and online.



.....

NOTE: Changing the service package causes all state information associated with the previous service package to be lost. You should change the service package only when there is no active traffic going to the PIC.

.....

The services supported in each package differ by PIC and platform type.

**Related
Documentation**

- [Configuring the Junos OS to Support Layer 2 Services on MX Series 3D Universal Edge Routers with MS-DPCs on page 78](#)

CHAPTER 16

Configuring Chassis Settings to Support External Clock Synchronization

- [Configuring the Junos OS to Support an External Clock Synchronization Interface for M Series and T Series Routers on page 119](#)
- [Configuring an External Clock Synchronization Interface for MX Series Routers on page 121](#)
- [Clock Sources for the PTX Series Packet Transport Switches on page 124](#)
- [Configuring an External Clock Synchronization Interface for PTX Series Packet Transport Switches on page 126](#)
- [Example: Configuring Framing Mode for Synchronous Ethernet on MX Series Routers with 10-Gigabit Ethernet MIC on page 127](#)

Configuring the Junos OS to Support an External Clock Synchronization Interface for M Series and T Series Routers

The M40e, M120, M320, T640, and T1600 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. When internal timing is set for SONET/SDH, Plesiochronous Digital Hierarchy (PDH), or digital hierarchy (DS-1) interfaces 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.

Routers and switches that support an external clock synchronization interface include:

- M40e, M120, and M320 routers
- T640 and T1600 routers

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);
y-cable-line-termination;
transmitter-enable;
validation-interval seconds;
primary (external-a | external-b);
secondary (external-a | external-b);
}
```

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

- For the M120 and M320 routers, specify a signal type mode for interfaces, either **t1** or **e1**. For the M40e, T640, and T1600 routers, only the **t1** signal type mode is supported. The default setting is **t1**.
- For the T640 and T1600 routers, external clock interfaces are supported on the SONET Clock Generators (SCG-T-EC). The external clock interfaces on the SONET Clock Generators (SCG-T) are not supported.
- Specify the switching mode as **revertive** if a lower-priority synchronization can be switched to a valid, higher-priority synchronization.
- For the M320 router, specify that a single signal should be wired to both Control Boards (CBs) using a Y-cable. For the M40e router, the signal is wired to the CIP and Y-cable functionality is embedded in this system.

The **y-cable-line-termination** option is not available on the M40e, M120, T640, and T1600 routers.

- Control whether the diagnostic timing signal is transmitted.

The **transmitter-enable** option is not available on the M120, T640, and T1600 routers.

- Set a validation interval. The **validation-interval** option validates the synchronized deviation of the synchronization source. 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. The validation interval can be a value from 90 through 86,400 seconds. The default value is 90 seconds. For the M120 router, the range for the **validation-interval** option is 30 through 86,400 and the default value is **30**.
- Specify the primary external timing source by using the **primary (external-a | external-b)** statement.
- Specify the secondary external timing source by using the **secondary (external-a | external-b)** statement.

Related Documentation

- [Configuring an External Clock Synchronization Interface for PTX Series Packet Transport Switches on page 126](#)

Configuring an External Clock Synchronization Interface for MX Series Routers

MX5-T, MX10-T, MX40-T, MX80-T, MX240, MX480, and MX960 routers support external clock synchronization using Synchronous Ethernet.

Configuring external clock synchronization requires making clock selection, quality level (QL), and priority considerations. The clock selection algorithm is used to pick the two best clock sources, primary and secondary, from among all the various sources, based on system configuration and execution criteria such as QL, priority, hardware restrictions, and so on, and is achieved using the following logic and restrictions:

- QL must be configured for non-external clocks, whether or not QL is enabled.
- In the case of option-1, QL must be configured for external clocks (external-a or external-b), whether or not QL is enabled.
- In the case of option-2, the default QL for the external clocks is QL_STU, whether or not QL is enabled.
- Configuring priority is optional. When not specified, external-a has a higher default priority than external-b, and external-b has a higher default priority than Ethernet based sources such as ge or xe clock sources, which have the lowest default priority. Configured priority is higher than any default priority.
- When QL is enabled, the received QL must be equal to or better than the configured QL for that particular source or else that source will not be considered for clock selection. This is so that a downstream client is guaranteed clock quality of a certain level (that 'certain level' being the configured QL).
- The 10-Gigabit Ethernet MIC with XFP supports Synchronous Ethernet, which requires both the MIC and interface configured in the same framing mode.
- During clock selection:
 - The active source with highest QL is selected.
 - If QL is the same for two or more sources, then the source with highest priority wins.
 - If two or more sources have the same QL and priority, then currently active source, if any, among these sources wins.
 - If two or more sources have the same QL and priority, and none of these is currently active, then any one of these may be picked.
 - The configured (or default) QL of the selected clock source is used for Ethernet Synchronization Messaging Channel (ESMC).
 - If the primary clock source is $ge|xe-x/y/z$, where y is even (0 or 2), then the secondary cannot be $ge|xe-x/y/*$ or $ge|xe-x/y + 1/*$. E.g., if $ge-1/2/3$ is the primary clock source, then the secondary cannot be $ge-1/2/*$ or $ge-1/3/*$ for an MX80 or MX240 router.
 - If the primary clock source is $ge|xe-x/y/z$, where y is odd (1 or 3), then the secondary cannot be $ge|xe-x/y/*$ or $ge|xe-x/y - 1/*$. E.g., if $xe-2/3/4$ is the primary, then the secondary cannot be $xe-2/2/*$ or $xe-2/3/*$ for an MX80 or MX240 router.

- If the primary clock source is `ge|x/y/z`, then the secondary cannot be `ge|x/y/*` in the case of 12-16x10G DPC on an MX Series router e.g., if `ge-0/1/2`, is primary, then `ge-0/1/*` cannot be the secondary clock source, but `ge-0/0/*` may be the secondary.
- In order to receive or transmit ESMC messages out of an interface, at least one logical interface should be configured on that interface. If the interface is currently not configured with a logical interface, you may do so using the **set interfaces interface-name unit 0** statement at the **edit** hierarchy level.

Setting the clock type To set the clock type, use the following command:

```
set chassis synchronization network-type (option-1 | option-2)
```

EEC-1 maps to G.813 option 1 and EEC-2 maps to G.812 type IV clock.

Setting the clock mode To set the mode of operation to select the clock source either from free-run local oscillator or from an external qualified clock, use the following command:

```
set chassis synchronization clock-mode (free-run | auto-select)
```

For MX80 routers, the free-run clock is provided by the local oscillator..

For MX240 routers, the free-run clock is provided by the SCB..

The default for both routers is auto-select mode.

Setting the quality mode To set the synchronization quality mode, use the following command:

```
set chassis synchronization quality-mode-enable
```

The default is disable.

Setting the selection mode To configure the ESMC or SSM quality-based clock selection mode, use the following command:

```
set chassis synchronization selection-mode (configured-quality|received-quality)
```

When the **selection-mode** statement is set as **configured-quality**, the clock source selection algorithm uses the ESMC or SSM quality level configured for a qualifying interface.

When the **selection-mode** statement is set as **received-quality**, the clock source selection algorithm uses the ESMC or SSM quality level received on the qualifying interface.



NOTE: For the **selection-mode** statement configuration to take effect, you must set the **quality-mode-enable** statement at the **[edit chassis synchronization]** hierarchy level.

Setting the switchover, config-change, or reboot times To set the switchover, configuration-change, or restart time, use the following command:

```
set chassis synchronization hold-interval (configuration-change | restart | switchover) seconds
```

This sets the time interval to wait before selecting the new clock source during.

The default switchover time is 30 seconds and cold boot time is 120 seconds.

Setting the synchronization switchover mode

To set the synchronization switchover mode, use the following command:

```
set chassis synchronization switchover-mode (revertive | non-revertive)
```

In revertive mode, the system switches from a lower to a higher quality clock source whenever the higher clock source becomes available.

In non-revertive mode, the system continues to use the current clock source as long as it is valid.

The default mode is revertive.

Setting the clock source

To set the clock source, use the following command:

```
set chassis synchronization source (external-a | external-b | interfaces interface-name)
```

The clock source is specified using the clock selection process.

Setting ESMC packet transmit

To enable ESMC packet transmit, use the following command:

```
set chassis synchronization esmc-transmit interfaces interface-name
```

Setting the synchronization source quality level

To set the synchronization source quality level, use the following command:

```
set chassis synchronization source (external-a | external-b | interfaces interface-name) quality-level (prc | prs | sec | smc | ssu-a | ssu-b | st2 | st3 | st3e | st4 | stu | tnc)
```

Both option I and option II SSM quality levels are supported.

The quality level is set to DNU for network-option 1 and set to DUS for network-option 2, if quality-level not configured and no ESMC messages received.

On selected active source (primary or secondary which is active), even if ESMC transmit is not enabled, a DNU ESMC will be sent out if network-option is 1, and DUS ESMC will be sent out if network-option is 2. This is applicable only for Ethernet interface type sources. This is done to avoid the source looping, as per the standard requirement.

Setting the synchronization source priority

To set the synchronization source priority, use the following command:

```
set chassis synchronization source (external-a | external-b | interfaces interface-name) priority number
```

Setting the synchronization source wait to restore time

To set the synchronization source wait to restore time, use the following command:

```
set chassis synchronization source interfaces interface-name wait-to-restore minutes
```

A wait-to-restore time can be configured for each port. When a port's signal transitions out of the signal fail state it must be fault free for the wait-to-restore time before it is again considered by the selection process.

The range is from 0 through 12 minutes.

The default time is 5 minutes.

| | |
|--|---|
| Setting the synchronization source lockout | <p>To set the synchronization source lockout, use the following command:</p> <pre>set chassis synchronization source (external-a external-b interfaces interface-name) request lockout</pre> <p>Lockout may be configured for any source. When configured, that source will not be considered by the selection process.</p> |
| Setting the forced switch | <p>To set the forced switch, use the following command:</p> <pre>set chassis synchronization source (external-a external-b interfaces interface-name) request force-switch</pre> <p>Forces a switch to the source provided the source is enabled and not locked out. Only one configured source may be force-switched.</p> |
| Setting the PIC level framing mode for the 10-Gigabit Ethernet MIC with XFP | <p>To configure the LAN framing mode on the 10-Gigabit Ethernet MIC with XFP, use the following command:</p> <pre>set chassis fpc fpc-slot pic pic-slot framing <lan></pre> <p>Operation in LAN framing mode on the 10-Gigabit Ethernet MIC with XFP also requires interface framing mode configuration of the MIC interface.</p> |
| Setting the interface framing mode for the 10-Gigabit Ethernet MIC with XFP | <p>To configure the interface framing mode on the 10-Gigabit Ethernet MIC with XFP, use the following command:</p> <pre>set interfaces xe-fpc/pic/port framing-mode <lan-phy wan-phy></pre> <p>Operation in LAN framing mode on the 10-Gigabit Ethernet MIC with XFP also requires PIC level framing mode configuration.</p> |
| Related Documentation | <ul style="list-style-type: none">• Clock Sources for the PTX Series Packet Transport Switches on page 124• Example: Configuring Framing Mode for Synchronous Ethernet on MX Series Routers with 10-Gigabit Ethernet MIC on page 127• request chassis synchronization mode• synchronization (MX Series)• Synchronous Ethernet Overview on page 11 |

Clock Sources for the PTX Series Packet Transport Switches

System clocking on the PTX Series Packet Transport Switches 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.

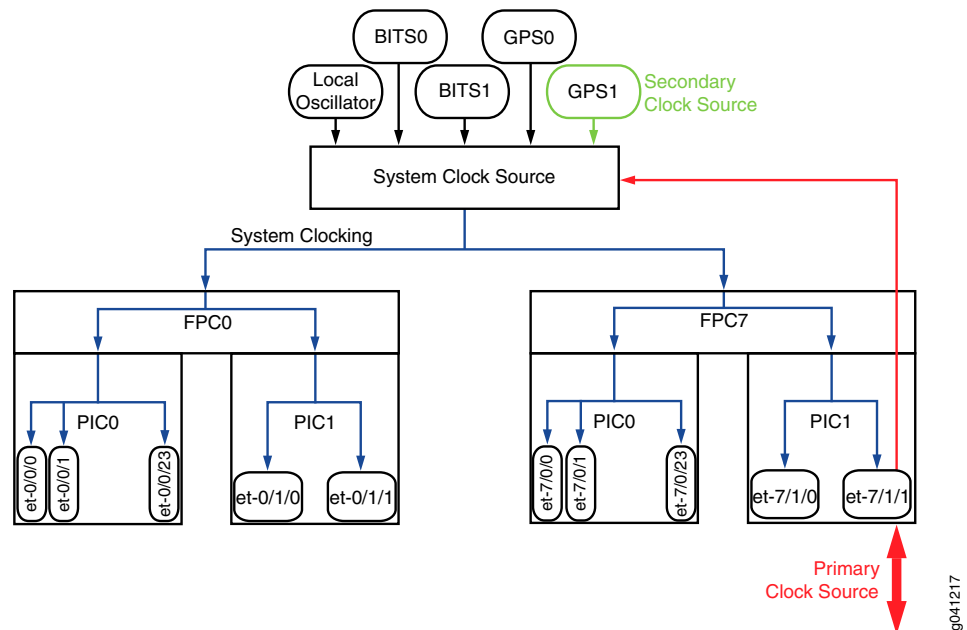
PTX Series Packet Transport Switches can use an internal clock source or it can extract clocking from an external source.

Clock sources and specifications include:

- The PTX series 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 4: Clocking Example for PTX Series Transport Switches



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 Switches on page 126](#)

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

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

- 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 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 Switches, 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 Switch, 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`

Example: Configuring Framing Mode for Synchronous Ethernet on MX Series Routers with 10-Gigabit Ethernet MIC

- [Requirements on page 127](#)
- [Overview on page 127](#)
- [Configuration on page 128](#)

Requirements

This example uses the following hardware and software components:

- Junos OS Release 11.4 or later for MX80-T, MX240, MX480, or MX960 routers
- One MX80-T, MX240, MX480, and MX960 router with 10-Gigabit Ethernet MIC with XFP

Overview

You can set the framing mode at the PIC level and at the interface level with various configuration combinations. For more information about the various configuration combinations, see [“Synchronous Ethernet on 10-Gigabit Ethernet MIC Overview” on page 13](#).

This example provides information about configuring framing mode at the interface level and the PIC level for Synchronous Ethernet on the 10-Gigabit Ethernet MIC with XFP.

The 10-Gigabit Ethernet MIC with XFP supports Synchronous Ethernet in LAN-PHY framing mode. This is possible only when all the logical PICs under the given Modular Interface Card (MIC) and its ingress interfaces are configured in LAN framing mode.

You can also alternatively configure a MIC in WAN-PHY framing mode on MX80, MX240, MX480, and MX960 routers by configuring all the constituent logical PICs in the same WAN-PHY framing mode in any one of the following configurations:

- No framing mode configured on all the constituent logical PICs of the MIC.
- Incompatible framing mode configured on constituent logical PICs of the MIC.
- No framing mode configured on some of the constituent logical PICs of the MIC.



NOTE: By default, the PIC-level framing mode is set to WAN framing type, that is, e1 | e3 | sdh | sonet | t1 | t3. Synchronous Ethernet works on 10-Gigabit Ethernet MIC with XFP in LAN-PHY mode only when the PIC level framing configuration is configured to lan framing type explicitly.

By default, the interface-level framing mode is set to lan-phy. For WAN-PHY operation, interface framing needs to be set to wan-phy framing explicitly.



NOTE: You can set the values for each parameter according to your requirement. The values given in this example are for illustration purposes only.

Configuration

CLI Quick Configuration

To quickly configure PIC-level framing and interface-level framing on the 10-Gigabit Ethernet MIC with XFP, copy the following commands and paste it into the CLI.

[edit]

```
set chassis fpc 2 pic 0 framing lan
set chassis fpc 2 pic 1 framing lan
set interfaces xe-2/1/0 framing-mode lan-phy
```

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 *Junos OS CLI User Guide*.

For step-by-step configuration of Synchronous Ethernet, see [“Configuring an External Clock Synchronization Interface for MX Series Routers”](#) on page 121.

Step-by-Step Procedure

To configure PIC-level framing on the 10-Gigabit Ethernet MIC with XFP, perform the following tasks:

1. In configuration mode, go to the **[edit chassis]** hierarchy level.

```
[edit]
user@host# edit chassis
```

2. Configure the FPC slot and the first PIC slot.

```
[edit chassis]
user@host# edit fpc 2 pic 0
```

3. Configure the framing type as LAN on the first PIC slot.

```
[edit chassis fpc2 pic 0]
user@host# set framing lan
```

4. Configure the FPC slot and the second PIC slot.

```
[edit chassis]
user@host# edit fpc 2 pic 1
```

5. Configure the framing type as LAN on the second PIC slot.

```
[edit chassis fpc2 pic 0]
user@host# set framing lan
```

Step-by-Step Procedure To configure interface-level framing on the 10-Gigabit Ethernet MIC with XFP, perform the following tasks:

1. In configuration mode, go to the **[edit interfaces]** hierarchy level and set the interface as **xe-2/1/0**.

```
[edit]
user@host# edit interfaces xe-2/1/0
```

2. Configure the interface in LAN-PHY framing mode.

```
[edit interfaces xe-2/1/0]
user@host# set framing-mode lan-phy
```

Results Display the results of the configuration at the PIC level:

```
[edit]
user@host# show
chassis {
  fpc 2 {
    pic 0 {
      framing lan;
    }
  }
  fpc 2 {
    pic 1 {
      framing lan;
    }
  }
}
```

Display the results of the configuration at the interface level:

```
[edit]
user@host# show
interfaces xe-2/1/0 {
  framing-mode lan-phy;
}
```

- Related Documentation**
- [Clock Sources for the PTX Series Packet Transport Switches on page 124](#)
 - [Configuring an External Clock Synchronization Interface for MX Series Routers on page 121](#)
 - [Example: Configuring Framing Mode for Synchronous Ethernet on MX Series Routers with 10-Gigabit Ethernet MIC on page 127](#)
 - request chassis synchronization mode
 - [Synchronous Ethernet Overview on page 11](#)
 - [Synchronous Ethernet on 10-Gigabit Ethernet MIC Overview on page 13](#)

- synchronization (MX Series)

Configuring Chassis Settings to Support ATM Devices

- [Configuring the Junos OS to Enable ATM2 Intelligent Queuing Layer 2 Circuit Transport Mode on page 131](#)
- [Configuring the Junos OS to Enable Idle Cell Format and Payload Patterns for ATM Devices on page 132](#)

Configuring the Junos OS to Enable ATM2 Intelligent Queuing Layer 2 Circuit Transport Mode

On ATM2 IQ PICs only, you can configure Layer 2 circuit cell relay, Layer 2 circuit ATM Adaptation Layer 5 (AAL5), or Layer 2 circuit trunk mode.

Layer 2 circuit cell relay and Layer 2 circuit AAL5 are defined in the Internet draft draft-martini-l2circuit-encap-mpls-04.txt, *Encapsulation Methods for Transport of Layer 2 Frames Over IP and MPLS Networks*.

Layer 2 circuit trunk mode allows you to send ATM cells over Multiprotocol Label Switching (MPLS) trunking.

The four transport modes are defined as follows:

- To tunnel IP packets over an ATM backbone, use the default standard AAL5 transport mode.
- To tunnel a stream of AAL5-encoded ATM segmentation-and-reassembly protocol data units (SAR-PDUs) over an MPLS or IP backbone, use Layer 2 circuit AAL5 transport mode.
- To tunnel a stream of ATM cells over an MPLS or IP backbone, use Layer 2 circuit cell-relay transport mode.
- To transport ATM cells over an MPLS core network that is implemented on some other vendor switches, use Layer 2 circuit trunk mode.



NOTE: You can transport AAL5-encoded traffic with Layer 2 circuit cell-relay transport mode, because Layer 2 circuit cell-relay transport mode ignores the encoding of the cell data presented to the ingress interface.

When you configure AAL5 mode Layer 2 circuits, the control word carries cell loss priority (CLP) information by default.

By default, ATM2 IQ PICs are in standard AAL5 transport mode. Standard AAL5 allows multiple applications to tunnel the protocol data units of their Layer 2 protocols over an ATM virtual circuit. To configure the Layer 2 circuit transport modes, include the **atm-l2circuit-mode** statement at the **[edit chassis fpc slot-number pic pic-number]** hierarchy level:

```
[edit chassis fpc slot-number pic pic-number]
atm-l2circuit-mode (cell | aal5 | trunk trunk);
```

On a TX Matrix or TX Matrix Plus router, include the **atm-l2circuit-mode** 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]
atm-l2circuit-mode (cell | aal5 | trunk trunk);
```

aal5 tunnels a stream of AAL5-encoded ATM cells over an IP backbone.

cell tunnels a stream of ATM cells over an IP backbone.

trunk transports ATM cells over an MPLS core network that is implemented on some other vendor switches. Trunk mode can be user-to-network interface (UNI) or network-to-network interface (NNI).



NOTE: To determine which vendors support Layer 2 circuit trunk mode, contact Juniper Networks customer support.

**Related
Documentation**

- [Configuring the Junos OS to Support ILMI for Cell Relay Encapsulation on an ATM2 IQ PIC on page 92](#)
- [Configuring the Junos OS to Enable Idle Cell Format and Payload Patterns for ATM Devices on page 132](#)
- [Configuring the Junos OS to Use ATM Cell-Relay Accumulation Mode on an ATM1 PIC on page 88](#)

Configuring the Junos OS to Enable Idle Cell Format and Payload Patterns for ATM Devices

ATM devices send idle cells to enable the receiving ATM interface to recognize the start of each new cell. The receiving ATM device does not act on the contents of idle cells and does not pass them up to the ATM layer in the ATM protocol stack.

By default, the idle cell format for ATM cells is (4 bytes): 0x00000000. For ATM 2 PICs only, you can configure the format of the idle cell header and payload bytes.

To configure the idle cell header to use the International Telecommunications Union (ITU-T) standard of 0x00000001, include the **itu-t** statement at the **[edit chassis fpc slot-number pic number idle-cell-format]** hierarchy level:

```
[edit chassis fpc slot-number pic pic-number idle-cell-format]
itu-t;
```

On a TX Matrix or TX Matrix Plus router, include the `itu-t` statement at the `[edit chassis lcc number fpc slot-number pic pic-number idle-cell-format]` hierarchy level:

```
[edit chassis lcc number fpc slot-number pic pic-number idle-cell-format]
itu-t;
```

By default, the payload pattern is cell payload (48 bytes). To configure the idle cell payload pattern, include the `payload-pattern` statement at the `[edit chassis fpc slot-number pic number idle-cell-format]` hierarchy level:

```
[edit chassis fpc slot-number pic pic-number idle-cell-format]
payload-pattern payload-pattern-byte;
```

On a TX Matrix router, include the `payload-pattern` statement at the `[edit chassis lcc number fpc slot-number pic pic-number idle-cell-format]` hierarchy level:

```
[edit chassis lcc number fpc slot-number pic pic-number idle-cell-format]
payload-pattern payload-pattern-byte;
```

The payload pattern byte can range from `0x00` through `0xff`.

For information about the TX Matrix router, see [“TX Matrix Router and T640 Router Configuration Overview” on page 23](#). For information about the TX Matrix Plus router, see [“TX Matrix Plus Router and T1600 Router Configuration Overview” on page 28](#).

Related Documentation

- [Configuring the Junos OS to Use ATM Cell-Relay Accumulation Mode on an ATM1 PIC on page 88](#)
- [Configuring the Junos OS to Enable ATM2 Intelligent Queuing Layer 2 Circuit Transport Mode on page 131](#)
- [Configuring the Junos OS to Support ILMI for Cell Relay Encapsulation on an ATM2 IQ PIC on page 92](#)

CHAPTER 18

Configuring Chassis Settings for Routing Engines and Packet Forwarding Engines

- [Configuring the Junos OS to Support Redundancy on Routers Having Multiple Routing Engines or Switching Boards on page 135](#)
- [Signaling Neighboring Routers of Fabric Down on T640 and T1600 Routers on page 136](#)
- [Traffic Black Hole Caused by Fabric Degradation on page 137](#)
- [Disabling FPC Restart on page 138](#)
- [Configuring the Junos OS to Allocate More Memory for Routing Tables, Firewall Filters, and Layer 3 VPN Labels on page 138](#)
- [Configuring the Junos OS to Enable a Routing Engine to Reboot on Hard Disk Errors on page 140](#)
- [Associating Sampling Instances for Active Flow Monitoring with a Specific Packet Forwarding Engine on page 141](#)
- [Configuring a Policer Overhead on page 142](#)
- [Configuring Sanity Polling for FPCs on T Series Routers on page 143](#)

Configuring the Junos OS to Support Redundancy on Routers Having Multiple Routing Engines or Switching Boards

For routers that have multiple Routing Engines or these multiple switching control boards: Switching and Forwarding Modules (SFMs), System and Switch Boards (SSBs), Forwarding Engine Boards (FEBs), or Compact Forwarding Engine Boards (CFEBs), you can configure redundancy properties.

To configure redundancy, include the following redundancy statements at the **[edit chassis]** hierarchy level:

```
redundancy {
  cfeb slot (always | preferred);
  failover {
    on-disk-failure
    on-loss-of-keepalives;
  }
  feb {
    redundancy-group group-name {
      feb slot-number (backup | primary);
```

```
        description description;  
        no-auto-failover;  
    }  
}  
graceful-switchover;  
keepalive-time seconds;  
routing-engine slot-number (master | backup | disabled);  
sfm slot-number (always | preferred);  
ssb slot-number (always | preferred);  
}
```

**Related
Documentation**

- Understanding Routing Engine Redundancy on Juniper Networks Routers

Signaling Neighboring Routers of Fabric Down on T640 and T1600 Routers

In JUNOS OS Release 10.4 and later, T640 and T1600 routers signal neighboring routers if they are unable to carry traffic due to all fabric planes being taken offline for one of the following reasons:

- CLI or button press initiated offline state.
- Automatically taken offline by the SPMB due to high temperature.
- PIO errors or voltage errors detected by the SPMB CPU to the SIBs.

The following scenarios are not supported:

- All PFEs get destination errors on all planes to all destinations, even with the Switch Interface Boards (SIBs) staying online.
- Complete fabric loss caused by destination timeouts, with the SIBs still online.

When chassisd detects all fabric planes are down, the router reboots all the FPCs in the system. When the FPCs come back up, the interfaces will not be created again, since all the fabric planes are down.

Once the user diagnoses and fixes the cause of all fabric planes going down, the user must then online the SIBs. The SIB online process brings up the interfaces.

Fabric down signaling to neighboring routers offers the following benefits:

- FPCs reboot when the control plane connection to the RE times out.
- Extends a simple approach to reboot FPCs when the dataplane blacks out.

When the router transitions from a state where SIBs are online or spare to a state where there are no SIBs in online state, then all the FPCs in the system are rebooted.

An ERRMSG indicates if all fabric planes are down and the FPCs will be rebooted if any fabric planes do not come up in 2 minutes.

An ERRMSG indicates the reason for FPC reboot on fabric connectivity loss.

The `chassisd` daemon traces when an FPC comes online, but PIC attach is not done due to no fabric plane present.

A warning is issued in the CLI when the last fabric plane is taken offline, that FPCs will reboot. You will need to online the SIBs after fixing the cause of the SIBs not being online. When the first SIB goes online, and link training with the FPCs completes, the interfaces will be created.

Fabric down signaling to neighboring routers functionality is available by default, and no user configuration required to enable it.

No CLI commands or alarms are required for this feature. Alarms indicate an SIBs offline system state to the user.

Related Documentation

- System Basics: Chassis-Level Features Configuration Guide

Traffic Black Hole Caused by Fabric Degradation

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

The M320, T640, and T1600 routers limit the black-hole time by detecting unreachable destination Packet Forwarding Engines and signaling connected routers 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.
- 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.

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. 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.

2. 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.
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 138](#)
 - [Router Chassis Configuration Statements on page 191](#)

Disabling FPC Restart

You can disable FPC restart to limit recovery actions from a degraded fabric condition to fabric plane restart only. 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 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 137](#)
 - [Router Chassis Configuration Statements on page 191](#)

Configuring the Junos OS to Allocate More Memory for Routing Tables, Firewall Filters, and Layer 3 VPN Labels

The jtree memory on all MX Series, all M120, and some M320, M10i, M7i, T640, T1600, TX Matrix, and TX Matrix Plus router Packet Forwarding Engines has two segments: one segment primarily stores routing tables and related information, and the other segment primarily stores firewall-filter-related information.

The Junos OS provides the **memory-enhanced** statement to reallocate the jtree memory for routes, firewall filters, and Layer 3 VPNs. The statement has the following options:

- **filter**—Include this statement when you want to support larger firewall filters over routing tables. However, we recommend enabling this option only if you do not have a very large routing table configuration.

To allocate more memory for firewall filters, include the **filter** statement at the **[edit chassis memory-enhanced]** hierarchy level:

```
[edit chassis memory-enhanced]
filter;
```

- **route**—Include this statement when you want to support larger routing tables (with more routes) over firewall filters. For example, you can enable this option, when you want to support a large number of routes for Layer 3 VPNs implemented using MPLS. However, we recommend enabling this option only if you do not have a very large firewall configuration.

To allocate more memory for routing tables, include the **route** statement at the **[edit chassis memory-enhanced]** hierarchy level:

```
[edit chassis memory-enhanced]
route;
```

- **vpn-label**—(T Series platforms only) Include this statement when you want to enhance memory to support a larger number of Layer 3 VPN labels.

Layer 3 VPN composite next hops can be enabled by including the **l3vpn-composite-nexthop** statement at the **[edit routing-options]** and **[edit logical-systems logical-system-name routing-options]** hierarchy levels. This statement enables BGP to accept larger numbers of Layer 3 VPN BGP updates with unique inner VPN labels. Including the **l3vpn-composite-nexthop** in the configuration enhances scaling and convergence performance of PE routers participating in a Layer 3 VPN in a multivendor environment. For more information on configuring the **l3vpn-composite-nexthop** statement, see the [Junos OS VPNs Configuration Guide](#).

To allocate more memory to support a larger number of Layer 3 VPN labels accepted by the **l3vpn-composite-nexthop** statement, include the **vpn-label** statement at the **[edit chassis memory-enhanced]** hierarchy level:

```
[edit chassis memory-enhanced]
vpn-label;
```

The **memory-enhanced vpn-label** statement increases the size of the fabric next-hop table, which is held on the egress FPC in the jtree, from the default value of 128,000 entries to 1,000,000 entries. This improves token fabric scaling, at the expense of additional segment 1 usage. This functionality is not applicable to MX Series, or M320 platforms, as these platforms provide for flexibly sized fabric token tables by default. This means that the **memory-enhanced route** statement is applicable to T Series platforms and that you can configure both **memory-enhanced vpn-label** and **memory-enhanced route** on T Series platforms when their combined functionality is desired.

You can configure the **memory-enhanced** statement on the following routers:

- M10i and M7i routers with Enhanced CFEB
- M320 routers with Enhanced III FPC1, Enhanced III FPC2, and Enhanced III FPC3
- M120 routers

- MX Series routers
- T Series (T640, T1600, TX Matrix, and TX Matrix Plus) routers with Enhanced Scaling FPC1, Enhanced Scaling FPC2, Enhanced Scaling FPC3, and Enhanced Scaling FPC4.

As the allocation of more memory for routing tables or firewall filters might disrupt the forwarding operations of a Packet Forwarding Engine, the Junos OS CLI displays a warning to restart all affected FPCs when you commit a configuration that includes the **memory-enhanced route** statement. The configuration does not become effective until you restart the FPC or DPC (on MX Series routers).

To restart a single FPC or DPC without rebooting the entire router, issue the **request chassis fpc slot *slot-number* restart** command. On an M120 router, issue the **request chassis feb slot *slot-number* restart** command.

To view if the configuration is active on an FPC or DPC, issue the **show pfe fpc *slot-number*** command.

**NOTE:**

- For T Series routers only. With Junos OS Release 10.2, enhanced jtree memory allocation is disabled by default. For Junos OS Releases 9.3 through 10.1, the default routing tables (inet.0 and inet6.0) use both memory segments by default.
 - In Junos OS Release 11.2 and later, the **memory-enhanced route** statement at the [edit chassis] hierarchy level replaces the **route-memory-enhanced** statement at the [edit chassis] hierarchy level.
 - The **filter** and **vpn-label** statements are supported only on T Series routers.
-

Related Documentation

- [memory-enhanced](#)
- [filter](#)
- [route](#)
- [vpn-label](#)

Configuring the Junos OS to Enable a Routing Engine to Reboot on Hard Disk Errors

When a hard disk error occurs, a Routing Engine might enter a state in which it responds to local pings and interfaces remain up, but no other processes are responding.

To recover from this situation, you can configure a single Routing Engine to reboot automatically when a hard disk error occurs. To enable this feature, include the **on-disk-failure reboot** statement at the [edit chassis routing-engine] hierarchy level.

```
[edit chassis routing-engine]
on-disk-failure {
    disk-failure-action (halt | reboot);
}
```

For dual Routing Engine environments, you can configure a backup Routing Engine to assume mastership automatically, if it detects a hard disk error on the master Routing Engine. To enable this feature, include the **on-disk-failure** statement at the **[edit chassis redundancy failover]** hierarchy level. For information about this statement, see the [Junos OS High Availability Configuration Guide](#).

You can configure the Routing Engine to halt (instead of rebooting) when the hard disk fails on the Routing Engine. To configure this feature, include the **disk-failure-action (halt | reboot)** statement at the **[edit chassis routing-engine on-disk-failure]** hierarchy level:

```
[edit chassis routing-engine]
on-disk-failure {
  disk-failure-action (halt | reboot);
}
```

Use the **halt** option to configure the Routing Engine to halt when the hard disk fails. Use the **reboot** option to configure the Routing Engine to reboot when the hard disk fails.

**Related
Documentation**

- [Configuring Automatic Mirroring of the CompactFlash Card on the Hard Disk Drive](#)

Associating Sampling Instances for Active Flow Monitoring with a Specific Packet Forwarding Engine

The Junos OS enables you to configure sampling instances for active flow monitoring, by specifying a name for the sampling parameters and associating the instance name with a specific Packet Forwarding Engine.

To configure active sampling instances, include the **instance** statement at the **[edit forwarding-options sampling]** hierarchy level. This configuration is supported on MX Series, M120, M320, and T Series routers. For more information about configuring sampling instances, see the [Junos OS Services Interfaces Configuration Guide](#).

To associate a configured active sampling instance with a specific Packet Forwarding Engine, include the sampling instance name at the **[edit chassis fpc slot-number]** hierarchy level:

```
[edit chassis fpc slot-number]
sampling-instance instance-name;
```

On a TX Matrix or TX Matrix Plus router, include the **sampling-instance** statement at the **[edit chassis lcc number fpc slot-number]** hierarchy level:

```
[edit chassis lcc number fpc slot-number]
sampling-instance instance-name;
```

**Related
Documentation**

- [Junos Services Interfaces Configuration Guide](#)
- [sampling-instance](#)

Configuring a Policer Overhead

Configuring a policer overhead allows you to control the rate of traffic sent or received on an interface. When you configure a policer overhead, the configured policer overhead value (bytes) is added to the length of the final Ethernet frame. This calculated length of frame is used to determine the policer or the rate limit action. Therefore, the policer overhead enables you to control the rate of traffic sent or received on an interface. You can configure the policer overhead to rate-limit queues and Layer 2 and MAC policers. The policer overhead and the shaping overhead can be configured simultaneously on an interface.

This feature is supported on M Series and T Series routers with IQ2 PICs or IQ2E PICs, and on MX Series DPCs.

To configure a policer overhead for controlling the rate of traffic sent or received on an interface:

1. In the **[edit chassis]** hierarchy level in configuration mode, create the interface on which to add the policer overhead to input or output traffic.

```
[edit chassis]
user@host# edit fpc fpc pic pic
```

For example:

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

2. Configure the policer overhead to control the input or output traffic on the interface. You could use either statement or both the statements for this configuration.

```
[edit chassis fpc fpc pic pic]
user@host# set ingress-policer-overhead bytes;
user@host# set egress-policer-overhead bytes;
```

For example:

```
[edit chassis fpc 0 pic 1]
user@host# set ingress-policer-overhead 10;
user@host# set egress-policer-overhead 20;
```

3. Verify the configuration:

```
[edit chassis]
user@host# show
fpc 0 {
  pic 1 {
    ingress-policer-overhead 10;
    egress-policer-overhead 20;
  }
}
```



NOTE: When the configuration for the policer overhead bytes on a PIC is changed, the PIC goes offline and then comes back online. In addition, the configuration in the CLI is on a per-PIC basis and, therefore, applies to all the ports on the PIC.

Related Documentation

- [egress-policer-overhead](#)
- [ingress-policer-overhead](#)

Configuring Sanity Polling for FPCs on T Series Routers

T Series routers running Junos OS Release 11.4 and later support the sanity polling feature. You can configure the **sanity-poll** statement for a particular FPC to start a periodic sanity check for that FPC. The periodic sanity check includes checking for FPC error conditions such as “register sanity issues,” “high temperature,” “hardware failure,” and so on. If you do not configure the **sanity-poll** statement, then sanity polling is disabled.



NOTE: Currently, periodic sanity check is performed only on the routing chip register.

Sanity polling periodically checks for an error condition in an FPC and performs the appropriate actions in case of an error.

To configure sanity polling for an FPC, include the **sanity-poll** statement and its substatements at the **[edit chassis fpc slot-number]** hierarchy level:

```
[edit chassis]
fpc slot-number {
  sanity-poll {
    retry-count number;
    on-error {
      raise-alarm;
      power (cycle | off);
      write-coredump;
    }
  }
}
```



NOTE: On a TX Matrix or TX Matrix Plus router, you can configure the **sanity-poll** statement at the **[edit chassis lcc number fpc number]** hierarchy level.

The **sanity-poll** statement comprises the following substatements:

- The **retry-count** statement specifies the number of rechecks to be performed after the occurrence of a particular error condition. If an error exists in all the periodic checks,

then sanity polling reports an error and proceeds to perform the appropriate actions (described as options of the **on-error** statement).

For example, if the periodic sanity check detects an error in the FPC and if you configure the **retry count number** to 15, sanity polling does not report the error immediately. Sanity polling checks 15 times for the same error condition. If an error persists in all 15 rechecks, then it reports an error and takes the appropriate actions.

If you do not configure the **retry-count** statement, then by default, the **sanity-poll** statement rechecks the detected error 10 times before reporting an error condition.

- If sanity polling detects an error condition, the **on-error** statement performs the appropriate actions to eliminate the error.

The following actions are common to all kinds of error conditions:

- To generate a chassis alarm, configure the **raise-alarm** statement. The chassis alarm is displayed in the front panel of the chassis.
- To reboot the FPC after generating a core file, configure the **power cycle** statement. This statement is useful for temporary software errors that are eliminated after reboot.
- To halt the FPC, configure the **power off** statement. This statement is useful in case of permanent hardware failure.



CAUTION: The **power off** statement halts the FPC. Ensure that you have backup paths through a different FPC to avoid service outage.



NOTE: The **power cycle** and **power off** statements are mutually exclusive: You can configure either the **power cycle** or the **power off** action for an error.

- To trigger the core file, configure the **write-coredump** statement.

You can configure multiple actions for a given FPC. If you do not configure any actions, the **sanity-poll** statement generates only FPC system log messages.

**Related
Documentation**

- [sanity-poll](#)
- [retry-count](#)
- [on-error](#)

Configuring Chassis Settings for the Craft Interface

- [Configuring the Junos OS to Disable the Physical Operation of the Craft Interface on page 145](#)

Configuring the Junos OS to Disable the Physical Operation of the Craft Interface

You can disable the physical operation of the craft interface front panel on the router. When you disable the operation of the craft interface, the buttons on the front panel, such as the alarm cutoff button, no longer function. To disable the craft interface operation, include the **craft-lockout** statement at the **[edit chassis]** hierarchy level:

```
[edit chassis]  
craft-lockout;
```

Related Documentation

- [Configuring the Junos OS to Determine Conditions That Trigger Alarms on Different Interface Types on page 149](#)
- [Silencing External Devices Connected to Alarm Relay Contacts on page 184](#)

Configuring Chassis Settings for PEMs

- Configuring the Six-Input DC Power Supply on page 147

Configuring the Six-Input DC Power Supply

By default, the six-input DC power supply is configured to have all the six input feeds connected. You can also choose to provide four or five input feeds to the six-input DC power supply. When providing four or five input feeds on standalone T640, T1600, and T4000 routers, you need to configure the **feeds** statement at the **[edit chassis pem]** hierarchy level. When providing five input feeds to a T1600 (LCC) router in a routing matrix, you need to configure the **feeds** statement at the **[edit chassis lcc lcc-number pem]** hierarchy level.



NOTE: Before configuring input feeds for your router, see the *T640 Core Router Hardware Guide*, *T1600 Core Router Hardware Guide*, or *T4000 Core Router Hardware Guide* for special considerations and for the number of input feeds supported by the router.

The steps to configure the **feeds** statement at both these hierarchy levels are similar. The following procedure illustrates the steps for configuring the **feeds** statement at the **[edit chassis pem]** hierarchy level.

To configure the six-input DC power supply:

1. At the **[edit chassis pem]** hierarchy level, configure the **feeds** statement with the number of input feeds provided to the power supply.

```
[edit chassis pem]
user@host# set feeds number-of-input-feeds
```

For example:

```
[edit chassis pem]
user@host# set feeds 5
```



NOTE: All power supplies in the router must use the same number of inputs feeds.

2. Verify the configuration by using the **show** command at the **[edit chassis]** hierarchy level:

```
[edit chassis]
user@host# show
pem {
    feeds 5;
}
```

The value assigned to the **feeds** statement must be equal to the number of input feeds provided to the power supply. Else, an alarm message is generated to indicate the mismatch.

**Related
Documentation**

- pem (T640, T1600, and T4000 Routers with Six-Input DC Power Supply)
- Chassis Traps

Configuring Chassis Settings for Alarms

- [Configuring the Junos OS to Determine Conditions That Trigger Alarms on Different Interface Types on page 149](#)
- [System-Wide Alarms and Alarms for Each Interface Type on page 150](#)
- [Chassis Conditions That Trigger Alarms on page 151](#)
- [Silencing External Devices Connected to Alarm Relay Contacts on page 184](#)

Configuring the Junos OS to Determine Conditions That Trigger Alarms on Different Interface Types

For the different types of PICs, you can configure which conditions trigger alarms and whether they trigger a red or yellow alarm. Red alarm conditions light the **RED ALARM** LED and trigger an audible alarm if one is connected. Yellow alarm conditions light the **YELLOW ALARM** LED and trigger an audible alarm if one is connected.



NOTE: By default, any failure condition on the integrated-services interface (Adaptive Services PIC) triggers a red alarm.

To configure conditions that trigger alarms and that can occur on any interface of the specified type, include the **alarm** statement at the **[edit chassis]** hierarchy level.

```
[edit chassis]
alarm {
  interface-type {
    alarm-name (red | yellow | ignore);
  }
}
```

alarm-name is the name of an alarm.

Related Documentation

- [System-Wide Alarms and Alarms for Each Interface Type on page 150](#)
- [Chassis Conditions That Trigger Alarms on page 151](#)
- [Silencing External Devices Connected to Alarm Relay Contacts on page 184](#)

System-Wide Alarms and Alarms for Each Interface Type

Table 12 on page 150 lists the system-wide alarms and the alarms for each interface type.

Table 12: Configurable PIC Alarm Conditions

| Interface/System | Alarm Condition | Configuration Option |
|-------------------|--|----------------------|
| SONET/SDH and ATM | Link alarm indication signal | ais-l |
| | Path alarm indication signal | ais-p |
| | Signal degrade (SD) | ber-sd |
| | Signal fail (SF) | ber-sf |
| | Loss of cell delineation (ATM only) | locd |
| | Loss of framing | lof |
| | Loss of light | lol |
| | Loss of pointer | lop-p |
| | Loss of signal | los |
| | Phase-locked loop out of lock | pll |
| | Synchronous transport signal (STS) payload label (C2) mismatch | plm-p |
| | Line remote failure indication | rfi-l |
| | Path remote failure indication | rfi-p |
| | STS path (C2) unequipped | uneq-p |

Table 12: Configurable PIC Alarm Conditions (*continued*)

| Interface/System | Alarm Condition | Configuration Option |
|---------------------|-------------------------------|----------------------|
| E3/T3 | Alarm indicator signal | ais |
| | Excessive numbers of zeros | exz |
| | Failure of the far end | ferf |
| | Idle alarm | idle |
| | Line code violation | lcv |
| | Loss of frame | lof |
| | Loss of signal | los |
| | Phase-locked loop out of lock | pll |
| | Yellow alarm | ylw |
| Ethernet | Link has gone down | link-down |
| DS1 | Alarm indicator signal | ais |
| | Yellow alarm | ylw |
| Integrated services | Hardware or software failure | failure |
| Management Ethernet | Link has gone down | link-down |

- Related Documentation**
- [Configuring the Junos OS to Determine Conditions That Trigger Alarms on Different Interface Types on page 149](#)

Chassis Conditions That Trigger Alarms

Various conditions related to the chassis components trigger yellow and red alarms. You cannot configure these conditions. [Table 13 on page 152](#) through “[Chassis Component Alarm Conditions on M5 and M10 Routers](#)” on page 152 list the alarms that the chassis components can generate. For information about chassis alarms for J Series Services Routers, see the *J Series Services Router Administration Guide*. For information about chassis alarms for the TX Matrix router, see the *TX Matrix Router Hardware Guide*. For information about chassis alarms for the TX Matrix Plus router, see the *TX Matrix Plus Router Hardware Guide*.

Chassis Component Alarm Conditions on M5 and M10 Routers

Table 13 on page 152 lists the alarms that the chassis components can generate on M5 and M10 routers.

Table 13: Chassis Component Alarm Conditions on M5 and M10 Routers

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|---------------------------------|--|---|----------------|
| Alternative media | The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails. | Open a support case using the Case Manager link at www.juniper.net/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Yellow |
| Craft interface | The craft interface has failed. | Replace failed craft interface. | Red |
| Fan trays | One fan tray has been removed from the chassis. | Install missing fan tray. | Yellow |
| | Two or more fan trays have been removed from the chassis. | Install missing fan trays. | Red |
| | One fan in the chassis is not spinning or is spinning below required speed. | Replace failed fan tray. | Red |
| Forwarding Engine Board (FEB) | The control board has failed. If this occurs, the board attempts to reboot. | Replace failed FEB. | Red |
| Flexible PIC Concentrator (FPC) | An FPC has failed. If this occurs, the FPC attempts to reboot. If the FEB sees that an FPC is rebooting too often, it shuts down the FPC. | Replace failed FPC. | Red |
| Hot swapping | Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's backplane from the front (generally, an FPC) is broken. | Replace failed component. | Red |

Table 13: Chassis Component Alarm Conditions on M5 and M10 Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|---|--|----------------|
| Routing Engine | Error in reading or writing CompactFlash card. | Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine. | Yellow |
| | System booted from hard disk. | Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine. | Yellow |
| | CompactFlash card missing in boot list. | Replace failed Routing Engine. | Red |
| | Hard disk missing in boot list. | Replace failed Routing Engine. | Red |
| Power supplies | A power supply has been removed from the chassis. | Install missing power supply. | Yellow |
| | A power supply has failed. | Replace failed power supply. | Red |

Table 13: Chassis Component Alarm Conditions on M5 and M10 Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|---|--|----------------|
| Temperature | The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | The chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | The temperature sensor has failed. | <p>Open a support case using the Case Manager link at</p> <p>www.juniper.net/</p> <p>or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).</p> | Red |

Chassis Component Alarm Conditions on M7i and M10i Routers

Table 14 on page 155 lists the alarms that the chassis components can generate on M7i and M10i routers.

Table 14: Chassis Component Alarm Conditions on M7i and M10i Routers

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|--------------------|--|--|----------------|
| Alternative media | The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Yellow |
| Compact FEB (CFEB) | For an M7i router, CFEB has failed. If this occurs, the board attempts to reboot. | Replace failed CFEB. | Red |
| | For an M10i router, both control boards have been removed or have failed. | Replace failed or missing CFEB. | Red |
| | Too many hard errors in CFEB memory. | Replace failed CFEB. | Red |
| | Too many soft errors in CFEB memory. | Replace failed CFEB. | Red |
| | A CFEB microcode download has failed. | Replace failed CFEB. | Red |
| Fan trays | A fan has failed. | Replace failed fan tray. | Red |
| | For an M7i router, a fan tray has been removed from the chassis. | Install missing fan tray. | Red |
| | For an M10i router, both fan trays are absent from the chassis. | Install missing fan tray. | Red |
| Hot swapping | Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's midplane from the front is broken. | Replace failed component. | Red |

Table 14: Chassis Component Alarm Conditions on M7i and M10i Routers (continued)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|--|--|----------------|
| Power supplies | A power supply has been removed. | Insert missing power supply. | Yellow |
| | A power supply has failed. | Replace failed power supply. | Red |
| | For an M10i router, only one power supply is operating. | Insert or replace secondary power supply. | Red |
| Routing Engine | Excessive framing errors on console port. | Replace the serial cable connected to the device. | Yellow |
| | An excessive framing error alarm is triggered when the default framing error threshold of 20 errors per second on a serial port is exceeded. | If the cable is replaced and no excessive framing errors are detected within 5 minutes from the last detected framing error, the alarm is cleared automatically. | |
| | This might be caused by a faulty serial console port cable connected to the device. | | |
| | Error in reading or writing hard disk. | Reformat hard disk and install bootable image. If this fails, replace failed Routing Engine. | Yellow |
| | Error in reading or writing CompactFlash card. | Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine. | Yellow |
| | System booted from hard disk. This alarm only applies, if you have an optional CompactFlash card. | Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine. | Yellow |
| | CompactFlash card missing in boot list. | Replace failed Routing Engine. | Red |
| | Hard disk missing in boot list. | Replace failed Routing Engine. | Red |
| | Routing Engine failed to boot. | Replace failed Routing Engine. | Red |

Table 14: Chassis Component Alarm Conditions on M7i and M10i Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|---|--|----------------|
| Temperature | The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | The chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | The temperature sensor has failed. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Red |

Chassis Component Alarm Conditions on M20 Routers

Table 15 on page 158 lists the alarms that the chassis components can generate on M20 routers.

Table 15: Chassis Component Alarm Conditions on M20 Routers

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|--|--|----------------|
| Alternative media | The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Yellow |
| Craft interface | The craft interface has failed. | Replace failed craft interface. | Red |
| Fan trays | One fan tray has been removed from the chassis. | Install missing fan tray. | Yellow |
| | Two or more fan trays have been removed from the chassis. | Install missing fan trays. | Red |
| | One fan in the chassis is not spinning or is spinning below requires speed. | Replace fan tray. | Red |
| FPC | An FPC has failed. If this occurs, the FPC attempts to reboot. If the System and Switch Board (SSB) sees that an FPC is rebooting too often, it shuts down the FPC. | Replace failed FPC. | Red |
| Hot swapping | Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs in to the router's backplane from the front (generally, an FPC) is broken. | Replace failed component. | Red |

Table 15: Chassis Component Alarm Conditions on M20 Routers (continued)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|--|--|----------------|
| Routing Engine | Excessive framing errors on console port. | Replace the serial cable connected to the device. | Yellow |
| | An excessive framing error alarm is triggered when the default framing error threshold of 20 errors per second on a serial port is exceeded. | If the cable is replaced and no excessive framing errors are detected within 5 minutes from the last detected framing error, the alarm is cleared automatically. | |
| | This might be caused by a faulty serial console port cable connected to the device. | | |
| | Error in reading or writing hard disk. | Reformat hard disk and install bootable image. If this fails, replace failed Routing Engine. | Yellow |
| | Error in reading or writing CompactFlash card. | Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine. | Yellow |
| | System booted from default backup Routing Engine. If you manually switched mastership, ignore this alarm condition. | Install bootable image on default master Routing Engine. If this fails, replace failed Routing Engine. | Yellow |
| | System booted from hard disk. | Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine. | Yellow |
| | CompactFlash card missing in boot list. | Replace failed Routing Engine. | Red |
| | Hard disk missing in boot list. | Replace failed Routing Engine. | Red |
| | Routing Engine failed to boot. | Replace failed Routing Engine. | Red |
| | Routing Engine failed to boot. | Replace failed Routing Engine. | Red |
| Power supplies | A power supply has been removed from the chassis. | Insert power supply into empty slot. | Yellow |
| | A power supply has failed. | Replace failed power supply. | Red |

Table 15: Chassis Component Alarm Conditions on M20 Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|---|--|----------------|
| SSB | The control board has failed. If this occurs, the board attempts to reboot. | Replace failed control board. | Red |
| Temperature | The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | The chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | The temperature sensor has failed. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Red |

Chassis Component Alarm Conditions on M40 Routers

Table 16 on page 161 lists the alarms that the chassis components can generate on M40 routers.

Table 16: Chassis Component Alarm Conditions on M40 Routers

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|--|--|----------------|
| Air filter | Change air filter. | Change air filter. | Yellow |
| Alternative media | The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Yellow |
| Craft interface | The craft interface has failed. | Replace failed craft interface. | Red |
| Fan trays | One fan tray has been removed from the chassis. | Install missing fan tray. | Yellow |
| | Two or more fan trays have been removed from the chassis. | Install missing fan trays. | Red |
| | One fan in the chassis is not spinning or is spinning below required speed. | Replace fan tray. | Red |
| FPC | An FPC has an out of range or invalid temperature reading. | Replace failed FPC. | Yellow |
| | An FPC microcode download has failed. | Replace failed FPC. | Red |
| | An FPC has failed. If this occurs, the FPC attempts to reboot. If the SCB sees that an FPC is rebooting too often, it shuts down the FPC. | Replace failed FPC. | Red |
| | Too many hard errors in FPC memory. | Replace failed FPC. | Red |
| | Too many soft errors in FPC memory. | Replace failed FPC. | Red |
| Hot swapping | Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's backplane from the front (generally, an FPC) is broken. | Replace failed component. | Red |

Table 16: Chassis Component Alarm Conditions on M40 Routers (continued)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|---|--|----------------|
| Power supplies | A power supply has been removed from the chassis. | Insert power supply into empty slot. | Yellow |
| | A power supply temperature sensor has failed. | Replace failed power supply or power entry module. | Yellow |
| | A power supply fan has failed. | Replace failed power supply fan. | Yellow |
| | A power supply has high temperature. | Replace failed power supply or power entry module. | Red |
| | A 5-V power supply has failed. | Replace failed power supply or power entry module. | Red |
| | A 3.3-V power supply has failed. | Replace failed power supply or power entry module. | Red |
| | A 2.5-V power supply has failed. | Replace failed power supply or power entry module. | Red |
| | A power supply input has failed. | Check power supply input connection. | Red |
| | A power supply has failed. | Replace failed power supply or power entry module. | Red |

Table 16: Chassis Component Alarm Conditions on M40 Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|--|--|----------------|
| Routing Engine | Excessive framing errors on console port. | Replace the serial cable connected to the device. | Yellow |
| | An excessive framing error alarm is triggered when the default framing error threshold of 20 errors per second on a serial port is exceeded. | If the cable is replaced and no excessive framing errors are detected within 5 minutes from the last detected framing error, the alarm is cleared automatically. | |
| | This might be caused by a faulty serial console port cable connected to the device. | | |
| | Error in reading or writing hard disk. | Reformat hard disk and install bootable image. If this fails, replace failed Routing Engine. | Yellow |
| | Error in reading or writing CompactFlash card. | Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine. | Yellow |
| | System booted from default backup Routing Engine. If you manually switched mastership, ignore this alarm condition. | Install bootable image on default master Routing Engine. If this fails, replace failed Routing Engine. | Yellow |
| | System booted from hard disk. | Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine. | Yellow |
| | CompactFlash card missing in boot list. | Replace failed Routing Engine. | Red |
| SCB | Hard disk missing in boot list. | Replace failed Routing Engine. | Red |
| | Routing Engine failed to boot. | Replace failed Routing Engine. | Red |
| | The System Control Board (SCB) has failed. If this occurs, the board attempts to reboot. | Replace failed SCB. | Red |

Table 16: Chassis Component Alarm Conditions on M40 Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|---|--|----------------|
| Temperature | The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | The chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | The temperature sensor has failed. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Red |

Chassis Component Alarm Conditions on M40e and M160 Routers

Table 17 on page 165 lists the alarms that the chassis components can generate on M40e and M160 routers.

Table 17: Chassis Component Alarm Conditions on M40e and M160 Routers

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|---------------------------------|--|--|----------------|
| Air filter | Change air filter. | Change air filter. | Yellow |
| Alternative media | The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Yellow |
| Connector Interface Panel (CIP) | A CIP is missing. | Insert CIP into empty slot. | Red |
| Craft interface | The craft interface has failed. | Replace failed craft interface. | Red |
| Fan trays | One fan tray has been removed from the chassis. | Install missing fan tray. | Yellow |
| | Two or more fan trays have been removed from the chassis. | Install missing fan trays. | Red |
| | One fan in the chassis is not spinning or spinning below required speed. | Replace fan tray. | Red |
| FPC | An FPC has an out of range or invalid temperature reading. | Replace failed FPC. | Yellow |
| | An FPC microcode download has failed. | Replace failed FPC. | Red |
| | An FPC has failed. If this occurs, the FPC attempts to reboot. If the MCS sees that an FPC is rebooting too often, it shuts down the FPC. | Replace failed FPC. | Red |
| | Too many hard errors in FPC memory. | Replace failed FPC. | Red |
| | Too many soft errors in FPC memory. | Replace failed FPC. | Red |

Table 17: Chassis Component Alarm Conditions on M40e and M160 Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|--|---|-----------------------------|----------------|
| Hot swapping | Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's backplane from the front (generally, an FPC) is broken. | Replace failed component. | Red |
| Miscellaneous Control Subsystem (MCS) | An MCS has an out of range or invalid temperature reading. | Replace failed MCS. | Yellow |
| | MCS0 has been removed. | Reinstall MCS0. | Yellow |
| | An MCS has failed. | Replace failed MCS. | Red |
| Packet Forwarding Engine Clock Generator (PCG) | A backup PCG is offline. | Set backup PCG online. | Yellow |
| | A PCG has an out of range or invalid temperature reading. | Replace failed PCG. | Yellow |
| | A PCG has been removed. | Insert PCG into empty slot. | Yellow |
| | A PCG has failed to come online. | Replace failed PCG. | Red |

Table 17: Chassis Component Alarm Conditions on M40e and M160 Routers (continued)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|--|--|----------------|
| Routing Engine | Excessive framing errors on console port. | Replace the serial cable connected to the device. | Yellow |
| | An excessive framing error alarm is triggered when the default framing error threshold of 20 errors per second on a serial port is exceeded. | If the cable is replaced and no excessive framing errors are detected within 5 minutes from the last detected framing error, the alarm is cleared automatically. | |
| | This might be caused by a faulty serial console port cable connected to the device. | | |
| | Error in reading or writing hard disk. | Reformat hard disk and install bootable image. If this fails, replace failed Routing Engine. | Yellow |
| | Error in reading or writing CompactFlash card. | Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine. | Yellow |
| | System booted from default backup Routing Engine. If you manually switched mastership, ignore this alarm condition. | Install bootable image on default master Routing Engine. If this fails, replace failed Routing Engine. | Yellow |
| | System booted from hard disk. | Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine. | Yellow |
| | CompactFlash card missing in boot list. | Replace failed Routing Engine. | Red |
| Power supplies | Hard disk missing in boot list. | Replace failed Routing Engine. | Red |
| | Routing Engine failed to boot. | Replace failed Routing Engine. | Red |
| | A power supply has been removed from the chassis. | Insert power supply into empty slot. | Yellow |
| | A power supply has failed. | Replace failed power supply. | Red |

Table 17: Chassis Component Alarm Conditions on M40e and M160 Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|---------------------------------------|---|--|----------------|
| Switching and Forwarding Module (SFM) | An SFM has an out of range or invalid temperature reading on SPP. | Replace failed SFM. | Yellow |
| | An SFM has an out of range or invalid temperature reading on SPR. | Replace failed SFM. | Yellow |
| | An SFM is offline. | Set SFM online. | Yellow |
| | An SFM has failed. | Replace failed SFM. | Red |
| | An SFM has been removed from the chassis. | Insert SFM into empty slot. | Red |
| | All SFMs are offline or missing from the chassis. | Insert SFMs into empty slots or set all SFMs online. | Red |

Table 17: Chassis Component Alarm Conditions on M40e and M160 Routers (continued)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|---|--|----------------|
| Temperature | The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | The chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | The temperature sensor has failed. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Red |

Chassis Component Alarm Conditions on M120 Routers

Table 18 on page 169 lists the alarms that the chassis components can generate on M120 routers.

Table 18: Chassis Component Alarm Conditions on M120 Routers

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|--------------------|--------------------|----------------|
| Air filters | Change air filter. | Change air filter. | Yellow |

Table 18: Chassis Component Alarm Conditions on M120 Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|---------------------------------|--|--|----------------|
| Alternative media | The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Yellow |
| Control Board (CB) | A CB Ethernet switch has failed. | Replace failed CB. | Yellow |
| | A CB has been removed. | Insert CB into empty slot. | Red |
| | A CB has failed. | Replace failed CB. | Red |
| Craft interface | The craft interface has failed. | Replace failed craft interface. | Red |
| Fan trays | One fan tray has been removed from the chassis. | Install missing fan tray. | Yellow |
| | Two or more fan trays have been removed from the chassis. | Install missing fan trays. | Red |
| | One fan in the chassis is not spinning or is spinning below required speed. | Replace fan tray. | Red |
| Forwarding Engine Boards (FEBs) | A spare FEB has failed. | Replace failed FEB. | Yellow |
| | A spare FEB has been removed. | Insert FEB into empty slot. | Yellow |
| | A FEB is offline. | Check FEB. Remove and reinsert the FEB. If this fails, replace failed FEB. | Yellow |
| | A FEB has failed. | Replace failed FEB. | Red |
| | A FEB has been removed. | Insert FEB into empty slot. | Red |

Table 18: Chassis Component Alarm Conditions on M120 Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|---|--|----------------|
| Host subsystem | A host subsystem has failed. | Replace the host subsystem. | Yellow |
| | A host subsystem has been removed. | Insert host subsystem into empty slot. | Red |
| Hot swapping | Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's backplane from the front (generally, an FPC) is broken. | Replace failed component. | Red |
| Power supplies | A power supply has been removed from the chassis. | Insert power supply into empty slot. | Yellow |
| | A power supply has a high temperature. | Replace failed power supply or power entry module. | Red |
| | A power supply input has failed. | Check power supply input connection. | Red |
| | A power supply output has failed. | Check power supply output connection. | Red |
| | A power supply has failed. | Replace failed power supply. | Red |

Table 18: Chassis Component Alarm Conditions on M120 Routers (continued)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|--|--|----------------|
| Routing Engine | Excessive framing errors on console port. | Replace the serial cable connected to the device. | Yellow |
| | An excessive framing error alarm is triggered when the default framing error threshold of 20 errors per second on a serial port is exceeded. | If the cable is replaced and no excessive framing errors are detected within 5 minutes from the last detected framing error, the alarm is cleared automatically. | |
| | This might be caused by a faulty serial console port cable connected to the device. | | |
| | Error in reading or writing hard disk. | Reformat hard disk and install bootable image. If this fails, replace failed Routing Engine. | Yellow |
| | Error in reading or writing CompactFlash card. | Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine. | |
| | System booted from default backup Routing Engine. If you manually switched mastership, ignore this alarm condition. | Install bootable image on default master Routing Engine. If this fails, replace failed Routing Engine. | |
| | System booted from hard disk. | Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine. | Red |
| | CompactFlash card missing in boot list. | Replace failed Routing Engine. | |
| | Hard disk missing in boot list. | Replace failed Routing Engine. | Red |
| | Routing Engine failed to boot. | Replace failed Routing Engine. | Red |

Table 18: Chassis Component Alarm Conditions on M120 Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|---|--|----------------|
| Temperature | The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | Chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | The temperature sensor has failed. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Red |

Chassis Component Alarm Conditions on M320 Routers

Table 19 on page 174 lists the alarms that the chassis components can generate on M320 routers.

Table 19: Chassis Component Alarm Conditions on M320 Routers

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|--------------------|--|--|----------------|
| Air filters | Change air filter. | Change air filter. | Yellow |
| Alternative media | The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Yellow |
| Control Board (CB) | A CB has been removed. | Insert CB into empty slot. | Yellow |
| | A CB temperature sensor alarm has failed. | Replace failed CB. | Yellow |
| | A CB has failed. | Replace failed CB. | Red |
| CIP | A CIP is missing. | Insert CIP into empty slot. | Red |
| Craft interface | The craft interface has failed. | Replace failed craft interface. | Red |
| Fan trays | One fan tray has been removed from the chassis. | Install missing fan tray. | Yellow |
| | Two or more fan trays have been removed from the chassis. | Install missing fan trays. | Red |
| | One fan in the chassis is not spinning or is spinning below required speed. | Replace fan tray. | Red |

Table 19: Chassis Component Alarm Conditions on M320 Routers (continued)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|---|--------------------------------------|----------------|
| FPC | An FPC has an out of range or invalid temperature reading. | Replace failed FPC. | Yellow |
| | An FPC microcode download has failed. | Replace failed FPC. | Red |
| | An FPC has failed. If this occurs, the FPC attempts to reboot. If the CB sees that an FPC is rebooting too often, it shuts down the FPC. | Replace failed FPC. | Red |
| | Too many hard errors in FPC memory. | Replace failed FPC. | Red |
| | Too many soft errors in FPC memory. | Replace failed FPC. | Red |
| Hot swapping | Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's backplane from the front (generally, an FPC) is broken. | Replace failed component. | Red |
| Power supplies | A power supply has been removed from the chassis. | Insert power supply into empty slot. | Yellow |
| | A power supply has failed. | Replace failed power supply. | Red |

Table 19: Chassis Component Alarm Conditions on M320 Routers (continued)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|--|--|----------------|
| Routing Engine | Excessive framing errors on console port. | Replace the serial cable connected to the device. | Yellow |
| | An excessive framing error alarm is triggered when the default framing error threshold of 20 errors per second on a serial port is exceeded. | If the cable is replaced and no excessive framing errors are detected within 5 minutes from the last detected framing error, the alarm is cleared automatically. | |
| | This might be caused by a faulty serial console port cable connected to the device. | | |
| | Error in reading or writing hard disk. | Reformat hard disk and install bootable image. If this fails, replace failed Routing Engine. | Yellow |
| | Error in reading or writing CompactFlash card. | Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine. | Yellow |
| | System booted from default backup Routing Engine. If you manually switched mastership, ignore this alarm condition. | Install bootable image on default master Routing Engine. If this fails, replace failed Routing Engine. | Yellow |
| | System booted from hard disk. | Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine. | Yellow |
| | CompactFlash card missing in boot list. | Replace failed Routing Engine. | Red |
| | Hard disk missing in boot list. | Replace failed Routing Engine. | Red |
| | Routing Engine failed to boot. | Replace failed Routing Engine. | Red |
| | A spare SIB is missing. | Insert spare SIB in to empty slot. | Yellow |

Table 19: Chassis Component Alarm Conditions on M320 Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|------------------------------|--|---|----------------|
| Switch Interface Board (SIB) | A SIB has failed. | Replace failed SIB. | Yellow |
| | A spare SIB has failed. | Replace failed SIB. | Yellow |
| | A SIB has an out of range or invalid temperature reading. | Replace failed SIB. | Yellow |
| | A SIB is missing. | Insert SIB into empty slot. | Red |
| | A SIB has failed. | Replace failed SIB. | Red |
| | The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |

Table 19: Chassis Component Alarm Conditions on M320 Routers (continued)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|---|--|----------------|
| Temperature | The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | Chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | The temperature sensor has failed. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Red |

Chassis Component Alarm Conditions on MX Series 3D Universal Edge Routers

Table 20 on page 178 lists the alarms that the chassis components can generate on MX Series 3D Universal Edge routers.

Table 20: Chassis Component Alarm Conditions on MX Series 3D Universal Edge Routers

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|--------------------|--------------------|----------------|
| Air filters | Change air filter. | Change air filter. | Yellow |

Table 20: Chassis Component Alarm Conditions on MX Series 3D Universal Edge Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|---------------------------------|--|--|----------------|
| Alternative media | The router boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Yellow |
| Craft interface | The craft interface has failed. | Replace failed craft interface. | Red |
| Dense Port Concentrators (DPC)s | A DPC is offline. | Check DPC. Remove and reinsert the DPC. If this fails, replace failed DPC. | Yellow |
| | A DPC has failed. | Replace failed DPC. | Red |
| | A DPC has been removed. | Insert DPC into empty slot. | Red |
| Fan trays | A fan tray has been removed from the chassis. | Install missing fan tray. | Red |
| | One fan in the chassis is not spinning or is spinning below required speed. | Replace fan tray. | Red |
| | A higher-cooling capacity fan tray is required when an MPC is installed on the chassis. | Upgrade to a high-capacity fan tray. | Yellow |
| Host subsystem | A host subsystem has been removed. | Insert host subsystem into empty slot. | Yellow |
| | A host subsystem has failed. | Replace failed host subsystem. | Red |
| Hot swapping | Too many hot-swap interrupts are occurring. This message generally indicates that a hardware component that plugs into the router's backplane from the front (generally, an FPC) is broken. | Replace failed component. | Red |

Table 20: Chassis Component Alarm Conditions on MX Series 3D Universal Edge Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|---|--|----------------|
| Power supplies | A power supply has been removed from the chassis. | Insert power supply into empty slot. | Yellow |
| | A power supply has a high temperature. | Replace failed power supply or power entry module. | Red |
| | A power supply input has failed. | Check power supply input connection. | Red |
| | A power supply output has failed. | Check power supply output connection. | Red |
| | A power supply has failed. | Replace failed power supply. | Red |
| | Invalid AC power supply configuration. | When two AC power supplies are installed, insert one power supply into an odd-numbered slot and the other power supply into an even-numbered slot. | Red |
| | Invalid DC power supply configuration. | When two DC power supplies are installed, insert one power supply into an odd-numbered slot and the other power supply into an even-numbered slot. | Red |
| | Mix of AC and DC power supplies. | Do not mix AC and DC power supplies. For DC power, remove the AC power supply. For AC power, remove the DC power supply. | Red |
| | Not enough power supplies. | Install an additional power supply. | Red |

Table 20: Chassis Component Alarm Conditions on MX Series 3D Universal Edge Routers (continued)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|----------------------------|--|--|----------------|
| Routing Engine | Excessive framing errors on console port. | Replace the serial cable connected to the device. | Yellow |
| | An excessive framing error alarm is triggered when the default framing error threshold of 20 errors per second on a serial port is exceeded. | If the cable is replaced and no excessive framing errors are detected within 5 minutes from the last detected framing error, the alarm is cleared automatically. | |
| | This might be caused by a faulty serial console port cable connected to the device. | | |
| | Error in reading or writing hard disk. | Reformat hard disk and install bootable image. If this fails, replace failed Routing Engine. | Yellow |
| | Error in reading or writing CompactFlash card. | Reformat CompactFlash card and install bootable image. If this fails, replace failed Routing Engine. | Yellow |
| | System booted from default backup Routing Engine. If you manually switched mastership, ignore this alarm condition. | Install bootable image on default master Routing Engine. If this fails, replace failed Routing Engine. | Yellow |
| | System booted from hard disk. | Install bootable image on CompactFlash card. If this fails, replace failed Routing Engine. | Yellow |
| | CompactFlash card missing in boot list. | Replace failed Routing Engine. | Red |
| System Control Board (SCB) | Hard disk missing in boot list. | Replace failed Routing Engine. | Red |
| | Routing Engine failed to boot. | Replace failed Routing Engine. | Red |
| | An SCB has been removed. | Insert SCB into empty slot. | Yellow |
| | An SCB temperature sensor alarm has failed. | Replace failed SCB. | Yellow |
| | An SCB has failed. | Replace failed SCB. | Red |

Table 20: Chassis Component Alarm Conditions on MX Series 3D Universal Edge Routers (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|---|--|----------------|
| Temperature | The chassis temperature has exceeded 55 degrees C (131 degrees F), the fans have been turned on to full speed, and one or more fans have failed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and the fans have been turned on to full speed. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Yellow |
| | The chassis temperature has exceeded 65 degrees C (149 degrees F), and a fan has failed. If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | Chassis temperature has exceeded 75 degrees C (167 degrees F). If this condition persists for more than 4 minutes, the router shuts down. | <ul style="list-style-type: none"> • Check room temperature. • Check air filter and replace it. • Check airflow. • Check fan. | Red |
| | The temperature sensor has failed. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Red |

Chassis Component Alarm Conditions on TX Matrix and TX Matrix Plus Routers

For information about chassis component alarms on the TX Matrix and TX Matrix Plus routers, see the *TX Matrix Router Hardware Guide* and the *TX Matrix Plus Router Hardware Guide*, respectively.

Backup Routing Engine Alarms

For routers with master and backup Routing Engines, a master Routing Engine can generate alarms for events that occur on a backup Routing Engine. [Table 21 on page 183](#) lists chassis alarms generated for a backup Routing Engine.



NOTE: Because the failure occurs on the backup Routing Engine, alarm severity for some events (such as Ethernet interface failures) is yellow instead of red.



NOTE: For information about configuring redundant Routing Engines, see the *Junos High Availability Configuration Guide*.

Table 21: Backup Routing Engine Alarms

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|-------------------|---|---|----------------|
| Alternative media | The backup Routing Engine boots from an alternate boot device, the hard disk. The CompactFlash card is typically the primary boot device. The Routing Engine boots from the hard disk when the primary boot device fails. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Yellow |
| Boot Device | The boot device (CompactFlash or hard disk) is missing in boot list on the backup Routing Engine. | Replace failed backup Routing Engine. | Red |
| Ethernet | The Ethernet management interface (fxp0 or em0) on the backup Routing Engine is down. | <ul style="list-style-type: none"> Check the interface cable connection. Reboot the system. If the alarm recurs, open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States) | Yellow |
| FRU Offline | The backup Routing Engine has stopped communicating with the master Routing Engine. | Open a support case using the Case Manager link at http://www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States). | Yellow |
| Hard Disk | Error in reading or writing hard disk on the backup Routing Engine. | Reformat hard disk and install bootable image. If this fails, replace failed backup Routing Engine. | Yellow |

Table 21: Backup Routing Engine Alarms (*continued*)

| Chassis Component | Alarm Condition | Remedy | Alarm Severity |
|---------------------|---|--|----------------|
| Multibit Memory ECC | The backup Routing Engine reports a multibit ECC error. | <ul style="list-style-type: none"> Reboot the system with the board reset button on the backup Routing Engine. If the alarm recurs, open a support case using the Case Manager link at www.juniper.net/support/ or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States) | Yellow |

Related Documentation

- [Configuring the Junos OS to Determine Conditions That Trigger Alarms on Different Interface Types on page 149](#)
- [Silencing External Devices Connected to Alarm Relay Contacts on page 184](#)

Silencing External Devices Connected to Alarm Relay Contacts

You can manually silence external devices connected to alarm relay contacts. To silence an external devices, press the alarm cutoff button located on the craft interface front panel of the device.

Silencing the device does not remove the alarm messages from the display (if present on the router or switch) or extinguish the alarm LEDs. In addition, new alarms that occur after an external device is silenced reactivate the external device.

Related Documentation

- [Configuring the Junos OS to Determine Conditions That Trigger Alarms on Different Interface Types on page 149](#)
- [Configuring the Junos OS to Disable the Physical Operation of the Craft Interface on page 145](#)

CHAPTER 22

Examples

- [Examples: Configuring PIC-Level Symmetrical Hashing for Load Balancing on 802.3ad LAGs on MX Series Routers on page 185](#)
- [Example: Configuring Tunnel Interfaces on a Gigabit Ethernet 40-Port DPC on page 187](#)
- [Example: Configuring J Series Services Router Switching Interfaces on page 188](#)
- [Example: Configuring Tunnel Interfaces on a 10-Gigabit Ethernet 4-Port DPC on page 188](#)
- [Example: Configuring Tunnel Interfaces on the MPC3E on page 188](#)

Examples: Configuring PIC-Level Symmetrical Hashing for Load Balancing on 802.3ad LAGs on MX Series Routers

The following examples show how to configure symmetrical hashing at the PIC level for load balancing on MX Series routers:

- [Configuring Symmetrical Hashing for family multiservice on Both Routers on page 185](#)
- [Configuring Symmetrical Hashing for family inet on Both Routers on page 186](#)
- [Configuring Symmetrical Hashing for family inet and family multiservice on the Two Routers on page 186](#)

Configuring Symmetrical Hashing for family multiservice on Both Routers

On the inbound traffic interface where traffic enters Router A, include the **symmetric-hash** statement at the **[edit chassis fpc slot-number pic pic-number hash-key family multiservice]** hierarchy level:

```
[edit chassis fpc 2 pic 2 hash-key]
family multiservice {
  source-mac;
  destination-mac;
  payload {
    ip {
      layer-3;
      layer-4;
    }
  }
  symmetric-hash;
}
```

On the inbound traffic interface where traffic enters Router B, include the **symmetric-hash complement** statement at the **[edit chassis fpc slot-number pic pic-number hash-key family multiservice]** hierarchy level:

```
[edit chassis fpc 0 pic 3 hash-key]
family multiservice {
  source-mac;
  destination-mac;
  payload {
    ip {
      layer-3;
      layer-4;
    }
  }
  symmetric-hash {
    complement;
  }
}
```

Configuring Symmetrical Hashing for family inet on Both Routers

On the inbound traffic interface where traffic enters Router A, include the **symmetric-hash** statement at the **[edit chassis fpc slot-number pic pic-number hash-key family inet]** hierarchy level:

```
[edit chassis fpc 0 pic 1 hash-key]
family inet {
  layer-3;
  layer-4;
  symmetric-hash;
}
```

On the inbound traffic interface where traffic enters Router B, include the **symmetric-hash complement** statement at the **[edit chassis fpc slot-number pic pic-number hash-key family inet]** hierarchy level:

```
[edit chassis fpc 1 pic 2 hash-key]
family inet {
  layer-3;
  layer-4;
  symmetric-hash {
    complement;
  }
}
```

Configuring Symmetrical Hashing for family inet and family multiservice on the Two Routers

On the inbound traffic interface where traffic enters Router A, include the **symmetric-hash** statement at the **[edit chassis fpc slot-number pic pic-number hash-key family multiservice]** hierarchy level:

```
[edit chassis fpc 1 pic 0 hash-key]
family multiservice {
  payload {
    ip {
      layer-3;
    }
  }
}
```



```

        layer-4;
    }
}
symmetric-hash;
}

```

On the inbound traffic interface where traffic enters Router B, include the **symmetric-hash complement** statement at the **[edit chassis fpc slot-number pic pic-number hash-key family inet]** hierarchy level:

```

[edit chassis fpc 0 pic 3 hash-key]
family inet {
    layer-3;
    layer-4;
    symmetric-hash {
        complement;
    }
}

```

**Related
Documentation**

- [Configuring PIC-Level Symmetrical Hashing for Load Balancing on 802.3ad LAGs for MX Series Routers on page 70](#)

Example: Configuring Tunnel Interfaces on a Gigabit Ethernet 40-Port DPC

The following example shows how to create tunnel interfaces on Packet Forwarding Engine 1 of DPC 4 with 1 Gbps of bandwidth reserved for tunnel services. On a Gigabit Ethernet 40-port DPC, tunnel interfaces coexist with Ethernet interfaces. With this configuration, the Gigabit Ethernet interfaces are **ge-4/1/0** through **ge-4/1/9**. The tunnel interfaces created are **gr-4/1/10**, **pe-4/1/10**, **pd-4/1/10**, **vt-4/1/10** and so on.

```

[edit chassis]
fpc 4 pic 1 {
    tunnel-services {
        bandwidth 1g;
    }
}

```

**Related
Documentation**

- [Configuring the Junos OS to Support ILMI for Cell Relay Encapsulation on an ATM2 IQ PIC on page 92](#)
- [Example: Configuring Tunnel Interfaces on a 10-Gigabit Ethernet 4-Port DPC on page 188](#)
- [Example: Configuring Tunnel Interfaces on the MPC3E on page 188](#)
- bandwidth
- tunnel-services
- [edit chassis] Hierarchy Level

Example: Configuring J Series Services Router Switching Interfaces

Configure a single physical interface for the uPIM and set the port parameters for port 0 and port 1:

```
[edit interfaces]
ge-2/0/0 {
  {
    switch-port 0 {
      no-auto-negotiation;
      1g;
      link-mode full-duplex;
    }
    port 1 {
      no-auto-negotiation;
      10m;
      link-mode half-duplex;
    }
  }
}
```

Related Documentation

- [Configuring J Series Services Router Switching Interfaces on page 83](#)

Example: Configuring Tunnel Interfaces on a 10-Gigabit Ethernet 4-Port DPC

In this example, you create tunnel interfaces on Packet Forwarding Engine 0 of DPC 4 with 10 Gbps of bandwidth reserved for tunnel traffic. Ethernet and tunnel interfaces cannot coexist on the same Packet Forwarding Engine of a 10-Gigabit Ethernet 4-port DPC. With this configuration, the tunnel interfaces created are **gr-4/0/0**, **pe-4/0/0**, **pd-4/0/0**, **vt-4/0/0** and so on.

```
[edit chassis]
fpc 4 pic 0 {
  tunnel-services {
    bandwidth 10g;
  }
}
```

Related Documentation

- [Example: Configuring Tunnel Interfaces on a Gigabit Ethernet 40-Port DPC on page 187](#)
- [Example: Configuring Tunnel Interfaces on the MPC3E on page 188](#)
- bandwidth
- tunnel-services
- [edit chassis] Hierarchy Level

Example: Configuring Tunnel Interfaces on the MPC3E

- [Requirements for Configuration of Tunnel Interfaces on the MPC3E on page 189](#)
- [Ethernet Tunnel Configuration Overview on page 189](#)

- [Configuring a 20-Gigabit Ethernet Tunnel on page 189](#)
- [Configuring a 40-Gigabit Ethernet Tunnel on page 189](#)

Requirements for Configuration of Tunnel Interfaces on the MPC3E

This example requires MX Series routers with the MPC3E and the 100-Gigabit CFP MIC.

Ethernet Tunnel Configuration Overview

MX Series routers do not support Tunnel Services PICs. However, you can create tunnel interfaces for supported interfaces on MX Series routers with the MPC3E and the 100-Gigabit CFP MIC.

To configure MX Series routers with the MPC3E and the 100-Gigabit Ethernet CFP MIC with 20 gigabit per second or 40 gigabit per second Ethernet tunnels, include the **tunnel-services** statement and the **bandwidth (1 | 10 | 20 | 40)** option at the **[edit chassis]** hierarchy level.



NOTE: Ethernet and tunnel interfaces cannot coexist on the same Packet Forwarding Engine of a MPC3E.

Configuring a 20-Gigabit Ethernet Tunnel

Step-by-Step Procedure In the following example, you create tunnel interfaces on Packet Forwarding Engine 1 of MPC 0 with 20 gigabit per second of bandwidth reserved for tunnel traffic. With this configuration, the tunnel interfaces created are **gr-0/1/0**, **pe-0/1/0**, **pd-0/1/0**, **vt-0/1/0**, and so on.

1. To create a 20 gigabit per second tunnel interface, use the following configuration:

```
[edit chassis]
fpc 0 pic 1 {
  tunnel-services {
    bandwidth 20;
  }
}
```

Configuring a 40-Gigabit Ethernet Tunnel

Step-by-Step Procedure In the following example, you create a tunnel interface on Packet Forwarding Engine 1 of MPC 0 with 40 gigabit per second of bandwidth reserved for tunnel traffic. With this configuration, the tunnel interfaces created are **gr-0/1/0**, **pe-0/1/0**, **pd-0/1/0**, **vt-0/1/0**, and so on.

1. To create a 40 gigabit per second tunnel interface, use the following configuration:

```
[edit chassis]
fpc 0 pic 1 {
  tunnel-services {
    bandwidth 40;
  }
}
```

**Related
Documentation**

- [Example: Configuring Tunnel Interfaces on a Gigabit Ethernet 40-Port DPC on page 187](#)
- [Example: Configuring Tunnel Interfaces on a 10-Gigabit Ethernet 4-Port DPC on page 188](#)
- [bandwidth](#)
- [tunnel-services](#)
- [\[edit chassis\] Hierarchy Level](#)
- [Configuring Tunnel Interfaces on MX Series Routers](#)

Configuration Statements

- Router Chassis Configuration Statements on page 191
- Chassis Configuration Statements on page 195

Router Chassis Configuration Statements

You can configure properties of the router chassis, including conditions that activate the red and yellow alarm LEDs and SONET/SDH framing and concatenation properties for individual Physical Interface Cards (PICs).

To configure router chassis properties, include the following statements at the **[edit chassis]** hierarchy level:



NOTE: Statements at the **[edit chassis redundancy]** hierarchy level are described in the [Junos OS High Availability Configuration Guide](#).

```
chassis {
  aggregated-devices {
    ethernet {
      device-count number;
      lacp {
        system-priority;
        link-protection;
      }
    }
    sonet {
      device-count number;
    }
  }
  alarm {
    interface-type {
      alarm-name (red | yellow | ignore);
    }
  }
  config-button {
    no-clear;
    no-rescue;
    craft-lockout;
  }
}
```

```
fabric {
  degraded {
    action-fpc-restart-disable;
    action-fpc-restart-disable;
  }
}
feb
  slot number
    ucode-imem-remap
    {
    }
}
fpc slot-number {
  allow-sram-parity-errors;
  port-mirror-instance port-mirroring-instance-name;
  sampling-instance;
  route-localization {
    fib-local;
    fib-remote;
  }
  power (off | on);
  pic pic-number {
    port-mirror-instance port-mirroring-instance-name;
    framing (t1 | e1);
    port port-number {
      speed (oc3-stm1 | oc12-stm4 | oc48-stm16);
    }
    adaptive-services {
      service-package (layer-2 | layer-3);
    }
    aggregate-ports;
    atm-cell-relay-accumulation;
    atm-l2circuit-mode (cell | aal5 | trunk trunk);
    vtmapping number;
    cel {
      e1 port-number {
        channel-group channel-number timeslots slot-number;
      }
    }
    channelization;
    ct3 {
      port port-number {
        t1 link-number {
          channel-group channel-number timeslots slot-number;
        }
      }
    }
    egress-policer-overhead bytes;
    framing (sdh | sonet);
    fru-poweron-sequence;
    idle-cell-format {
      itu-t;
      payload-pattern payload-pattern-byte;
    }
    ingress-policer-overhead bytes;
    linerate-mode;
    max-queues-per-interface (8 | 4);
```

```

mlfr-uni-nni-bundles number;
number-of-ports;
no-concatenate;
no-multi-rate;
q-pic-large-buffer {
    large-scale;
    small-scale;
}
red-buffer-occupancy {
    weighted-averaged [ instant-usage-weight-exponent weight-value ];
}
sparse-dlcis;
traffic-manager {
    egress-shaping-overhead number;
    ingress-shaping-overhead number;
    mode {
        egress-only;
        ingress-and-egress;
        session-shaping;
    }
}
tunnel-services {
    bandwidth (1g | 10g);
    vtmapping (itu-t | klm);
}
}
fpc-resync;
fpc-feb-connectivity {
    fpc slot-number feb (slot-number | none);
}
lcc number {
    fpc number {
        pic number {
            atm-cell-relay-accumulation;
            atm-l2circuit-mode (cell | aal5 | trunk trunk);
            framing (sdh | sonet);
            idle-cell-format {
                itu-t;
                payload-pattern payload-pattern-byte;
            }
            linerate-mode;
            max-queues-per-interface (8 | 4);
            no-concatenate;
            no-mcast-replication;
            hash-key {
                family {
                    inet {
                        layer-3;
                        layer-4;
                        symmetric-hash {
                            complement;
                        }
                    }
                }
            }
            multiservice {
                source-mac;
                destination-mac;
            }
        }
    }
}

```

```

        payload {
            ip {
                layer-3;
                layer-4;
            }
        }
        symmetric-hash {
            complement;
        }
    }
}
}
}
}
pem {
    feeds number-of-input-feeds
}
maximum-ecmp;
offline;
online-expected;
sampling-instance;
}
memory-enhanced{
    filter;
    route;
    vpn-label;
}
(packet-scheduling | no-packet-scheduling);
pem {
    minimum number;
    feeds number-of-input-feeds
}
no-concatenate;
redundancy {
    cfeb slot (always | preferred);
    failover {
        on-disk-failure
        on-loss-of-keepalives;
    }
    feb {
        redundancy-group group-name {
            feb slot-number (backup | primary);
            description description;
            no-auto-failover;
        }
    }
    port-mirror-instance port-mirroring-instance-name;
    graceful-switchover;
    keepalive-time seconds;
    routing-engine slot-number (master | backup | disabled);
    sfm slot-number (always | preferred);
    ssb slot-number (always | preferred);
}
network-services (ethernet | enhanced-ethernet | ip | enhanced-ip);
route-localization {
    inet;

```



```

        inet6;
    }
    routing-engine {
        on-disk-failure {
            disk-failure-action (halt | reboot);
        }
    }
    sfm slot-number {
        power off;
    }
    sib {
        minimum number;
    }
    vrf-mtu-check;
    vtmapping (itu-t | klm);
    synchronization {
        signal-type (e1 | t1);
        switching-mode (revertive | non-revertive);
        y-cable-line-termination;
        transmitter-enable;
        validation-interval seconds;
        primary (external-a | external-b);
        secondary (external-a | external-b);
    }
}

```



NOTE: The configuration statements at the [edit chassis lcc] hierarchy level apply only to a routing matrix based on a TX Matrix router or a TX Matrix Plus router. For information about a routing matrix composed of a TX Matrix router and T640 routers, see “[TX Matrix Router and T640 Router Configuration Overview](#)” on page 23 and the *TX Matrix Router Hardware Guide*. For information about a routing matrix composed of a TX Matrix Plus router and T1600 routers, see “[TX Matrix Plus Router and T1600 Router Configuration Overview](#)” on page 28 and the *TX Matrix Plus Router Hardware Guide*.

Related Documentation • [Chassis Configuration Statements on page 195](#)

Chassis Configuration Statements

The following table lists the router chassis configuration statements available at the [edit chassis] hierarchy level.

| A-D | E-I | J-O | P-R | S-Z |
|----------------------------|-------------------------|---------------|-------------------|-------------------|
| action-fpc-restart-disable | e1 | lacc | | |
| adaptive-services | egress-policer-overhead | lcc | packet-scheduling | sampling-instance |
| aggregate-ports | ethernet (Chassis) | linerate-mode | payload | sanity-poll |

| A-D | E-I | J-O | | |
|-----------------------------|--|--------------------------|---|--|
| aggregated-devices | fabric upgrade-mode | link-protection | pem (M320 Routers) | service-package |
| alarm | family | maximum-ecmp | pem (T640, T1600, and T4000 Routers with Six-Input DC Power Supply) | session-offload |
| allow-sram-parity-errors | fib-local | max-queues-per-interface | pic (M Series, MX Series, and T Series Routers) | sfn |
| atm-cell-relay-accumulation | fib-remote | memory-enhanced | pic (TX Matrix and TX Matrix Plus Routers) | sib |
| atm-l2circuit-mode | filter | mlfr-uni-nni-bundles | port | sonet |
| bandwidth | fpc (M320, T320, T640 Routers) | multiservice | power | sparse-dlcis |
| ce1 | fpc (MX Series 3D Universal Edge Routers) | network-services | q-pic-large-buffer | speed |
| channel-group | fpc (TX Matrix and TX Matrix Plus Routers) | no-concatenate | red-buffer-occupancy | symmetric-hash |
| channelization | fpc-feb-connectivity | no-multi-rate | retry-count | synchronization (M Series, T Series, and PTX Series) |
| chassis | fpc-resync | non-revertive | route | synchronization (MX Series) |
| config-button | framing | number-of-ports | routing-engine | |
| craft-lockout | fru-poweron-sequence | offline | route-localization | system-priority |
| ct3 | hash-key | on-disk-failure | | t1 |
| device-count | idle-cell-format | on-error | | traffic-manager |
| disk-failure-action | inet | online-expected | | tunnel-services |
| dynamic-profile-options | ingress-policer-overhead | | | ucode-imem-remap |
| | | | | vpn-label |
| | | | | vrf-mtu-check |
| | | | | vtmapping |

| | | | | |
|-----|-----|-----|--|--|
| A-D | E-I | J-O | | |
|-----|-----|-----|--|--|

| |
|--|
| |
|--|

Related Documentation • [Router Chassis Configuration Statements on page 191](#)

PART 3

Administration

- [Administrative Commands on page 201](#)
- [Monitoring Commands on page 243](#)

CHAPTER 24

Administrative Commands

clear chassis display message

| | |
|---------------------------------------|---|
| Syntax | clear chassis display message |
| Syntax (TX Matrix Router) | clear chassis display message <fcc <i>number</i> scc> |
| Syntax (TX Matrix Plus Router) | clear chassis display message <fcc <i>number</i> sfc <i>number</i> > |
| Syntax (QFX Series) | clear chassis display message <node-device <i>name</i> interconnect-device <i>name</i> > |
| Release Information | Command introduced in Junos OS Release 7.5. Command introduced in Junos OS Release 9.0 for EX Series switches. sfc option for the TX Matrix Plus routers introduced in Junos OS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series. |
| Description | (M40e, M160, M320, T Series routers, EX Series, and QFX Series only) Clear or stop a text message on the craft interface display, which is on the front of the router or switch or on the LCD panel display on the router or switch. The craft interface alternates the display of text messages with standard craft interface messages, switching between messages every 2 seconds. By default, on both the router and the switch, the text message is displayed for 5 minutes. The craft interface display has four 20-character lines. The LCD panel display has two 16-character lines, and text messages appear only on the second line. |
| Options | none —Clear or stop a text message on the craft interface display. interconnect-device <i>name</i> —(QFabric switches only) (Optional) On a QFabric switch, clear or stop a text message on the LCD panel display on the specified Interconnect device. fcc <i>number</i> —(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, clear or stop a text message on the craft interface on a specific T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, clear or stop a text message on the craft interface on a specific T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3. node-device <i>name</i> —(QFabric switches only) (Optional) On a QFabric switch, clear or stop a text message on the LCD panel display on the specified node device in a Node group. scc —(TX Matrix routers only) (Optional) Clear or stop a text message on the craft interface on the TX Matrix router (or switch-card chassis). sfc <i>number</i> —(TX Matrix Plus routers only) (Optional) Clear or stop a text message on the craft interface on the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0. |

Required Privilege Level clear

Related Documentation

- [Configuring the LCD Panel on EX Series Switches \(CLI Procedure\)](#)
- [set chassis display message on page 240](#)
- [show chassis craft-interface](#)

List of Sample Output [clear chassis display message on page 203](#)

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

Sample Output

clear chassis display message The following example displays and then clears the text message on the craft interface display:

```
user@host> show chassis craft-interface
Red alarm:      LED off, relay off
Yellow alarm:   LED off, relay off
Host OK LED:    On
Host fail LED:  Off
FPCs           0  1  2  3  4  5  6  7
```

```
-----
Green  ..  *..  *  *.
Red    .....
```

LCD screen:

```
+-----+
|NOC contact Dusty |
|(888) 526-1234    |
+-----+
```

```
user@host> clear chassis display message
```

```
user@host> show chassis craft-interface
Red alarm:      LED off, relay off
Yellow alarm:   LED off, relay off
Host OK LED:    On
Host fail LED:  Off
FPCs           0  1  2  3  4  5  6  7
```

```
-----
Green  ..  *..  *  *.
Red    .....
```

LCD screen:

```
+-----+
|host              |
|Up: 0+17:05:47    |
|                  |
|Temperature OK    |
+-----+
```

request chassis cb

| | |
|---------------------------------------|---|
| Syntax | request chassis cb (offline online) slot <i>slot-number</i> |
| Syntax (TX Matrix Router) | request chassis cb (offline online) <slot <i>slot-number</i> lcc <i>number</i> slot <i>cb-slot-number</i> scc <i>number</i> slot <i>cb-slot-number</i> > |
| Syntax (TX Matrix Plus Router) | request chassis cb (offline online) <slot <i>slot-number</i> lcc <i>number</i> slot <i>cb-slot-number</i> sfc <i>number</i> slot <i>cb-slot-number</i> > |
| Syntax (QFabric Switch) | request chassis cb (offline online) interconnect-device <i>name</i> slot <i>slot-number</i> <interconnect-device <i>name</i> slot <i>slot-number</i> > |
| Release Information | <p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS 9.4 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 11.3 for the QFX Series.</p> |
| Description | (M120, M320, and MX Series routers and T Series routers, the QFX Series, and EX8200 switches only) Control the operation of the Control Board (CB). For information about the meaning of “CBs” on the switches, see EX Series Switches Hardware and CLI Terminology Mapping. |
| Options | <p>offline—Take the Control Board offline.</p> <p>online—Bring the Control Board online.</p> <p>interconnect-device <i>name</i>—(QFabric switches only) (Optional) Bring the Interconnect device Control Board either offline or online:</p> <p>slot <i>slot-number</i>—Control Board slot number:</p> <ul style="list-style-type: none">• (TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, if you specify the number of the T640 router by using the lcc <i>number</i> option (the recommended method), replace cb-slot-number with a value from 0 through 1. <p>Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 router by using the lcc <i>number</i> option (the recommended method), replace cb-slot-number with a value from 0 through 1.</p> <ul style="list-style-type: none">• M320 router—Replace slot-number with a value from 0 through 1.• MX480/MX240 routers—Replace slot-number with a value from 0 through 1.• MX960 router—Replace slot-number with a value from 0 through 2.• EX8208 switch—Replace slot-number with a value from 0 through 2.• EX8216 switch—Replace slot-number with a value from 0 through 1.• QFabric Switch—Replace slot-number with a value from 0 through 1. <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Change the CB status for the TX Matrix Plus router (or switch-fabric chassis). Replace number with 0.</p> |

Required Privilege Level maintenance

Related Documentation

- [show chassis environment cb on page 282](#)
- Switching Control Board Redundancy
- Routing Engine and Switching Control Board Redundancy Configuration Statements

List of Sample Output [request chassis cb on page 205](#)
[request chassis cb interconnect-device \(QFabric Switch\) on page 205](#)

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

Sample Output

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

request chassis cb user@switch> request chassis cb interconnect-device interconnect1 offline slot 1
interconnect-device Backup CB 1 cannot be set offline, backup RE is online
(QFabric Switch)

request chassis cfep

| | |
|---------------------------------|--|
| Syntax | request chassis cfep (offline online restart) |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (M7i and M10i routers only) Control the operation of the Compact Forwarding Engine Board (CFEB). |
| Options | offline —Take the CFEB offline. online —Bring the CFEB online. restart —Restart the CFEB. |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none">• show chassis cfep on page 250• Configuring CFEB Redundancy on the M10i Router• CFEB Overview |
| List of Sample Output | request chassis cfep on page 206 |
| Output Fields | When you enter this command, you are provided feedback on the status of your request. |

Sample Output

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

request chassis cip

| | |
|---------------------------------|--|
| Syntax | <code>request chassis cip (offline online) slot <i>slot-number</i></code> |
| Release Information | Command introduced for the TX Matrix Plus router in Junos OS Release 9.6. |
| Description | (TX Matrix Plus routers only) Control the operation of the Connector Interface Panel (CIP). |
| Options | <p>offline—Take the CIP offline.</p> <p>online—Bring the CIP online.</p> <p>slot <i>slot-number</i>—CIP slot number. Replace <i>slot-number</i> with a value ranging from 0 through 1.</p> |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none"> • show chassis cip on page 252 • Installing a T1600 CIP • Installing a T640 CIP • Installing a TX-CIP • Installing an M320 CIP • Installing the M40e CIP • Installing the T1600 CIP • Installing the T320 CIP • CIP Overview |
| List of Sample Output | request chassis cip offline slot (TX Matrix Plus Router) on page 207 request chassis cip offline slot (TX Matrix Plus Router) on page 207 |
| Output Fields | When you enter this command, you are provided feedback on the status of your request. |

Sample Output

```

request chassis cip offline slot (TX Matrix Plus Router)
user@host > request chassis cip offline slot 0
CIP 0 offline done

request chassis cip offline slot (TX Matrix Plus Router)
user@host > request chassis cip online slot 0
CIP 0 online done

```

request chassis fabric plane

| | |
|---------------------------------|--|
| Syntax | <code>request chassis fabric plane <i>plane-number</i> (offline online)</code> |
| Release Information | Command introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 9.4 for EX Series switches. |
| Description | (M120 and MX Series routers and EX8200 switches only) Control the operation of the specified fabric plane. |
| Options | <p>offline—Take the fabric plane offline. Use the request chassis fabric plane <i>plane-number</i> offline command to clear a FAULT state on a fabric plane. To bring the fabric plane back online, use the request chassis fabric plane <i>plane-number</i> online command.</p> <p>online—Bring the fabric plane online.</p> <p>plane <i>plane-number</i>—Fabric plane number.</p> <ul style="list-style-type: none">• For the M120 router, replace <i>plane-number</i> with a value from 0 through 3.• For the MX480 and MX240 routers, replace <i>plane-number</i> with a value from 0 through 7.• For the MX960 router, replace <i>plane-number</i> with a value from 0 through 5.• For the EX8208 switch, replace <i>plane-number</i> with a value from 0 through 11.• For the EX8216 switch, replace <i>plane-number</i> with a value from 0 through 7. |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none">• show chassis fabric plane on page 450• show chassis fabric plane-location on page 473• Creating a Fabric Port Group• Fabric Management Overview |
| List of Sample Output | request chassis fabric plane 0 online on page 208 request chassis fabric plane 0 offline on page 208 request chassis fabric plane 0 online (EX8200 switch) on page 209 |
| Output Fields | When you enter this command, you are provided feedback on the status of your request. |

Sample Output

| | |
|---|--|
| request chassis fabric plane 0 online | <pre>user@host> request chassis fabric plane 0 online Online initiated, use "show chassis fabric plane" to verify</pre> |
| request chassis fabric plane 0 offline | <pre>user@host> request chassis fabric plane 0 offline</pre> |

Offline initiated, use “show chassis fabric plane” to verify

```
request chassis fabric plane 0 online
user@host> request chassis fabric plane 0 online
Plane 0 is already active
(EX8200 switch)
```

request chassis feb

| | |
|---------------------------------|---|
| Syntax | <code>request chassis feb (offline online restart) slot <i>slot-number</i></code> |
| Release Information | Command introduced in Junos OS Release 8.0. |
| Description | (M120 router only) Control the operation of the specified Forwarding Engine Board (FEB). |
| Options | <p>offline—Take the specified FEB offline.</p> <p>online—Bring the specified FEB online.</p> <p>restart—Restart the specified FEB.</p> <p>slot <i>slot-number</i>—FEB slot number. Replace <i>slot-number</i> with a value from 0 through 5.</p> |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none">• show chassis feb on page 502• show chassis fabric feb on page 419• show chassis fpc-feb-connectivity on page 535• feb• Switching Control Board Redundancy |
| List of Sample Output | request chassis feb offline slot 0 on page 210 request chassis feb online slot 0 on page 210 request chassis feb restart slot 0 on page 210 |
| Output Fields | When you enter this command, you are provided feedback on the status of your request. |

Sample Output

| | |
|---|--|
| <code>request chassis feb offline slot 0</code> | <code>user@host> request chassis feb offline slot 0</code> Offline initiated, use “show chassis feb” to verify |
| <code>request chassis feb online slot 0</code> | <code>user@host> request chassis feb online slot 0</code> Online initiated, use “show chassis feb” to verify |
| <code>request chassis feb restart slot 0</code> | <code>user@host> request chassis feb restart slot 0</code> Restart initiated, use “show chassis feb” to verify |

request chassis fpc

| | |
|--|--|
| Syntax | <code>request chassis fpc (offline online restart) slot <i>slot-number</i></code> |
| Syntax (TX Matrix and TX Matrix Plus Router) | <code>request chassis fpc (offline online restart) slot <i>slot-number</i> <lcc <i>number</i>></code> |
| Syntax (MX Series Router) | <code>request chassis fpc (offline online restart) slot <i>slot-number</i> <all-members> <local> <member <i>member-id</i>></code> |
| Syntax (QFX Series) | <code>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)></code> |
| Syntax (PTX Series Packet Transport Switches) | <code>request chassis fpc (offline online restart) slot <i>slot-number</i></code> |
| 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 11.3 for the QFX Series.</p> <p>Command introduced in Junos OS 12.1 for the PTX Series Packet Transport Switches.</p> |
| Description | (M20, M40, M40e, M120, M160, M320, MX Series, and T Series routers; EX Series switches and PTX Series Packet Transport Switches only) Control the operation of the Flexible PIC Concentrator (FPC). For information about the meaning of “FPCs” on the switches, see EX Series Switches Hardware and CLI Terminology Mapping. |
| Options | <p>offline—Take the FPC offline.</p> <p>online—Bring the FPC online.</p> <p>interconnect-device <i>name</i>—(QFX Series only) Bring the Flexible Port Concentrator (FPC) on the Interconnect device either offline or online:</p> <ul style="list-style-type: none"> (QFabric Switch) On a QFabric switch, specify the name of the Interconnect device containing the Flexible Port Concentrator (FPC) you want to bring either offline or online. <p>restart—Restart the FPC.</p> <p>slot <i>slot-number</i>—FPC slot number:</p> <ul style="list-style-type: none"> M20 router—0 through 3. M120 router—0 through 5. MX240 router—0 through 2. On the MX240 router, slot-number corresponds to the Dense Port Concentrator (DPC) slot number. If an MPC is installed, slot-number corresponds to the MPC slot number. |

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

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

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

- Other routers—0 through 7.
- QFabric Switch —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 Switch—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 and TX Matrix Plus routers only) (Optional) On a TX Matrix router, control the FPC in a specified T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, control the FPC in a specified T1600 router that is connected to the TX Matrix Plus router. Replace ***number*** with a value from 0 through 3.

Required Privilege Level maintenance

Related Documentation

- [show chassis fpc on page 514](#)
- [show chassis fpc-feb-connectivity on page 535](#)
- [show chassis fabric fpcs on page 423](#)
- [Configuring the Junos OS to Make a Flexible PIC Concentrator Stay Offline on page 85](#)
- [Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online on page 101](#)
- [MX960 Flexible PIC Concentrator Description](#)

List of Sample Output [request chassis fpc on page 213](#)

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 fpm resync

| | |
|--------------------------------|--|
| Syntax | request chassis fpm resync |
| Syntax (TX Matrix Router) | request chassis fpm resync (<i>lcc number</i> <i>scc</i>) |
| Syntax (TX Matrix Plus Router) | request chassis fpm resync (<i>lcc number</i> <i>sfc number</i>) |
| Syntax (MX Series Router) | request chassis fpm resync <all-members> <local> <member <i>member-id</i> > |
| Release Information | Command introduced before Junos OS Release 7.4. sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6. |
| Description | (M40e, M120, M160, M320, MX Series, and T Series routers only) Resynchronize the craft interface status. |
| Options | <p>all-members—(MX Series routers only) (Optional) Resynchronize the craft interface status on all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, resynchronize the craft interface status on a specified T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, resynchronize the craft interface status on a specified T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(MX Series routers only) (Optional) Resynchronize the craft interface status on the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(MX Series routers only) (Optional) Resynchronize the craft interface status on the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value of 0 or 1.</p> <p>scc—(TX Matrix routers only) Resynchronize the craft interface status on the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) Resynchronize the craft interface status on the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p> |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none">• show chassis environment fpm on page 315• Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online on page 101 |

List of Sample Output [request chassis fpm resync on page 215](#)

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

Sample Output

```
request chassis fpm user@host> request chassis fpm resync
resync             Front Panel resynced
```

request chassis lcc

Syntax (TX Matrix and TX Matrix Plus Router) `request chassis lcc (offline | online) slot slot-number`

Release Information Command introduced before Junos OS Release 7.4.

Description (TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, control the operation of a T640 router (or line-card chassis) that is connected to the TX matrix router. On a TX Matrix Plus router, control the operation of a T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router.

Options **offline**—On a routing matrix based on the TX Matrix router (or switch-card chassis), take the T640 router (or line-card chassis) offline. On a routing matrix based on a TX Matrix Plus router (or switch-fabric chassis), take the T1600 router (or line-card chassis) offline.

online—On a routing matrix based on the TX Matrix router (or switch-card chassis), bring the T640 router (or line-card chassis) online. On a routing matrix based on a TX Matrix Plus router (or switch-fabric chassis), bring the T1600 router (or line-card chassis) online.

slot *slot-number*—On a TX Matrix router (or switch-card chassis), the slot number of a T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router (or switch-fabric chassis), the slot number of a T1600 router (or line-card chassis) that is connected to the TX Matrix Plus (or switch-fabric chassis) router. Replace *slot-number* with a value from 0 through 3.

Required Privilege Level maintenance

Related Documentation

- [show chassis lccs on page 601](#)
- Configuring Line-Card Upgrade Groups for Nonstop Software Upgrade (CLI Procedure)
- fpc

List of Sample Output [request chassis lcc on page 216](#)

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

Sample Output

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

request chassis mcs

| | |
|---------------------------------|--|
| Syntax | <code>request chassis mcs (offline online restart) slot <i>slot-number</i></code> |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (M40e and M160 routers only) Control the operation of the Miscellaneous Control Subsystem (MCS). |
| Options | <p>offline—Take the MCS offline.</p> <p>online—Bring the MCS online.</p> <p>restart—Restart the MCS.</p> <p>slot <i>slot-number</i>—MCS slot number. Replace <i>slot-number</i> with 0 or 1.</p> |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none"> • show chassis environment mcs on page 320 |
| List of Sample Output | request chassis mcs on page 217 |
| Output Fields | When you enter this command, you are provided feedback on the status of your request. |

Sample Output

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

request chassis mic

| | |
|---------------------------------|--|
| Syntax | <code>request chassis mic (offline online) fpc-slot <i>slot-number</i> mic-slot <i>slot-number</i></code> |
| Release Information | Command introduced in Junos OS Release 10.1. |
| Description | (MX Series routers only) Control the operation of the Modular Interface Cards (MICs) installed on a Modular Port Concentrator (MPC). |
| Options | <p>offline—Take the MIC offline.</p> <p>online—Bring the MIC online.</p> <p>fpc-slot <i>slot-number</i>—FPC slot number where the MIC is installed:</p> <ul style="list-style-type: none">• MX80 router—Replace fpc-slot with the value 1. This command is not supported on FPC slot 0.• MX240 router—Replace fpc-slot with a value from 0 through 2.• MX480 router—Replace fpc-slot with a value from 0 through 5.• MX-960 router—Replace fpc-slot with a value from 0 through 11. <p>mic-slot <i>slot-number</i>—MIC slot number. Replace slot-number with 0 or 1.</p> |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none">• show chassis hardware on page 537 |
| List of Sample Output | request chassis mic online on page 218 |
| Output Fields | When you enter this command, you are provided feedback on the status of your request. |

Sample Output

| | |
|---|---|
| <code>request chassis mic online</code> | <code>user@host> request chassis mic online fpc-slot 1 mic-slot 1</code> |
|---|---|




request chassis pcg

| | |
|---------------------------------|---|
| Syntax | <code>request chassis pcg (offline online) slot <i>slot-number</i></code> |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (M40e and M160 routers) Control the operation of the Packet Forwarding Engine (PFE) clock generator (PCG). |
| Options | <p>offline—Take the PCG offline.</p> <p>online—Bring the PCG online.</p> <p>slot <i>slot-number</i>—PCG slot number. Replace <i>slot-number</i> with 0 or 1.</p> |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none">• show chassis environment pcg on page 350 |
| List of Sample Output | request chassis pcg on page 219 |
| Output Fields | When you enter this command, you are provided feedback on the status of your request. |

Sample Output

| | |
|----------------------------|---|
| request chassis pcg | <pre>user@host> request chassis pcg online slot 0 PCG 1 appears to be already online</pre> |
|----------------------------|---|

request chassis pic

| | |
|---|---|
| Syntax | <code>request chassis pic (offline online) fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i></code> |
| Syntax (TX Matrix and TX Matrix Plus Router) | <code>request chassis pic (offline online) fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i> <lcc <i>number</i>></code> |
| Release Information | Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. |
| Description | Control the operation of the PIC. |
| | <p> NOTE: The <code>request chassis pic (offline online) fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i></code> command is not supported for built-in PICs on MX Series routers.</p> <p>To view a list of built-in PICs on the router or switch chassis, use the <code>show chassis hardware</code> command.</p> |
| | <p> NOTE: T1600 routers and TX Matrix Plus routers with 100-Gigabit Ethernet PICs require two adjacent PIC slots, 0 and 1, for each PIC. Therefore, only <code>online</code> and <code>offline</code> command options to PIC slot 0 are allowed. Use of the <code>online</code> and <code>offline</code> command options for PIC slot 1 with the described router and PIC combination is not allowed.</p> |
| | <p> NOTE: In T Series routers, when the PIC state is set from <code>offline</code> to <code>online</code> or vice-versa before the processing is complete for the previous command, you are provided feedback on the status of your request. The following sample messages are displayed if you try to set a PIC <code>offline</code> or <code>online</code>:</p> <pre>user@switch> request chassis pic fpc-slot 1 pic-slot 0 online fpc 1 pic 0 online initiated, use "show chassis fpc pic-status" to verify</pre> <pre>user@switch> request chassis pic fpc-slot 1 pic-slot 0 online FPC 1 PIC 0 already transitioning to online</pre> <p>When the same PIC is set to a different state while the transition is in progress, you are provided feedback on the status of your request.</p> <pre>user@switch> request chassis pic fpc-slot 1 pic-slot 0 offline FPC 1, PIC 0 already transitioning to online. Please retry later.</pre> |
| Options | <p>offline—Take the PIC offline.</p> <p>online—Bring the PIC online.</p> |

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

- EX Series switches:
 - EX3200 switches and EX4200 standalone switches—0.
 - EX4200 switches in a Virtual Chassis configuration—0 through 9 (switch's member ID).
 - EX8208 switches—0 through 7 (line card).
 - EX8216 switches—0 through 15 (line card).
- M5, M7i, M10, and M10i routers—0 or 1.
- M20 routers—0 through 3.
- M120 routers—0 through 5.
- MX960 routers—0 through 11.
- M40, M40e, M160, M320, T320, T640, and T1600 routers—0 through 7.
- TX Matrix and TX Matrix Plus routers only—On a TX Matrix router, if you specify the number of the T640 router by using the **lcc number** option (the recommended method), replace *slot-number* with a value from 0 through 7. Otherwise, replace *slot-number* with a value from 0 through 31.

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

```
user@host> request chassis pic fpc-slot 1 lcc 1 pic-slot 0 offline
user@host> request chassis pic fpc-slot 9 pic-slot 0 offline
```

pic-slot slot-number—PIC slot number. For the M Series router, the T640 router, the T1600 router, and the TX Matrix and TX Matrix Plus routers, it can be 0, 1, 2, or 3. On the MX960 router, *slot-number* corresponds to the slot number of the Packet Forwarding Engine. For the T320 router, it can be 0 or 1. For EX3200 and EX4200 switches, it is 0 for built-in network interfaces and 1 for interfaces on uplink modules. For EX8208 and EX8216 switches, it is 0.

lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, control the PIC in a specified T640 router that is connected to the TX Matrix router. On a TX Matrix Plus router, control the PIC in a specified T1600 router that is connected to the TX Matrix Plus router. Replace *number* with a value from 0 through 3.

Required Privilege Level maintenance

Related Documentation

- [show chassis hardware on page 537](#)
- [show chassis pic on page 611](#)

- Configuring the PIC Type
- 100-Gigabit Ethernet PIC Overview

List of Sample Output [request chassis pic on page 222](#)

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

Sample Output

```
request chassis pic user@host> request chassis pic pic-slot 0 online fpc-slot 0
FPC 0, PIC 0 is already online
```

request chassis redundancy feb slot

| | |
|---------------------------------|--|
| Syntax | <code>request chassis redundancy feb slot <i>slot-number</i> (switch-to-backup revert-from-backup)</code> |
| Release Information | Command introduced in Junos OS Release 8.2. |
| Description | (M120 routers only) Control the operation of the specified Forwarding Engine Board (FEB) in a redundancy group. |
| Options | <p><i>slot-number</i>—FEB slot number. Replace <i>slot-number</i> with a value from 0 through 5.</p> <p>switch-to-backup—Initiate a switchover from the specified active FEB to the backup FEB for the redundancy group.</p> <p>revert-from-backup—Initiate a revert to the specified FEB following a switchover to the backup FEB for a redundancy group.</p> |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none"> • show chassis redundancy feb on page 632 • Configuring FEB Redundancy on the M120 Router • Switching Control Board Redundancy |
| List of Sample Output | request chassis redundancy feb slot 2 switch-to-backup on page 223 request chassis redundancy feb slot 3 revert-to-backup on page 223 |
| Output Fields | When you enter this command, you are provided feedback on the status of your request. |

Sample Output

```

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

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

```

request chassis routing-engine master

| | |
|---------------------------------------|---|
| Syntax | request chassis routing-engine master (acquire release switch) <force> <no-confirm> |
| Syntax (TX Matrix Router) | request chassis routing-engine master (acquire release switch) (lcc <i>number</i> scc all-chassis) <force> <no-confirm> |
| Syntax (TX Matrix Plus Router) | request chassis routing-engine master (acquire release switch) (lcc <i>number</i> sfc all-chassis all-lcc) <force> <no-confirm> |
| Syntax (MX Series Router) | request chassis routing-engine master (acquire release switch) <all-members> <force> <local> <member <i>member-id</i> > <no-confirm> |
| Syntax (QFX Series) | request chassis routing-engine master (acquire release switch) <check> <interconnect-device <i>name</i> > <node-group <i>name</i> > <no-confirm> |
| Release Information | Command introduced before Junos OS Release 7.4. all-chassis option added in Junos OS Release 8.0. Command introduced in Junos OS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6. Command introduced in Junos OS Release 11.3 for the QFX Series. |
| Description | For routers or switches with multiple Routing Engines, control which Routing Engine is the master. |



CAUTION: (Routing matrix based on the TX Matrix or TX Matrix Plus routers only) Within the routing matrix, we recommend that all Routing Engines run the same Junos OS Release. If you run different releases on the Routing Engines and a change in mastership occurs on any backup Routing Engine in the routing matrix, one or all T640 routers (in a routing matrix based on the TX Matrix router) or T1600 routers (in a routing matrix based on a TX Matrix Plus router) might become logically disconnected from the TX Matrix router and cause data loss. For more information, see the [TX Matrix Router Hardware Guide](#) or the [Junos OS High Availability Configuration Guide](#).



NOTE: Successive graceful Routing Engine switchover events must be a minimum of 240 seconds (4 minutes) apart after both Routing Engines have come up.

If the router or switch displays a warning message similar to “Standby Routing Engine is not ready for graceful switchover. Packet Forwarding Engines that are not ready for graceful switchover might be reset,” do not attempt switchover. If you choose to proceed with switchover, only the Packet Forwarding Engines that were not ready for graceful switchover are reset. None of the Flexible PIC concentrators (FPCs) should spontaneously restart. We recommend that you wait until the warning no longer appears and then proceed with the switchover.

Options **acquire**—Attempt to become the master Routing Engine.

release—Request that the other Routing Engine become the master.

switch—Toggle mastership between Routing Engines.

The **acquire**, **release**, and **switch** options have the following suboptions:

all-chassis—(TX Matrix and TX Matrix Plus routers only) On a routing matrix composed of a TX Matrix router and the attached T640 routers, switch mastership on all the Routing Engines in the routing matrix. Likewise, on a routing matrix composed of a TX Matrix Plus router and the attached T1600 routers, switch mastership on all the Routing Engines in the routing matrix.

all-lcc—(TX Matrix Plus routers only) Request to acquire mastership for all line-card chassis (LCC).

all-members—(MX Series routers only) (Optional) Control Routing Engine mastership on the Routing Engines in all member routers of the Virtual Chassis configuration.

interconnect-device *name*—(QFabric switches only) (Optional) Control Routing Engine mastership on the Routing Engines on an Interconnect device.

lcc *number*—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, the T640 router (or LCC) that is connected to the TX Matrix router (or switch-card chassis). On a TX Matrix Plus router, the T1600 router (or LCC) that is connected to the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with a value from 0 through 3.

local—(MX Series routers only) (Optional) Control Routing Engine mastership on the Routing Engines in the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Control Routing Engine mastership on the Routing Engines of the specified member in the Virtual Chassis Configuration. Replace ***member-id*** with a value of 0 or 1.

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

node-group *name*—(QFabric switches only) (Optional) Control Routing Engine mastership on the Routing Engines on a Node group.

scc—(TX Matrix routers only) TX Matrix (or switch-card chassis).

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

force—(Optional) Available only with the acquire option. Force the change to a new master Routing Engine.

Additional Information

Because both Routing Engines are always running, the transition from one to the other as the master Routing Engine is immediate. However, the changeover interrupts communication to the System and Switch Board (SSB). The SSB takes several seconds to reinitialize the Flexible PIC Concentrators (FPCs) and restart the PICs. Interior gateway protocol (IGP) and BGP convergence times depend on the specific network environment.

By default, the Routing Engine in slot 0 (RE0) is the master and the Routing Engine in slot 1 (RE1) is the backup. To change the default master Routing Engine, include the **routing-engine** statement at the **[edit chassis redundancy]** hierarchy level in the configuration. For more information, see the [Junos OS System Basics Configuration Guide](#)

To have the backup Routing Engine become the master Routing Engine, use the **request chassis routing-engine master switch** command. If you use this command to change the master and then restart the chassis software for any reason, the master reverts to the default setting.



NOTE: Although the configurations on the two Routing Engines do not have to be the same and are not automatically synchronized, we recommend making both configurations the same.

Required Privilege Level maintenance

Related Documentation

- [show chassis routing-engine on page 635](#)
- Configuring Routing Engine Redundancy
- Switching the Global Master and Backup Roles in a Virtual Chassis Configuration

List of Sample Output

[request chassis routing-engine master acquire on page 227](#)
[request chassis routing-engine master switch on page 227](#)

Output Fields

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

Sample Output

```
request chassis routing-engine master acquire user@host> request chassis routing-engine master acquire
warning: Traffic will be interrupted while the PFE is re-initialized
warning: The other routing engine's file system could be corrupted
Reset other routing engine and become master ? [yes,no] (no)

request chassis routing-engine master switch user@host> request chassis routing-engine master switch
warning: Traffic will be interrupted while the PFE is re-initialized
Toggle mastership between Routing Engines ? [yes,no] (no) yes

Resolving mastership...
Complete. The other Routing Engine becomes the master.

Switch mastership back to the local Routing Engine:

user@host> request chassis routing-engine master switch

warning: Traffic will be interrupted while the PFE is re-initialized
Toggle mastership between routing engines ? [yes,no] (no) yes

Resolving mastership...
Complete. The local routing engine becomes the master.
```

request chassis scg

| | |
|--|---|
| Syntax | <code>request chassis scg (offline online) slot <i>slot-number</i></code> |
| Syntax (TX Matrix and TX Matrix Plus Routers) | <code>request chassis scg lcc <i>number</i> (offline online) slot <i>slot-number</i></code> |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (T Series routers only) Control the operation of the specified SONET Clock Generator (SCG). |
| Options | <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix Plus router, change the SCG status on a specified T640 router (or line-card chassis [LCC]) that is connected to the TX Matrix router. On a TX Matrix Plus router, change the SCG status on a specified T1600 router (or LCC) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>offline—Take the SCG offline. When you change the SCG status to offline, the unit is not powered down.</p> <p>online—Bring the SCG online.</p> <p>slot <i>slot-number</i>—SCG slot number. Replace <i>slot-number</i> with 0 or 1.</p> |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none">• show chassis environment scg on page 363• Configuring the Clock Source• T320 SONET Clock Generator (SCG) Description |
| List of Sample Output | request chassis scg on page 228 |
| Output Fields | When you enter this command, you are provided feedback on the status of your request. |

Sample Output

| | |
|----------------------------|---|
| request chassis scg | <pre>user@host> request chassis scg online slot 0 Online initiated, use "show chassis environment scg" to verify</pre> |
|----------------------------|---|

request chassis sfm master switch

| | |
|---------------------------------|--|
| Syntax | request chassis sfm master switch <no-confirm> |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (M40e and M160 routers only) Control which Switching and Forwarding Module (SFM) is master. |
| Options | no-confirm —(Optional) Do not display a switch warning or query. |
| Additional Information | <p>By default, the SFM in slot 0 (SFM0) is the master and the SFM in slot 1 (SFM1) is the backup. If you use this command to change the master, and then restart the chassis software for any reason, the master reverts to the default setting. To change the default master SFM, include the sfm statement at the [edit chassis redundancy] hierarchy level in the configuration. For more information, see the Junos OS System Basics Configuration Guide.</p> <p>All installed SFMs are always working together to forward packets. If an SFM fails, the other SFMs take over and traffic continues to flow uninterrupted.</p> |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none"> • show chassis sfm on page 651 • Switching the Global Master and Backup Roles in a Virtual Chassis Configuration |
| List of Sample Output | request chassis sfm master switch on page 229 request chassis sfm master switch no-confirm on page 229 |
| Output Fields | When you enter this command, you are provided feedback on the status of your request. |

Sample Output

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

Switch initiated, use "show chassis sfm" to verify

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

request chassis sfm

| | |
|---------------------------------|--|
| Syntax | <code>request chassis sfm (offline online restart) slot <i>slot-number</i></code> |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (M40e and M160 routers only) Control the operation of the specified Switching and Forwarding Module (SFM). |
| Options | <p>offline—Take the SFM offline.</p> <p>online—Bring the SFM online.</p> <p>restart—Restart the SFM.</p> <p>slot <i>slot-number</i>—SFM slot number. Replace <i>slot-number</i> with a value from 0 through 3.</p> |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none">• show chassis sfm on page 651• Configuring SFM Redundancy on M40e and M160 Routers• M40e Switching and Forwarding Module (SFM) Description |
| List of Sample Output | request chassis sfm (M40e) on page 230 request chassis sfm (M160) on page 230 |
| Output Fields | When you enter this command, you are provided feedback on the status of your request. |

Sample Output

| | |
|-----------------------------------|--|
| request chassis sfm (M40e) | <pre>user@host> request chassis sfm slot 1 restart M40e router: error: SFM 0 is transitioning to online state.</pre> |
| request chassis sfm (M160) | <pre>user@host> request chassis sfm slot 1 restart M160 router: Restart initiated, use "show chassis sfm" to verify</pre> |

request chassis sib

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

- Related Documentation**
- [show chassis sibs on page 654](#)
 - [show chassis environment sib on page 372](#)
 - [Configuring the Junos OS to Upgrade and Downgrade Switch Interface Boards on a TX Matrix Router on page 38](#)
 - [M320 SIB Description](#)

List of Sample Output [request chassis sib on page 232](#)
[request chassis sib on page 232](#)

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

Sample Output

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

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

request chassis sib f13 train-link-receive slot

| | |
|--|--|
| Syntax | request chassis sib f13 train-link-receive slot <i>SFC-SIB-F13-slot-num</i> |
| Syntax (TX Matrix Plus Routing) | request chassis sib f13 train-link-receive slot <i>SFC-SIB-F13-slot-num</i> |
| Release Information | Command introduced in Junos OS Release 10.1. |
| Description | (TX Matrix Plus routing platform only) Control the receiving link of the specified Switch Interface Board (SIB) of the SFC. |
| Options | slot <i>SFC-SIB-F13-slot-num</i> — SFC SIB slot number. Replace it with 0, 3, 6, 8 or 11. |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none"> • request chassis sib f13 train-link-transmit slot on page 234 • Configuring the Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform on page 55 |
| List of Sample Output | request chassis sib f13 train-link-receive slot on page 233 |
| Output Fields | When you enter this command, the SFC is ready to receive traffic from the T1600 router (LCC). |

Sample Output

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

request chassis sib f13 train-link-transmit slot

| | |
|---------------------------------|--|
| Syntax | <code>request chassis sib f13 train-link-transmit slot <i>SFC-SIB-F13-slot-num</i></code> |
| Release Information | Command introduced in Junos OS Release 10.1. |
| Description | (TX Matrix Plus routing platform only) Control the transmission link of the specified Switch Interface Board (SIB) of the SFC. |
| Options | <code>slot <i>SFC-SIB-F13-slot-num</i></code> —SFC SIB slot number. Replace it with 0, 3, 6, 8 or 11. |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none">• request chassis sib f13 train-link-receive slot on page 233• Configuring the Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform on page 55 |
| List of Sample Output | request chassis sib f13 train-link-transmit slot on page 234 |
| Output Fields | When you enter this command, the SFC is ready to transmit traffic to the T1600 router (LCC). |

Sample Output

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


request chassis sib train-link-receive slot

| | |
|---------------------------------|--|
| Syntax | <code>request chassis sib train-link-receive slot <i>LCC-SIB-ST-SIB-L-slot-num</i></code> |
| Release Information | Command introduced in Junos OS Release 10.1. |
| Description | (T1600 Router [LCC] and TX Matrix Plus routing platform only) Control the receiving link of the specified Switch Interface Board (SIB) of the LCC. |
| Options | <code>slot <i>LCC-SIB-ST-SIB-L-slot-num</i></code> — LCC SIB slot number. Replace it with a value from 0 through 4. |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none"> • request chassis sib train-link-transmit slot on page 236 • Configuring the Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform on page 55 |
| List of Sample Output | request chassis sib train-link-receive slot on page 235 |
| Output Fields | When you enter this command, the LCC is ready to receive traffic from the SFC. |

Sample Output

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

request chassis sib train-link-transmit slot

| | |
|---|--|
| Syntax | <code>request chassis sib train-link-transmit slot <i>LCC-SIB-ST-SIB-L-slot-num</i></code> |
| Syntax (TX Matrix Plus Routing Platform) | <code>request chassis sib train-link-receive slot <i>LCC-SIB-ST-SIB-L-slot-num</i></code> |
| Release Information | Command introduced in Junos OS Release 10.1. |
| Description | (T1600 Router (LCC) and TX Matrix Plus routing platform only) Control the transmission link of the specified Switch Interface Board (SIB) of the LCC. |
| Options | <code>slot <i>LCC-SIB-ST-SIB-L-slot-num</i></code> — LCC SIB slot number. Replace it with a value from 0 through 4. |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none">• request chassis sib train-link-receive slot on page 235• Configuring the Junos OS to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform on page 55 |
| List of Sample Output | request chassis sib train-link-transmit slot on page 236 |
| Output Fields | When you enter this command, the LCC is ready to transmit traffic to the SFC. |

Sample Output

| | |
|---|---|
| <code>request chassis sib train-link-transmit slot</code> | <code>user@host> request chassis sib train-link-transmit slot 0</code> |
|---|---|

request chassis spmb restart

| | |
|---------------------------------------|---|
| Syntax | <code>request chassis spmb restart slot <i>slot-number</i></code> |
| Syntax (TX Matrix Router) | <code>request chassis spmb restart (<i>lcc number</i> <i>scc</i>) slot <i>slot-number</i></code> |
| Syntax (TX Matrix Plus Router) | <code>request chassis spmb restart (<i>lcc number</i> <i>sfc number</i>) slot <i>slot-number</i></code> |
| Release Information | Command introduced before Junos OS Release 7.4. sfc option for the TX Matrix Plus router introduced in Junos OS Release 9.6. |
| Description | Restart the specified Switch Processor Mezzanine Board (SPMB) on the Control Board (CB). |
| Options | <p><i>lcc number</i>—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, the T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, the T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p><i>scc</i>—(TX Matrix routers only) TX Matrix router (or switch-card chassis) in the routing matrix.</p> <p><i>sfc</i>—(TX Matrix Plus routers only) TX Matrix Plus router (or switch-fabric chassis) in the routing matrix.</p> <p><i>slot slot-number</i>—CB slot number. Replace <i>slot-number</i> with 0 or 1.</p> |
| Required Privilege Level | maintenance |
| Related Documentation | <ul style="list-style-type: none"> • show chassis spmb on page 661 • show chassis spmb sibs on page 669 |
| List of Sample Output | request chassis spmb restart on page 237 |
| Output Fields | When you enter this command, you are provided feedback on the status of your request. |

Sample Output

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

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 Switches. |
| Description | (M320, M40e, M120, T320, T640, and T1600 routers and PTX Packet Transport Switches 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 Switch, 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**
- [show chassis synchronization on page 674](#)
 - [Configuring an External Clock Synchronization Interface for MX Series Routers on page 121](#)
 - Supported Time Synchronization Standard

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

set chassis display message

| | |
|---------------------------------------|--|
| Syntax | set chassis display message " <i>message</i> " <permanent> |
| Syntax (TX Matrix Router) | set chassis display message " <i>message</i> " (<i>lcc number</i> <i>scc</i>) <permanent> |
| Syntax (TX Matrix Plus Router) | set chassis display message " <i>message</i> " (<i>fpc-slot slot-number</i> <i>lcc number</i> <i>sfc number</i>) <permanent> |
| Release Information | Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. sfc option for TX Matrix Plus router introduced in Junos OS Release 9.6. |
| Description | Display or stop a text message on the craft interface display, which is on the front of the router, or on the LCD panel display on the switch. The craft interface alternates the display of text messages with standard craft interface messages, switching between messages every 2 seconds. By default, on both the router and the switch, the text message is displayed for 5 minutes. The craft interface display has four 20-character lines. The LCD panel display has two 16-character lines, and text messages appear only on the second line. |
| Options | <p>"<i>message</i>"—Message to display. On the craft interface display, if the message is longer than 20 characters, it wraps onto the next line. If a word does not fit on one line, the entire word moves down to the next line. Any portion of the message that does not fit on the display is truncated. An empty pair of quotation marks ("") deletes the text message from the craft interface display. On the LCD panel display, the message is limited to 16 characters.</p> <p>fpc-slot <i>slot-number</i>—(TX Matrix Plus routers and EX4200 and QFX Series only) On the router or switch, display the text message on the craft interface for a specific Flexible PIC Concentrator (FPC). Replace <i>slot-number</i> with a value from 0 through 31. On the switch, display the text message for a specific member of a Virtual Chassis, where fpc-slot <i>slot-number</i> corresponds to the member ID. Replace <i>slot-number</i> with a value from 0 through 9. On the QFX Series, the <i>slot-number</i> is always 0.</p> <p><i>lcc number</i> —(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the text message on the craft interface display of a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display the text message on the craft interface display of a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>permanent—(Optional) Display a text message on the craft interface display or LCD panel display permanently.</p> <p>scc—(TX Matrix routers only) Display the text message on the craft interface display of the TX Matrix router (or switch-card chassis).</p> |

sfc number—(TX Matrix Plus routers only) Display the text message on the craft interface display of the TX Matrix Plus router (or switch-fabric chassis).

Required Privilege Level clear

Related Documentation

- Configuring the LCD Panel on EX Series Switches (CLI Procedure)
- [clear chassis display message on page 202](#)
- show chassis craft-interface
- Understanding the Implementation of System Log Messages

List of Sample Output [set chassis display message \(Creating\) on page 241](#)
[set chassis display message \(Deleting\) on page 241](#)

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

Sample Output

set chassis display message (Creating) The following example shows how to set the display message and verify the result:

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

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

set chassis display message (Deleting) The following example shows how to delete the display message and verify that the message is removed:

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

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

```
+-----+
|host    |
|Up: 0+17:05:47|
|        |
|Temperature OK|
+-----+
```


CHAPTER 25

Monitoring Commands

show chassis alarms

| | |
|--|--|
| Syntax | show chassis alarms |
| Syntax (TX Matrix Router) | show chassis alarms <lcc <i>number</i> scc> |
| Syntax (TX Matrix Plus Router) | show chassis alarms <lcc <i>number</i> sfc <i>number</i> > |
| Syntax (MX Series Router) | show chassis alarms <all-members> <local> <member <i>member-id</i> > |
| Syntax (QFX Series) | show chassis alarms <interconnect-device <i>name</i> > <node-device <i>name</i> > |
| Syntax (PTX Series Packet Transport Switches) | 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 Switches. |
| 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 <i>name</i> —(QFabric switches only) (Optional) Display information about alarm conditions for the Interconnect device. lcc <i>number</i> — (TX Matrix and TX Matrix Plus routers only) (Optional) On the TX Matrix router, show information about a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On the TX Matrix Plus router, show information about a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3. 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* with a value of 0 or 1.

node-device *name*—(QFabric switches only) (Optional) Display information about alarm conditions for the Node device.

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

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

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

On 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.

Required Privilege Level view

Related Documentation

- [Configuring an Alarm Entry and Its Attributes](#)
- [Chassis Conditions That Trigger Alarms on page 151](#)

List of Sample Output

- [show chassis alarms \(Alarms Active\) on page 246](#)
- [show chassis alarms \(No Alarms Active\) on page 246](#)
- [show chassis alarms \(Fan Tray\) on page 246](#)
- [show chassis alarms \(T4000 Router\) on page 246](#)
- [show chassis alarms \(Unreachable Destinations Present on a T Series Router\) on page 246](#)
- [show chassis alarms \(FPC Offline Due to Unreachable Destinations on a T Series Router\) on page 247](#)
- [show chassis alarms \(SCG Absent on a T Series Router\) on page 247](#)
- [show chassis alarms \(Alarms Active on a TX Matrix Router\) on page 247](#)
- [show chassis alarms \(Backup Routing Engine\) on page 248](#)
- [show chassis alarms \(Alarms Active on the QFX Series\) on page 248](#)

[show chassis alarms node-device \(Alarms Active on the QFabric Switch\) on page 248](#)
[show chassis alarms \(Alarms Active on the QFabric Switch\) on page 248](#)
[show chassis alarms \(Alarms Active on an EX8200 Switch\) on page 248](#)
[show chassis alarms \(Alarms Active on a PTX5000 Packet Transport Switch\) on page 249](#)

Output Fields Table 22 on page 246 lists the output fields for the **show chassis alarms** command. Output fields are listed in the approximate order in which they appear.

Table 22: 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 (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) user@host> show chassis alarms
10 alarms currently active
Alarm time          Class  Description

```

```

Destinations Present 2011-08-30 18:43:53 PDT Major FPC 7 has unreachable destinations
on a T Series Router 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 user@host> show chassis alarms
(FPC Offline Due to 10 alarms currently active
Unreachable          Alarm time      Class  Description
Destinations on a T 2011-08-30 18:43:53 PDT Major FPC 7 offline due to unreachable destinations
Series Router)      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 user@host> show chassis alarms
(SCG Absent on a T 4 alarms currently active
Series Router)      Alarm time      Class  Description
2011-01-23 21:42:46 PST Major SCG 0 NO EXT CLK MEAS-BKUP SCG ABS

```

```

show chassis alarms user@host> show chassis alarms
(Alarms Active on a TX scc-re0:
Matrix Router)      -----
8 alarms currently active
Alarm time      Class  Description
2004-08-05 18:43:53 PDT Minor LCC 0 Minor Errors
2004-08-05 18:43:53 PDT Minor SIB 3 Not Online
2004-08-05 18:43:52 PDT Major SIB 2 Absent
2004-08-05 18:43:52 PDT Major SIB 1 Absent
2004-08-05 18:43:52 PDT Major SIB 0 Absent
2004-08-05 18:43:33 PDT Major LCC 2 Major Errors
2004-08-05 18:43:28 PDT Major LCC 0 Major Errors
2004-08-05 18:43:05 PDT Minor LCC 2 Minor Errors
lcc0-re0:
-----
5 alarms currently active
Alarm time      Class  Description
2004-08-05 18:43:53 PDT Minor SIB 3 Not Online
2004-08-05 18:43:49 PDT Major SIB 2 Absent
2004-08-05 18:43:49 PDT Major SIB 1 Absent
2004-08-05 18:43:49 PDT Major SIB 0 Absent
2004-08-05 18:43:28 PDT Major PEM 0 Not OK
lcc2-re0:
-----
5 alarms currently active
Alarm time      Class  Description
2004-08-05 18:43:35 PDT Minor SIB 3 Not Online
2004-08-05 18:43:33 PDT Major SIB 2 Absent
2004-08-05 18:43:33 PDT Major SIB 1 Absent

```

```

2004-08-05 18:43:33 PDT Major SIB 0 Absent
2004-08-05 18:43:05 PDT Minor PEM 1 Absent

show chassis alarms (Backup Routing Engine) user@host> show chassis alarms
2 alarms are currently active
Alarm time          Class Description
2005-04-07 10:12:22 PDT Minor Host 1 Boot from alternate media
2005-04-07 10:11:54 PDT Major Host 1 compact-flash missing in Boot List

show chassis alarms (Alarms Active on 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 Switch) 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 Switch) 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 Switch)

```
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 cfeb

| | |
|---------------------------------|---|
| Syntax | show chassis cfeb |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (M7i and M10i routers only) Display status information about the Compact Forwarding Engine Board (CFEB). |
| Options | This command has no options. |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none"> • request chassis cfeb on page 206 • Configuring CFEB Redundancy on the M10i Router • CFEB Overview |
| List of Sample Output | show chassis cfeb (M7i) on page 251 show chassis cfeb (M10i) on page 251 |
| Output Fields | Table 23 on page 250 lists the output fields for the show chassis cfeb command. Output fields are listed in the approximate order in which they appear. |

Table 23: show chassis cfeb Output Fields

| Field Name | Field Description |
|------------------------------|---|
| State | Status of the CFEB: <ul style="list-style-type: none"> • Online—CFEB is online and running. • Offline—CFEB is powered down. |
| Intake Temperature | Temperature of the air before flowing past the CFEB. |
| Exhaust Temperature | Temperature of the air after flowing past the CFEB. |
| CPU utilization | Percentage of CPU being used by the CFEB processor. |
| Interrupt utilization | Of the total CPU being used by the CFEB processor, the percentage being used for interrupts |
| Heap Utilization | Percentage of heap space (dynamic memory) being used by the CFEB processor. If this number exceeds 80 percent, there may be a software problem (memory leak). |
| Buffer Utilization | Percentage of buffer space being used by the CFEB processor for buffering internal messages |
| Total CPU DRAM | Amount of DRAM available to the CFEB CPU. |

Table 23: show chassis cfep Output Fields (*continued*)

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

Sample Output

```

show chassis cfep user@host> show chassis cfep
(M7i) CFEB status:
      State Online
      Intake Temperature 27 degrees C / 80 degrees F
      Exhaust Temperature 33 degrees C / 91 degrees F
      CPU utilization 3 percent
      Interrupt utilization 0 percent
      Heap utilization 8 percent
      Buffer utilization 21 percent
      Total CPU DRAM 128 MB
      Internet Processor II Version 1, Foundry IBM, Part number 164
      Start time: 2003-06-11 11:41:22 PDT
      Uptime: 1 hour, 39 minutes, 31 seconds

show chassis cfep user@host> show chassis cfep
(M10i) CFEB status:
Slot 0 information:
  StateMaster
  Intake temperature 35 degrees C / 95 degrees F
  Exhaust temperature 43 degrees C / 109 degrees F
  CPU utilization 3 percent
  Interrupt utilization 0 percent
  Heap utilization 10 percent
  Buffer utilization 22 percent
  Total CPU DRAM 128 MB
  Internet Processor II Version 1, Foundry IBM, Part number 164
  Start time: 2004-11-01 03:24:15 PST
  Uptime: 12 hours, 56 minutes, 18 seconds
Slot 1 information:
  State Backup

```

show chassis cip

| | |
|---------------------------------------|--|
| Syntax (TX Matrix Plus Router) | show chassis cip |
| Release Information | Command introduced in Junos OS Release 9.6. |
| Description | (TX Matrix Plus routers only) Display environmental information about the Connector Interface Panel (CIP) that provides Ethernet Control Plane connectivity to line-card chassis (LCCs), switch fabric chassis, and other devices. |
| Options | This command has no options. |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none"> • request chassis cip on page 207 • Installing a T1600 CIP • Installing a T640 CIP • Installing a TX-CIP • Installing an M320 CIP • Installing an M320 CIP • Installing the T1600 CIP • Installing the T320 CIP • CIP Overview |
| Output Fields | Table 24 on page 252 lists the output fields for the show chassis cip command. Output fields are listed in the approximate order in which they appear. |

Table 24: show chassis cip Output Fields

| Field Name | Field Description |
|----------------|---|
| Eswitch | Ethernet switch used to connect to the LCC or to a JCS1200: 0 or 1 . |
| Port | <p>Physical port number of the Ethernet switch:</p> <ul style="list-style-type: none"> • Port numbers: 4 to 8 on Ethernet switch 0 can be used to connect up to four (reserved for future use) other SFCs or optional JCS1200s. <p>NOTE: The current configuration of the routing matrix based on a TX Matrix Plus router supports only one SFC.</p> <ul style="list-style-type: none"> • Port numbers 0 to 15 on Ethernet switch 1 can be used to connect up to 16 LCCs. <p>NOTE: The current configuration of a routing matrix based on a TX Matrix Plus router supports only up to four LCCs. You can connect the four LCCs to any of the ports (0 to 15) on the Ethernet switch 1.</p> |

Table 24: show chassis cip Output Fields (*continued*)

| Field Name | Field Description |
|--------------|--|
| Type | Type of CIP: <ul style="list-style-type: none"> XE—Ethernet switch 0 ports used for connections to the SFC control plane or other devices such as JCS1200. GE—Ethernet switch 1 ports used for connections to the LCC control plane. |
| Connected-to | Show control plane connection to a specific LCC or SFC. |
| Link | State of the connection to an LCC control plane, SFC control plane, or other devices: Up or Down . |
| Speed | Ethernet link speed. |
| Duplex | Type of Ethernet link: Full or Half Duplex . |
| Auto-neg | Status of autonegotiation for the CIP connection to the LCC, SFC, or other devices: On or Off . |

show chassis cip (TX Matrix Plus Router)

```

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

```

show chassis environment

| | |
|---|---|
| Syntax | show chassis environment |
| Syntax (T4000 Router) | 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>name</i> > <scg <i>scg-slot-number</i> > <sib <i>sib-slot-number</i> > |
| Syntax (TX Matrix Router) | show chassis environment <lcc <i>number</i> scc> |
| Syntax (TX Matrix Plus Router) | show chassis environment <lcc <i>number</i> sfc <i>number</i> > |
| Syntax (MX Series Router) | show chassis environment <all-members> <local> <member <i>member-id</i> > |
| Syntax (QFX Series) | show chassis environment <cb <i>slot-number</i> <interconnect-device <i>name</i> >> <fpc <i>slot-number</i> <interconnect-device <i>name</i> >> <interconnect-device <i>name</i> <slot-number> <node-device <i>name</i> > <pem <i>slot-number</i> (interconnect-device <i>name</i> <i>slot-number</i>) (node-device <i>name</i>)> <routing-engine <i>name</i> <interconnect-device <i>name</i> <i>slot-number</i> >> |
| Syntax (PTX Series Packet Transport Switches) | 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> > |
| 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 Switches. monitored option added in Junos OS Release 12.1 for the PTX Series Packet Transport Switches. Command introduced in Junos OS Release 12.1 for the T4000 Core Routers. |

- Description** Display environmental information about the router or switch chassis, including the temperature and information about the fans, power supplies, and Routing Engine.
- Options**
- none**—Display environmental information about the router or switch chassis. On a TX Matrix router, display environmental information about the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the TX Matrix Plus router and its attached T1600 routers.
 - all-members**—(MX Series routers only) (Optional) Display chassis environmental information for all the members of the Virtual Chassis configuration.
 - cb *cb-slot-number***—(PTX Series, T4000 Core Routers) (Optional) Display chassis environmental information for the Control Board. Replace ***cb-slot*** with **0** or **1**.
 - cb *interconnect-device name***—(QFabric switches only) (Optional) Display chassis environmental information for the Control Board on an Interconnect device.
 - cgc *cgc-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***—(QFX3500 switches and QFabric Switches) (Optional) On the QFX3500 switch, display chassis environmental information for a specified Flexible PIC Concentrator. On a QFabric switch, display chassis environment information for a specified Flexible PIC Concentrator on an Interconnect device.
 - fpc *fpc-slot***—(PTX Series, T4000 Core Routers) (Optional) Display chassis environmental information for a specified Flexible PIC Concentrator. For T4000 Core Routers, replace ***fpc-slot*** with a value from **0** through **7**.
 - fpm**—(PTX Series only, T4000 Core Routers) (Optional) Display chassis environmental information for the craft interface (FPM).
 - interconnect-device *name***—(QFabric switches only) (Optional) Display chassis environmental information for the Interconnect device.
 - monitored**—(PTX Series 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 and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display chassis environmental information for a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display chassis environmental information for a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace ***number*** with a value from **0** through **3**.
 - local**—(MX Series routers only) (Optional) Display chassis environmental information for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display chassis environmental information for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of **0** or **1**.

node-device *name*—(QFabric switches 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 Switches) (Optional) Display chassis environmental information for the Power Entry Module on the specified Interconnect device or Node device.

pem *pem-slot-number*—(T4000 Core Routers) (Optional) Display chassis environmental information for the Power Entry Module on the specified Power Entry Module. Replace *pem-slot-number* with a value of **0** or **1**.

routing-engine—(QFX3500 switches and QFabric Switches) (Optional) Display chassis environmental information for the Routing Engine on the specified Interconnect device.

routing-engine *re-slot-number*—(PTX Series, T4000 Core Routers) (Optional) Display chassis environmental information for the specified Routing Engine. Replace *re-slot-number* with a value of **0** or **1**.

scg—(T4000 Core Routers) (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 (or switch-card chassis).

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

sib *sib-slot-number*—(PTX Series, T4000 Core Routers) (Optional) Display chassis environmental information about the specified switch interface board. For T4000 Core Routers, replace *sib-slot-number* with a value from **0** through **4**.

Required Privilege Level

view

Related Documentation

- [show chassis environment cb on page 282](#)
- [show chassis environment ccg](#)
- [show chassis environment cip](#)
- [show chassis environment fpc on page 297](#)
- [show chassis environment fpm on page 315](#)
- [show chassis environment mcs on page 320](#)

- `show chassis environment monitored`
- [show chassis environment pcg on page 350](#)
- `show chassis environment pdu`
- [show chassis environment pem on page 352](#)
- [show chassis environment routing-engine on page 359](#)
- [show chassis environment scg on page 363](#)
- [show chassis environment sib on page 372](#)

| | |
|------------------------------|--|
| List of Sample Output | show chassis environment (J2300 Router) on page 258 |
| | show chassis environment (J4300 or J6300 Router) on page 258 |
| | show chassis environment (M5 Router) on page 258 |
| | show chassis environment (M7i Router) on page 259 |
| | show chassis environment (M10 Router) on page 259 |
| | show chassis environment (M10i Router) on page 259 |
| | show chassis environment (M20 Router) on page 260 |
| | show chassis environment (M40 Router) on page 260 |
| | show chassis environment (M40e Router) on page 260 |
| | show chassis environment (M120 Router) on page 261 |
| | show chassis environment (M160 Router) on page 262 |
| | show chassis environment (M320 Router) on page 262 |
| | show chassis environment (MX240 Router) on page 263 |
| | show chassis environment (MX240 Router with Enhanced MX SCB) on page 264 |
| | show chassis environment (MX480 Router) on page 265 |
| | show chassis environment (MX480 Router with Enhanced MX SCB) on page 266 |
| | show chassis environment (MX960 Router) on page 267 |
| | show chassis environment (MX960 Router with Enhanced MX SCB) on page 267 |
| | show chassis environment (T320 Router) on page 270 |
| | show chassis environment (T640 Router) on page 271 |
| | show chassis environment (T4000 Router) on page 271 |
| | show chassis environment (TX Matrix Router) on page 273 |
| | show chassis environment (T1600 Router) on page 275 |
| | show chassis environment (TX Matrix Plus Router) on page 275 |
| | show chassis environment (EX4200 Standalone Switch) on page 278 |
| | show chassis environment (QFX Series) on page 278 |
| | show chassis environment node-device (QFabric Switch) on page 278 |
| | show chassis environment pem (QFX Series) on page 278 |
| | show chassis environment (PTX5000 Packet Transport Switch) on page 279 |

Output Fields [Table 25 on page 258](#) lists the output fields for the **show chassis environment** command. Output fields are listed in the approximate order in which they appear.

Table 25: show chassis environment Output Fields

| Field Name | Field Description |
|--------------|--|
| Power | <p>Power information:</p> <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 | <p>Temperature of air flowing through the chassis in degrees Celsius (C) and Fahrenheit (F).</p> <p>On PTX Series Packet Transport Switches, multiple cooling zones are supported. FRU temperatures in each zone are coordinated with the fan speed of fan trays in those zones.</p> |
| Fan | <p>Fan status: OK, Testing (during initial power-on), Failed, or Absent.</p> <p>On PTX Series Packet Transport Switches, multiple fan trays are supported. Fan status is reported in Fan Tray or Fan combinations. Measurement indicates actual fan RPM (PTX only).</p> |
| Misc | <p>Information about other components of the chassis:</p> <ul style="list-style-type: none"> On some routers, this field indicates the status of one or more additional components. On the M160 router, Misc includes CIP (Connector Interface Panel). OK indicates that the CIP is present. On the T640 router, Misc includes CIP and SPMB (Switch Processor Mezzanine Board). OK indicates that the item is present. On PTX Series Packet Transport Switches, Misc includes the SPMB (Switch Processor Mezzanine Board). OK indicates that the item is present. |

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 Fan 1 OK

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

```


| | | | |
|------|-----------------|----|--------------------------|
| | Left Fan 2 | OK | Spinning at normal speed |
| | Left Fan 3 | OK | Spinning at normal speed |
| | Left Fan 4 | OK | Spinning at normal speed |
| Misc | Craft Interface | OK | |

```

show chassis environment (M7i 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 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 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
Power PEM 1             Absent
Temp  PCG 0              OK          44 degrees C / 111 degrees F
      PCG 1              OK          47 degrees C / 116 degrees F
      Routing Engine 0   OK          40 degrees C / 104 degrees F
      Routing Engine 1   OK          37 degrees C / 98 degrees F
      MCS 0              OK          45 degrees C / 113 degrees F
      MCS 1              OK          42 degrees C / 107 degrees F
      SFM 0 SPP          OK          40 degrees C / 104 degrees F

```

| | | | |
|-------------|----------------------|----|------------------------------|
| SFM 0 | SPR | OK | 44 degrees C / 111 degrees F |
| SFM 1 | SPP | OK | 43 degrees C / 109 degrees F |
| SFM 1 | SPR | OK | 45 degrees C / 113 degrees F |
| FPC 0 | | OK | 38 degrees C / 100 degrees F |
| FPC 1 | | OK | 40 degrees C / 104 degrees F |
| FPC 2 | | OK | 38 degrees C / 100 degrees F |
| FPC 4 | | OK | 34 degrees C / 93 degrees F |
| FPC 5 | | OK | 43 degrees C / 109 degrees F |
| FPC 6 | | OK | 41 degrees C / 105 degrees F |
| FPC 7 | | OK | 43 degrees C / 109 degrees F |
| FPM CMB | | OK | 28 degrees C / 82 degrees F |
| FPM Display | | OK | 28 degrees C / 82 degrees F |
| Fans | Rear Bottom Blower | OK | Spinning at normal speed |
| | Rear Top Blower | OK | Spinning at normal speed |
| | Front Top Blower | OK | Spinning at normal speed |
| | Fan Tray Rear Left | OK | Spinning at normal speed |
| | Fan Tray Rear Right | OK | Spinning at normal speed |
| | Fan Tray Front Left | OK | Spinning at normal speed |
| | Fan Tray Front Right | OK | Spinning at normal speed |
| Misc | CIP | OK | |

```

show chassis environment (M120 Router)
user@host> show chassis environment

```

| Class | Item | Status | Measurement |
|-------|-------------------------|--------|------------------------------|
| Temp | PEM 0 | OK | |
| | PEM 1 | OK | |
| | Routing Engine 0 | OK | 43 degrees C / 109 degrees F |
| | Routing Engine 1 | OK | 44 degrees C / 111 degrees F |
| | CB 0 Intake | OK | 33 degrees C / 91 degrees F |
| | CB 0 Exhaust A | OK | 36 degrees C / 96 degrees F |
| | CB 0 Exhaust B | OK | 35 degrees C / 95 degrees F |
| | CB 1 Intake | OK | 34 degrees C / 93 degrees F |
| | CB 1 Exhaust A | OK | 38 degrees C / 100 degrees F |
| | CB 1 Exhaust B | OK | 35 degrees C / 95 degrees F |
| | FEB 3 Intake | OK | 35 degrees C / 95 degrees F |
| | FEB 3 Exhaust A | OK | 37 degrees C / 98 degrees F |
| | FEB 3 Exhaust B | OK | 39 degrees C / 102 degrees F |
| | FEB 4 Intake | OK | 33 degrees C / 91 degrees F |
| | FEB 4 Exhaust A | OK | 39 degrees C / 102 degrees F |
| | FEB 4 Exhaust B | OK | 36 degrees C / 96 degrees F |
| | FPC 2 Exhaust A | OK | 32 degrees C / 89 degrees F |
| | FPC 2 Exhaust B | OK | 31 degrees C / 87 degrees F |
| | FPC 3 Exhaust A | OK | 32 degrees C / 89 degrees F |
| | FPC 3 Exhaust B | OK | 33 degrees C / 91 degrees F |
| | FPC 4 Exhaust A | OK | 32 degrees C / 89 degrees F |
| | FPC 4 Exhaust B | OK | 30 degrees C / 86 degrees F |
| Fans | Front Top Tray Fan 1 | OK | Spinning at normal speed |
| | Front Top Tray Fan 2 | OK | Spinning at normal speed |
| | Front Top Tray Fan 3 | OK | Spinning at normal speed |
| | Front Top Tray Fan 4 | OK | Spinning at normal speed |
| | Front Top Tray Fan 5 | OK | Spinning at normal speed |
| | Front Top Tray Fan 6 | OK | Spinning at normal speed |
| | Front Top Tray Fan 7 | OK | Spinning at normal speed |
| | Front Top Tray Fan 8 | OK | Spinning at normal speed |
| | Front Bottom Tray Fan 1 | OK | Spinning at normal speed |
| | Front Bottom Tray Fan 2 | OK | Spinning at normal speed |
| | Front Bottom Tray Fan 3 | OK | Spinning at normal speed |
| | Front Bottom Tray Fan 4 | OK | Spinning at normal speed |
| | Front Bottom Tray Fan 5 | OK | Spinning at normal speed |
| | Front Bottom Tray Fan 6 | OK | Spinning at normal speed |
| | Front Bottom Tray Fan 7 | OK | Spinning at normal speed |

| | | |
|-------------------------|----|--------------------------|
| Front Bottom Tray Fan 8 | OK | Spinning at normal speed |
| Rear Top Tray Fan 1 | OK | Spinning at normal speed |
| Rear Top Tray Fan 2 | OK | Spinning at normal speed |
| Rear Top Tray Fan 3 | OK | Spinning at normal speed |
| Rear Top Tray Fan 4 | OK | Spinning at normal speed |
| Rear Top Tray Fan 5 | OK | Spinning at normal speed |
| Rear Top Tray Fan 6 | OK | Spinning at normal speed |
| Rear Top Tray Fan 7 | OK | Spinning at normal speed |
| Rear Top Tray Fan 8 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 1 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 2 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 3 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 4 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 5 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 6 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 7 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 8 | OK | Spinning at normal speed |

```

show chassis environment (M160 Router)
user@host> show chassis environment

```

| Class | Item | Status | Measurement |
|-------|----------------------|--------|------------------------------|
| Power | PEM 0 | OK | PEM 1 |
| Temp | PCG 0 | OK | 45 degrees C / 113 degrees F |
| | PCG 1 | Absent | |
| | Routing Engine 0 | OK | 35 degrees C / 95 degrees F |
| | Routing Engine 1 | Absent | |
| | MCS 0 | OK | 50 degrees C / 122 degrees F |
| | SFM 0 SPP | OK | 47 degrees C / 116 degrees F |
| | SFM 0 SPR | OK | 49 degrees C / 120 degrees F |
| | SFM 1 SPP | OK | 50 degrees C / 122 degrees F |
| | SFM 1 SPR | OK | 50 degrees C / 122 degrees F |
| | SFM 2 SPP | OK | 51 degrees C / 123 degrees F |
| | SFM 2 SPR | OK | 52 degrees C / 125 degrees F |
| | SFM 3 SPP | OK | 52 degrees C / 125 degrees F |
| | SFM 3 SPR | OK | 48 degrees C / 118 degrees F |
| | FPC 0 | OK | 45 degrees C / 113 degrees F |
| | FPC 6 | OK | 43 degrees C / 109 degrees F |
| | FPM CMB | OK | 31 degrees C / 87 degrees F |
| | FPM Display | OK | 33 degrees C / 91 degrees F |
| Fans | Rear Bottom Blower | OK | Spinning at normal speed |
| | Rear Top Blower | OK | Spinning at normal speed |
| | Front Top Blower | OK | Spinning at normal speed |
| | Fan Tray Rear Left | OK | Spinning at normal speed |
| | Fan Tray Rear Right | OK | Spinning at normal speed |
| | Fan Tray Front Left | OK | Spinning at normal speed |
| | Fan Tray Front Right | OK | Spinning at normal speed |
| Misc | CIP | OK | |

```

show chassis environment (M320 Router)
user@host> show chassis environment

```

| Class | Item | Status | Measurement |
|-------|------------------|--------|------------------------------|
| Temp | PEM 0 | Absent | |
| | PEM 1 | Absent | |
| | PEM 2 | OK | |
| | PEM 3 | OK | |
| | Routing Engine 0 | OK | 33 degrees C / 91 degrees F |
| | Routing Engine 1 | OK | 32 degrees C / 89 degrees F |
| | CB 0 | OK | 36 degrees C / 96 degrees F |
| | CB 1 | OK | 36 degrees C / 96 degrees F |
| | SIB 0 | OK | 38 degrees C / 100 degrees F |
| | SIB 1 | OK | 29 degrees C / 84 degrees F |
| | SIB 2 | OK | 38 degrees C / 100 degrees F |

| | | |
|------------------------|----|------------------------------|
| SIB 3 | OK | 41 degrees C / 105 degrees F |
| FPC 0 Intake | OK | 28 degrees C / 82 degrees F |
| FPC 0 Exhaust | OK | 40 degrees C / 104 degrees F |
| FPC 1 Intake | OK | 29 degrees C / 84 degrees F |
| FPC 1 Exhaust | OK | 39 degrees C / 102 degrees F |
| FPC 2 Intake | OK | 28 degrees C / 82 degrees F |
| FPC 2 Exhaust | OK | 38 degrees C / 100 degrees F |
| FPC 3 Intake | OK | 28 degrees C / 82 degrees F |
| FPC 3 Exhaust | OK | 39 degrees C / 102 degrees F |
| FPC 6 Intake | OK | 27 degrees C / 80 degrees F |
| FPC 6 Exhaust | OK | 39 degrees C / 102 degrees F |
| FPC 7 Intake | OK | 27 degrees C / 80 degrees F |
| FPC 7 Exhaust | OK | 42 degrees C / 107 degrees F |
| FPM GBUS | OK | 30 degrees C / 86 degrees F |
| Fan Top Left Front fan | OK | Spinning at normal speed |
| Top Right Rear fan | OK | Spinning at normal speed |
| Top Right Front fan | OK | Spinning at normal speed |
| Top Left Rear fan | OK | Spinning at normal speed |
| Bottom Left Front fan | OK | Spinning at normal speed |
| Bottom Right Rear fan | OK | Spinning at normal speed |
| Bottom Right Front fan | OK | Spinning at normal speed |
| Bottom Left Rear fan | OK | Spinning at normal speed |
| Rear Fan 1 (TOP) | OK | Spinning at normal speed |
| Rear Fan 2 | OK | Spinning at normal speed |
| Rear Fan 3 | OK | Spinning at normal speed |
| Rear Fan 4 | OK | Spinning at normal speed |
| Rear Fan 5 | OK | Spinning at normal speed |
| Rear Fan 6 | OK | Spinning at normal speed |
| Rear Fan 7 (Bottom) | OK | Spinning at normal speed |
| Misc CIP | OK | |

```

show chassis environment (MX240 Router)
user@host> show chassis environment

```

| Class | Item | Status | Measurement |
|-------|--------------------|--------|------------------------------|
| Temp | PEM 0 | OK | 40 degrees C / 104 degrees F |
| | PEM 1 | OK | 45 degrees C / 113 degrees F |
| | PEM 2 | Absent | |
| | PEM 3 | Absent | |
| | Routing Engine 0 | OK | 39 degrees C / 102 degrees F |
| | Routing Engine 1 | OK | 37 degrees C / 98 degrees F |
| | CB 0 Intake | OK | 36 degrees C / 96 degrees F |
| | CB 0 Exhaust A | OK | 34 degrees C / 93 degrees F |
| | CB 0 Exhaust B | OK | 38 degrees C / 100 degrees F |
| | CB 0 ACBC | OK | 37 degrees C / 98 degrees F |
| | CB 0 SF A | OK | 49 degrees C / 120 degrees F |
| | CB 0 SF B | OK | 41 degrees C / 105 degrees F |
| | CB 1 Intake | OK | 37 degrees C / 98 degrees F |
| | CB 1 Exhaust A | OK | 34 degrees C / 93 degrees F |
| | CB 1 Exhaust B | OK | 39 degrees C / 102 degrees F |
| | CB 1 ACBC | OK | 38 degrees C / 100 degrees F |
| | CB 1 SF A | OK | 47 degrees C / 116 degrees F |
| | CB 1 SF B | OK | 41 degrees C / 105 degrees F |
| | FPC 1 Intake | OK | 33 degrees C / 91 degrees F |
| | FPC 1 Exhaust A | OK | 38 degrees C / 100 degrees F |
| | FPC 1 Exhaust B | OK | 53 degrees C / 127 degrees F |
| | FPC 1 I3 0 TSensor | OK | 50 degrees C / 122 degrees F |
| | FPC 1 I3 0 Chip | OK | 53 degrees C / 127 degrees F |
| | FPC 1 I3 1 TSensor | OK | 49 degrees C / 120 degrees F |
| | FPC 1 I3 1 Chip | OK | 52 degrees C / 125 degrees F |
| | FPC 1 I3 2 TSensor | OK | 47 degrees C / 116 degrees F |
| | FPC 1 I3 2 Chip | OK | 49 degrees C / 120 degrees F |

| | | | |
|------|--------------------|----|------------------------------|
| | FPC 1 I3 3 TSensor | OK | 44 degrees C / 111 degrees F |
| | FPC 1 I3 3 Chip | OK | 46 degrees C / 114 degrees F |
| | FPC 1 IA 0 TSensor | OK | 45 degrees C / 113 degrees F |
| | FPC 1 IA 0 Chip | OK | 44 degrees C / 111 degrees F |
| | FPC 1 IA 1 TSensor | OK | 44 degrees C / 111 degrees F |
| | FPC 1 IA 1 Chip | OK | 48 degrees C / 118 degrees F |
| | FPC 2 Intake | OK | 32 degrees C / 89 degrees F |
| | FPC 2 Exhaust A | OK | 40 degrees C / 104 degrees F |
| | FPC 2 Exhaust B | OK | 52 degrees C / 125 degrees F |
| | FPC 2 I3 0 TSensor | OK | 52 degrees C / 125 degrees F |
| | FPC 2 I3 0 Chip | OK | 56 degrees C / 132 degrees F |
| | FPC 2 I3 1 TSensor | OK | 52 degrees C / 125 degrees F |
| | FPC 2 I3 1 Chip | OK | 55 degrees C / 131 degrees F |
| | FPC 2 I3 2 TSensor | OK | 49 degrees C / 120 degrees F |
| | FPC 2 I3 2 Chip | OK | 52 degrees C / 125 degrees F |
| | FPC 2 I3 3 TSensor | OK | 44 degrees C / 111 degrees F |
| | FPC 2 I3 3 Chip | OK | 48 degrees C / 118 degrees F |
| | FPC 2 IA 0 TSensor | OK | 50 degrees C / 122 degrees F |
| | FPC 2 IA 0 Chip | OK | 48 degrees C / 118 degrees F |
| | FPC 2 IA 1 TSensor | OK | 47 degrees C / 116 degrees F |
| | FPC 2 IA 1 Chip | OK | 53 degrees C / 127 degrees F |
| Fans | Front Fan | OK | Spinning at normal speed |
| | Middle Fan | OK | Spinning at normal speed |
| | Rear Fan | OK | Spinning at normal speed |

**show chassis
environment (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)
user@host> show chassis environment

```

| 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 (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 user@host> show chassis environment
environment (T640 Router)
Class Item          Status Measurement
Temp PEM 0          Absent
      PEM 1          OK           22 degrees C / 71 degrees F
      SCG 0          OK           30 degrees C / 86 degrees F
      SCG 1          OK           30 degrees C / 86 degrees F
      Routing Engine 0 Present
      Routing Engine 1 OK           27 degrees C / 80 degrees F
      CB 0           Present
      CB 1           OK           33 degrees C / 91 degrees F
      SIB 0          Absent
      SIB 1          Absent
      SIB 2          Absent
      SIB 3          Absent
      SIB 4          Absent
      FPC 4 Top      Testing
      FPC 4 Bottom   Testing
      FPC 5 Top      Testing
      FPC 5 Bottom   Testing
      FPC 6 Top      Testing
      FPC 6 Bottom   Testing
      FPM GBUS       OK           23 degrees C / 73 degrees F
      FPM Display    Absent
Fans  Top Left Front fan OK           Spinning at normal speed
      Top Left Middle fan OK           Spinning at normal speed
      Top Left Rear fan OK           Spinning at normal speed
      Top Right Front fan OK          Spinning at normal speed
      Top Right Middle fan OK         Spinning at normal speed
      Top Right Rear fan OK          Spinning at normal speed
      Bottom Left Front fan OK        Spinning at normal speed
      Bottom Left Middle fan OK       Spinning at normal speed
      Bottom Left Rear fan OK         Spinning at normal speed
      Bottom Right Front fan OK       Spinning at normal speed
      Bottom Right Middle fan OK      Spinning at normal speed
      Bottom Right Rear fan OK        Spinning at normal speed
      Fourth Blower from top OK       Spinning at normal speed
      Bottom Blower   OK             Spinning at normal speed
      Middle Blower   OK             Spinning at normal speed
      Top Blower      OK             Spinning at normal speed
      Second Blower from top OK       Spinning at normal speed
Misc  CIP              OK
      SPMB 0          OK
      SPMB 1          OK

```

```

show chassis user@host> show chassis environment
environment (T4000 Router)
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 |
| | 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 |
| Misc | CIP | OK | |
| | SPMB 0 | OK | |
| | SPMB 1 | OK | |

show chassis environment (TX Matrix Router) user@host> show chassis environment
scc-re0:

| Class | Item | Status | Measurement |
|-------|-------------------------|--------|------------------------------|
| Temp | PEM 0 | Absent | |
| | PEM 1 | OK | 29 degrees C / 84 degrees F |
| | Routing Engine 0 | OK | 34 degrees C / 93 degrees F |
| | Routing Engine 1 | OK | 34 degrees C / 93 degrees F |
| | CB 0 | OK | 32 degrees C / 89 degrees F |
| | CB 1 | OK | 32 degrees C / 89 degrees F |
| | SIB 0 | OK | 44 degrees C / 111 degrees F |
| | SIB 0 (B) | OK | 44 degrees C / 111 degrees F |
| | FPM GBUS | OK | 27 degrees C / 80 degrees F |
| | FPM Display | OK | 32 degrees C / 89 degrees F |
| Fans | Top Left Front fan | OK | Spinning at normal speed |
| | Top Left Middle fan | OK | Spinning at normal speed |
| | Top Left Rear fan | OK | Spinning at normal speed |
| | Top Right Front fan | OK | Spinning at normal speed |
| | Top Right Middle fan | OK | Spinning at normal speed |
| | Top Right Rear fan | OK | Spinning at normal speed |
| | Bottom Left Front fan | OK | Spinning at normal speed |
| | Bottom Left Middle fan | OK | Spinning at normal speed |
| | Bottom Left Rear fan | OK | Spinning at normal speed |
| | Bottom Right Front fan | OK | Spinning at normal speed |
| | Bottom Right Middle fan | OK | Spinning at normal speed |
| | Bottom Right Rear fan | OK | Spinning at normal speed |
| | Rear Tray Top fan | OK | Spinning at normal speed |
| | Rear Tray Second fan | OK | Spinning at normal speed |
| | Rear Tray Third fan | OK | Spinning at normal speed |
| | Rear Tray Fourth fan | OK | Spinning at normal speed |
| | Rear Tray Fifth fan | OK | Spinning at normal speed |
| | Rear Tray Sixth fan | OK | Spinning at normal speed |
| | Rear Tray Seventh fan | OK | Spinning at normal speed |
| | Rear Tray Bottom fan | OK | Spinning at normal speed |
| Misc | CIP 0 | OK | |
| | CIP 1 | OK | |
| | SPMB 0 | OK | |
| | SPMB 1 | OK | |

1cc0-re0:

| Class | Item | Status | Measurement |
|-------|-------------------------|--------|------------------------------|
| Temp | PEM 0 | OK | 29 degrees C / 84 degrees F |
| | PEM 1 | Absent | |
| | SCG 0 | OK | 35 degrees C / 95 degrees F |
| | SCG 1 | Absent | |
| | Routing Engine 0 | OK | 39 degrees C / 102 degrees F |
| | Routing Engine 1 | OK | 36 degrees C / 96 degrees F |
| | CB 0 | OK | 32 degrees C / 89 degrees F |
| | CB 1 | OK | 32 degrees C / 89 degrees F |
| | SIB 0 | OK | 40 degrees C / 104 degrees F |
| | SIB 0 (B) | OK | 51 degrees C / 123 degrees F |
| | FPC 0 Top | OK | 45 degrees C / 113 degrees F |
| | FPC 0 Bottom | OK | 31 degrees C / 87 degrees F |
| | FPC 1 Top | OK | 34 degrees C / 93 degrees F |
| | FPC 1 Bottom | OK | 31 degrees C / 87 degrees F |
| | FPM GBUS | OK | 30 degrees C / 86 degrees F |
| | FPM Display | OK | 34 degrees C / 93 degrees F |
| Fans | Top Left Front fan | OK | Spinning at normal speed |
| | Top Left Middle fan | OK | Spinning at normal speed |
| | Top Left Rear fan | OK | Spinning at normal speed |
| | Top Right Front fan | OK | Spinning at normal speed |
| | Top Right Middle fan | OK | Spinning at normal speed |
| | Top Right Rear fan | OK | Spinning at normal speed |
| | Bottom Left Front fan | OK | Spinning at normal speed |
| | Bottom Left Middle fan | OK | Spinning at normal speed |
| | Bottom Left Rear fan | OK | Spinning at normal speed |
| | Bottom Right Front fan | OK | Spinning at normal speed |
| | Bottom Right Middle fan | OK | Spinning at normal speed |
| | Bottom Right Rear fan | OK | Spinning at normal speed |
| | Rear Tray Top fan | OK | Spinning at normal speed |
| | Rear Tray Second fan | OK | Spinning at normal speed |
| | Rear Tray Third fan | OK | Spinning at normal speed |
| | Rear Tray Fourth fan | OK | Spinning at normal speed |
| | Rear Tray Fifth fan | OK | Spinning at normal speed |
| | Rear Tray Sixth fan | OK | Spinning at normal speed |
| | Rear Tray Seventh fan | OK | Spinning at normal speed |
| | Rear Tray Bottom fan | OK | Spinning at normal speed |
| Misc | CIP | OK | |
| | SPMB 0 | OK | |
| | SPMB 1 | OK | |

lcc2-re0:

| Class | Item | Status | Measurement |
|-------|--------------------|--------|------------------------------|
| Temp | PEM 0 | OK | 29 degrees C / 84 degrees F |
| | PEM 1 | Absent | |
| | SCG 0 | OK | 32 degrees C / 89 degrees F |
| | SCG 1 | Absent | |
| | Routing Engine 0 | OK | 31 degrees C / 87 degrees F |
| | Routing Engine 1 | OK | 32 degrees C / 89 degrees F |
| | CB 0 | OK | 30 degrees C / 86 degrees F |
| | SIB 0 | OK | 38 degrees C / 100 degrees F |
| | SIB 0 (B) | OK | 49 degrees C / 120 degrees F |
| | FPC 0 Top | OK | 45 degrees C / 113 degrees F |
| | FPC 0 Bottom | OK | 33 degrees C / 91 degrees F |
| | FPC 1 Top | OK | 37 degrees C / 98 degrees F |
| | FPC 1 Bottom | OK | 33 degrees C / 91 degrees F |
| | FPM GBUS | OK | 30 degrees C / 86 degrees F |
| | FPM Display | OK | 34 degrees C / 93 degrees F |
| Fans | Top Left Front fan | OK | Spinning at normal speed |


```

Top Left Middle fan    OK      Spinning at normal speed
...

show chassis environment (T1600 Router) user@host> show chassis environment
Class Item              Status      Measurement
Temp PEM 0              OK          27 degrees C / 80 degrees F
      PEM 1              Absent
      SCG 0              OK          31 degrees C / 87 degrees F
      SCG 1              OK          35 degrees C / 95 degrees F
      Routing Engine 0   OK          30 degrees C / 86 degrees F
      Routing Engine 1   OK          30 degrees C / 86 degrees F
      CB 0               OK          31 degrees C / 87 degrees F
      CB 1               OK          31 degrees C / 87 degrees F
      SIB 0              OK          41 degrees C / 105 degrees F
      SIB 0 (B)          OK          34 degrees C / 93 degrees F
      SIB 1              OK          0 degrees C / 32 degrees F
      SIB 1 (B)          OK          0 degrees C / 32 degrees F
      SIB 2              OK          0 degrees C / 32 degrees F
      SIB 2 (B)          OK          0 degrees C / 32 degrees F
      SIB 3              OK          0 degrees C / 32 degrees F
      SIB 3 (B)          OK          0 degrees C / 32 degrees F
      SIB 4              OK          0 degrees C / 32 degrees F
      SIB 4 (B)          OK          0 degrees C / 32 degrees F
      FPC 0 Top           OK          49 degrees C / 120 degrees F
      FPC 0 Bottom        OK          50 degrees C / 122 degrees F
      FPC 1 Top           OK          48 degrees C / 118 degrees F
      FPC 1 Bottom        OK          49 degrees C / 120 degrees F
      FPM GBUS            OK          27 degrees C / 80 degrees F
      FPM Display         OK          30 degrees C / 86 degrees F
Fans  Top Left Front fan  OK          Spinning at normal speed
      Top Left Middle fan OK          Spinning at normal speed
      Top Left Rear fan   OK          Spinning at normal speed
      Top Right Front fan  OK          Spinning at normal speed
      Top Right Middle fan OK          Spinning at normal speed
      Top Right Rear fan   OK          Spinning at normal speed
      Bottom Left Front fan OK          Spinning at normal speed
      Bottom Left Middle fan OK          Spinning at normal speed
      Bottom Left Rear fan  OK          Spinning at normal speed
      Bottom Right Front fan OK          Spinning at normal speed
      Bottom Right Middle fan OK          Spinning at normal speed
      Bottom Right Rear fan OK          Spinning at normal speed
      Rear Tray Top fan     OK          Spinning at normal speed
      Rear Tray Second fan  OK          Spinning at normal speed
      Rear Tray Third fan   OK          Spinning at normal speed
      Rear Tray Fourth fan  OK          Spinning at normal speed
      Rear Tray Fifth fan   OK          Spinning at normal speed
      Rear Tray Sixth fan   OK          Spinning at normal speed
      Rear Tray Seventh fan  OK          Spinning at normal speed
      Rear Tray Bottom fan  OK          Spinning at normal speed
Misc  CIP                  OK
      SPMB 0              OK
      SPMB 1              OK

```

```

show chassis environment (TX Matrix Plus Router) user@host> show chassis environment
sfc0-re0:
-----
Class Item              Status      Measurement
Temp PEM 0              OK          28 degrees C / 82 degrees F
      PEM 1              Absent
      Routing Engine 0   OK          27 degrees C / 80 degrees F
      Routing Engine 1   OK          29 degrees C / 84 degrees F

```

| | | | |
|------|------------------|----|------------------------------|
| | CB 0 Intake | OK | 26 degrees C / 78 degrees F |
| | CB 0 Exhaust A | OK | 25 degrees C / 77 degrees F |
| | CB 0 Exhaust B | OK | 25 degrees C / 77 degrees F |
| | CB 1 Intake | OK | 26 degrees C / 78 degrees F |
| | CB 1 Exhaust A | OK | 26 degrees C / 78 degrees F |
| | CB 1 Exhaust B | OK | 26 degrees C / 78 degrees F |
| | SIB F13 0 | OK | 47 degrees C / 116 degrees F |
| | SIB F13 0 (B) | OK | 48 degrees C / 118 degrees F |
| | SIB F13 1 | OK | 38 degrees C / 100 degrees F |
| | SIB F13 1 (B) | OK | 37 degrees C / 98 degrees F |
| | SIB F2S 0/0 | OK | 27 degrees C / 80 degrees F |
| | SIB F2S 0/2 | OK | 28 degrees C / 82 degrees F |
| | SIB F2S 0/4 | OK | 27 degrees C / 80 degrees F |
| | SIB F2S 0/6 | OK | 28 degrees C / 82 degrees F |
| | SIB F2S 1/0 | OK | 26 degrees C / 78 degrees F |
| | SIB F2S 1/2 | OK | 26 degrees C / 78 degrees F |
| | SIB F2S 1/4 | OK | 26 degrees C / 78 degrees F |
| | SIB F2S 1/6 | OK | 26 degrees C / 78 degrees F |
| | SIB F2S 2/0 | OK | 25 degrees C / 77 degrees F |
| | SIB F2S 2/2 | OK | 25 degrees C / 77 degrees F |
| | SIB F2S 2/4 | OK | 23 degrees C / 73 degrees F |
| | CIP 0 Intake | OK | 23 degrees C / 73 degrees F |
| | CIP 0 Exhaust A | OK | 24 degrees C / 75 degrees F |
| | CIP 0 Exhaust B | OK | 24 degrees C / 75 degrees F |
| | CIP 1 Intake | OK | 24 degrees C / 75 degrees F |
| | CIP 1 Exhaust A | OK | 25 degrees C / 77 degrees F |
| | CIP 1 Exhaust B | OK | 25 degrees C / 77 degrees F |
| Fans | Fan Tray 0 Fan 1 | OK | Spinning at normal speed |
| | Fan Tray 0 Fan 2 | OK | Spinning at normal speed |
| | Fan Tray 0 Fan 3 | OK | Spinning at normal speed |
| | Fan Tray 0 Fan 4 | OK | Spinning at normal speed |
| | Fan Tray 0 Fan 5 | OK | Spinning at normal speed |
| | Fan Tray 0 Fan 6 | OK | Spinning at normal speed |
| | Fan Tray 1 Fan 1 | OK | Spinning at normal speed |
| | Fan Tray 1 Fan 2 | OK | Spinning at normal speed |
| | Fan Tray 1 Fan 3 | OK | Spinning at normal speed |
| | Fan Tray 1 Fan 4 | OK | Spinning at normal speed |
| | Fan Tray 1 Fan 5 | OK | Spinning at normal speed |
| | Fan Tray 1 Fan 6 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 1 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 2 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 3 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 4 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 5 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 6 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 7 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 8 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 9 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 1 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 2 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 3 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 4 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 5 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 6 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 7 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 8 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 9 | OK | Spinning at normal speed |
| | Fan Tray 4 Fan 1 | OK | Spinning at normal speed |
| | Fan Tray 4 Fan 2 | OK | Spinning at normal speed |
| | Fan Tray 4 Fan 3 | OK | Spinning at normal speed |
| | Fan Tray 4 Fan 4 | OK | Spinning at normal speed |

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

```
lcc0-re0:
```

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

```

Rear Tray Sixth fan      OK      Spinning at normal speed
Rear Tray Seventh fan    OK      Spinning at normal speed
Rear Tray Bottom fan     OK      Spinning at normal speed
Misc CIP                 OK
SPMB 0                   OK
SPMB 1                   OK

show chassis environment (EX4200 Standalone Switch)
user@host> show chassis environment
Class Item              Status      Measurement
Power FPC 0 Power Supply 0 OK
      FPC 0 Power Supply 1 Absent
Temp  FPC 0 CPU          OK          41 degrees C / 105 degrees F
      FPC 0 EX-PFE1      OK          42 degrees C / 107 degrees F
      FPC 0 EX-PFE2      OK          46 degrees C / 114 degrees F
      FPC 0 GEPHY Front Left OK          25 degrees C / 77 degrees F
      FPC 0 GEPHY Front Right OK          27 degrees C / 80 degrees F
      FPC 0 Uplink Conn   OK          29 degrees C / 84 degrees F
Fans  FPC 0 Fan 1         OK          Spinning at normal speed
      FPC 0 Fan 2         OK          Spinning at normal speed
      FPC 0 Fan 3         OK          Spinning at normal speed

show chassis environment (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 node-device node1 (QFabric Switch)
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 (QFX Series)
user@switch> show chassis environment pem
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      Check
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 Switch)

user@switch> show chassis environment
Class Item          Status      Measurement
Temp PDU 0          OK          36 degrees C / 96 degrees F
      PDU 0 PSM 0    OK          38 degrees C / 100 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 Intake    OK          39 degrees C / 102 degrees F
      SIB 0 Exhaust   OK          37 degrees C / 98 degrees F
      SIB 0 Junction  OK          43 degrees C / 109 degrees F
      SIB 1 Intake    OK          39 degrees C / 102 degrees F
      SIB 1 Exhaust   OK          36 degrees C / 96 degrees F
      SIB 1 Junction  OK          46 degrees C / 114 degrees F
      SIB 2 Intake    OK          37 degrees C / 98 degrees F
      SIB 2 Exhaust   OK          37 degrees C / 98 degrees F
      SIB 2 Junction  OK          42 degrees C / 107 degrees F
      SIB 3 Intake    OK          40 degrees C / 104 degrees F
      SIB 3 Exhaust   OK          40 degrees C / 104 degrees F
      SIB 3 Junction  OK          45 degrees C / 113 degrees F
      SIB 4 Intake    OK          47 degrees C / 116 degrees F
      SIB 4 Exhaust   OK          44 degrees C / 111 degrees F
      SIB 4 Junction  OK          58 degrees C / 136 degrees F
      SIB 5 Intake    OK          58 degrees C / 136 degrees F
      SIB 5 Exhaust   OK          43 degrees C / 109 degrees F
      SIB 5 Junction  OK          71 degrees C / 159 degrees F
      SIB 6 Intake    OK          57 degrees C / 134 degrees F
      SIB 6 Exhaust   OK          42 degrees C / 107 degrees F
      SIB 6 Junction  OK          65 degrees C / 149 degrees F
      SIB 7 Intake    OK          58 degrees C / 136 degrees F
      SIB 7 Exhaust   OK          42 degrees C / 107 degrees F
      SIB 7 Junction  OK          66 degrees C / 150 degrees F
      SIB 8 Intake    OK          57 degrees C / 134 degrees F
      SIB 8 Exhaust   OK          42 degrees C / 107 degrees F
      SIB 8 Junction  OK          70 degrees C / 158 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 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 Router) | show chassis environment cb <slot> <all-members> <local> <member member-id> |
| 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 12.1 for PTX Series Packet Transport Switches. 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. |
| Description | (M120, M320, MX Series, and T Series routers, EX8200 switches, and PTX Series Packet Transport Switches only) Display environmental information about the Control Boards (CBs). For information about the meaning of “CBs” on the switches, see EX Series Switches Hardware and CLI Terminology Mapping. |
| Options | <p>none—Display environmental information about all CBs. For a TX Matrix router, display environmental information about all CBs on the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display environmental information about all CBs on the TX Matrix Plus router and its attached T1600 routers.</p> <p>all-members—(MX Series routers only) (Optional) Display environmental information about the CBs on all the members of the Virtual Chassis configuration.</p> <p>lcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) For a TX Matrix router, display environmental information about the CBs in a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. For a TX Matrix Plus router, display environmental information about the CBs in a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace number with a value from 0 through 3.</p> <p>local—(MX Series routers only) (Optional) Display environmental information about the CBs on the local Virtual Chassis member.</p> <p>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.</p> |

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

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

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

Required Privilege Level view

Related Documentation

- [request chassis cb on page 204](#)
- 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 284](#)
[show chassis environment cb \(M320 Router\) on page 285](#)
[show chassis environment cb \(MX80 Router\) on page 285](#)
[show chassis environment cb \(MX240 Router\) on page 285](#)
[show chassis environment cb \(MX240 Router with Enhanced MX SCB\) on page 286](#)
[show chassis environment cb \(MX480 Router\) on page 286](#)
[show chassis environment cb \(MX480 Router with Enhanced MX SCB\) on page 287](#)
[show chassis environment cb \(MX960 Router\) on page 287](#)
[show chassis environment cb \(MX960 Router with Enhanced MX SCB\) on page 287](#)
[show chassis environment cb \(T4000 Core Router\) on page 288](#)
[show chassis environment cb \(TX Matrix Router\) on page 289](#)
[show chassis environment cb \(TX Matrix Plus Router\) on page 289](#)
[show chassis environment cb \(EX8200 Switch\) on page 293](#)
[show chassis environment cb \(EX8208 Switch\) on page 294](#)
[show chassis environment cb \(PTX5000 Packet Transport Switch\) on page 295](#)

Output Fields [Table 26 on page 283](#) lists the output fields for the **show chassis environment cb** command. Output fields are listed in the approximate order in which they appear.

Table 26: 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 EX Series Switches Hardware and CLI Terminology Mapping.</p> |

Table 26: show chassis environment cb Output Fields (*continued*)

| Field Name | Field Description |
|---|---|
| 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. |
| Power | Power required and measured on the CB. The left column displays the required power, in volts. The right column displays the measured power, in millivolts. |
| BUS Revision | Revision level of the generic bus device. (Not on switches.) |
| FPGA Revision | Revision level of the field-programmable gate array (FPGA). (Not on switches.) |
| PMBus device (on MX240, MX480, and MX960 routers with Enhanced MX SCB) | <p>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:</p> <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 (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
device                Expected Measured Measured Calculated
                     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 | 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
(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 |

1cc3-re0:

CB 0 status:

| | |
|---------------|-----------------------------|
| State | Online Master |
| Temperature | 37 degrees C / 98 degrees F |
| Power 1 | |
| 1.8 V | 1809 mV |
| 2.5 V | 2510 mV |
| 3.3 V | 3296 mV |
| 3.3 V bias | 3291 mV |
| 4.6 V | 4670 mV |
| 5.0 V | 4905 mV |
| 8.0 V bias | 7211 mV |
| 12.0 V | 11882 mV |
| Power 2 | |
| 1.0 V | 996 mV |
| 1.2 V | 1188 mV |
| 3.3 V RE | 3326 mV |
| Bus Revision | 51 |
| FPGA Revision | 5 |

CB 1 status:

| | |
|-------------|------------------------------|
| State | Online Standby |
| Temperature | 38 degrees C / 100 degrees F |
| Power 1 | |
| 1.8 V | 1813 mV |
| 2.5 V | 2510 mV |
| 3.3 V | 3322 mV |
| 3.3 V bias | 3289 mV |
| 4.6 V | 4692 mV |
| 5.0 V | 4967 mV |

```

      8.0 V bias          7194 mV
      12.0 V             11916 mV
Power 2
      1.0 V              996 mV
      1.2 V             1205 mV
      3.3 V RE          3273 mV
Bus Revision             51
FPGA Revision            5

```

```

show chassis environment cb
user@host> show chassis environment cb
(EX8200 Switch)

```

```

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 user@host> show chassis environment cb
environment cb CB 0 status:
(EX8208 Switch) 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 Switch)**

```

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 fpc

| | |
|---|---|
| Syntax | show chassis environment fpc <slot> |
| Syntax (TX Matrix and TX Matrix Plus Router) | show chassis environment fpc <fcc number> <slot> |
| Syntax (MX Series Router) | show chassis environment fpc <slot> <all-members> <local> <member <i>member-id</i> > |
| 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 the QFX Series. Command introduced in Junos OS Release 12.1 for the PTX Series Packet Transport Switches. Command introduced in Junos OS Release 12.1 for the T4000 Core Routers. |
| Description | (M40e, M120, M160, M320, MX Series, and T Series routers; EX Series, QFX Series, and PTX Series switches only) Display environmental information about Flexible PIC Concentrators (FPCs). |
| Options | <p>none—Display environmental information about all FPCs. On a TX Matrix router, display environmental information about all FPCs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all FPCs on the TX Matrix Plus router and its attached T1600 routers.</p> <p>all-members—(MX Series routers only) (Optional) Display environmental information for the FPCs in all the members of the Virtual Chassis configuration.</p> <p>interconnect-device <i>name</i>—(QFabric switches only) (Optional) Display chassis environmental information for the Interconnect device.</p> <p>fcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the FPC in a T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the FPC in a T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(MX Series routers only) (Optional) Display environmental information for the FPCs in the local Virtual Chassis member.</p> |

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 T1600 router by using only the **lcc *number*** option (the recommended method), replace **slot** with a value from 0 through 7. Otherwise, replace **slot** with a value from 0 through 31. For example, the following commands have the same result:

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

- M120 router—Replace **slot** with a value from 0 through 5.
- MX240 router—Replace **slot** with a value from 0 through 2.
- MX480 router—Replace **slot** with a value from 0 through 5.
- MX960 router—Replace **slot** with a value from 0 through 11.
- Other routers—Replace **slot** with a value from 0 through 7.
- EX Series switches:
 - EX3200 switches and EX4200 standalone switches—Replace **slot** with 0.
 - EX4200 switches in a Virtual Chassis configuration—Replace **slot** with a value from 0 through 9.
 - EX6210 switches—Replace **slot** with a value from 0 through 9.
 - EX8208 switches—Replace **slot** with a value from 0 through 7.
 - EX8216 switches—Replace **slot** with a value from 0 through 15.
- QFX3500 switches —Replace ***fpc-slot*** with 0 through 15.
- PTX5000 Packet Transport Switch—Replace ***fpc-slot*** with 0 through 7.

Required Privilege Level view

- Related Documentation**
- [request chassis fpc on page 211](#)
 - [show chassis fpc on page 514](#)
 - [show chassis fpc-feb-connectivity on page 535](#)
 - [Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online on page 101](#)
 - [MX960 Flexible PIC Concentrator Description](#)

List of Sample Output

- [show chassis environment fpc \(M120 Router\) on page 300](#)
- [show chassis environment fpc \(M160 Router\) on page 301](#)
- [show chassis environment fpc \(M320 Router\) on page 301](#)
- [show chassis environment fpc \(MX240 Router\) on page 302](#)
- [show chassis environment fpc \(MX480 Router\) on page 303](#)
- [show chassis environment fpc \(MX960 Router\) on page 304](#)
- [show chassis environment fpc \(MX480 Router with 100-Gigabit Ethernet CFP\) on page 305](#)
- [show chassis environment fpc \(T320, T640, and T1600 Routers\) on page 306](#)
- [show chassis environment fpc \(T4000 Router\) on page 307](#)
- [show chassis environment fpc lcc \(TX Matrix Router\) on page 311](#)
- [show chassis environment fpc lcc \(TX Matrix Plus Router\) on page 312](#)
- [show chassis environment fpc \(QFX Series\) on page 313](#)
- [show chassis environment fpc interconnect-device \(QFabric Switches\) on page 313](#)
- [show chassis environment fpc 0 \(PTX5000 Packet Transport Switch\) on page 313](#)

Output Fields Table 27 on page 299 lists the output fields for the **show chassis environment fpc** command. Output fields are listed in the approximate order in which they appear.

Table 27: 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 chassis 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 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 and PTX Series only) Temperature of the air flowing out of the chassis.</p> <p>The PTX Series Packet Transport Switches 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. |

Table 27: show chassis environment fpc Output Fields (*continued*)

| Field Name | Field Description |
|-------------------------------------|--|
| TL <i>n</i> Temperature | (PTX Series only) Temperature of the air flowing past the specified TL area of the Packet Forwarding Engine 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 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 user@host> show chassis environment fpc
environment fpc (M160 Router)
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 user@host> show chassis environment fpc
environment fpc (M320 Router)
FPC 0 status:
State          Online
Temperature Intake 27 degrees C / 80 degrees F
Temperature Exhaust 38 degrees C / 100 degrees F
Temperature MMB1   31 degrees C / 87 degrees F
Power:
1.5 V          1487 mV
1.5 V *        1494 mV
1.8 V          1821 mV
2.5 V          2533 mV
3.3 V          3323 mV
5.0 V          5028 mV
3.3 V bias     3296 mV
5.0 V bias     4984 mV

```

```

CMB Revision          16
FPC 1 status:
State                  Online
Temperature Intake     27 degrees C / 80 degrees F
Temperature Exhaust    37 degrees C / 98 degrees F
Temperature MMB1       32 degrees C / 89 degrees F
Power:
  1.5 V                1504 mV
  1.5 V *              1499 mV
  1.8 V                1820 mV
  2.5 V                2529 mV
  3.3 V                3328 mV
  5.0 V                5013 mV
  3.3 V bias           3294 mV
  5.0 V bias           4984 mV
CMB Revision          16
FPC 2 status:
State                  Online
Temperature Intake     28 degrees C / 82 degrees F
Temperature Exhaust    38 degrees C / 100 degrees F
Temperature MMB1       32 degrees C / 89 degrees F
Power:
  1.5 V                1498 mV
  1.5 V *              1487 mV
  1.8 V                1816 mV
  2.5 V                2531 mV
  3.3 V                3324 mV
  5.0 V                5025 mV
  3.3 V bias           3277 mV
  5.0 V bias           5013 mV
CMB Revision          17
FPC 3 status:
...

```

**show chassis
environment fpc
(MX240 Router)**

```

user@host> show chassis environment fpc
FPC 1 status:
State                  Online
Temperature Intake     34 degrees C / 93 degrees F
Temperature Exhaust A  39 degrees C / 102 degrees F
Temperature Exhaust B  53 degrees C / 127 degrees F
Temperature I3 0 TSensor 51 degrees C / 123 degrees F
Temperature I3 0 Chip   54 degrees C / 129 degrees F
Temperature I3 1 TSensor 50 degrees C / 122 degrees F
Temperature I3 1 Chip   53 degrees C / 127 degrees F
Temperature I3 2 TSensor 48 degrees C / 118 degrees F
Temperature I3 2 Chip   51 degrees C / 123 degrees F
Temperature I3 3 TSensor 45 degrees C / 113 degrees F
Temperature I3 3 Chip   48 degrees C / 118 degrees F
Temperature IA 0 TSensor 45 degrees C / 113 degrees F
Temperature IA 0 Chip   45 degrees C / 113 degrees F
Temperature IA 1 TSensor 45 degrees C / 113 degrees F
Temperature IA 1 Chip   49 degrees C / 120 degrees F
Power
  1.5 V                1492 mV
  2.5 V                2507 mV
  3.3 V                3306 mV
  1.8 V PFE 0          1801 mV
  1.8 V PFE 1          1804 mV
  1.8 V PFE 2          1798 mV
  1.8 V PFE 3          1798 mV
  1.2 V PFE 0          1169 mV

```

```

1.2 V PFE 1          1189 mV
1.2 V PFE 2          1182 mV
1.2 V PFE 3          1176 mV
I2C Slave Revision   42
FPC 2 status:
State                Online
Temperature Intake    33 degrees C / 91 degrees F
Temperature Exhaust A 41 degrees C / 105 degrees F
Temperature Exhaust B 53 degrees C / 127 degrees F
Temperature I3 0 TSensor 53 degrees C / 127 degrees F
Temperature I3 0 Chip  58 degrees C / 136 degrees F
Temperature I3 1 TSensor 52 degrees C / 125 degrees F
Temperature I3 1 Chip  56 degrees C / 132 degrees F
Temperature I3 2 TSensor 50 degrees C / 122 degrees F
Temperature I3 2 Chip  52 degrees C / 125 degrees F
Temperature I3 3 TSensor 46 degrees C / 114 degrees F
Temperature I3 3 Chip  49 degrees C / 120 degrees F
Temperature IA 0 TSensor 51 degrees C / 123 degrees F
Temperature IA 0 Chip  49 degrees C / 120 degrees F
Temperature IA 1 TSensor 48 degrees C / 118 degrees F
Temperature IA 1 Chip  53 degrees C / 127 degrees F
Power
1.5 V                1492 mV
2.5 V                2445 mV
3.3 V                3293 mV
1.8 V PFE 0          1827 mV
1.8 V PFE 1          1775 mV
1.8 V PFE 2          1788 mV
1.8 V PFE 3          1798 mV
1.2 V PFE 0          1250 mV
1.2 V PFE 1          1234 mV
1.2 V PFE 2          1231 mV
1.2 V PFE 3          1192 mV
I2C Slave Revision   42

```

**show chassis
environment fpc
(MX480 Router)**

```

user@host> show chassis environment fpc
FPC 1 status:
State                Online
Temperature Intake    36 degrees C / 96 degrees F
Temperature Exhaust A 41 degrees C / 105 degrees F
Temperature Exhaust B 55 degrees C / 131 degrees F
Temperature I3 0 TSensor 55 degrees C / 131 degrees F
Temperature I3 0 Chip  57 degrees C / 134 degrees F
Temperature I3 1 TSensor 53 degrees C / 127 degrees F
Temperature I3 1 Chip  53 degrees C / 127 degrees F
Temperature I3 2 TSensor 52 degrees C / 125 degrees F
Temperature I3 2 Chip  49 degrees C / 120 degrees F
Temperature I3 3 TSensor 47 degrees C / 116 degrees F
Temperature I3 3 Chip  47 degrees C / 116 degrees F
Temperature IA 0 TSensor 54 degrees C / 129 degrees F
Temperature IA 0 Chip  58 degrees C / 136 degrees F
Temperature IA 1 TSensor 48 degrees C / 118 degrees F
Temperature IA 1 Chip  53 degrees C / 127 degrees F
Power
1.5 V                1479 mV
2.5 V                2542 mV
3.3 V                3319 mV
1.8 V PFE 0          1811 mV
1.8 V PFE 1          1804 mV
1.8 V PFE 2          1804 mV
1.8 V PFE 3          1814 mV

```

```

1.2 V PFE 0          1192 mV
1.2 V PFE 1          1202 mV
1.2 V PFE 2          1205 mV
1.2 V PFE 3          1189 mV
I2C Slave Revision   40

```

**show chassis
environment fpc
(MX960 Router)**

user@host> show chassis environment fpc

FPC 5 status:

```

State      Online
Temperature Intake      27 degrees C / 80 degrees F
Temperature Exhaust A   34 degrees C / 93 degrees F
Temperature Exhaust B   40 degrees C / 104 degrees F
Temperature I3 0 TSensor 39 degrees C / 102 degrees F
Temperature I3 0 Chip    41 degrees C / 105 degrees F
Temperature I3 1 TSensor 38 degrees C / 100 degrees F
Temperature I3 1 Chip    37 degrees C / 98 degrees F
Temperature I3 2 TSensor 37 degrees C / 98 degrees F
Temperature I3 2 Chip    34 degrees C / 93 degrees F
Temperature I3 3 TSensor 32 degrees C / 89 degrees F
Temperature I3 3 Chip    33 degrees C / 91 degrees F
Temperature IA 0 TSensor 39 degrees C / 102 degrees F
Temperature IA 0 Chip    44 degrees C / 111 degrees F
Temperature IA 1 TSensor 36 degrees C / 96 degrees F
Temperature IA 1 Chip    44 degrees C / 111 degrees F
Power
1.5 V      1479 mV
2.5 V      2523 mV
3.3 V      3254 mV
1.8 V PFE 0 1798 mV
1.8 V PFE 1 1798 mV
1.8 V PFE 2 1807 mV
1.8 V PFE 3 1791 mV
1.2 V PFE 0 1173 mV
1.2 V PFE 1 1179 mV
1.2 V PFE 2 1179 mV
1.2 V PFE 3 1185 mV
I2C Slave Revision 6

```

FPC 6 status:

```

State      Online
Temperature Intake      25 degrees C / 77 degrees F
Temperature Exhaust A   38 degrees C / 100 degrees F
Temperature Exhaust B   38 degrees C / 100 degrees F
Temperature I3 0 TSensor 40 degrees C / 104 degrees F
Temperature I3 0 Chip    40 degrees C / 104 degrees F
Temperature I3 1 TSensor 40 degrees C / 104 degrees F
Temperature I3 1 Chip    38 degrees C / 100 degrees F
Temperature I3 2 TSensor 37 degrees C / 98 degrees F
Temperature I3 2 Chip    32 degrees C / 89 degrees F
Temperature I3 3 TSensor 34 degrees C / 93 degrees F
Temperature I3 3 Chip    33 degrees C / 91 degrees F
Temperature IA 0 TSensor 45 degrees C / 113 degrees F
Temperature IA 0 Chip    47 degrees C / 116 degrees F
Temperature IA 1 TSensor 37 degrees C / 98 degrees F
Temperature IA 1 Chip    42 degrees C / 107 degrees F
Power
1.5 V      1485 mV
2.5 V      2510 mV
3.3 V      3332 mV
1.8 V PFE 0 1801 mV
1.8 V PFE 1 1814 mV
1.8 V PFE 2 1804 mV

```

```

1.8 V PFE 3          1820 mV
1.2 V PFE 0          1192 mV
1.2 V PFE 1          1189 mV
1.2 V PFE 2          1202 mV
1.2 V PFE 3          1156 mV
I2C Slave Revision   40

```

**show chassis
environment fpc
(MX480 Router with
100-Gigabit Ethernet
CFP)**

```
user@host> show chassis environment fpc
```

```
FPC 1 status:
```

```

State               Online
Temperature Intake   40 degrees C / 104 degrees F
Temperature Exhaust A 42 degrees C / 107 degrees F
Temperature Exhaust B 52 degrees C / 125 degrees F
Temperature LU 0 TSen 46 degrees C / 114 degrees F
Temperature LU 0 Chip 55 degrees C / 131 degrees F
Temperature LU 1 TSen 46 degrees C / 114 degrees F
Temperature LU 1 Chip 48 degrees C / 118 degrees F
Temperature LU 2 TSen 46 degrees C / 114 degrees F
Temperature LU 2 Chip 61 degrees C / 141 degrees F
Temperature LU 3 TSen 46 degrees C / 114 degrees F
Temperature LU 3 Chip 69 degrees C / 156 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 77 degrees C / 170 degrees F
Power
MPC-BIAS3V3-z12105   3285 mV
MPC-VDD3V3-z16100    3305 mV
MPC-VDD2V5-z16100    2500 mV
MPC-VDD1V8-z12004    1801 mV
MPC-AVDD1V0-z12004   996 mV
MPC-VDD1V2-z16100    1199 mV
MPC-VDD1V5A-z12004   1492 mV
MPC-VDD1V5B-z12004   1499 mV
MPC-XF_0V9-z12004    995 mV
MPC-PCIE_1V0-z16100  1000 mV
MPC-LU0_1V0-z12004   995 mV
MPC-LU1_1V0-z12004   995 mV
MPC-LU2_1V0-z12004   991 mV
MPC-LU3_1V0-z12004   993 mV
MPC-12VA-BMR453       12019 mV
MPC-12VB-BMR453       12060 mV
MPC-PMB_1V1-z12006    1091 mV
MPC-PMB_1V2-z12106    1198 mV
MPC-XM_0V9-vt273m     899 mV
I2C Slave Revision   106

```

```
FPC 2 status:
```

```

State               Online
Temperature Intake   31 degrees C / 87 degrees F
Temperature Exhaust A 38 degrees C / 100 degrees F
Temperature Exhaust B 48 degrees C / 118 degrees F
Temperature I3 0 TSensor 47 degrees C / 116 degrees F
Temperature I3 0 Chip 51 degrees C / 123 degrees F
Temperature I3 1 TSensor 45 degrees C / 113 degrees F
Temperature I3 1 Chip 50 degrees C / 122 degrees F
Temperature I3 2 TSensor 42 degrees C / 107 degrees F
Temperature I3 2 Chip 48 degrees C / 118 degrees F
Temperature I3 3 TSensor 40 degrees C / 104 degrees F
Temperature I3 3 Chip 43 degrees C / 109 degrees F
Temperature IA 0 TSensor 46 degrees C / 114 degrees F
Temperature IA 0 Chip 44 degrees C / 111 degrees F

```

```

Temperature IA 1 TSensor 44 degrees C / 111 degrees F
Temperature IA 1 Chip    48 degrees C / 118 degrees F
Power
  1.2 V PFE 0            1231 mV
  1.2 V PFE 1            1227 mV
  1.2 V PFE 2            1243 mV
  1.2 V PFE 3            1211 mV
  1.5 V                   1511 mV
  1.8 V PFE 0            1811 mV
  1.8 V PFE 1            1820 mV
  1.8 V PFE 2            1804 mV
  1.8 V PFE 3            1817 mV
  2.5 V                   2475 mV
  3.3 V                   3300 mV
I2C Slave Revision      42

```

**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 Switches)
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 Switch)
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 fpm

| | |
|---------------------------------------|--|
| Syntax | show chassis environment fpm |
| Syntax (TX Matrix Router) | show chassis environment fpm <lcc <i>number</i> scc> |
| Syntax (TX Matrix Plus Router) | 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 12.1 for the PTX Series Packet Transport Switches.</p> <p>Command introduced in Junos OS Release 12.1 for the T4000 Core Routers.</p> |
| Description | (M40e, M120, M160, M320, MX Series, and T Series routers and the PTX Series Packet Transport Switches only) Display environmental information about the front panel module in the router. |
| Options | <p>none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display environmental information about the front panel modules (craft interfaces) on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the front panel modules (craft interfaces) on the TX Matrix Plus router and its attached T1600 routers.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the front panel module (craft interface) on a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the front panel module (craft interface) on a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix router only) (Optional) Display environmental information about the front panel module (craft interface) on the TX Matrix router (or switch-card chassis).</p> <p>sfc <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 | <ul style="list-style-type: none"> • request chassis fpm resync on page 214 |
| List of Sample Output | <p>show chassis environment fpm (M40e and M160 Routers) on page 317</p> <p>show chassis environment fpm (M320 Router) on page 317</p> <p>show chassis environment fpm (MX240 Router) on page 317</p> |

[show chassis environment fpm \(MX480 Router\) on page 317](#)
[show chassis environment fpm \(T Series Routers\) on page 317](#)
[show chassis environment fpm lcc \(TX Matrix Router\) on page 317](#)
[show chassis environment fpm scc \(TX Matrix Router\) on page 318](#)
[show chassis environment fpm sfc \(TX Matrix Plus Router\) on page 318](#)
[show chassis environment fpm \(T4000 Core Router\) on page 319](#)
[show chassis environment fpm \(PTX5000 Packet Transport Switch\) on page 319](#)

Output Fields Table 28 on page 316 lists the output fields for the **show chassis environment fpm** command. Output fields are listed in the approximate order in which they appear.

Table 28: 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. |
| 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 | (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 (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
regress@stymphalian# run show chassis environment fpm
FPM status:
State          Online
FPM GBUS Voltage:
  1.8 V bias    1792 mV
  3.3 V bias    3299 mV
  5.0 V bias    5001 mV
  8.0 V bias    7238 mV
FPM Display Voltage:
  5.0 V        4998 mV
FPM GBUS temperature 25 degrees C / 77 degrees F
FPM Display temperature 27 degrees C / 80 degrees F
GBUS Revision      37

```

**show chassis
environment fpm
(PTX5000 Packet
Transport Switch)**

```

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 mcs

| | |
|---------------------------------|---|
| Syntax | <code>show chassis environment mcs</code> <code><slot></code> |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (M40e and M160 routers only) Display environmental information about the Miscellaneous Control Subsystems (MCSs). |
| Options | <p>none—Display environmental information about both MCSs.</p> <p>slot —(Optional) Display environmental information about an individual MCS. Replace slot with 0 or 1</p> |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none"> request chassis mcs on page 217 |
| List of Sample Output | show chassis environment mcs (M40e Router) on page 321 show chassis environment mcs (M160 Router) on page 321 |
| Output Fields | Table 29 on page 320 lists the output fields for the show chassis environment mcs command. Output fields are listed in the approximate order in which they appear. |

Table 29: show chassis environment mcs Output Fields

| Field Name | Field Description |
|----------------------|--|
| State | <p>Status of the MCS:</p> <ul style="list-style-type: none"> Present—MCS is detected by the chassis daemon but is either not supported by the current version of Junos or MCS is coming up but not yet online. Online—MCS is online and running. Offline—MCS is powered down. Empty—No MCS is present. Master—MCS is online, operating as master. Standby—MCS is online, operating as standby. |
| Temperature | Temperature of the air flowing past the MCS. |
| Power | Information about the voltage supplied to the MCS. The left column displays the required power, in volts. The right column displays the measured power, in millivolts. |
| BUS Revision | Revision level of the generic bus device. |
| FPGA Revision | Revision level of the field-programmable gate array (FPGA) revision. |

Sample Output

```

show chassis environment mcs user@host> show chassis environment mcs
(M40e Router)
MCS 0 status:
State Online Master
Temperature 45 degrees C / 113 degrees F
Power:
  3.3 V 3283 mV
  5.0 V 5013 mV
  12.0 V 11721 mV
  5.0 V bias 5025 mV
  8.0 V bias 8229 mV
BUS Revision 12
FPGA Revision 13
MCS 1 status:
State Online Standby
Temperature 42 degrees C / 107 degrees F
Power:
  3.3 V 3296 mV
  5.0 V 4971 mV
  12.0 V 11814 mV
  5.0 V bias 4976 mV
  8.0 V bias 8241 mV
BUS Revision 12
FPGA Revision 13

show chassis environment mcs user@host> show chassis environment mcs
(M160 Router)
MCS 0 status:
State Online Master
Temperature 50 degrees C / 122 degrees F
Power:
  3.3 V 3306 mV
  5.0 V 4993 mV
  12.0 V 11799 mV
  5.0 V bias 4993 mV
  8.0 V bias 8288 mV
BUS Revision 12
FPGA Revision 13

```

show chassis environment

| | |
|--|---|
| Syntax | show chassis environment |
| Syntax (T4000 Router) | 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>name</i> > <scg <i>scg-slot-number</i> > <sib <i>sib-slot-number</i> > |
| Syntax (TX Matrix Router) | show chassis environment <lcc <i>number</i> scc> |
| Syntax (TX Matrix Plus Router) | show chassis environment <lcc <i>number</i> sfc <i>number</i> > |
| Syntax (MX Series Router) | show chassis environment <all-members> <local> <member <i>member-id</i> > |
| Syntax (QFX Series) | show chassis environment <cb <i>slot-number</i> <interconnect-device <i>name</i> >> <fpc <i>slot-number</i> <interconnect-device <i>name</i> >> <interconnect-device <i>name</i> <slot-number> <node-device <i>name</i> > <pem <i>slot-number</i> (interconnect-device <i>name</i> <i>slot-number</i>) (node-device <i>name</i>)> <routing-engine <i>name</i> <interconnect-device <i>name</i> <i>slot-number</i> >> |
| Syntax (PTX Series Packet Transport Switches) | 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> > |
| 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 Switches. monitored option added in Junos OS Release 12.1 for the PTX Series Packet Transport Switches. Command introduced in Junos OS Release 12.1 for the T4000 Core Routers. |

- Description** Display environmental information about the router or switch chassis, including the temperature and information about the fans, power supplies, and Routing Engine.
- Options**
- none**—Display environmental information about the router or switch chassis. On a TX Matrix router, display environmental information about the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about the TX Matrix Plus router and its attached T1600 routers.
 - all-members**—(MX Series routers only) (Optional) Display chassis environmental information for all the members of the Virtual Chassis configuration.
 - cb *cb-slot-number***—(PTX Series, T4000 Core Routers) (Optional) Display chassis environmental information for the Control Board. Replace ***cb-slot*** with **0** or **1**.
 - cb *interconnect-device name***—(QFabric switches only) (Optional) Display chassis environmental information for the Control Board on an Interconnect device.
 - cgc *cgc-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***—(QFX3500 switches and QFabric Switches) (Optional) On the QFX3500 switch, display chassis environmental information for a specified Flexible PIC Concentrator. On a QFabric switch, display chassis environment information for a specified Flexible PIC Concentrator on an Interconnect device.
 - fpc *fpc-slot***—(PTX Series, T4000 Core Routers) (Optional) Display chassis environmental information for a specified Flexible PIC Concentrator. For T4000 Core Routers, replace ***fpc-slot*** with a value from **0** through **7**.
 - fpm**—(PTX Series only, T4000 Core Routers) (Optional) Display chassis environmental information for the craft interface (FPM).
 - interconnect-device *name***—(QFabric switches only) (Optional) Display chassis environmental information for the Interconnect device.
 - monitored**—(PTX Series 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 and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display chassis environmental information for a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display chassis environmental information for a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace ***number*** with a value from **0** through **3**.
 - local**—(MX Series routers only) (Optional) Display chassis environmental information for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display chassis environmental information for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of **0** or **1**.

node-device *name*—(QFabric switches 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 Switches) (Optional) Display chassis environmental information for the Power Entry Module on the specified Interconnect device or Node device.

pem *pem-slot-number*—(T4000 Core Routers) (Optional) Display chassis environmental information for the Power Entry Module on the specified Power Entry Module. Replace *pem-slot-number* with a value of **0** or **1**.

routing-engine—(QFX3500 switches and QFabric Switches) (Optional) Display chassis environmental information for the Routing Engine on the specified Interconnect device.

routing-engine *re-slot-number*—(PTX Series, T4000 Core Routers) (Optional) Display chassis environmental information for the specified Routing Engine. Replace *re-slot-number* with a value of **0** or **1**.

scg—(T4000 Core Routers) (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 (or switch-card chassis).

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

sib *sib-slot-number*—(PTX Series, T4000 Core Routers) (Optional) Display chassis environmental information about the specified switch interface board. For T4000 Core Routers, replace *sib-slot-number* with a value from **0** through **4**.

Required Privilege Level

view

Related Documentation

- [show chassis environment cb on page 282](#)
- [show chassis environment ccg](#)
- [show chassis environment cip](#)
- [show chassis environment fpc on page 297](#)
- [show chassis environment fpm on page 315](#)
- [show chassis environment mcs on page 320](#)

- `show chassis environment monitored`
- [show chassis environment pcg on page 350](#)
- `show chassis environment pdu`
- [show chassis environment pem on page 352](#)
- [show chassis environment routing-engine on page 359](#)
- [show chassis environment scg on page 363](#)
- [show chassis environment sib on page 372](#)

| | |
|------------------------------|--|
| List of Sample Output | show chassis environment (J2300 Router) on page 326 |
| | show chassis environment (J4300 or J6300 Router) on page 326 |
| | show chassis environment (M5 Router) on page 326 |
| | show chassis environment (M7i Router) on page 327 |
| | show chassis environment (M10 Router) on page 327 |
| | show chassis environment (M10i Router) on page 327 |
| | show chassis environment (M20 Router) on page 328 |
| | show chassis environment (M40 Router) on page 328 |
| | show chassis environment (M40e Router) on page 328 |
| | show chassis environment (M120 Router) on page 329 |
| | show chassis environment (M160 Router) on page 330 |
| | show chassis environment (M320 Router) on page 330 |
| | show chassis environment (MX240 Router) on page 331 |
| | show chassis environment (MX240 Router with Enhanced MX SCB) on page 332 |
| | show chassis environment (MX480 Router) on page 333 |
| | show chassis environment (MX480 Router with Enhanced MX SCB) on page 334 |
| | show chassis environment (MX960 Router) on page 335 |
| | show chassis environment (MX960 Router with Enhanced MX SCB) on page 335 |
| | show chassis environment (T320 Router) on page 338 |
| | show chassis environment (T640 Router) on page 339 |
| | show chassis environment (T4000 Router) on page 339 |
| | show chassis environment (TX Matrix Router) on page 341 |
| | show chassis environment (T1600 Router) on page 343 |
| | show chassis environment (TX Matrix Plus Router) on page 343 |
| | show chassis environment (EX4200 Standalone Switch) on page 346 |
| | show chassis environment (QFX Series) on page 346 |
| | show chassis environment node-device (QFabric Switch) on page 346 |
| | show chassis environment pem (QFX Series) on page 346 |
| | show chassis environment (PTX5000 Packet Transport Switch) on page 347 |

Output Fields [Table 25 on page 258](#) lists the output fields for the **show chassis environment** command. Output fields are listed in the approximate order in which they appear.

Table 30: show chassis environment Output Fields

| Field Name | Field Description |
|--------------|--|
| Power | <p>Power information:</p> <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 | <p>Temperature of air flowing through the chassis in degrees Celsius (C) and Fahrenheit (F).</p> <p>On PTX Series Packet Transport Switches, multiple cooling zones are supported. FRU temperatures in each zone are coordinated with the fan speed of fan trays in those zones.</p> |
| Fan | <p>Fan status: OK, Testing (during initial power-on), Failed, or Absent.</p> <p>On PTX Series Packet Transport Switches, multiple fan trays are supported. Fan status is reported in Fan Tray or Fan combinations. Measurement indicates actual fan RPM (PTX only).</p> |
| Misc | <p>Information about other components of the chassis:</p> <ul style="list-style-type: none"> On some routers, this field indicates the status of one or more additional components. On the M160 router, Misc includes CIP (Connector Interface Panel). OK indicates that the CIP is present. On the T640 router, Misc includes CIP and SPMB (Switch Processor Mezzanine Board). OK indicates that the item is present. On PTX Series Packet Transport Switches, Misc includes the SPMB (Switch Processor Mezzanine Board). OK indicates that the item is present. |

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 Fan 1 OK

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

```

```

Left Fan 2      OK      Spinning at normal speed
Left Fan 3      OK      Spinning at normal speed
Left Fan 4      OK      Spinning at normal speed
Misc Craft Interface  OK

```

```

show chassis user@host> show chassis environment
environment (M7i)
Router)
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 user@host> show chassis environment
environment (M10i)
Router)
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 user@host> show chassis environment
environment (M10i)
Router)
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 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 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
Power PEM 1             Absent
Temp  PCG 0              OK          44 degrees C / 111 degrees F
      PCG 1              OK          47 degrees C / 116 degrees F
      Routing Engine 0   OK          40 degrees C / 104 degrees F
      Routing Engine 1   OK          37 degrees C / 98 degrees F
      MCS 0              OK          45 degrees C / 113 degrees F
      MCS 1              OK          42 degrees C / 107 degrees F
      SFM 0 SPP          OK          40 degrees C / 104 degrees F

```

| | | | |
|-------------|----------------------|----|------------------------------|
| SFM 0 | SPR | OK | 44 degrees C / 111 degrees F |
| SFM 1 | SPP | OK | 43 degrees C / 109 degrees F |
| SFM 1 | SPR | OK | 45 degrees C / 113 degrees F |
| FPC 0 | | OK | 38 degrees C / 100 degrees F |
| FPC 1 | | OK | 40 degrees C / 104 degrees F |
| FPC 2 | | OK | 38 degrees C / 100 degrees F |
| FPC 4 | | OK | 34 degrees C / 93 degrees F |
| FPC 5 | | OK | 43 degrees C / 109 degrees F |
| FPC 6 | | OK | 41 degrees C / 105 degrees F |
| FPC 7 | | OK | 43 degrees C / 109 degrees F |
| FPM CMB | | OK | 28 degrees C / 82 degrees F |
| FPM Display | | OK | 28 degrees C / 82 degrees F |
| Fans | Rear Bottom Blower | OK | Spinning at normal speed |
| | Rear Top Blower | OK | Spinning at normal speed |
| | Front Top Blower | OK | Spinning at normal speed |
| | Fan Tray Rear Left | OK | Spinning at normal speed |
| | Fan Tray Rear Right | OK | Spinning at normal speed |
| | Fan Tray Front Left | OK | Spinning at normal speed |
| | Fan Tray Front Right | OK | Spinning at normal speed |
| Misc | CIP | OK | |

```

show chassis environment (M120 Router)
user@host> show chassis environment

```

| Class | Item | Status | Measurement |
|-------|-------------------------|--------|------------------------------|
| Temp | PEM 0 | OK | |
| | PEM 1 | OK | |
| | Routing Engine 0 | OK | 43 degrees C / 109 degrees F |
| | Routing Engine 1 | OK | 44 degrees C / 111 degrees F |
| | CB 0 Intake | OK | 33 degrees C / 91 degrees F |
| | CB 0 Exhaust A | OK | 36 degrees C / 96 degrees F |
| | CB 0 Exhaust B | OK | 35 degrees C / 95 degrees F |
| | CB 1 Intake | OK | 34 degrees C / 93 degrees F |
| | CB 1 Exhaust A | OK | 38 degrees C / 100 degrees F |
| | CB 1 Exhaust B | OK | 35 degrees C / 95 degrees F |
| | FEB 3 Intake | OK | 35 degrees C / 95 degrees F |
| | FEB 3 Exhaust A | OK | 37 degrees C / 98 degrees F |
| | FEB 3 Exhaust B | OK | 39 degrees C / 102 degrees F |
| | FEB 4 Intake | OK | 33 degrees C / 91 degrees F |
| | FEB 4 Exhaust A | OK | 39 degrees C / 102 degrees F |
| | FEB 4 Exhaust B | OK | 36 degrees C / 96 degrees F |
| | FPC 2 Exhaust A | OK | 32 degrees C / 89 degrees F |
| | FPC 2 Exhaust B | OK | 31 degrees C / 87 degrees F |
| | FPC 3 Exhaust A | OK | 32 degrees C / 89 degrees F |
| | FPC 3 Exhaust B | OK | 33 degrees C / 91 degrees F |
| | FPC 4 Exhaust A | OK | 32 degrees C / 89 degrees F |
| | FPC 4 Exhaust B | OK | 30 degrees C / 86 degrees F |
| Fans | Front Top Tray Fan 1 | OK | Spinning at normal speed |
| | Front Top Tray Fan 2 | OK | Spinning at normal speed |
| | Front Top Tray Fan 3 | OK | Spinning at normal speed |
| | Front Top Tray Fan 4 | OK | Spinning at normal speed |
| | Front Top Tray Fan 5 | OK | Spinning at normal speed |
| | Front Top Tray Fan 6 | OK | Spinning at normal speed |
| | Front Top Tray Fan 7 | OK | Spinning at normal speed |
| | Front Top Tray Fan 8 | OK | Spinning at normal speed |
| | Front Bottom Tray Fan 1 | OK | Spinning at normal speed |
| | Front Bottom Tray Fan 2 | OK | Spinning at normal speed |
| | Front Bottom Tray Fan 3 | OK | Spinning at normal speed |
| | Front Bottom Tray Fan 4 | OK | Spinning at normal speed |
| | Front Bottom Tray Fan 5 | OK | Spinning at normal speed |
| | Front Bottom Tray Fan 6 | OK | Spinning at normal speed |
| | Front Bottom Tray Fan 7 | OK | Spinning at normal speed |

| | | |
|-------------------------|----|--------------------------|
| Front Bottom Tray Fan 8 | OK | Spinning at normal speed |
| Rear Top Tray Fan 1 | OK | Spinning at normal speed |
| Rear Top Tray Fan 2 | OK | Spinning at normal speed |
| Rear Top Tray Fan 3 | OK | Spinning at normal speed |
| Rear Top Tray Fan 4 | OK | Spinning at normal speed |
| Rear Top Tray Fan 5 | OK | Spinning at normal speed |
| Rear Top Tray Fan 6 | OK | Spinning at normal speed |
| Rear Top Tray Fan 7 | OK | Spinning at normal speed |
| Rear Top Tray Fan 8 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 1 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 2 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 3 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 4 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 5 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 6 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 7 | OK | Spinning at normal speed |
| Rear Bottom Tray Fan 8 | OK | Spinning at normal speed |

```

show chassis environment (M160 Router)
user@host> show chassis environment

```

| Class | Item | Status | Measurement |
|-------|----------------------|--------|------------------------------|
| Power | PEM 0 | OK | PEM 1 |
| Temp | PCG 0 | OK | 45 degrees C / 113 degrees F |
| | PCG 1 | Absent | |
| | Routing Engine 0 | OK | 35 degrees C / 95 degrees F |
| | Routing Engine 1 | Absent | |
| | MCS 0 | OK | 50 degrees C / 122 degrees F |
| | SFM 0 SPP | OK | 47 degrees C / 116 degrees F |
| | SFM 0 SPR | OK | 49 degrees C / 120 degrees F |
| | SFM 1 SPP | OK | 50 degrees C / 122 degrees F |
| | SFM 1 SPR | OK | 50 degrees C / 122 degrees F |
| | SFM 2 SPP | OK | 51 degrees C / 123 degrees F |
| | SFM 2 SPR | OK | 52 degrees C / 125 degrees F |
| | SFM 3 SPP | OK | 52 degrees C / 125 degrees F |
| | SFM 3 SPR | OK | 48 degrees C / 118 degrees F |
| | FPC 0 | OK | 45 degrees C / 113 degrees F |
| | FPC 6 | OK | 43 degrees C / 109 degrees F |
| | FPM CMB | OK | 31 degrees C / 87 degrees F |
| | FPM Display | OK | 33 degrees C / 91 degrees F |
| Fans | Rear Bottom Blower | OK | Spinning at normal speed |
| | Rear Top Blower | OK | Spinning at normal speed |
| | Front Top Blower | OK | Spinning at normal speed |
| | Fan Tray Rear Left | OK | Spinning at normal speed |
| | Fan Tray Rear Right | OK | Spinning at normal speed |
| | Fan Tray Front Left | OK | Spinning at normal speed |
| | Fan Tray Front Right | OK | Spinning at normal speed |
| Misc | CIP | OK | |

```

show chassis environment (M320 Router)
user@host> show chassis environment

```

| Class | Item | Status | Measurement |
|-------|------------------|--------|------------------------------|
| Temp | PEM 0 | Absent | |
| | PEM 1 | Absent | |
| | PEM 2 | OK | |
| | PEM 3 | OK | |
| | Routing Engine 0 | OK | 33 degrees C / 91 degrees F |
| | Routing Engine 1 | OK | 32 degrees C / 89 degrees F |
| | CB 0 | OK | 36 degrees C / 96 degrees F |
| | CB 1 | OK | 36 degrees C / 96 degrees F |
| | SIB 0 | OK | 38 degrees C / 100 degrees F |
| | SIB 1 | OK | 29 degrees C / 84 degrees F |
| | SIB 2 | OK | 38 degrees C / 100 degrees F |

| | | |
|------------------------|----|------------------------------|
| SIB 3 | OK | 41 degrees C / 105 degrees F |
| FPC 0 Intake | OK | 28 degrees C / 82 degrees F |
| FPC 0 Exhaust | OK | 40 degrees C / 104 degrees F |
| FPC 1 Intake | OK | 29 degrees C / 84 degrees F |
| FPC 1 Exhaust | OK | 39 degrees C / 102 degrees F |
| FPC 2 Intake | OK | 28 degrees C / 82 degrees F |
| FPC 2 Exhaust | OK | 38 degrees C / 100 degrees F |
| FPC 3 Intake | OK | 28 degrees C / 82 degrees F |
| FPC 3 Exhaust | OK | 39 degrees C / 102 degrees F |
| FPC 6 Intake | OK | 27 degrees C / 80 degrees F |
| FPC 6 Exhaust | OK | 39 degrees C / 102 degrees F |
| FPC 7 Intake | OK | 27 degrees C / 80 degrees F |
| FPC 7 Exhaust | OK | 42 degrees C / 107 degrees F |
| FPM GBUS | OK | 30 degrees C / 86 degrees F |
| Fan Top Left Front fan | OK | Spinning at normal speed |
| Top Right Rear fan | OK | Spinning at normal speed |
| Top Right Front fan | OK | Spinning at normal speed |
| Top Left Rear fan | OK | Spinning at normal speed |
| Bottom Left Front fan | OK | Spinning at normal speed |
| Bottom Right Rear fan | OK | Spinning at normal speed |
| Bottom Right Front fan | OK | Spinning at normal speed |
| Bottom Left Rear fan | OK | Spinning at normal speed |
| Rear Fan 1 (TOP) | OK | Spinning at normal speed |
| Rear Fan 2 | OK | Spinning at normal speed |
| Rear Fan 3 | OK | Spinning at normal speed |
| Rear Fan 4 | OK | Spinning at normal speed |
| Rear Fan 5 | OK | Spinning at normal speed |
| Rear Fan 6 | OK | Spinning at normal speed |
| Rear Fan 7 (Bottom) | OK | Spinning at normal speed |
| Misc CIP | OK | |

```

show chassis environment (MX240 Router)
user@host> show chassis environment

```

| Class | Item | Status | Measurement |
|-------|--------------------|--------|------------------------------|
| Temp | PEM 0 | OK | 40 degrees C / 104 degrees F |
| | PEM 1 | OK | 45 degrees C / 113 degrees F |
| | PEM 2 | Absent | |
| | PEM 3 | Absent | |
| | Routing Engine 0 | OK | 39 degrees C / 102 degrees F |
| | Routing Engine 1 | OK | 37 degrees C / 98 degrees F |
| | CB 0 Intake | OK | 36 degrees C / 96 degrees F |
| | CB 0 Exhaust A | OK | 34 degrees C / 93 degrees F |
| | CB 0 Exhaust B | OK | 38 degrees C / 100 degrees F |
| | CB 0 ACBC | OK | 37 degrees C / 98 degrees F |
| | CB 0 SF A | OK | 49 degrees C / 120 degrees F |
| | CB 0 SF B | OK | 41 degrees C / 105 degrees F |
| | CB 1 Intake | OK | 37 degrees C / 98 degrees F |
| | CB 1 Exhaust A | OK | 34 degrees C / 93 degrees F |
| | CB 1 Exhaust B | OK | 39 degrees C / 102 degrees F |
| | CB 1 ACBC | OK | 38 degrees C / 100 degrees F |
| | CB 1 SF A | OK | 47 degrees C / 116 degrees F |
| | CB 1 SF B | OK | 41 degrees C / 105 degrees F |
| | FPC 1 Intake | OK | 33 degrees C / 91 degrees F |
| | FPC 1 Exhaust A | OK | 38 degrees C / 100 degrees F |
| | FPC 1 Exhaust B | OK | 53 degrees C / 127 degrees F |
| | FPC 1 I3 0 TSensor | OK | 50 degrees C / 122 degrees F |
| | FPC 1 I3 0 Chip | OK | 53 degrees C / 127 degrees F |
| | FPC 1 I3 1 TSensor | OK | 49 degrees C / 120 degrees F |
| | FPC 1 I3 1 Chip | OK | 52 degrees C / 125 degrees F |
| | FPC 1 I3 2 TSensor | OK | 47 degrees C / 116 degrees F |
| | FPC 1 I3 2 Chip | OK | 49 degrees C / 120 degrees F |

| | | | |
|------|--------------------|----|------------------------------|
| | FPC 1 I3 3 TSensor | OK | 44 degrees C / 111 degrees F |
| | FPC 1 I3 3 Chip | OK | 46 degrees C / 114 degrees F |
| | FPC 1 IA 0 TSensor | OK | 45 degrees C / 113 degrees F |
| | FPC 1 IA 0 Chip | OK | 44 degrees C / 111 degrees F |
| | FPC 1 IA 1 TSensor | OK | 44 degrees C / 111 degrees F |
| | FPC 1 IA 1 Chip | OK | 48 degrees C / 118 degrees F |
| | FPC 2 Intake | OK | 32 degrees C / 89 degrees F |
| | FPC 2 Exhaust A | OK | 40 degrees C / 104 degrees F |
| | FPC 2 Exhaust B | OK | 52 degrees C / 125 degrees F |
| | FPC 2 I3 0 TSensor | OK | 52 degrees C / 125 degrees F |
| | FPC 2 I3 0 Chip | OK | 56 degrees C / 132 degrees F |
| | FPC 2 I3 1 TSensor | OK | 52 degrees C / 125 degrees F |
| | FPC 2 I3 1 Chip | OK | 55 degrees C / 131 degrees F |
| | FPC 2 I3 2 TSensor | OK | 49 degrees C / 120 degrees F |
| | FPC 2 I3 2 Chip | OK | 52 degrees C / 125 degrees F |
| | FPC 2 I3 3 TSensor | OK | 44 degrees C / 111 degrees F |
| | FPC 2 I3 3 Chip | OK | 48 degrees C / 118 degrees F |
| | FPC 2 IA 0 TSensor | OK | 50 degrees C / 122 degrees F |
| | FPC 2 IA 0 Chip | OK | 48 degrees C / 118 degrees F |
| | FPC 2 IA 1 TSensor | OK | 47 degrees C / 116 degrees F |
| | FPC 2 IA 1 Chip | OK | 53 degrees C / 127 degrees F |
| Fans | Front Fan | OK | Spinning at normal speed |
| | Middle Fan | OK | Spinning at normal speed |
| | Rear Fan | OK | Spinning at normal speed |

**show chassis
environment (MX240
Router with Enhanced
MX SCB)**

| user@host> show chassis environment | | Status | Measurement |
|-------------------------------------|--------------------|--------|------------------------------|
| Class | Item | | |
| 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)
user@host> show chassis environment

```

| 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 (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 user@host> show chassis environment
environment (T640 Router)
Class Item          Status      Measurement
Temp PEM 0          Absent
      PEM 1          OK          22 degrees C / 71 degrees F
      SCG 0          OK          30 degrees C / 86 degrees F
      SCG 1          OK          30 degrees C / 86 degrees F
      Routing Engine 0 Present
      Routing Engine 1 OK          27 degrees C / 80 degrees F
      CB 0           Present
      CB 1           OK          33 degrees C / 91 degrees F
      SIB 0          Absent
      SIB 1          Absent
      SIB 2          Absent
      SIB 3          Absent
      SIB 4          Absent
      FPC 4 Top      Testing
      FPC 4 Bottom   Testing
      FPC 5 Top      Testing
      FPC 5 Bottom   Testing
      FPC 6 Top      Testing
      FPC 6 Bottom   Testing
      FPM GBUS       OK          23 degrees C / 73 degrees F
      FPM Display    Absent
Fans  Top Left Front fan OK          Spinning at normal speed
      Top Left Middle fan OK          Spinning at normal speed
      Top Left Rear fan OK          Spinning at normal speed
      Top Right Front fan OK          Spinning at normal speed
      Top Right Middle fan OK          Spinning at normal speed
      Top Right Rear fan OK          Spinning at normal speed
      Bottom Left Front fan OK          Spinning at normal speed
      Bottom Left Middle fan OK          Spinning at normal speed
      Bottom Left Rear fan OK          Spinning at normal speed
      Bottom Right Front fan OK          Spinning at normal speed
      Bottom Right Middle fan OK          Spinning at normal speed
      Bottom Right Rear fan OK          Spinning at normal speed
      Fourth Blower from top OK          Spinning at normal speed
      Bottom Blower OK          Spinning at normal speed
      Middle Blower OK          Spinning at normal speed
      Top Blower OK          Spinning at normal speed
      Second Blower from top OK          Spinning at normal speed
Misc  CIP              OK
      SPMB 0         OK
      SPMB 1         OK

```

```

show chassis user@host> show chassis environment
environment (T4000 Router)
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 |
| | 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 |
| Misc | CIP | OK | |
| | SPMB 0 | OK | |
| | SPMB 1 | OK | |

show chassis environment (TX Matrix Router) user@host> show chassis environment
scc-re0:

| Class | Item | Status | Measurement |
|-------|-------------------------|--------|------------------------------|
| Temp | PEM 0 | Absent | |
| | PEM 1 | OK | 29 degrees C / 84 degrees F |
| | Routing Engine 0 | OK | 34 degrees C / 93 degrees F |
| | Routing Engine 1 | OK | 34 degrees C / 93 degrees F |
| | CB 0 | OK | 32 degrees C / 89 degrees F |
| | CB 1 | OK | 32 degrees C / 89 degrees F |
| | SIB 0 | OK | 44 degrees C / 111 degrees F |
| | SIB 0 (B) | OK | 44 degrees C / 111 degrees F |
| | FPM GBUS | OK | 27 degrees C / 80 degrees F |
| | FPM Display | OK | 32 degrees C / 89 degrees F |
| Fans | Top Left Front fan | OK | Spinning at normal speed |
| | Top Left Middle fan | OK | Spinning at normal speed |
| | Top Left Rear fan | OK | Spinning at normal speed |
| | Top Right Front fan | OK | Spinning at normal speed |
| | Top Right Middle fan | OK | Spinning at normal speed |
| | Top Right Rear fan | OK | Spinning at normal speed |
| | Bottom Left Front fan | OK | Spinning at normal speed |
| | Bottom Left Middle fan | OK | Spinning at normal speed |
| | Bottom Left Rear fan | OK | Spinning at normal speed |
| | Bottom Right Front fan | OK | Spinning at normal speed |
| | Bottom Right Middle fan | OK | Spinning at normal speed |
| | Bottom Right Rear fan | OK | Spinning at normal speed |
| | Rear Tray Top fan | OK | Spinning at normal speed |
| | Rear Tray Second fan | OK | Spinning at normal speed |
| | Rear Tray Third fan | OK | Spinning at normal speed |
| | Rear Tray Fourth fan | OK | Spinning at normal speed |
| | Rear Tray Fifth fan | OK | Spinning at normal speed |
| | Rear Tray Sixth fan | OK | Spinning at normal speed |
| | Rear Tray Seventh fan | OK | Spinning at normal speed |
| | Rear Tray Bottom fan | OK | Spinning at normal speed |
| Misc | CIP 0 | OK | |
| | CIP 1 | OK | |
| | SPMB 0 | OK | |
| | SPMB 1 | OK | |

1cc0-re0:

| Class | Item | Status | Measurement |
|-------|-------------------------|--------|------------------------------|
| Temp | PEM 0 | OK | 29 degrees C / 84 degrees F |
| | PEM 1 | Absent | |
| | SCG 0 | OK | 35 degrees C / 95 degrees F |
| | SCG 1 | Absent | |
| | Routing Engine 0 | OK | 39 degrees C / 102 degrees F |
| | Routing Engine 1 | OK | 36 degrees C / 96 degrees F |
| | CB 0 | OK | 32 degrees C / 89 degrees F |
| | CB 1 | OK | 32 degrees C / 89 degrees F |
| | SIB 0 | OK | 40 degrees C / 104 degrees F |
| | SIB 0 (B) | OK | 51 degrees C / 123 degrees F |
| | FPC 0 Top | OK | 45 degrees C / 113 degrees F |
| | FPC 0 Bottom | OK | 31 degrees C / 87 degrees F |
| | FPC 1 Top | OK | 34 degrees C / 93 degrees F |
| | FPC 1 Bottom | OK | 31 degrees C / 87 degrees F |
| | FPM GBUS | OK | 30 degrees C / 86 degrees F |
| | FPM Display | OK | 34 degrees C / 93 degrees F |
| Fans | Top Left Front fan | OK | Spinning at normal speed |
| | Top Left Middle fan | OK | Spinning at normal speed |
| | Top Left Rear fan | OK | Spinning at normal speed |
| | Top Right Front fan | OK | Spinning at normal speed |
| | Top Right Middle fan | OK | Spinning at normal speed |
| | Top Right Rear fan | OK | Spinning at normal speed |
| | Bottom Left Front fan | OK | Spinning at normal speed |
| | Bottom Left Middle fan | OK | Spinning at normal speed |
| | Bottom Left Rear fan | OK | Spinning at normal speed |
| | Bottom Right Front fan | OK | Spinning at normal speed |
| | Bottom Right Middle fan | OK | Spinning at normal speed |
| | Bottom Right Rear fan | OK | Spinning at normal speed |
| | Rear Tray Top fan | OK | Spinning at normal speed |
| | Rear Tray Second fan | OK | Spinning at normal speed |
| | Rear Tray Third fan | OK | Spinning at normal speed |
| | Rear Tray Fourth fan | OK | Spinning at normal speed |
| | Rear Tray Fifth fan | OK | Spinning at normal speed |
| | Rear Tray Sixth fan | OK | Spinning at normal speed |
| | Rear Tray Seventh fan | OK | Spinning at normal speed |
| | Rear Tray Bottom fan | OK | Spinning at normal speed |
| Misc | CIP | OK | |
| | SPMB 0 | OK | |
| | SPMB 1 | OK | |

lcc2-re0:

| Class | Item | Status | Measurement |
|-------|--------------------|--------|------------------------------|
| Temp | PEM 0 | OK | 29 degrees C / 84 degrees F |
| | PEM 1 | Absent | |
| | SCG 0 | OK | 32 degrees C / 89 degrees F |
| | SCG 1 | Absent | |
| | Routing Engine 0 | OK | 31 degrees C / 87 degrees F |
| | Routing Engine 1 | OK | 32 degrees C / 89 degrees F |
| | CB 0 | OK | 30 degrees C / 86 degrees F |
| | SIB 0 | OK | 38 degrees C / 100 degrees F |
| | SIB 0 (B) | OK | 49 degrees C / 120 degrees F |
| | FPC 0 Top | OK | 45 degrees C / 113 degrees F |
| | FPC 0 Bottom | OK | 33 degrees C / 91 degrees F |
| | FPC 1 Top | OK | 37 degrees C / 98 degrees F |
| | FPC 1 Bottom | OK | 33 degrees C / 91 degrees F |
| | FPM GBUS | OK | 30 degrees C / 86 degrees F |
| | FPM Display | OK | 34 degrees C / 93 degrees F |
| Fans | Top Left Front fan | OK | Spinning at normal speed |

```

Top Left Middle fan    OK      Spinning at normal speed
...

show chassis environment (T1600 Router) user@host> show chassis environment
Class Item              Status      Measurement
Temp PEM 0              OK          27 degrees C / 80 degrees F
      PEM 1              Absent
      SCG 0              OK          31 degrees C / 87 degrees F
      SCG 1              OK          35 degrees C / 95 degrees F
      Routing Engine 0   OK          30 degrees C / 86 degrees F
      Routing Engine 1   OK          30 degrees C / 86 degrees F
      CB 0               OK          31 degrees C / 87 degrees F
      CB 1               OK          31 degrees C / 87 degrees F
      SIB 0              OK          41 degrees C / 105 degrees F
      SIB 0 (B)          OK          34 degrees C / 93 degrees F
      SIB 1              OK          0 degrees C / 32 degrees F
      SIB 1 (B)          OK          0 degrees C / 32 degrees F
      SIB 2              OK          0 degrees C / 32 degrees F
      SIB 2 (B)          OK          0 degrees C / 32 degrees F
      SIB 3              OK          0 degrees C / 32 degrees F
      SIB 3 (B)          OK          0 degrees C / 32 degrees F
      SIB 4              OK          0 degrees C / 32 degrees F
      SIB 4 (B)          OK          0 degrees C / 32 degrees F
      FPC 0 Top           OK          49 degrees C / 120 degrees F
      FPC 0 Bottom        OK          50 degrees C / 122 degrees F
      FPC 1 Top           OK          48 degrees C / 118 degrees F
      FPC 1 Bottom        OK          49 degrees C / 120 degrees F
      FPM GBUS            OK          27 degrees C / 80 degrees F
      FPM Display         OK          30 degrees C / 86 degrees F
Fans  Top Left Front fan  OK          Spinning at normal speed
      Top Left Middle fan OK          Spinning at normal speed
      Top Left Rear fan   OK          Spinning at normal speed
      Top Right Front fan  OK          Spinning at normal speed
      Top Right Middle fan OK          Spinning at normal speed
      Top Right Rear fan   OK          Spinning at normal speed
      Bottom Left Front fan OK          Spinning at normal speed
      Bottom Left Middle fan OK          Spinning at normal speed
      Bottom Left Rear fan  OK          Spinning at normal speed
      Bottom Right Front fan OK          Spinning at normal speed
      Bottom Right Middle fan OK          Spinning at normal speed
      Bottom Right Rear fan OK          Spinning at normal speed
      Rear Tray Top fan     OK          Spinning at normal speed
      Rear Tray Second fan  OK          Spinning at normal speed
      Rear Tray Third fan   OK          Spinning at normal speed
      Rear Tray Fourth fan  OK          Spinning at normal speed
      Rear Tray Fifth fan   OK          Spinning at normal speed
      Rear Tray Sixth fan   OK          Spinning at normal speed
      Rear Tray Seventh fan  OK          Spinning at normal speed
      Rear Tray Bottom fan  OK          Spinning at normal speed
Misc  CIP                  OK
      SPMB 0              OK
      SPMB 1              OK

show chassis environment (TX Matrix Plus Router) user@host> show chassis environment
sfc0-re0:
-----
Class Item              Status      Measurement
Temp PEM 0              OK          28 degrees C / 82 degrees F
      PEM 1              Absent
      Routing Engine 0   OK          27 degrees C / 80 degrees F
      Routing Engine 1   OK          29 degrees C / 84 degrees F

```

| | | | |
|------|------------------|----|------------------------------|
| | CB 0 Intake | OK | 26 degrees C / 78 degrees F |
| | CB 0 Exhaust A | OK | 25 degrees C / 77 degrees F |
| | CB 0 Exhaust B | OK | 25 degrees C / 77 degrees F |
| | CB 1 Intake | OK | 26 degrees C / 78 degrees F |
| | CB 1 Exhaust A | OK | 26 degrees C / 78 degrees F |
| | CB 1 Exhaust B | OK | 26 degrees C / 78 degrees F |
| | SIB F13 0 | OK | 47 degrees C / 116 degrees F |
| | SIB F13 0 (B) | OK | 48 degrees C / 118 degrees F |
| | SIB F13 1 | OK | 38 degrees C / 100 degrees F |
| | SIB F13 1 (B) | OK | 37 degrees C / 98 degrees F |
| | SIB F2S 0/0 | OK | 27 degrees C / 80 degrees F |
| | SIB F2S 0/2 | OK | 28 degrees C / 82 degrees F |
| | SIB F2S 0/4 | OK | 27 degrees C / 80 degrees F |
| | SIB F2S 0/6 | OK | 28 degrees C / 82 degrees F |
| | SIB F2S 1/0 | OK | 26 degrees C / 78 degrees F |
| | SIB F2S 1/2 | OK | 26 degrees C / 78 degrees F |
| | SIB F2S 1/4 | OK | 26 degrees C / 78 degrees F |
| | SIB F2S 1/6 | OK | 26 degrees C / 78 degrees F |
| | SIB F2S 2/0 | OK | 25 degrees C / 77 degrees F |
| | SIB F2S 2/2 | OK | 25 degrees C / 77 degrees F |
| | SIB F2S 2/4 | OK | 23 degrees C / 73 degrees F |
| | CIP 0 Intake | OK | 23 degrees C / 73 degrees F |
| | CIP 0 Exhaust A | OK | 24 degrees C / 75 degrees F |
| | CIP 0 Exhaust B | OK | 24 degrees C / 75 degrees F |
| | CIP 1 Intake | OK | 24 degrees C / 75 degrees F |
| | CIP 1 Exhaust A | OK | 25 degrees C / 77 degrees F |
| | CIP 1 Exhaust B | OK | 25 degrees C / 77 degrees F |
| Fans | Fan Tray 0 Fan 1 | OK | Spinning at normal speed |
| | Fan Tray 0 Fan 2 | OK | Spinning at normal speed |
| | Fan Tray 0 Fan 3 | OK | Spinning at normal speed |
| | Fan Tray 0 Fan 4 | OK | Spinning at normal speed |
| | Fan Tray 0 Fan 5 | OK | Spinning at normal speed |
| | Fan Tray 0 Fan 6 | OK | Spinning at normal speed |
| | Fan Tray 1 Fan 1 | OK | Spinning at normal speed |
| | Fan Tray 1 Fan 2 | OK | Spinning at normal speed |
| | Fan Tray 1 Fan 3 | OK | Spinning at normal speed |
| | Fan Tray 1 Fan 4 | OK | Spinning at normal speed |
| | Fan Tray 1 Fan 5 | OK | Spinning at normal speed |
| | Fan Tray 1 Fan 6 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 1 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 2 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 3 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 4 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 5 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 6 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 7 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 8 | OK | Spinning at normal speed |
| | Fan Tray 2 Fan 9 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 1 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 2 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 3 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 4 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 5 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 6 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 7 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 8 | OK | Spinning at normal speed |
| | Fan Tray 3 Fan 9 | OK | Spinning at normal speed |
| | Fan Tray 4 Fan 1 | OK | Spinning at normal speed |
| | Fan Tray 4 Fan 2 | OK | Spinning at normal speed |
| | Fan Tray 4 Fan 3 | OK | Spinning at normal speed |
| | Fan Tray 4 Fan 4 | OK | Spinning at normal speed |

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

lcc0-re0:

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

```

Rear Tray Sixth fan      OK      Spinning at normal speed
Rear Tray Seventh fan    OK      Spinning at normal speed
Rear Tray Bottom fan     OK      Spinning at normal speed
Misc CIP                 OK
SPMB 0                   OK
SPMB 1                   OK

show chassis environment (EX4200 Standalone Switch)
user@host> show chassis environment
Class Item              Status      Measurement
Power FPC 0 Power Supply 0 OK
      FPC 0 Power Supply 1 Absent
Temp  FPC 0 CPU          OK          41 degrees C / 105 degrees F
      FPC 0 EX-PFE1      OK          42 degrees C / 107 degrees F
      FPC 0 EX-PFE2      OK          46 degrees C / 114 degrees F
      FPC 0 GEPHY Front Left OK          25 degrees C / 77 degrees F
      FPC 0 GEPHY Front Right OK          27 degrees C / 80 degrees F
      FPC 0 Uplink Conn   OK          29 degrees C / 84 degrees F
Fans  FPC 0 Fan 1         OK          Spinning at normal speed
      FPC 0 Fan 2         OK          Spinning at normal speed
      FPC 0 Fan 3         OK          Spinning at normal speed

show chassis environment (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 node-device (QFabric Switch)
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 (QFX Series)
user@switch> show chassis environment pem
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      Check
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 user@switch> show chassis environment
(PTX5000 Packet Transport Switch)
Class Item          Status Measurement
Temp PDU 0          OK          36 degrees C / 96 degrees F
      PDU 0 PSM 0    OK          38 degrees C / 100 degrees F
      PDU 0 PSM 1    OK          38 degrees C / 100 degrees F
      PDU 0 PSM 2    OK          37 degrees C / 98 degrees F
      PDU 0 PSM 3    OK
      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 Intake    OK          39 degrees C / 102 degrees F
      SIB 0 Exhaust   OK          37 degrees C / 98 degrees F
      SIB 0 Junction  OK          43 degrees C / 109 degrees F
      SIB 1 Intake    OK          39 degrees C / 102 degrees F
      SIB 1 Exhaust   OK          36 degrees C / 96 degrees F
      SIB 1 Junction  OK          46 degrees C / 114 degrees F
      SIB 2 Intake    OK          37 degrees C / 98 degrees F
      SIB 2 Exhaust   OK          37 degrees C / 98 degrees F
      SIB 2 Junction  OK          42 degrees C / 107 degrees F
      SIB 3 Intake    OK          40 degrees C / 104 degrees F
      SIB 3 Exhaust   OK          40 degrees C / 104 degrees F
      SIB 3 Junction  OK          45 degrees C / 113 degrees F
      SIB 4 Intake    OK          47 degrees C / 116 degrees F
      SIB 4 Exhaust   OK          44 degrees C / 111 degrees F
      SIB 4 Junction  OK          58 degrees C / 136 degrees F
      SIB 5 Intake    OK          58 degrees C / 136 degrees F
      SIB 5 Exhaust   OK          43 degrees C / 109 degrees F
      SIB 5 Junction  OK          71 degrees C / 159 degrees F
      SIB 6 Intake    OK          57 degrees C / 134 degrees F
      SIB 6 Exhaust   OK          42 degrees C / 107 degrees F
      SIB 6 Junction  OK          65 degrees C / 149 degrees F
      SIB 7 Intake    OK          58 degrees C / 136 degrees F
      SIB 7 Exhaust   OK          42 degrees C / 107 degrees F
      SIB 7 Junction  OK          66 degrees C / 150 degrees F
      SIB 8 Intake    OK          57 degrees C / 134 degrees F
      SIB 8 Exhaust   OK          42 degrees C / 107 degrees F
      SIB 8 Junction  OK          70 degrees C / 158 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 pcg

| | |
|---------------------------------|---|
| Syntax | <code>show chassis environment pcg</code> <code><slot></code> |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (M40e and M160 routers only) Display environmental information about the Packet Forwarding Engine clock generators (PCGs). |
| Options | <p>none—Display environmental information about both PCGs.</p> <p>slot—(Optional) Display environmental information about an individual PCG. Replace slot with 0 or 1.</p> |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none"> request chassis pcg on page 219 |
| List of Sample Output | show chassis environment pcg (M40e Router) on page 351 show chassis environment pcg (M160 Router) on page 351 |
| Output Fields | Table 31 on page 350 lists the output fields for the show chassis environment pcg command. Output fields are listed in the approximate order in which they appear. |

Table 31: show chassis environment pcg Output Fields

| Field Name | Field Description |
|-----------------|---|
| PCG slot status | Slot number: 0 or 1. |
| State | Status of PCG: <ul style="list-style-type: none"> Present—PCG is detected by the chassis process but is either not supported by the current version of Junos OS or PCG is coming up but is not yet online. Online—PCG is powered down. If Online, it can be the Master clock or the Standby clock. Offline—PCG is powered down. Empty—No PCG is present. |
| Temperature | Temperature of the air flowing past the PCG. |
| Frequency | Frequency setting and measurement for the PCG. |
| Power | Information about the voltage supplied to the PCG. The left column displays the required power, in volts. The right column displays the measured power, in millivolts. |
| BUS Revision | Revision level of the generic bus device. |

Sample Output

```

show chassis      user@host> show chassis environment pcg
environment pcg   PCG 0 status:
(M40e Router)     State                Online - Master clock
                    Temperature            44 degrees C / 111 degrees F
                    Frequency:
                      Setting              125.00 MHz
                      Measurement          124.95 MHz
                    Power:
                      3.3 V                3266 mV
                      5.0 V bias           4964 mV
                      8.0 V bias           8112 mV
                    BUS Revision            12
                    PCG 1 status:
                      State                Online - Standby
                      Temperature            47 degrees C / 116 degrees F
                      Frequency:
                        Setting              125.00 MHz
                        Measurement          124.96 MHz
                      Power:
                        3.3 V                3271 mV
                        5.0 V bias           4979 mV
                        8.0 V bias           8117 mV
                      BUS Revision            12

show chassis      user@host> show chassis environment pcg
environment pcg   PCG 0 status:
(M160 Router)     State                Online - Master clock
                    Temperature            41 degrees C / 105 degrees F
                    Frequency:
                      Setting              125.00 MHz
                      Measurement          125.03 MHz
                    Power:
                      3.3 V                3286 mV
                      5.0 V bias           5010 mV
                      8.0 V bias           8183 mV
                    BUS Revision            12
                    PCG 1 status:
                      State                Online - Standby
                      Temperature            43 degrees C / 109 degrees F
                      Frequency:
                        Setting              125.00 MHz
                        Measurement          125.01 MHz
                      Power:
                        3.3 V                3288 mV
                        5.0 V bias           4993 mV
                        8.0 V bias           8197 mV
                      BUS Revision            12

```

show chassis environment pem

| | |
|--|---|
| Syntax | show chassis environment pem <slot> |
| Syntax (TX Matrix Routers) | show chassis environment pem <lcc number scc> <slot> |
| Syntax (TX Matrix Plus Routers) | show chassis environment pem <lcc number sfc number> <slot> |
| Syntax (MX Series Router) | show chassis environment pem <slot> <all-members> <local> <member member-id> |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (M40e, M120, M160, M320, MX Series, and T Series routers only) Display Power Entry Module (PEM) environmental status information. |



NOTE: The new high-capacity (4100W) 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.

- Options** **none**—Display environmental information about both PEMs. For the TX Matrix router, display environmental information about the PEMs, the TX Matrix router, and its attached T640 routers. For the TX Matrix Plus router, display environmental information about the PEMs, the TX Matrix Plus router, and its attached T1600 routers.
- all-members**—(MX Series routers only) (Optional) Display environmental information about the PEMs in all the member routers of the Virtual Chassis configuration.
- lcc number**—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the PEM in a specified T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display environmental information about the PEM in a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace **number** with a value from 0 through 3.
- local**—(MX Series routers only) (Optional) Display environmental information about the PEM in the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display environmental information about the PEM in the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

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

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

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

Required Privilege Level view

Related Documentation

- [show chassis hardware on page 537](#)

List of Sample Output

[show chassis environment pem \(M40e Router\) on page 354](#)
[show chassis environment pem \(M120 Router\) on page 354](#)
[show chassis environment pem \(M160 Router\) on page 355](#)
[show chassis environment pem \(M320 Router\) on page 355](#)
[show chassis environment pem \(MX240 Router\) on page 355](#)
[show chassis environment pem \(MX480 Router\) on page 355](#)
[show chassis environment pem \(MX960 Router\) on page 356](#)
[show chassis environment pem \(T320 Router\) on page 356](#)
[show chassis environment pem \(T640 Router\) on page 356](#)
[show chassis environment pem \(T4000 Router\) on page 356](#)
[show chassis environment pem \(T640/T1600/T4000 Routers With Six-Input DC Power Supply\) on page 356](#)
[show chassis environment pem lcc \(TX Matrix Routing Matrix\) on page 357](#)
[show chassis environment pem scc \(TX Matrix Routing Matrix\) on page 357](#)
[show chassis environment pem sfc \(TX Matrix Plus Routing Matrix\) on page 357](#)
[show chassis environment pem lcc \(TX Matrix Plus Routing Matrix\) on page 358](#)

Output Fields [Table 32 on page 353](#) lists the output fields for the **show chassis environment pem** command. Output fields are listed in the approximate order in which they appear.

Table 32: show chassis environment pem Output Fields

| Field Name | Field Description |
|------------------------|--|
| PEM <i>slot</i> status | Number of the PEM slot. |
| State | Status of the PEM. |
| Temperature | Temperature of the air flowing past the PEM. |
| AC Input | Status of the AC input for the specified component |
| AC Output | Status of the AC output for the specified component. |

Table 32: show chassis environment pem Output Fields (*continued*)

| Field Name | Field Description |
|------------|--|
| DC input | Status of the DC input for the specified component. |
| DC output | Status of the DC output for the specified component. |
| Load | (Not available on M40e or M160 routers) Information about the load on supply, in percentage of rated current being used. |
| Voltage | (M120, M160, M320, T640, T1600, TX Matrix, and TX Matrix Plus routers only) Information about voltage supplied to the PEM. |
| Current | (T640, T1600, TX Matrix, and TX Matrix Plus routers only) Information about the PEM current. |
| Power | (T640, T1600, TX Matrix, and TX Matrix Plus routers only) Information about the PEM power. |
| SCG/CB/SIB | (T640, T1600, TX Matrix, and TX Matrix Plus routers only) SONET Clock Generator/Control Board/Switch Interface Board. |
| FAN | (T640, T1600, and T4000 routers with six-input DC power supply only) Information about the DC output to the fan. |

Sample Output

```

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

show chassis environment pem user@host> show chassis environment pem
(M120 Router)                PEM 0 status:
                             State                Online
                             Temperature            OK
                             DC Input:              OK
                             DC Output:             OK
                             Load                  Less than 20 percent
                             Voltage:
                               48.0 V input          52864 mV
                               48.0 V fan supply     41655 mV
                               3.3 V                3399 mV
                             PEM 1 status:
                             State                Online
                             Temperature            OK
                             DC Input:              OK
                             DC Output:             OK
                             Load                  Less than 20 percent
                             Voltage:
                               48.0 V input          54537 mV
                               48.0 V fan supply     42910 mV
                               3.3 V                3506 mV

```



```

show chassis environment pem
(M160 Router)
user@host> show chassis environment pem
PEM 0 status:
  State                Online
  Temperature           OK
  DC input              OK
  DC output             OK
  Load                 Less than 20 percent
  Voltage:
    48.0 V input        54833 mV
    48.0 V fan supply   50549 mV
    8.0 V bias          8239 mV
    5.0 V bias          5006 mV

```

```

show chassis environment pem
(M320 Router)
user@host> show chassis environment pem
PEM 2 status:
  State                Online
  Temperature           OK
  DC input              OK
  Load                 Less than 40 percent
    48.0 V input        51853 mV
    48.0 V fan supply   48877 mV
    8.0 V bias          8449 mV
    5.0 V bias          4998 mV
PEM 3 status:
  State                Online
  Temperature           OK
  DC input              OK
  Load                 Less than 40 percent
    48.0 V input        51717 mV
    48.0 V fan supply   49076 mV
    8.0 V bias          8442 mV
    5.0 V bias          4998 mV

```

```

show chassis environment pem
(MX240 Router)
user@host> show chassis environment pem
PEM 0 status:
  State                Online
  Temperature           OK
  DC Output:           OK
PEM 1 status:
  State                Online
  Temperature           OK
  DC Output:           OK

```

```

show chassis environment pem
(MX480 Router)
user@host> show chassis environment pem
PEM 0 status:
  State                Online
  Temperature           OK
  DC Input:            OK
  DC Output:           OK
  Voltage:
PEM 1 status:
  State                Online
  Temperature           OK
  DC Input:            OK
  DC Output:           OK
  Voltage:

```

show chassis environment pem
(MX960 Router)

```
user@host> show chassis environment pem
PEM 2 status:
  State                Present
PEM 3 status:
  State                Online
  Temperature          OK
  DC Output:          OK
```

show chassis environment pem
(T320 Router)

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

show chassis environment pem
(T640 Router)

```
user@host> show chassis environment pem
PEM 0 status:
  State                Online
  Temperature          22 degrees C / 71 degrees F
  AC input: OK
  DC output:
    Voltage    Current    Power    Load
    FPC 0      56875      606      34      4
    FPC 1      57016      525      29      3
    FPC 2        0        0        0      0
    FPC 3        0        0        0      0
    FPC 4        0        0        0      0
    FPC 5        0        0        0      0
    FPC 6      57158      1581      90     12
    FPC 7        0        0        0      0
  SCG/CB/SIB      56750      1125      63      5
```

show chassis environment pem
(T4000 Router)

```
user@host> show chassis environment pem
PEM 0 status:
  State                Online
  Temperature          33 degrees C / 91 degrees F
  DC Input:           OK
    Voltage(V)    Current(A)    Power(W)    Load(%)
    INPUT 0       54.625      9.812      535      22
    INPUT 1       54.625     10.250     559      23
    INPUT 2       55.125      0.125        6       0
    INPUT 3       54.500     10.062     548      22
    INPUT 4       54.750      9.375     513      21
    INPUT 5       54.750     10.187     557      23
  DC Output
    Voltage(V)    Current(A)    Power(W)    Load(%)
    FPC 0       55.750     10.125     564      37
    FPC 1       51.625      0.000        0       0
    FPC 2       52.000      0.000        0       0
    FPC 3       55.062     10.437     574      38
    FPC 4       52.125      0.000        0       0
    FPC 5       55.000      9.375     515      34
    FPC 6       55.187      9.687     534      35
    FPC 7       51.437      0.000        0       0
  SCG/CB/SIB     55.375     15.750     872      35
  FAN           54.562     14.750     804      42
```

show chassis environment pem
(T640/T1600/T4000)

```
user@host> show chassis environment pem
PEM 1 status:
  State                Online
  Temperature          36 degrees C / 96 degrees F
```

**Routers With Six-Input
DC Power Supply)**

| | | | | | |
|------------|------------|------------|----------|---------|--|
| DC Input: | OK | | | | |
| | Voltage(V) | Current(A) | Power(W) | Load(%) | |
| INPUT 0 | 0.000 | 0.000 | 0 | 0 | |
| INPUT 1 | 54.875 | 3.812 | 209 | 27 | |
| INPUT 2 | 55.375 | 3.937 | 218 | 29 | |
| INPUT 3 | 54.625 | 3.750 | 204 | 27 | |
| INPUT 4 | 55.125 | 3.375 | 186 | 24 | |
| INPUT 5 | 55.125 | 3.375 | 186 | 24 | |
| DC Output | Voltage(V) | Current(A) | Power(W) | Load(%) | |
| FPC 0 | 52.312 | 0.000 | 0 | 0 | |
| FPC 1 | 52.687 | 0.000 | 0 | 0 | |
| FPC 2 | 52.812 | 0.000 | 0 | 0 | |
| FPC 3 | 55.812 | 7.062 | 394 | 52 | |
| FPC 4 | 52.625 | 0.000 | 0 | 0 | |
| FPC 5 | 52.625 | 0.000 | 0 | 0 | |
| FPC 6 | 52.750 | 0.000 | 0 | 0 | |
| FPC 7 | 52.750 | 0.000 | 0 | 0 | |
| SCG/CB/SIB | 55.937 | 11.937 | 667 | 55 | |
| FAN | 55.812 | 4.937 | 275 | 36 | |

**show chassis
environment pem lcc
(TX Matrix Routing
Matrix)**

```
user@host> show chassis environment pem 0 lcc 0
lcc0-re0:
```

| | | | | | |
|---------------|-----------------------------|---------|-------|------|--|
| ----- | | | | | |
| PEM 0 status: | | | | | |
| State | Present | | | | |
| Temperature | 27 degrees C / 80 degrees F | | | | |
| DC input: | Check | | | | |
| DC output: | Voltage | Current | Power | Load | |
| FPC 0 | 0 | 0 | 0 | 0 | |
| FPC 1 | 0 | 0 | 0 | 0 | |
| FPC 2 | 0 | 0 | 0 | 0 | |
| FPC 3 | 0 | 0 | 0 | 0 | |
| FPC 4 | 0 | 0 | 0 | 0 | |
| FPC 5 | 0 | 0 | 0 | 0 | |
| FPC 6 | 0 | 0 | 0 | 0 | |
| FPC 7 | 0 | 0 | 0 | 0 | |
| SCG/CB/SIB | 0 | 0 | 0 | 0 | |

**show chassis
environment pem scc
(TX Matrix Routing
Matrix)**

```
user@host> show chassis environment pem scc
scc-re0:
```

| | | | | | |
|---------------|-----------------------------|---------|-------|------|--|
| ----- | | | | | |
| PEM 1 status: | | | | | |
| State | Online | | | | |
| Temperature | 24 degrees C / 75 degrees F | | | | |
| DC input: | OK | | | | |
| DC output: | Voltage | Current | Power | Load | |
| SIB 0 | 0 | 0 | 0 | 0 | |
| SIB 1 | 0 | 0 | 0 | 0 | |
| SIB 2 | 0 | 0 | 0 | 0 | |
| SIB 3 | 56550 | 0 | 0 | 0 | |
| SIB 4 | 55958 | 6912 | 386 | 51 | |

**show chassis
environment pem sfc
(TX Matrix Plus Routing
Matrix)**

```
user@host> show chassis environment pem sfc 0
sfc0-re0:
```

| | | | | | |
|---------------|-----------------------------|---------|-------|------|--|
| ----- | | | | | |
| PEM 0 status: | | | | | |
| State | Online | | | | |
| Temperature | 35 degrees C / 95 degrees F | | | | |
| DC Input: | OK | | | | |
| DC Output | Voltage | Current | Power | Load | |

| | | | | |
|-----------|-------|-------|-----|----|
| Channel 0 | 53820 | 14140 | 761 | 59 |
| Channel 1 | 53550 | 12720 | 681 | 53 |
| Channel 2 | 53840 | 12930 | 696 | 54 |
| Channel 3 | 53690 | 14990 | 804 | 63 |
| Channel 4 | 53620 | 15070 | 808 | 63 |
| Channel 5 | 53900 | 14820 | 798 | 62 |
| Channel 6 | 54120 | 5020 | 271 | 21 |

```

show chassis environment pem lcc
(TX Matrix Plus Routing Matrix)

```

```

user@host> show chassis environment lcc 0

```

```

lcc0-re1:

```

```

-----
PEM 0 status:

```

```

State                Online
Temperature           38 degrees C / 100 degrees F
DC Input:             OK
DC Output             Voltage    Current    Power    Load
FPC 0                 0        0        0        0
FPC 1                 0        0        0        0
FPC 2                 0        0        0        0
FPC 3                 0        0        0        0
FPC 4                 56408    7575    427     56
FPC 5                 0        0        0        0
FPC 6                 56266    7956    447     59
FPC 7                 56283    6100    343     45
SCG/CB/SIB            55916    8950    500     41

```

```

PEM 1 status:

```

```

State                Present
Temperature           35 degrees C / 95 degrees F
DC Input:             Check
DC Output             Voltage    Current    Power    Load
FPC 0                 0        0        0        0
FPC 1                 0        0        0        0
FPC 2                 0        0        0        0
FPC 3                 0        0        0        0
FPC 4                 0        0        0        0
FPC 5                 0        0        0        0
FPC 6                 0        0        0        0
FPC 7                 0        0        0        0
SCG/CB/SIB            0        0        0        0

```

show chassis environment routing-engine

| | |
|--|--|
| Syntax | show chassis environment routing-engine <slot> |
| Syntax (TX Matrix Routers) | show chassis environment routing-engine <lcc <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 (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 | <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>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 the QFX Series.</p> <p>Command introduced in Junos OS Release 12.1 for the PTX Series Packet Transport Switches.</p> <p>Command introduced in Junos OS Release 12.1 for the T4000 Core Routers.</p> |
| Description | Display Routing Engine environmental status information. |
| Options | <p>none—Display environmental information about all Routing Engines. For a TX Matrix router, display environmental information about all Routing Engines on the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display environmental information about all Routing Engines on the TX Matrix Plus router and its attached T1600 routers.</p> <p>all-members—(MX Series routers only) (Optional) Display environmental information about the Routing Engines in all member routers in the Virtual Chassis configuration.</p> <p>interconnect-device <i>name</i>—(QFabric switches only) (Optional) Display environmental information about the Routing Engines for the Interconnect device.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix routers only) (Optional) On a TX Matrix router, display environmental information about the Routing Engine in a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the Routing Engine in a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> |

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 (or switch-card chassis).

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

slot—(Optional) Display environmental information about an individual Routing Engine. On M10i, M20, M40e, M120, M160, M320, MX Series, and T Series routers, replace **slot** with 0 or 1. On M5, M7i, M10, and M40 routers and on the J Series router, replace **slot** with 0. On EX3200 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 Switches, replace **slot** with 0 or 1.

Required Privilege Level view

List of Sample Output

[show chassis environment routing-engine \(Nonredundant\) on page 361](#)
[show chassis environment routing-engine \(Redundant\) on page 361](#)
[show chassis environment routing-engine \(TX Matrix Plus Router\) on page 361](#)
[show chassis environment routing-engine \(T4000 Core Router\) on page 361](#)
[show chassis environment routing-engine \(QFX Series\) on page 361](#)
[show chassis environment routing-engine interconnect-device \(QFabric Switch\) on page 362](#)
[show chassis environment routing-engine \(PTX5000 Packet Transport Switch\) on page 362](#)

Output Fields [Table 33 on page 360](#) 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 33: 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. |

Table 33: show chassis environment routing-engine Output Fields (continued)

| Field Name | Field Description |
|-----------------|--|
| 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 (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
user@switch> show chassis environment routing-engine
Routing Engine 0 status:
  State                Online Master
  Temperature           42 degrees C / 107 degrees F

```

**routing-engine (QFX
Series)**

```
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
routing-engine
(PTX5000 Packet Transport Switch)
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 scg

| | |
|---|---|
| Syntax | show chassis environment scg <slot> |
| Syntax (TX Matrix and TX Matrix Plus Router) | show chassis environment scg <fcc number> <slot> |
| Release Information | Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 12.1 for the T4000 Core Routers. |
| Description | Display SONET Clock Generator (SCG) environmental information. |
| Options | <p>none—(TX Matrix and TX Matrix Plus routers only) Display environmental information about all SCGs. On a TX Matrix router, display environmental information about all SCGs on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display environmental information about all SCGs on the TX Matrix Plus router and its attached T1600 routers.</p> <p>fcc number—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the SCG in a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the SCG in a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>slot—(Optional) Display environmental information about the SCG. Replace <i>slot</i> with 0 or 1.</p> |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none"> • request chassis scg on page 228 • Configuring the Clock Source • T320 SONET Clock Generator (SCG) Description |
| List of Sample Output | show chassis environment scg (T Series Routers) on page 364 show chassis environment scg (T4000 Core Routers) on page 364 show chassis environment scg fcc (TX Matrix Router) on page 365 show chassis environment scg fcc (TX Matrix Plus Router) on page 365 show chassis environment scg (TX Matrix Plus Router) on page 365 |
| Output Fields | Table 34 on page 364 lists the output fields for the show chassis environment scg command. Output fields are listed in the approximate order in which they appear. |

Table 34: show chassis environment scg Output Fields

| Field Name | Field Description |
|-----------------|--|
| SCG slot status | Number of the SCG slot: 0 or 1. |
| State | Status of the SCG: <ul style="list-style-type: none"> • Online—SCG is online and running. • Offline—SCG is powered down. If two SCGs are installed and online, one is functioning as the master, and the other is the standby. |
| Temperature | Temperature of the air flowing past the SCG. |
| Power | Power on the SCG. The left column displays required power, in volts. The right column displays measured power, in millivolts. |
| BUS Revision | Revision level of the generic bus device. |

Sample Output

show chassis
environment scg (T
Series Routers)

```

user@host> show chassis environment scg
SCG 0 status:
  State                Online - Master clock
  Temperature          29 degrees C / 84 degrees F
  Power:
    GROUND              0 mV
    3.3 V               3297 mV
    5.0 V               5050 mV
    5.6 V               5682 mV
    1.8 V bias          1787 mV
    3.3 V bias          3277 mV
    5.0 V bias          4984 mV
    8.0 V bias          8400 mV
  BUS Revision         40
SCG 1 status:
  State                Online - Standby
  Temperature          28 degrees C / 82 degrees F
  Power:
    GROUND              0 mV
    3.3 V               3317 mV
    5.0 V               5057 mV
    5.6 V               5689 mV
    1.8 V bias          1794 mV
    3.3 V bias          3296 mV
    5.0 V bias          4991 mV
    8.0 V bias          8410 mV
  BUS Revision         40

```

show chassis
environment scg
(T4000 Core Routers)

```

user@host> show chassis environment scg
SCG 0 status:
  State                Online - Master clock
  Temperature          33 degrees C / 91 degrees F
  Power
    GROUND              0 mV

```

```

1.8 V bias      1794 mV
3.3 V           3310 mV
3.3 V bias     3299 mV
5.0 V          5040 mV
5.0 V bias     5003 mV
5.6 V          5780 mV
8.0 V bias     7416 mV
Bus Revision    40
SCG 1 status:
State           Online - Standby
Temperature      33 degrees C / 91 degrees F
Power
GROUND          0 mV
1.8 V bias      1794 mV
3.3 V           3319 mV
3.3 V bias     3286 mV
5.0 V          5047 mV
5.0 V bias     5013 mV
5.6 V          5758 mV
8.0 V bias     7347 mV
Bus Revision    40

```

show chassis environment scg lcc
(TX Matrix Router)

```

user@host> show chassis environment scg lcc 0 0
lcc0-re0:
-----
SCG 0 status:
State           Online - Master clock
Temperature      30 degrees C / 86 degrees F
Power:
GROUND          0 mV
3.3 V           3321 mV
5.0 V           5062 mV
5.6 V           5682 mV
1.8 V bias      1789 mV
3.3 V bias      3289 mV
5.0 V bias      4993 mV
8.0 V bias      7807 mV
BUS Revision    40

```

show chassis environment scg lcc
(TX Matrix Plus Router)

```

user@host> show chassis environment scg lcc 0
lcc0-re0:
-----
SCG 0 status:
State           Online - Master clock
Temperature      42 degrees C / 107 degrees F
Power
GROUND          0 mV
1.8 V bias      1800 mV
3.3 V           3290 mV
3.3 V bias      3304 mV
5.0 V           5042 mV
5.0 V bias      4979 mV
5.6 V           5765 mV
8.0 V bias      7682 mV
Bus Revision    40

```

show chassis environment scg
lcc0-re0:

```

(TX Matrix Plus Router) SCG 0 status:
State Online - Master clock
Temperature 40 degrees C / 104 degrees F
Power
  GROUND 0 mV
  1.8 V bias 1800 mV
  3.3 V 3291 mV
  3.3 V bias 3304 mV
  5.0 V 5042 mV
  5.0 V bias 4979 mV
  5.6 V 5765 mV
  8.0 V bias 7643 mV
Bus Revision 40

```

```
lcc1-re0:
```

```

-----
SCG 0 status:
State Online - Master clock
Temperature 37 degrees C / 98 degrees F
Power
  GROUND 0 mV
  1.8 V bias 1788 mV
  3.3 V 3305 mV
  3.3 V bias 3284 mV
  5.0 V 5042 mV
  5.0 V bias 5010 mV
  5.6 V 5748 mV
  8.0 V bias 7692 mV
Bus Revision 40

```

```
lcc2-re0:
```

```

-----
SCG 0 status:
State Online - Master clock
Temperature 39 degrees C / 102 degrees F
Power
  GROUND 0 mV
  1.8 V bias 1785 mV
  3.3 V 3306 mV
  3.3 V bias 3301 mV
  5.0 V 5045 mV
  5.0 V bias 4993 mV
  5.6 V 5765 mV
  8.0 V bias 7838 mV
Bus Revision 40

```

```
lcc3-re0:
```

```

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

```


show chassis environment sfm

| | |
|---------------------------------|--|
| Syntax | <code>show chassis environment sfm</code> <code><slot></code> |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (M40e and M160 routers only) Display Switching and Forwarding Module (SFM) environmental information. |
| Options | <p>none—Display environmental information about all SFMs.</p> <p>slot—(Optional) Display environmental information about an individual SFM. Replace slot with a value from 0 through 3.</p> |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none"> • request chassis sfm on page 230 • request chassis sfm master switch on page 229 • Configuring SFM Redundancy on M40e and M160 Routers • Switching the Global Master and Backup Roles in a Virtual Chassis Configuration |
| List of Sample Output | <p>show chassis environment sfm (M40e Router) on page 370</p> <p>show chassis environment sfm (M160 Router) on page 370</p> |
| Output Fields | Table 35 on page 368 lists the output fields for the show chassis environment sfm command. Output fields are listed in the approximate order in which they appear. |

Table 35: show chassis environment sfm Output Fields

| Field Name | Field Description |
|------------------------|---|
| SFM slot status | SFM slot number: 0 or 1 on an M40e router, or 0 , 1 , 2 , or 3 on an M160 router. |
| State | <p>Status of the SFM:</p> <ul style="list-style-type: none"> • Online—SFM is online and running. • Offline—SFM is powered down. <p>If two SFMs are installed and online, one is functioning as the master, and the other is marked as the Standby.</p> |
| SPP Temperature | Temperature of the air flowing past the Switch Plane Processor card. |
| SPR Temperature | Temperature of the air flowing past the Switch Plane Router card. |
| SPP Power | Information about the voltage supplied to the Switch Plane Processor card. The left column displays the required power, in volts. The right column displays the measured power, in millivolts. |

Table 35: show chassis environment sfm Output Fields (*continued*)

| Field Name | Field Description |
|---------------------|--|
| SPR Power | Information about the voltage supplied to the Switch Plane Router. The left column displays the required power, in volts. The right column displays the measured power, in millivolts. |
| CMB Revision | Revision level of the Chassis Management Bus (CMB) device. |

Sample Output

```
show chassis environment sfm user@host> show chassis environment sfm
(M40e Router)                SFM 0 status:
                               State                Online
                               SPP temperature       40 degrees C / 104 degrees F
                               SPR temperature       44 degrees C / 111 degrees F
                               SPP Power:
                               1.5 V                1501 mV
                               2.5 V                2472 mV
                               3.3 V                3293 mV
                               5.0 V                5028 mV
                               5.0 V bias           4964 mV
                               SPR Power:
                               1.5 V                1501 mV
                               2.5 V                2483 mV
                               3.3 V                3308 mV
                               5.0 V                5035 mV
                               5.0 V bias           4981 mV
                               8.0 V bias           8239 mV
                               CMB Revision          12
                               SFM 1 status:
                               State                Online - Standby
                               SPP temperature       43 degrees C / 109 degrees F
                               SPR temperature       45 degrees C / 113 degrees F
                               SPP Power:
                               1.5 V                1503 mV
                               2.5 V                2483 mV
                               3.3 V                3284 mV
                               5.0 V                5045 mV
                               5.0 V bias           4993 mV
                               SPR Power:
                               1.5 V                1498 mV
                               2.5 V                2472 mV
                               3.3 V                3284 mV
                               5.0 V                5035 mV
                               5.0 V bias           4991 mV
                               8.0 V bias           8231 mV
                               CMB Revision          12
```

```
show chassis environment sfm user@host> show chassis environment sfm
(M160 Router)                SFM 0 status:
                               State                Online
                               SPP temperature       43 degrees C / 109 degrees F
                               SPR temperature       44 degrees C / 111 degrees F
                               SPP Power:
                               1.5 V                1504 mV
                               2.5 V                2474 mV
                               3.3 V                3290 mV
                               5.0 V                5015 mV
                               5.0 V bias           4962 mV
                               SPR Power:
                               1.5 V                1498 mV
                               2.5 V                2482 mV
                               3.3 V                3299 mV
                               5.0 V                5020 mV
                               5.0 V bias           4971 mV
                               8.0 V bias           8229 mV
                               CMB Revision          12
                               SFM 1 status:
```


| State | Online |
|-----------------|------------------------------|
| SPP temperature | 47 degrees C / 116 degrees F |
| SPR temperature | 50 degrees C / 122 degrees F |
| SPP Power: | |
| 1.5 V | 1499 mV |
| 2.5 V | 2466 mV |
| 3.3 V | 3274 mV |
| 5.0 V | 5025 mV |
| 5.0 V bias | 4984 mV |
| SPR Power: | |
| 1.5 V | 1496 mV |
| 2.5 V | 2470 mV |
| 3.3 V | 3279 mV |
| 5.0 V | 5020 mV |
| 5.0 V bias | 4993 mV |
| 8.0 V bias | 8222 mV |
| CMB Revision | 12 |
| SFM 2 status: | |
| State | Online |
| SPP temperature | 50 degrees C / 122 degrees F |
| SPR temperature | 52 degrees C / 125 degrees F |
| SPP Power: | |
| 1.5 V | 1504 mV |
| 2.5 V | 2471 mV |
| 3.3 V | 3294 mV |
| 5.0 V | 5045 mV |
| 5.0 V bias | 4981 mV |
| SPR Power: | |
| 1.5 V | 1496 mV |
| 2.5 V | 2470 mV |
| 3.3 V | 3293 mV |
| 5.0 V | 5028 mV |
| 5.0 V bias | 4971 mV |
| 8.0 V bias | 8214 mV |
| CMB Revision | 12 |
| SFM 3 status: | |
| State | Online |
| SPP temperature | 49 degrees C / 120 degrees F |
| SPR temperature | 48 degrees C / 118 degrees F |
| SPP Power: | |
| 1.5 V | 1505 mV |
| 2.5 V | 2484 mV |
| 3.3 V | 3296 mV |
| 5.0 V | 5040 mV |
| 5.0 V bias | 4984 mV |
| SPR Power: | |
| 1.5 V | 1503 mV |
| 2.5 V | 2488 mV |
| 3.3 V | 3302 mV |
| 5.0 V | 5037 mV |
| 5.0 V bias | 4993 mV |
| 8.0 V bias | 8249 mV |
| CMB Revision | 12 |

show chassis environment sib

| | |
|---------------------------------------|--|
| Syntax | show chassis environment sib <slot> |
| Syntax (TX Matrix Router) | show chassis environment sib <lcc number scc> <slot> |
| Syntax (TX Matrix Plus Router) | show chassis environment sib <lcc number sfc number> <slot> <f13 sib-slot> <f2s sib-slot/sib-f2s-slot-number> |
| Release Information | Command introduced before Junos OS Release 7.4. sfc option introduced in Junos OS Release 9.6. for the TX Matrix Plus router. Command introduced in Junos OS 12.1 for the PTX Series Packet Transport Switches. Command introduced in Junos OS 12.1 for the T4000 Core Routers. |
| Description | (M320, T Series, TX Matrix, and TX Matrix Plus routers, and PTX Packet Transport Switches only) Display Switch Interface Boards (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 T1600 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.</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 and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display environmental information about the SIB in a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display environmental information about the SIB in a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace number with a value from 0 through 4.</p> <p>scc—(TX Matrix routers only) (Optional) Display environmental information about the SIB in the TX Matrix router (or switch-card chassis).</p> <p>sfc—(TX Matrix Plus routers only) (Optional) Display environmental information about the SIB in the TX Matrix Plus router (or switch-fabric chassis).</p> <p>slot—(Optional) Display environmental information about the specified SIB. For the M320 router, replace slot with a value from 0 through 3. For the T640, T1600, T4000, and</p> |

TX Matrix routers, replace **slot** with a value from **0** through **4**. For the TX Matrix Plus router, replace **slot** with a value from **0** through **15**. For the T320 router, replace **slot** with a value from **0** through **2**. For the PTX5000 Packet Transport Switch, replace **slot** with a value from **0** through **8**.

Required Privilege Level view

- Related Documentation**
- [request chassis sib on page 231](#)
 - [show chassis sibs on page 654](#)
 - [Configuring the Junos OS to Upgrade and Downgrade Switch Interface Boards on a TX Matrix Router on page 38](#)
 - [M320 SIB Description](#)

List of Sample Output

[show chassis environment sib \(M320 Router\) on page 374](#)
[show chassis environment sib 1 \(T640 Router\) on page 375](#)
[show chassis environment sib 1 \(T4000 Router\) on page 375](#)
[show chassis environment sib scc \(TX Matrix Router\) on page 376](#)
[show chassis environment sib \(TX Matrix Plus Router\) on page 376](#)
[show chassis environment sib sfc \(TX Matrix Plus Router\) on page 386](#)
[show chassis environment sib f13 \(TX Matrix Plus Router\) on page 391](#)
[show chassis environment sib f2s \(TX Matrix Plus Router\) on page 392](#)
[show chassis environment sib \(PTX5000 Packet Transport Switch\) on page 392](#)

Output Fields [Table 36 on page 373](#) lists the output fields for the **show chassis environment sib** command. Output fields are listed in the approximate order in which they appear.

Table 36: show chassis environment sib Output Fields

| Field Name | Field Description |
|-----------------|---|
| SIB slot status | <p>SIB slot number:</p> <ul style="list-style-type: none"> • 0 through 3 on an M320 router. • 0 or 2 on a T320 router. • 0 through 4 on a T640, or T1600, T4000, or TX Matrix router. • 0 through 15 on a TX Matrix Plus router (Slots 2, 5, 10, 13, 14, and 15 are unused). • 0, 1, 3, 4, 6, 7, 8, 9, 11, or 12 for F13 SIBs on a TX Matrix Plus router. • 0 through 4, followed by 0, 2, 4, or 6 for an F2S SIB on a TX Matrix Plus router. For example, SIB F2S 0/4. • 0 through 8 on a PTX5000 Packet Transport Switch. |

Table 36: show chassis environment sib Output Fields (*continued*)

| Field Name | Field Description |
|--------------------|---|
| 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 Switches, 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

```

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 user@host> show chassis environment sib 1
environment sib 1
(T640 Router) 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 user@host> show chassis environment sib 1
environment sib 1
(T4000 Router) 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 |

**show chassis
environment sib sfc
(TX Matrix Plus
Router)**

```

          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
...

```

```

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
(PTX5000 Packet
Transport Switch)**

```
user@host> show chassis environment sib
SIB 0 status:
State                               Online
Intake Temperature                  39 degrees C / 102 degrees F
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
Intake Temperature                  39 degrees C / 102 degrees F
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
Intake Temperature                  37 degrees C / 98 degrees F
```

| | |
|----------------------|------------------------------|
| 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 |
| Intake Temperature | 40 degrees C / 104 degrees F |
| 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 |
| Intake Temperature | 47 degrees C / 116 degrees F |
| 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 |
| Intake Temperature | 57 degrees C / 134 degrees F |
| 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 |
| Intake Temperature | 57 degrees C / 134 degrees F |
| 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 |
| Intake Temperature | 58 degrees C / 136 degrees F |
| 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 |
| Intake Temperature | 57 degrees C / 134 degrees F |
| 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 (PTX Series Packet Transport Switches) | 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 12.1 for the PTX Series Packet Transport Switches. |
| Description | (M10i, M40e, M120, M160, M320, MX Series, and T Series routers and EX8200 and PTX Series switches only) Display information about the ports on the Control Board (CB) Ethernet switch. |
| Options | <p>none—Display information about each connected port on the Ethernet switch. On a TX Matrix router, display information about each connected port on the Ethernet switch on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display information about each connected port on the Ethernet switch on the TX Matrix Plus router and its attached T1600 routers.</p> <p>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.</p> |

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 Switches, replace ***port*** with a value from 0 through 25. On the T4000 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 and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display information about the ports on the CB's Ethernet switch on a specified T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display information about the ports on the CB's Ethernet switch on a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace ***number*** with a value from 0 through 3.

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.

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 (or switch-card chassis).

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

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

statistics *port*—(Optional) Display traffic statistics for the specified port on the Ethernet switch. On the TX Matrix router, replace ***port*** with a value from 0 through 25. On the TX Matrix Plus router or EX8200 switch, replace ***port*** with a value from 0 through 27. On the PTX Series Packet Transport Switches, replace ***port*** with a value from 0 through 25. On the T4000 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 399](#)
- [show chassis ethernet-switch \(TX Matrix Router\) on page 400](#)
- [show chassis ethernet-switch errors on page 401](#)
- [show chassis ethernet-switch statistics on page 402](#)
- [show chassis ethernet-switch errors \(TX Matrix Plus Router\) on page 403](#)
- [show chassis ethernet-switch sfc errors \(TX Matrix Plus Router\) on page 403](#)
- [show chassis ethernet-switch statistics \(TX Matrix Plus Router\) on page 404](#)
- [show chassis ethernet-switch \(T4000 Router\) on page 409](#)
- [show chassis ethernet-switch errors \(T4000 Router\) on page 409](#)
- [show chassis ethernet-switch \(PTX5000 Packet Transport Switch\) on page 410](#)
- [show chassis ethernet-switch statistics \(PTX5000 Packet Transport Switch\) on page 411](#)
- [show chassis ethernet-switch port-state \(PTX5000 Packet Transport Switch\) on page 414](#)

Output Fields [Table 37 on page 397](#) lists the output fields for the **show chassis ethernet-switch** command. Output fields are listed in the approximate order in which they appear.

Table 37: show chassis ethernet-switch Output Fields

| Field Name | Field Description |
|---|--|
| <p>Link is good on port n connected to device</p> <p>or</p> <p>Link is good on Fast Ethernet port n connected to device</p> | <p>Information about the link between each port on the CB's Ethernet switch and one of the following devices:</p> <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 |
| 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 . |
| 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) | (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) | (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. |

Table 37: show chassis ethernet-switch Output Fields (*continued*)

| Field Name | Field Description |
|--|---|
| Accumulated error counts for port n connected to device FPCn: (error output only) | |
| Lock | Number of lock errors detected. |
| Xmit | Number of transmission errors detected. |
| ESD | Number of electrostatic discharge (ESD) errors detected. |
| False Carrier | Number of false carrier errors detected. |
| Disconnects | Number of disconnect errors detected. |
| FX mode | Number of errors detected on an Ethernet link over optical fiber. |
| Statistics for port n connected to device FPCn (statistics output only) | |
| TX 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 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 Octets | Number of octets received. |

Table 37: show chassis ethernet-switch Output Fields (*continued*)

| Field Name | Field Description |
|--------------------------|---|
| 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 (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
```

```
1cc2-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 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            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 user@host> show chassis ethernet-switch
(T4000 Router)               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 user@host> show chassis ethernet-switch errors
(T4000 Router)               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 Switch)**

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
 Switch)**

```
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
port-state (PTX5000 Packet Transport Switch)
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 fan

| | |
|----------------------------------|---|
| Syntax | show chassis fan |
| Syntax (MX Series Router) | show chassis fan <all-members> <local> <member <i>member-id</i> > |
| Syntax (QFabric Switches) | show chassis fan <interconnect-device <i>name</i> > |
| Release Information | Command introduced in Junos OS Release 10.0 on MX Series 3D Universal Edge Routers, M120 routers, and M320 routers. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 11.4 for EX Series switches. Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches. Command introduced in Junos OS Release 12.1 for T4000 routers. |
| Description | (T Series routers, M120 routers, M320 routers, MX Series 3D Universal Edge Routers, QFX3108 Interconnect devices, EX Series switches, and PTX Series Packet Transport Switches only) Show information about the fan tray and fans. |
| 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> <p>member <i>member-id</i>—(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 <i>member-id</i> with a value of 0 or 1.</p> |
| Required Privilege Level | view |
| List of Sample Output | show chassis fan on page 416 show chassis fan (QFabric Switches) on page 416 show chassis fan (EX Series Switches) on page 417 show chassis fan (T4000 Core Router) on page 417 show chassis fan (PTX5000 Packet Transport Switch) on page 417 |
| Output Fields | Table 38 on page 415 lists the output fields for the show chassis fan command. Output fields are listed in the approximate order in which they appear. |

Table 38: show chassis fan Output Fields

| Field Name | Field Description |
|------------|----------------------|
| Item | Fan item identifier. |

Table 38: show chassis fan Output Fields (*continued*)

| Field Name | Field Description |
|-------------|--|
| Status | <p>Status of the fan:</p> <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, MX Series 3D Universal Edge Routers, QFX3108 Interconnect devices, and EX Series switches only) Fan speed in revolutions per minute (RPM). |
| % RPM | (PTX Series Packet Transport Switches only) Percentage of the fan speed being used. |
| Measurement | <p>(T Series routers, MX Series 3D Universal Edge Routers, QFX3108 Interconnect devices, and EX Series switches only) Fan speed status based on different chassis cooling requirements:</p> <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) <p>(PTX Series Packet Transport Switches only) Fan speed in revolutions per minute (RPM) for each fan in the fan tray.</p> |

Sample Output

```

show chassis fan user@host> 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 user@host> show chassis fan interconnect-device interconnect1
(QFabric Switches) user@host> show chassis fan interconnect1
    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 (EX Series Switches)

```
user@host> show chassis fan
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 (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 (PTX5000 Packet Transport Switch)

```
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 fabric feb

| | |
|---------------------------------|---|
| Syntax | show chassis fabric feb |
| Release Information | Command introduced in Junos OS Release 8.0. |
| Description | (M120 router only) Display the state of the electrical and optical switching fabric links between the Forwarding Engine Boards (FEBs) and the fabric planes, as interpreted by the FEB. |
| Options | This command has no options. |
| Required Privilege Level | view |
| List of Sample Output | show chassis fabric feb on page 419 |
| Output Fields | Table 39 on page 419 lists the output fields for the show chassis fabric feb command. |

Table 39: show chassis fabric feb Output Fields

| Field Name | Field Description |
|------------------------------------|---|
| Fabric management FEB state | State of the switching fabric link between each FEB and fabric plane: desalination error, disabled, enabled, link error, link ok, or unused. |

Sample Output

```

user@host> show chassis fabric feb
Fabric management      FEB state
FEB 0                  Plane 0: Plane enabled
                       Plane 1: Plane enabled
                       Plane 2: Plane enabled
                       Plane 3: Plane enabled

FEB 4                  Plane 0: Plane enabled
                       Plane 1: Plane enabled
                       Plane 2: Plane enabled
                       Plane 3: Plane enabled

```

show chassis fabric errors

| | |
|--|--|
| Syntax | show chassis fabric errors <fpc <i>slot-number</i> lcc <i>number</i> > <sib (<i>slot</i> f13 <i>sib-slot</i> f2s <i>sib-slot/sib-f2s-slot-number</i> lcc <i>number</i>)> |
| Syntax (PTX Series Packet Transport Switches) | show chassis fabric errors <sib <i>sib-slot</i> > |
| Release Information | Command introduced in Junos OS Release 10.0. Command introduced in Junos OS Release 12.1 for the PTX Series Packet Transport Switches. |
| Description | (TX Matrix Plus routers and PTX Series Packet Transport Switches) Display the first ten and last ten fabric errors for the FPC or Switch Interface Boards (SIBs). |



NOTE: This command can only be issued on a master Routing Engine.

Options **fpc *slot-number***—Show error log of the first ten and last ten errors for the specified FPC. (PTX5000 Packet Transport Switches only)—Replace ***slot-number*** with a value from 0 through 7.

(TX Matrix Plus routers only)—Replace ***slot-number*** with a value from 0 through 31. This option has the following suboptions:

- **lcc *number***—Show error log of the first ten and last ten errors for the specified FPC on a specific network device (or line-card chassis) that is part of the routing matrix. Replace ***number*** with a value from 0 through 3.

If you specify the number of the 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)***sib-slot***—Replace ***sib-slot*** with a value ranging from 0 through 4.

(PTX Series Packet Transport Switches)—Replace ***sib-slot*** with a value ranging from 0 through 8.

- **f13 *sib-slot***—(Optional) Show SIB F13 errors. Replace ***sib-slot*** with a valid SIB value number: 0, 1, 3, 4, 6, 7, 8, 9, 11, or 12.

- **f2s sib-slot/sib-f2s-slot-number**—(Optional) Show SIB F2S errors. Replace **sib-slot** with a value from 0 through 4, followed by a **sib-f2s-slot-number** value 0, 2, 4 or 6.
- **lcc number**—(Optional) Show error log of the first ten and last ten SIB errors for the specified network device (or line-card chassis). Replace **number** with a value from 0 through 3.



NOTE: The **lcc number** suboption is mandatory when using the following format for the command: **show chassis fabric errors sib lcc number sib slot-number**. For instance, issuing **show chassis fabric errors sib lcc 2 3** displays errors detected on LCC 2, SIB 3.

This suboption is not required when the **f13** or **f2s** suboptions are used with the **sib slot-number** option.

Required Privilege Level view

List of Sample Output [show chassis fabric errors \(F13 SIB Errors on a TX Matrix Plus Router\) on page 422](#)
[show chassis fabric errors \(F2S SIB Errors on a TX Matrix Plus Router\) on page 422](#)
[show chassis fabric errors \(SIB Errors Specific to an LCC Connected to a TX Matrix Plus Router\) on page 422](#)
[show chassis fabric errors \(FPC Errors Specific to an LCC Connected to a TX Matrix Plus Router\) on page 422](#)
[show chassis fabric errors \(PTX Series Packet Transport Switches\) on page 422](#)

Output Fields [Table 40 on page 421](#) lists the output fields for the **show chassis fabric errors** command. Output fields are listed in the approximate order in which they appear.

Table 40: show chassis fabric errors Output Fields

| Field Name | Field Description |
|------------------------------|---|
| Time | Time the error was logged. |
| Error log of first 10 errors | List of the first ten errors. |
| Error log of last 10 errors | List of the last ten errors. |
| fpc slot number | (PTX5000 Packet Transport Switch only)—Range is 0 through 7. |
| sib slot number | (PTX Series Packet Transport Switches only)—Range is 0 through 8. |
| lcc number | Not supported on PTX Series Packet Transport Switches. |

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 (PTX Series Packet Transport Switches) 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 fpcs

| | |
|--|---|
| Syntax | show chassis fabric fpcs <fcc <i>number</i> > |
| Syntax (MX Series Router) | show chassis fabric fpcs <all-members> <local> <member <i>member-id</i> > |
| Syntax (T4000 Core Router) | show chassis fabric fpcs |
| Syntax (PTX Series Packet Transport Switches) | show chassis fabric fpcs <slot <i>fpc-slot</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 12.1 for PTX Series Packet Transport Switches. |
| Description | (M320, MX Series, and T Series routers, EX8200 switches, and PTX Series Packet Transport Switches only) Display the state of the electrical switch fabric links between the Flexible PIC Concentrators (FPCs) and the Switch Interface Boards (SIBs). |
| Options | <p>none—Display the switch fabric link state. On a TX Matrix router, display the switching fabric link states for the FPCs in all T640 routers connected to the TX Matrix router. On a TX Matrix Plus router, display the switching fabric link states for the FPCs in all T1600 routers connected to the TX Matrix Plus router.</p> <p>all-members—(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in all members of the Virtual Chassis configuration.</p> <p>fcc <i>number</i>—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display the switch fabric link state for the FPCs in the specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display the switch fabric link state for the FPCs in the specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(MX Series routers only) (Optional) Display the switching fabric link states for the FPCs in the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value of 0 or 1.</p> <p>slot <i>fpc-slot</i>—(PTX Series Packet Transport Switches only) (Optional) Display the fabric state of the specified FPC slot. If no value is provided, display the status of all FPCs.</p> |

| | |
|---------------------------------|--|
| Required Privilege Level | view |
| List of Sample Output | show chassis fabric fpcs (M320 Router) on page 425 show chassis fabric fpcs (MX240 Router) on page 426 show chassis fabric fpcs (MX480 Router) on page 426 show chassis fabric fpcs (MX960 Router) on page 427 show chassis fabric fpcs (T320 Router) on page 428 show chassis fabric fpcs (T640 Router) on page 429 show chassis fabric fpcs (TX Matrix Router) on page 429 show chassis fabric fpcs (TI600 Router) on page 430 show chassis fabric fpcs (T4000 Core Router) on page 432 show chassis fabric fpcs (TX Matrix Plus Router) on page 433 show chassis fabric fpcs lcc (TX Matrix Plus Router) on page 440 show chassis fabric fpcs (EX8200 Switch) on page 441 show chassis fabric fpcs (PTX Series Packet Transport Switches) on page 442 |
| Output Fields | Table 41 on page 425 lists the output fields for the show chassis fabric fpcs command. Output fields are listed in the approximate order in which they appear. |

Table 41: 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. • 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 Switches only)—The plane is disabled because of link errors detected at the FPC RX. • Plane Disabled, Links Down (PTX Series Packet Transport Switches 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 Switches only)—The FPC CCL 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 (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**
 lcc0-re0:

```

-----
Fabric management FPC state:
FPC #0
  PFE #1
    SIB #0
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
FPC #2
  PFE #1
    SIB #0
      Links ok
    SIB #2
      Links ok

```

```

SIB #3
    Links ok
SIB #4
    Links ok   FPC #3
PFE #1
SIB #2
    Plane enabled
SIB #3
    Link error
    Destination error on PFEs
      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 #4 Links ok
    PFE #1
        SIB #4 Links ok
FPC #5
    PFE #1
        SIB #4 Links ok
FPC #6
    PFE #1
        SIB #4 Links ok

```

```
lcc2-re0:
```

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

```

FPC #0
    PFE #1
        SIB #4 Links ok
FPC #1
    PFE #1
        SIB #4 Links ok
FPC #2
    PFE #0
        SIB #4 Links ok
    PFE #1
        SIB #4 Links ok
FPC #4
    PFE #0
        SIB #4 Links ok
    PFE #1
        SIB #4 Links ok
FPC #5
    PFE #1
        SIB #4 Links ok

```

**show chassis fabric
fpcs (T1600 Router)**

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

```
Fabric management FPC state:
```

```

FPC #0
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3

```

```

        Plane enabled
    SIB #4
        Plane enabled
PFE #1
    SIB #0
        Links ok
    SIB #1
        Plane enabled
    SIB #2
        Plane enabled
    SIB #3
        Plane enabled
    SIB #4
        Plane enabled
FPC #1
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3
            Plane enabled
        SIB #4
            Plane enabled
    PFE #1
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3
            Plane enabled
        SIB #4
            Plane enabled
FPC #2
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3
            Plane enabled
        SIB #4
            Plane enabled
FPC #4
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Plane enabled
        SIB #2
            Plane enabled
        SIB #3
            Plane enabled
        SIB #4
            Plane enabled
```

```

PFE #1
  SIB #0
    Links ok
  SIB #1
    Plane enabled
  SIB #2
    Plane enabled
  SIB #3
    Plane enabled
  SIB #4
    Plane enabled
FPC #3
  PFE #1
    SIB #2
      Plane enabled
    SIB #3
      Link error
      Destination error on PFES
      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 (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
1cc0-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
      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
      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

```

```

SIB #1 Links ok
SIB #2 Links ok
SIB #3 Links ok
SIB #3 Destination error on PFES 1 8 9 29 40 65 72 73
93 104
SIB #4 Links ok
FPC #6
PFE #0
SIB #0 Links ok
SIB #1 Links ok
SIB #2 Links ok
SIB #3 Links ok
SIB #4 Links ok
PFE #1
SIB #0 Links ok
SIB #1 Links ok
SIB #2 Links ok
SIB #3 Links ok
SIB #4 Links ok
FPC #7
PFE #0
SIB #0 Links ok
SIB #1 Links ok
SIB #2 Links ok
SIB #3 Links ok
SIB #4 Links ok

lcc2-re0:
-----
Fabric management FPC state:
FPC #0
PFE #0
SIB #0 Links ok
SIB #1 Links ok
SIB #2 Links ok
SIB #3 Links ok
SIB #4

```

```

Links ok
PFE #1
  SIB #0
    Links ok
  SIB #1
    Links ok
  SIB #2
    Links ok
  SIB #3
    Links ok
  SIB #4
    Links ok
FPC #2
  PFE #0
    SIB #0
      Links ok
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
  PFE #1
    SIB #0
      Links ok
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
FPC #4
  PFE #0
    SIB #0
      Links ok
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
FPC #5
  PFE #0
    SIB #0
      Links ok
    SIB #1
      Links ok
    SIB #2
      Links ok
    SIB #3
      Links ok
    SIB #4
      Links ok
  PFE #1
    SIB #0
```

```

        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #6
  PFE #0
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
  PFE #1
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #7
  PFE #0
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
```

lcc3-re0:

Fabric management FPC state:

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

```
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
FPC #2
PFE #0
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
PFE #1
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
FPC #4
PFE #0
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
PFE #1
SIB #0
Links ok
SIB #1
Links ok
SIB #2
Links ok
SIB #3
Links ok
SIB #4
Links ok
FPC #5
PFE #0
SIB #0
Links ok
SIB #1
```

```

        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
PFE #1
    SIB #0
        Links ok
    SIB #1
        Links ok
    SIB #2
        Links ok
    SIB #3
        Links ok
    SIB #4
        Links ok
FPC #6
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
    PFE #1
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
FPC #7
    PFE #0
        SIB #0
            Links ok
        SIB #1
            Links ok
        SIB #2
            Links ok
        SIB #3
            Links ok
        SIB #4
            Links ok
```

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

```
user@host> show chassis fabric fpcs lcc 0
lcc0-re1:
-----
Fabric management FPC state:
FPC #3
    PFE #1
        SIB #2
```

```

        Plane enabled
SIB #3
    Link error
    Destination error on PFes      0   1   2   3   4   5   6   7
        8   9  10  11  12  13  14  15  16  17  18  19  20  21
SIB #4
    Destination error on PFes      0   1   2   3   4   5   6   7
        8   9  10  11  12  13  14  15  16  17  18  19  20  21
FPC #4
    PFE #0
        SIB #0 Links ok
        SIB #1 Links ok
        SIB #2 Links ok
        SIB #3 Links ok
        SIB #4 Links ok
    PFE #1
        SIB #0 Links ok
        SIB #1 Links ok
        SIB #2 Links ok
        SIB #3 Links ok
        SIB #4 Links ok
FPC #6
    PFE #0
        SIB #0 Links ok
        SIB #1 Links ok
        SIB #2 Links ok
        SIB #3 Links ok
        SIB #4 Links ok
    PFE #1
        SIB #0 Links ok
        SIB #1 Links ok
        SIB #2 Links ok
        SIB #3 Links ok
        SIB #4 Links ok
FPC #7
    PFE #0
        SIB #0 Links ok
        SIB #1 Links ok
        SIB #2 Links ok
        SIB #3 Links ok
        SIB #4 Links ok

```

show chassis fabric 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
Switches)**

```

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 map

| | |
|----------------------------------|---|
| Syntax | show chassis fabric map plane <plane-number> |
| Syntax (MX Series Router) | show chassis fabric map <all-members> <local> <member member-id> <plane plane-number> |
| Release Information | Command introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 9.4 for EX Series switches. |
| Description | (M120 and MX Series routers and EX8200 switches only) On the M120 router, display the state of the switching fabric map for connections from the Forwarding Engine Boards (FEBs) to the ports on the fabric planes, as interpreted by the fabric plane. On the MX Series router and the EX8200 switch, display the state of the switching fabric map for connections from each Packet Forwarding Engine on the Dense Port Concentrators (DPCs) to the ports on the fabric planes, as interpreted by the fabric plane. For information about the meaning of “fabric plane”, “DPCs”, and “SIBs” on the switches, see EX Series Switches Hardware and CLI Terminology Mapping. |
| Options | <p>none—Display the switching fabric map state for the M120 or MX Series router or EX8200 switch.</p> <p>all-members—(MX Series routers only) (Optional) Display the switching fabric map state for all the members of the Virtual Chassis configuration.</p> <p>local—(MX Series routers only) (Optional) Display the switching fabric map state for the local Virtual Chassis member.</p> <p>member member-id—(MX Series routers only) (Optional) Display the switching fabric map state for the specified member of the Virtual Chassis configuration. Replace the <i>member-id</i> with a value of 0 or 1.</p> <p>plane plane-number—(Optional) Display the state of the fabric link for the specified plane number.</p> <ul style="list-style-type: none"> For the M120 router, replace <i>plane-number</i> with a value from 0 through 3. For the MX480 and MX240 routers, replace <i>plane-number</i> with a value from 0 through 7. For the MX960 router, replace <i>plane-number</i> with a value from 0 through 5. For the EX8208 switch, replace <i>plane-number</i> with a value from 0 through 11. For the EX8216 switch, replace <i>plane-number</i> with a value from 0 through 7. |
| Required Privilege Level | view |

List of Sample Output [show chassis fabric map \(M120 Router\) on page 444](#)
[show chassis fabric map \(MX Series Routers\) on page 444](#)
[show chassis fabric map plane 1 \(EX8200 Switch\) on page 448](#)

Output Fields Table 42 on page 444 lists the output fields for the **show chassis fabric map** command. Output fields are listed in the approximate order in which they appear.

Table 42: show chassis fabric map Output Fields

| Field Name | Field Description |
|------------------|--|
| in-links | Fabric map for receive side links. |
| out-links | Fabric map for transmit side links. |
| state | <p>State of the fabric link:</p> <ul style="list-style-type: none"> • RESET—Link between SIB and FPC/DPC is powered down on purpose. This is done in all non-dual PFE based boards. • UP—Link between SIB and FPC/DPC is up and running. • DOWN—Link between SIB and FPC/DPC is powered down. • FAULT—SIB is in alarmed state where the SIB's plane is not operational for the following reasons: <ul style="list-style-type: none"> • On-board F-chip is not operational. • Fiber optic connector faults. • FPC connector faults. • SIB midplane connector faults. |

Sample Output

show chassis fabric map (M120 Router)

```

user@host> show chassis fabric map
FEB0->CB0F0_00 up CB0F0_08->FEB7 Down

FEB1->CB0F0_01 Down CB0F0_09->FEB6 Down

FEB6->CB0F0_02 Down CB0F0_10->FEB1 Down

FEB2->CB0F0_03 Down CB0F0_11->FEB0 up

FEB3->CB0F0_04 Down CB0F0_12->FEB3 Down

FEB4->CB0F0_05 up CB0F0_13->FEB2 Down

FEB7->CB0F0_06 Down CB0F0_14->FEB5 Down

FEB5->CB0F0_07 Down CB0F0_15->FEB4 up:

```

show chassis fabric map (MX Series Routers)

```

user@host> show chassis fabric map
DPC4PFE0->CB0F0_00_0 up CB0F0_00_0->DPC4PFE0 up
DPC4PFE1->CB0F0_00_1 up CB0F0_00_1->DPC4PFE1 up
DPC4PFE2->CB0F0_00_2 up CB0F0_00_2->DPC4PFE2 up
DPC4PFE3->CB0F0_00_3 up CB0F0_00_3->DPC4PFE3 up
DPC7PFE0->CB0F0_01_0 Down CB0F0_01_0->DPC7PFE0 Down
DPC7PFE1->CB0F0_01_1 Down CB0F0_01_1->DPC7PFE1 Down
DPC7PFE2->CB0F0_01_2 Down CB0F0_01_2->DPC7PFE2 Down

```

| | | | |
|-----------------------|------|-----------------------|------|
| DPC7PFE3->CB0F0_01_3 | Down | CB0F0_01_3->DPC7PFE3 | Down |
| DPC3PFE0->CB0F0_03_0 | Down | CB0F0_03_0->DPC3PFE0 | Down |
| DPC3PFE1->CB0F0_03_1 | Down | CB0F0_03_1->DPC3PFE1 | Down |
| DPC3PFE2->CB0F0_03_2 | Down | CB0F0_03_2->DPC3PFE2 | Down |
| DPC3PFE3->CB0F0_03_3 | Down | CB0F0_03_3->DPC3PFE3 | Down |
| DPC8PFE0->CB0F0_05_0 | Down | CB0F0_05_0->DPC8PFE0 | Down |
| DPC8PFE1->CB0F0_05_1 | Down | CB0F0_05_1->DPC8PFE1 | Down |
| DPC8PFE2->CB0F0_05_2 | Down | CB0F0_05_2->DPC8PFE2 | Down |
| DPC8PFE3->CB0F0_05_3 | Down | CB0F0_05_3->DPC8PFE3 | Down |
| DPC1PFE0->CB0F0_06_0 | Down | CB0F0_06_0->DPC1PFE0 | Down |
| DPC1PFE1->CB0F0_06_1 | Down | CB0F0_06_1->DPC1PFE1 | Down |
| DPC1PFE2->CB0F0_06_2 | Down | CB0F0_06_2->DPC1PFE2 | Down |
| DPC1PFE3->CB0F0_06_3 | Down | CB0F0_06_3->DPC1PFE3 | Down |
| DPC10PFE0->CB0F0_07_0 | Down | CB0F0_07_0->DPC10PFE0 | Down |
| DPC10PFE1->CB0F0_07_1 | Down | CB0F0_07_1->DPC10PFE1 | Down |
| DPC10PFE2->CB0F0_07_2 | Down | CB0F0_07_2->DPC10PFE2 | Down |
| DPC10PFE3->CB0F0_07_3 | Down | CB0F0_07_3->DPC10PFE3 | Down |
| DPC11PFE0->CB0F0_08_0 | Down | CB0F0_08_0->DPC11PFE0 | Down |
| DPC11PFE1->CB0F0_08_1 | Down | CB0F0_08_1->DPC11PFE1 | Down |
| DPC11PFE2->CB0F0_08_2 | Down | CB0F0_08_2->DPC11PFE2 | Down |
| DPC11PFE3->CB0F0_08_3 | Down | CB0F0_08_3->DPC11PFE3 | Down |
| DPC0PFE0->CB0F0_09_0 | Down | CB0F0_09_0->DPC0PFE0 | Down |
| DPC0PFE1->CB0F0_09_1 | Down | CB0F0_09_1->DPC0PFE1 | Down |
| DPC0PFE2->CB0F0_09_2 | Down | CB0F0_09_2->DPC0PFE2 | Down |
| DPC0PFE3->CB0F0_09_3 | Down | CB0F0_09_3->DPC0PFE3 | Down |
| DPC9PFE0->CB0F0_11_0 | Down | CB0F0_11_0->DPC9PFE0 | Down |
| DPC9PFE1->CB0F0_11_1 | Down | CB0F0_11_1->DPC9PFE1 | Down |
| DPC9PFE2->CB0F0_11_2 | Down | CB0F0_11_2->DPC9PFE2 | Down |
| DPC9PFE3->CB0F0_11_3 | Down | CB0F0_11_3->DPC9PFE3 | Down |
| DPC2PFE0->CB0F0_13_0 | up | CB0F0_13_0->DPC2PFE0 | up |
| DPC2PFE1->CB0F0_13_1 | up | CB0F0_13_1->DPC2PFE1 | up |
| DPC2PFE2->CB0F0_13_2 | up | CB0F0_13_2->DPC2PFE2 | up |
| DPC2PFE3->CB0F0_13_3 | up | CB0F0_13_3->DPC2PFE3 | up |
| DPC6PFE0->CB0F0_14_0 | Down | CB0F0_14_0->DPC6PFE0 | Down |
| DPC6PFE1->CB0F0_14_1 | Down | CB0F0_14_1->DPC6PFE1 | Down |
| DPC6PFE2->CB0F0_14_2 | Down | CB0F0_14_2->DPC6PFE2 | Down |
| DPC6PFE3->CB0F0_14_3 | Down | CB0F0_14_3->DPC6PFE3 | Down |
| DPC5PFE0->CB0F0_15_0 | Down | CB0F0_15_0->DPC5PFE0 | Down |
| DPC5PFE1->CB0F0_15_1 | Down | CB0F0_15_1->DPC5PFE1 | Down |
| DPC5PFE2->CB0F0_15_2 | Down | CB0F0_15_2->DPC5PFE2 | Down |
| DPC5PFE3->CB0F0_15_3 | Down | CB0F0_15_3->DPC5PFE3 | Down |
| DPC4PFE0->CB0F1_00_0 | up | CB0F1_00_0->DPC4PFE0 | up |
| DPC4PFE1->CB0F1_00_1 | up | CB0F1_00_1->DPC4PFE1 | up |
| DPC4PFE2->CB0F1_00_2 | up | CB0F1_00_2->DPC4PFE2 | up |
| DPC4PFE3->CB0F1_00_3 | up | CB0F1_00_3->DPC4PFE3 | up |
| DPC7PFE0->CB0F1_01_0 | Down | CB0F1_01_0->DPC7PFE0 | Down |
| DPC7PFE1->CB0F1_01_1 | Down | CB0F1_01_1->DPC7PFE1 | Down |
| DPC7PFE2->CB0F1_01_2 | Down | CB0F1_01_2->DPC7PFE2 | Down |
| DPC7PFE3->CB0F1_01_3 | Down | CB0F1_01_3->DPC7PFE3 | Down |
| DPC3PFE0->CB0F1_03_0 | Down | CB0F1_03_0->DPC3PFE0 | Down |
| DPC3PFE1->CB0F1_03_1 | Down | CB0F1_03_1->DPC3PFE1 | Down |
| DPC3PFE2->CB0F1_03_2 | Down | CB0F1_03_2->DPC3PFE2 | Down |
| DPC3PFE3->CB0F1_03_3 | Down | CB0F1_03_3->DPC3PFE3 | Down |
| DPC8PFE0->CB0F1_05_0 | Down | CB0F1_05_0->DPC8PFE0 | Down |
| DPC8PFE1->CB0F1_05_1 | Down | CB0F1_05_1->DPC8PFE1 | Down |
| DPC8PFE2->CB0F1_05_2 | Down | CB0F1_05_2->DPC8PFE2 | Down |
| DPC8PFE3->CB0F1_05_3 | Down | CB0F1_05_3->DPC8PFE3 | Down |
| DPC1PFE0->CB0F1_06_0 | Down | CB0F1_06_0->DPC1PFE0 | Down |
| DPC1PFE1->CB0F1_06_1 | Down | CB0F1_06_1->DPC1PFE1 | Down |
| DPC1PFE2->CB0F1_06_2 | Down | CB0F1_06_2->DPC1PFE2 | Down |
| DPC1PFE3->CB0F1_06_3 | Down | CB0F1_06_3->DPC1PFE3 | Down |

| | | | |
|-----------------------|------|-----------------------|------|
| DPC10PFE0->CB0F1_07_0 | Down | CB0F1_07_0->DPC10PFE0 | Down |
| DPC10PFE1->CB0F1_07_1 | Down | CB0F1_07_1->DPC10PFE1 | Down |
| DPC10PFE2->CB0F1_07_2 | Down | CB0F1_07_2->DPC10PFE2 | Down |
| DPC10PFE3->CB0F1_07_3 | Down | CB0F1_07_3->DPC10PFE3 | Down |
| DPC11PFE0->CB0F1_08_0 | Down | CB0F1_08_0->DPC11PFE0 | Down |
| DPC11PFE1->CB0F1_08_1 | Down | CB0F1_08_1->DPC11PFE1 | Down |
| DPC11PFE2->CB0F1_08_2 | Down | CB0F1_08_2->DPC11PFE2 | Down |
| DPC11PFE3->CB0F1_08_3 | Down | CB0F1_08_3->DPC11PFE3 | Down |
| DPC0PFE0->CB0F1_09_0 | Down | CB0F1_09_0->DPC0PFE0 | Down |
| DPC0PFE1->CB0F1_09_1 | Down | CB0F1_09_1->DPC0PFE1 | Down |
| DPC0PFE2->CB0F1_09_2 | Down | CB0F1_09_2->DPC0PFE2 | Down |
| DPC0PFE3->CB0F1_09_3 | Down | CB0F1_09_3->DPC0PFE3 | Down |
| DPC9PFE0->CB0F1_11_0 | Down | CB0F1_11_0->DPC9PFE0 | Down |
| DPC9PFE1->CB0F1_11_1 | Down | CB0F1_11_1->DPC9PFE1 | Down |
| DPC9PFE2->CB0F1_11_2 | Down | CB0F1_11_2->DPC9PFE2 | Down |
| DPC9PFE3->CB0F1_11_3 | Down | CB0F1_11_3->DPC9PFE3 | Down |
| DPC2PFE0->CB0F1_13_0 | up | CB0F1_13_0->DPC2PFE0 | up |
| DPC2PFE1->CB0F1_13_1 | up | CB0F1_13_1->DPC2PFE1 | up |
| DPC2PFE2->CB0F1_13_2 | up | CB0F1_13_2->DPC2PFE2 | up |
| DPC2PFE3->CB0F1_13_3 | up | CB0F1_13_3->DPC2PFE3 | up |
| DPC6PFE0->CB0F1_14_0 | Down | CB0F1_14_0->DPC6PFE0 | Down |
| DPC6PFE1->CB0F1_14_1 | Down | CB0F1_14_1->DPC6PFE1 | Down |
| DPC6PFE2->CB0F1_14_2 | Down | CB0F1_14_2->DPC6PFE2 | Down |
| DPC6PFE3->CB0F1_14_3 | Down | CB0F1_14_3->DPC6PFE3 | Down |
| DPC5PFE0->CB0F1_15_0 | Down | CB0F1_15_0->DPC5PFE0 | Down |
| DPC5PFE1->CB0F1_15_1 | Down | CB0F1_15_1->DPC5PFE1 | Down |
| DPC5PFE2->CB0F1_15_2 | Down | CB0F1_15_2->DPC5PFE2 | Down |
| DPC5PFE3->CB0F1_15_3 | Down | CB0F1_15_3->DPC5PFE3 | Down |
| DPC4PFE0->CB1F0_00_0 | up | CB1F0_00_0->DPC4PFE0 | up |
| DPC4PFE1->CB1F0_00_1 | up | CB1F0_00_1->DPC4PFE1 | up |
| DPC4PFE2->CB1F0_00_2 | up | CB1F0_00_2->DPC4PFE2 | up |
| DPC4PFE3->CB1F0_00_3 | up | CB1F0_00_3->DPC4PFE3 | up |
| DPC7PFE0->CB1F0_01_0 | Down | CB1F0_01_0->DPC7PFE0 | Down |
| DPC7PFE1->CB1F0_01_1 | Down | CB1F0_01_1->DPC7PFE1 | Down |
| DPC7PFE2->CB1F0_01_2 | Down | CB1F0_01_2->DPC7PFE2 | Down |
| DPC7PFE3->CB1F0_01_3 | Down | CB1F0_01_3->DPC7PFE3 | Down |
| DPC3PFE0->CB1F0_03_0 | Down | CB1F0_03_0->DPC3PFE0 | Down |
| DPC3PFE1->CB1F0_03_1 | Down | CB1F0_03_1->DPC3PFE1 | Down |
| DPC3PFE2->CB1F0_03_2 | Down | CB1F0_03_2->DPC3PFE2 | Down |
| DPC3PFE3->CB1F0_03_3 | Down | CB1F0_03_3->DPC3PFE3 | Down |
| DPC8PFE0->CB1F0_05_0 | Down | CB1F0_05_0->DPC8PFE0 | Down |
| DPC8PFE1->CB1F0_05_1 | Down | CB1F0_05_1->DPC8PFE1 | Down |
| DPC8PFE2->CB1F0_05_2 | Down | CB1F0_05_2->DPC8PFE2 | Down |
| DPC8PFE3->CB1F0_05_3 | Down | CB1F0_05_3->DPC8PFE3 | Down |
| DPC1PFE0->CB1F0_06_0 | Down | CB1F0_06_0->DPC1PFE0 | Down |
| DPC1PFE1->CB1F0_06_1 | Down | CB1F0_06_1->DPC1PFE1 | Down |
| DPC1PFE2->CB1F0_06_2 | Down | CB1F0_06_2->DPC1PFE2 | Down |
| DPC1PFE3->CB1F0_06_3 | Down | CB1F0_06_3->DPC1PFE3 | Down |
| DPC10PFE0->CB1F0_07_0 | Down | CB1F0_07_0->DPC10PFE0 | Down |
| DPC10PFE1->CB1F0_07_1 | Down | CB1F0_07_1->DPC10PFE1 | Down |
| DPC10PFE2->CB1F0_07_2 | Down | CB1F0_07_2->DPC10PFE2 | Down |
| DPC10PFE3->CB1F0_07_3 | Down | CB1F0_07_3->DPC10PFE3 | Down |
| DPC11PFE0->CB1F0_08_0 | Down | CB1F0_08_0->DPC11PFE0 | Down |
| DPC11PFE1->CB1F0_08_1 | Down | CB1F0_08_1->DPC11PFE1 | Down |
| DPC11PFE2->CB1F0_08_2 | Down | CB1F0_08_2->DPC11PFE2 | Down |
| DPC11PFE3->CB1F0_08_3 | Down | CB1F0_08_3->DPC11PFE3 | Down |
| DPC0PFE0->CB1F0_09_0 | Down | CB1F0_09_0->DPC0PFE0 | Down |
| DPC0PFE1->CB1F0_09_1 | Down | CB1F0_09_1->DPC0PFE1 | Down |
| DPC0PFE2->CB1F0_09_2 | Down | CB1F0_09_2->DPC0PFE2 | Down |
| DPC0PFE3->CB1F0_09_3 | Down | CB1F0_09_3->DPC0PFE3 | Down |
| DPC9PFE0->CB1F0_11_0 | Down | CB1F0_11_0->DPC9PFE0 | Down |

| | | | |
|-----------------------|------|-----------------------|------|
| DPC9PFE1->CB1F0_11_1 | Down | CB1F0_11_1->DPC9PFE1 | Down |
| DPC9PFE2->CB1F0_11_2 | Down | CB1F0_11_2->DPC9PFE2 | Down |
| DPC9PFE3->CB1F0_11_3 | Down | CB1F0_11_3->DPC9PFE3 | Down |
| DPC2PFE0->CB1F0_13_0 | up | CB1F0_13_0->DPC2PFE0 | up |
| DPC2PFE1->CB1F0_13_1 | up | CB1F0_13_1->DPC2PFE1 | up |
| DPC2PFE2->CB1F0_13_2 | up | CB1F0_13_2->DPC2PFE2 | up |
| DPC2PFE3->CB1F0_13_3 | up | CB1F0_13_3->DPC2PFE3 | up |
| DPC6PFE0->CB1F0_14_0 | Down | CB1F0_14_0->DPC6PFE0 | Down |
| DPC6PFE1->CB1F0_14_1 | Down | CB1F0_14_1->DPC6PFE1 | Down |
| DPC6PFE2->CB1F0_14_2 | Down | CB1F0_14_2->DPC6PFE2 | Down |
| DPC6PFE3->CB1F0_14_3 | Down | CB1F0_14_3->DPC6PFE3 | Down |
| DPC5PFE0->CB1F0_15_0 | Down | CB1F0_15_0->DPC5PFE0 | Down |
| DPC5PFE1->CB1F0_15_1 | Down | CB1F0_15_1->DPC5PFE1 | Down |
| DPC5PFE2->CB1F0_15_2 | Down | CB1F0_15_2->DPC5PFE2 | Down |
| DPC5PFE3->CB1F0_15_3 | Down | CB1F0_15_3->DPC5PFE3 | Down |
| DPC4PFE0->CB1F1_00_0 | up | CB1F1_00_0->DPC4PFE0 | up |
| DPC4PFE1->CB1F1_00_1 | up | CB1F1_00_1->DPC4PFE1 | up |
| DPC4PFE2->CB1F1_00_2 | up | CB1F1_00_2->DPC4PFE2 | up |
| DPC4PFE3->CB1F1_00_3 | up | CB1F1_00_3->DPC4PFE3 | up |
| DPC7PFE0->CB1F1_01_0 | Down | CB1F1_01_0->DPC7PFE0 | Down |
| DPC7PFE1->CB1F1_01_1 | Down | CB1F1_01_1->DPC7PFE1 | Down |
| DPC7PFE2->CB1F1_01_2 | Down | CB1F1_01_2->DPC7PFE2 | Down |
| DPC7PFE3->CB1F1_01_3 | Down | CB1F1_01_3->DPC7PFE3 | Down |
| DPC3PFE0->CB1F1_03_0 | Down | CB1F1_03_0->DPC3PFE0 | Down |
| DPC3PFE1->CB1F1_03_1 | Down | CB1F1_03_1->DPC3PFE1 | Down |
| DPC3PFE2->CB1F1_03_2 | Down | CB1F1_03_2->DPC3PFE2 | Down |
| DPC3PFE3->CB1F1_03_3 | Down | CB1F1_03_3->DPC3PFE3 | Down |
| DPC8PFE0->CB1F1_05_0 | Down | CB1F1_05_0->DPC8PFE0 | Down |
| DPC8PFE1->CB1F1_05_1 | Down | CB1F1_05_1->DPC8PFE1 | Down |
| DPC8PFE2->CB1F1_05_2 | Down | CB1F1_05_2->DPC8PFE2 | Down |
| DPC8PFE3->CB1F1_05_3 | Down | CB1F1_05_3->DPC8PFE3 | Down |
| DPC1PFE0->CB1F1_06_0 | Down | CB1F1_06_0->DPC1PFE0 | Down |
| DPC1PFE1->CB1F1_06_1 | Down | CB1F1_06_1->DPC1PFE1 | Down |
| DPC1PFE2->CB1F1_06_2 | Down | CB1F1_06_2->DPC1PFE2 | Down |
| DPC1PFE3->CB1F1_06_3 | Down | CB1F1_06_3->DPC1PFE3 | Down |
| DPC10PFE0->CB1F1_07_0 | Down | CB1F1_07_0->DPC10PFE0 | Down |
| DPC10PFE1->CB1F1_07_1 | Down | CB1F1_07_1->DPC10PFE1 | Down |
| DPC10PFE2->CB1F1_07_2 | Down | CB1F1_07_2->DPC10PFE2 | Down |
| DPC10PFE3->CB1F1_07_3 | Down | CB1F1_07_3->DPC10PFE3 | Down |
| DPC11PFE0->CB1F1_08_0 | Down | CB1F1_08_0->DPC11PFE0 | Down |
| DPC11PFE1->CB1F1_08_1 | Down | CB1F1_08_1->DPC11PFE1 | Down |
| DPC11PFE2->CB1F1_08_2 | Down | CB1F1_08_2->DPC11PFE2 | Down |
| DPC11PFE3->CB1F1_08_3 | Down | CB1F1_08_3->DPC11PFE3 | Down |
| DPC0PFE0->CB1F1_09_0 | Down | CB1F1_09_0->DPC0PFE0 | Down |
| DPC0PFE1->CB1F1_09_1 | Down | CB1F1_09_1->DPC0PFE1 | Down |
| DPC0PFE2->CB1F1_09_2 | Down | CB1F1_09_2->DPC0PFE2 | Down |
| DPC0PFE3->CB1F1_09_3 | Down | CB1F1_09_3->DPC0PFE3 | Down |
| DPC9PFE0->CB1F1_11_0 | Down | CB1F1_11_0->DPC9PFE0 | Down |
| DPC9PFE1->CB1F1_11_1 | Down | CB1F1_11_1->DPC9PFE1 | Down |
| DPC9PFE2->CB1F1_11_2 | Down | CB1F1_11_2->DPC9PFE2 | Down |
| DPC9PFE3->CB1F1_11_3 | Down | CB1F1_11_3->DPC9PFE3 | Down |
| DPC2PFE0->CB1F1_13_0 | up | CB1F1_13_0->DPC2PFE0 | up |
| DPC2PFE1->CB1F1_13_1 | up | CB1F1_13_1->DPC2PFE1 | up |
| DPC2PFE2->CB1F1_13_2 | up | CB1F1_13_2->DPC2PFE2 | up |
| DPC2PFE3->CB1F1_13_3 | up | CB1F1_13_3->DPC2PFE3 | up |
| DPC6PFE0->CB1F1_14_0 | Down | CB1F1_14_0->DPC6PFE0 | Down |
| DPC6PFE1->CB1F1_14_1 | Down | CB1F1_14_1->DPC6PFE1 | Down |
| DPC6PFE2->CB1F1_14_2 | Down | CB1F1_14_2->DPC6PFE2 | Down |
| DPC6PFE3->CB1F1_14_3 | Down | CB1F1_14_3->DPC6PFE3 | Down |
| DPC5PFE0->CB1F1_15_0 | Down | CB1F1_15_0->DPC5PFE0 | Down |
| DPC5PFE1->CB1F1_15_1 | Down | CB1F1_15_1->DPC5PFE1 | Down |

```

DPC5PFE2->CB1F1_15_2    Down    CB1F1_15_2->DPC5PFE2    Down
DPC5PFE3->CB1F1_15_3    Down    CB1F1_15_3->DPC5PFE3    Down
plane 4 is not up
plane 5 is not up

```

**show chassis fabric
map plane 1 (EX8200
Switch)**

```

user@host> show chassis fabric map plane 1
regress@tp-grande01> show chassis fabric map plane 1
DPC6PFE0->CB0F0_00_0    Down    CB0F0_00_0->DPC6PFE0    Down
DPC6PFE1->CB0F0_00_1    Down    CB0F0_00_1->DPC6PFE1    Down
DPC6PFE2->CB0F0_00_2    Down    CB0F0_00_2->DPC6PFE2    Down
DPC6PFE3->CB0F0_00_3    Down    CB0F0_00_3->DPC6PFE3    Down
DPC0PFE0->CB0F0_01_0    Down    CB0F0_01_0->DPC0PFE0    Down
DPC0PFE1->CB0F0_01_1    Down    CB0F0_01_1->DPC0PFE1    Down
DPC0PFE2->CB0F0_01_2    Down    CB0F0_01_2->DPC0PFE2    Down
DPC0PFE3->CB0F0_01_3    Down    CB0F0_01_3->DPC0PFE3    Down
DPC5PFE0->CB0F0_02_0    Down    CB0F0_02_0->DPC5PFE0    Down
DPC5PFE1->CB0F0_02_1    Down    CB0F0_02_1->DPC5PFE1    Down
DPC5PFE2->CB0F0_02_2    Down    CB0F0_02_2->DPC5PFE2    Down
DPC5PFE3->CB0F0_02_3    Down    CB0F0_02_3->DPC5PFE3    Down
DPC3PFE0->CB0F0_03_0    Down    CB0F0_03_0->DPC3PFE0    Down
DPC3PFE1->CB0F0_03_1    Down    CB0F0_03_1->DPC3PFE1    Down
DPC3PFE2->CB0F0_03_2    Down    CB0F0_03_2->DPC3PFE2    Down
DPC3PFE3->CB0F0_03_3    Down    CB0F0_03_3->DPC3PFE3    Down
DPC4PFE0->CB0F0_04_0    Down    CB0F0_04_0->DPC4PFE0    Down
DPC4PFE1->CB0F0_04_1    Down    CB0F0_04_1->DPC4PFE1    Down
DPC4PFE2->CB0F0_04_2    Down    CB0F0_04_2->DPC4PFE2    Down
DPC4PFE3->CB0F0_04_3    Down    CB0F0_04_3->DPC4PFE3    Down
DPC2PFE0->CB0F0_05_0    Down    CB0F0_05_0->DPC2PFE0    Down
DPC2PFE1->CB0F0_05_1    Down    CB0F0_05_1->DPC2PFE1    Down
DPC2PFE2->CB0F0_05_2    Down    CB0F0_05_2->DPC2PFE2    Down
DPC2PFE3->CB0F0_05_3    Down    CB0F0_05_3->DPC2PFE3    Down
DPC7PFE0->CB0F0_06_0    Down    CB0F0_06_0->DPC7PFE0    Down
DPC7PFE1->CB0F0_06_1    Down    CB0F0_06_1->DPC7PFE1    Down
DPC7PFE2->CB0F0_06_2    Down    CB0F0_06_2->DPC7PFE2    Down
DPC7PFE3->CB0F0_06_3    Down    CB0F0_06_3->DPC7PFE3    Down
DPC1PFE0->CB0F0_07_0    Down    CB0F0_07_0->DPC1PFE0    Down
DPC1PFE1->CB0F0_07_1    Down    CB0F0_07_1->DPC1PFE1    Down
DPC1PFE2->CB0F0_07_2    Down    CB0F0_07_2->DPC1PFE2    Down
DPC1PFE3->CB0F0_07_3    Down    CB0F0_07_3->DPC1PFE3    Down
DPC0PFE0->CB0F0_08_0    Down    CB0F0_08_0->DPC0PFE0    Down
DPC0PFE1->CB0F0_08_1    Down    CB0F0_08_1->DPC0PFE1    Down
DPC0PFE2->CB0F0_08_2    Down    CB0F0_08_2->DPC0PFE2    Down
DPC0PFE3->CB0F0_08_3    Down    CB0F0_08_3->DPC0PFE3    Down
DPC7PFE0->CB0F0_09_0    Down    CB0F0_09_0->DPC7PFE0    Down
DPC7PFE1->CB0F0_09_1    Down    CB0F0_09_1->DPC7PFE1    Down
DPC7PFE2->CB0F0_09_2    Down    CB0F0_09_2->DPC7PFE2    Down
DPC7PFE3->CB0F0_09_3    Down    CB0F0_09_3->DPC7PFE3    Down
DPC1PFE0->CB0F0_10_0    Down    CB0F0_10_0->DPC1PFE0    Down
DPC1PFE1->CB0F0_10_1    Down    CB0F0_10_1->DPC1PFE1    Down
DPC1PFE2->CB0F0_10_2    Down    CB0F0_10_2->DPC1PFE2    Down
DPC1PFE3->CB0F0_10_3    Down    CB0F0_10_3->DPC1PFE3    Down
DPC4PFE0->CB0F0_11_0    Down    CB0F0_11_0->DPC4PFE0    Down
DPC4PFE1->CB0F0_11_1    Down    CB0F0_11_1->DPC4PFE1    Down
DPC4PFE2->CB0F0_11_2    Down    CB0F0_11_2->DPC4PFE2    Down
DPC4PFE3->CB0F0_11_3    Down    CB0F0_11_3->DPC4PFE3    Down
DPC2PFE0->CB0F0_12_0    Down    CB0F0_12_0->DPC2PFE0    Down
DPC2PFE1->CB0F0_12_1    Down    CB0F0_12_1->DPC2PFE1    Down
DPC2PFE2->CB0F0_12_2    Down    CB0F0_12_2->DPC2PFE2    Down
DPC2PFE3->CB0F0_12_3    Down    CB0F0_12_3->DPC2PFE3    Down
DPC5PFE0->CB0F0_13_0    Down    CB0F0_13_0->DPC5PFE0    Down
DPC5PFE1->CB0F0_13_1    Down    CB0F0_13_1->DPC5PFE1    Down

```

| | | | |
|----------------------|------|----------------------|------|
| DPC5PFE2->CB0F0_13_2 | Down | CB0F0_13_2->DPC5PFE2 | Down |
| DPC5PFE3->CB0F0_13_3 | Down | CB0F0_13_3->DPC5PFE3 | Down |
| DPC3PFE0->CB0F0_14_0 | Down | CB0F0_14_0->DPC3PFE0 | Down |
| DPC3PFE1->CB0F0_14_1 | Down | CB0F0_14_1->DPC3PFE1 | Down |
| DPC3PFE2->CB0F0_14_2 | Down | CB0F0_14_2->DPC3PFE2 | Down |
| DPC3PFE3->CB0F0_14_3 | Down | CB0F0_14_3->DPC3PFE3 | Down |
| DPC6PFE0->CB0F0_15_0 | Down | CB0F0_15_0->DPC6PFE0 | Down |
| DPC6PFE1->CB0F0_15_1 | Down | CB0F0_15_1->DPC6PFE1 | Down |
| DPC6PFE2->CB0F0_15_2 | Down | CB0F0_15_2->DPC6PFE2 | Down |
| DPC6PFE3->CB0F0_15_3 | Down | CB0F0_15_3->DPC6PFE3 | Down |

show chassis fabric plane

| | |
|---------------------------------------|---|
| Syntax | show chassis fabric plane |
| Syntax (TX Matrix Plus Router) | show chassis fabric plane <detail extensive terse> <lcc <i>number</i> sfc <i>number</i> > |
| Syntax (MX Series Router) | show chassis fabric plane <detail extensive terse> <all-members> <local> <member <i>member-id</i> > |
| Release Information | Command introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 9.4 for EX Series switches. detail , extensive , lcc , sfc , and terse options introduced for the TX Matrix Plus router in Junos OS Release 9.6. |
| Description | (TX Matrix Plus, T1600, M120, and MX Series routers and EX8200 switches only) On the M120 router, display the state of all fabric plane connections to the Forwarding Engine Boards (FEBs). On MX Series routers, display the state of all fabric plane connections to the Dense Port Concentrators (DPCs) and Packet Forwarding Engines (PFEs) on the Flexible PIC Concentrators (FPCs). On the TX Matrix Plus router and T1600 routers in a routing matrix, display the state of the fabric management plane and the logical planes on the switch-fabric chassis (SFC) and line-card chassis (LCC). On EX8200 switches, display the state of all fabric planes. This command can be used on the master Routing Engine only. |
| Options | <p>detail—(TX Matrix Plus and T1600 routers in a routing matrix, and MX Series routers only) (Optional) Display detailed output for the fabric management plane. Show Switch Interface Board (SIB) states for the TXP-F13 SIB and TXP-F2S SIB.</p> <p>extensive—(TX Matrix Plus and T1600 routers in a routing matrix, and MX Series routers only) (Optional) Display extensive output for the fabric management plane, including the state of the optical links between the F13 SIB on the TX Matrix Plus router and the TXP-T1600 SIB (ST-SIB-L) on the T1600 router.</p> <p>terse—(TX Matrix Plus router and MX Series routers only) (Optional) Display terse output for the fabric management plane.</p> <p>all-members—(MX Series routers only) (Optional) Display the state of all fabric plane connections on all members of the Virtual Chassis configuration.</p> <p>lcc <i>number</i>—(TX Matrix Plus router only) (Optional) T1600 router (LCC) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(MX Series routers only) (Optional) Display the state of all fabric plane connections on the local Virtual Chassis member.</p> |

member *member-id*—(MX Series routers only) (Optional) Display the state of all fabric plane connections on the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 0 or 1.

sfc *number*—(TX Matrix Plus router only) (Optional) Show information about the TX Matrix Plus router (SFC). Replace *number* with 0.

Required Privilege Level view

Related Documentation

- [request chassis fabric plane on page 208](#)
- [show chassis fabric plane-location on page 473](#)

List of Sample Output

- [show chassis fabric plane \(M120 Router\) on page 457](#)
- [show chassis fabric plane \(MX240 Router\) on page 457](#)
- [show chassis fabric plane \(MX480 Router\) on page 459](#)
- [show chassis fabric plane \(MX960 Router\) on page 460](#)
- [show chassis fabric plane \(TX Matrix Plus Router\) on page 461](#)
- [show chassis fabric plane detail \(TX Matrix Plus Router\) on page 461](#)
- [show chassis fabric plane extensive \(TX Matrix Plus Router\) on page 462](#)
- [show chassis fabric plane terse \(TX Matrix Plus Router\) on page 464](#)
- [show chassis fabric plane lcc \(TX Matrix Plus Router\) on page 464](#)
- [show chassis fabric plane sfc \(TX Matrix Plus Router\) on page 465](#)
- [show chassis fabric plane \(T1600 Router\) on page 465](#)
- [show chassis fabric plane extensive \(T1600 Router\) on page 465](#)
- [show chassis fabric plane detail \(T1600 Router\) on page 468](#)
- [show chassis fabric plane extensive \(TX Matrix Plus Router\) on page 468](#)
- [show chassis fabric plane \(EX8200 Switch\) on page 471](#)

Output Fields Table 43 on page 451 lists the output fields for the **show chassis fabric plane** command. Output fields are listed in the approximate order in which they appear.

Table 43: show chassis fabric plane Output Fields

| Field Name | Field Description | Level of output |
|------------|---|-----------------|
| Plane | (TX Matrix Plus, MX Series, and M120 routers and EX8200 switches only) Number of the plane. | none |

Table 43: show chassis fabric plane Output Fields (*continued*)

| Field Name | Field Description | Level of output |
|--------------------|--|-----------------|
| Plane state | <p>(MX Series and M120 routers and EX8200 switches only) State of each plane:</p> <ul style="list-style-type: none"> • ACTIVE—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"> • FAULTY— SIB is in alarmed state where the SIB's plane is not operational for the following reasons: <ul style="list-style-type: none"> • On-board fabric ASIC is not operational. • Fiber optic connector faults. • FPC connector faults. • SIB midplane connector faults. | none |
| FEB | <p>(M120 routers only) FEB number and state of links to each FEB:</p> <ul style="list-style-type: none"> • Link error—Link between SIB and FPC is not operational. • Links ok—Link between SIB and FPC is active. • Unused—No FPC is present. | none |
| FPC | <p>(MX Series routers only) Slot number of each Dense Port Concentrator (DPC) or Flexible PIC Concentrator (FPC). An FPC occupies two DPC slots on an MX Series router. The interface corresponds to the lowest numbered DPC slot for which the FPC is installed.</p> | none |
| PFE | <p>(MX Series and M120 routers only) Slot number of each Packet Forwarding Engine and the state of the links to the DCP: Links ok, Link error, or Unused. Each DPC includes four Packet Forwarding Engines.</p> <p>Links ok: Link between SIB and FPC is active. Link error: Link between SIB and FPC is not operational. Unused: No FPC is present.</p> | none |

Table 43: show chassis fabric plane Output Fields (*continued*)

| Field Name | Field Description | Level of output |
|---------------|---|-----------------|
| State | <p>(TX Matrix Plus and T1600 routers in a routing matrix only)—State of the fabric plane:</p> <ul style="list-style-type: none"> • Online: Fabric plane is operational and running and links on the SIB are operational. • Offline: Fabric plane state is Offline because the plane does not have four or more F2S and one F13 online. • Empty: Fabric plane state is Empty if all SIBs in the plane are absent. • Spare: Fabric plane is redundant and can be operational if the operational fabric plane encounters an error. • Check: Fabric plane is in alarmed state due to the following reason and the cause of the error must be resolved: <ul style="list-style-type: none"> • One or more SIBs (belonging to the fabric plane) in the Online or Spare states has transitioned to the Check state. Check state of the SIB can be caused by link errors or destination errors. • Fault: Fabric plane is in alarmed state if one or more SIBs belonging to the plane are in the Fault state. A SIB can be in the Fault state because of the following reasons: <ul style="list-style-type: none"> • On-board fabric ASIC is not operational. • Fiber optic connector faults. • FPC connector faults. • SIB midplane connector faults. • Link errors have exceeded the threshold. | none |
| Uptime | <p>(TX Matrix Plus and T1600 routers in a routing matrix only)—Time the fabric plane has been up and running.</p> | none |

Fabric Management Plane State Output Fields for the show chassis fabric plane extensive Command on a TX Matrix Plus Router

Table 43: show chassis fabric plane Output Fields (*continued*)

| Field Name | Field Description | Level of output |
|---------------------------------------|---|------------------|
| PLANE <i>number</i> | <p>State of the fabric plane:</p> <ul style="list-style-type: none"> • Online: Fabric plane is operational and running and links on the SIB are operational. • Offline: Fabric plane state is Offline because the plane does not have 4 or more F2S and 1 F13 online. • Empty: Fabric plane state is Empty if all SIBs in the plane are absent. • Spare: Fabric plane is redundant and can be operational if the operational fabric plane encounters an error. • Check: Fabric plane is in alarmed state due to the following reasons and the cause of the error must be resolved: <ul style="list-style-type: none"> • One or more SIBs (belonging to the fabric plane) in the Online or Spare states has transitioned to the Check state. Check state of the SIB can be caused because of link errors or destination errors. • Fault: Fabric plane is in alarmed state if one or more SIBs belonging to the plane are in the Fault state. A SIB can be in the Fault state because of the following reasons: <ul style="list-style-type: none"> • On-board fabric ASIC is not operational. • Fiber optic connector faults. • FPC connector faults. • SIB midplane connector faults. • Link errors have exceeded the threshold. | extensive |
| SIB F13/F2S <i>slot-number</i> | <p>State of the TXP-F13 SIB or TXP-F2S SIB:</p> <ul style="list-style-type: none"> • Activating—Transitional state when the SIB is transitioning to the Online or Spare state. • Deactivating—Transitional state when the SIB is going offline. • Online—SIB is operational and running. • Offline—SIB is powered down. • Spare—SIB is redundant and will move to active state if one of the working SIBs fails to pass traffic. • Empty—No SIB is present. • Fault—SIB is in alarmed state because of the following reasons and the cause of the error must be resolved: <ul style="list-style-type: none"> • On-board fabric ASIC is not operational. • Fiber optic connector faults. • FPC connector faults. • SIB midplane connector faults. • Link errors have exceeded the threshold • Check—SIB is in alarmed state where the SIB is partially operational because of link or destination errors. Only a SIB that is Online or Spare can transition to the Check state. <p>NOTE: If a SIB is not inserted properly, the SIB cannot transition to the Online or Spare state, and therefore cannot transition to the Check state.</p> | extensive |

Table 43: show chassis fabric plane Output Fields (*continued*)

| Field Name | Field Description | Level of output |
|---|--|------------------|
| SIB F13 slot-number Odd/Even | State of the TXP-F13 SIB even and odd port connection optical links from the TX Matrix Plus router (SFC) to the T1600 router (LCC) in the routing matrix. The left four ports on the SFC are labeled Even and provide connections to one even-numbered LCC—LCC0 or LCC2. The right four ports on the SFC are labeled Odd and provide connections to one odd-numbered LCC—LCC1 or LCC3. | extensive |
| LCC number, SIB slot-number | State of the SIB on the LCC that is connected to the Even or Odd port on the TXP-F13 SIB faceplate: <ul style="list-style-type: none"> • Links ok—Links between the TXP-F13 SIB on the SFC and the LCC is active. • Link error—Link between the TXP-F13 SIB on the SFC and the LCC is not operational. • Unused—No SIB is present. | extensive |
| SG number Port number | State of the SG chip ports on the LCC: <ul style="list-style-type: none"> • Links ok—Link is active. • Link error—Link is not operational. • Unused—Port is not in use. | extensive |
| SIB F2S slot-number | State of the intra-chassis links between the TXP-F2S and TXP-F13 SIB. | extensive |

Fabric Management SIB State Output Fields for the show chassis fabric plane extensive Command on a TX Matrix Plus Router

Table 43: show chassis fabric plane Output Fields (*continued*)

| Field Name | Field Description | Level of output |
|------------------------|---|------------------|
| SIB slot-number | <p>State of the SIBs on the T1600 router (LCC) in the routing matrix:</p> <ul style="list-style-type: none"> • Activating—Transitional state when the SIB is coming online. • Deactivating—Transitional state when the SIB is going offline. • Connected—SIBs on an LCC are connected and trained, but are either not online or are spare, because the plane on the the TX Matrix Plus router (SFC) is still offline. The LCC SIB transitions to the Connected state when the F13 SIB to which it connects is online but the SFC plane (to which the LCC SIB connects) is offline for some reason; for instance, when there are insufficient number of F2 SIBs in the plane. • Disconnected—If an F13 SIB on the TX Matrix Plus router (SFC) goes offline, then the SIBs on the LCCs connected to the F13 SIB get disconnected. The Disconnected state is valid only for SIBs on an LCC. An LCC SIB transitions to the Disconnected state when the F13 SIB to which it connects goes Offline, irrespective of the state of the SFC plane. • SFC Error—If an F13 SIB on the TX Matrix Plus router (SFC) transitions to the Fault state (because of link errors, for instance), and if an LCC SIB connected to the F13 SIB comes online, the LCC SIB transitions to the SFC Error state. This state indicates that the F13 SIB to which the LCC SIB is connected has errors <p>NOTE: The Connected, Disconnected, and SFC Error states are only applicable to the SIBs on an LCC.</p> <ul style="list-style-type: none"> • Online—SIB is operational and running. • Offline—SIB is powered down. • Spare—SIB is redundant and will move to active state if one of the working SIBs fails to pass traffic. • Empty—No SIB is present. • Fault— SIB is in alarmed state where the SIB's plane is not operational for the following reasons: <ul style="list-style-type: none"> • On-board fabric ASIC is not operational. • Fiber optic connector faults. • FPC connector faults. • SIB midplane connector faults. • Link errors have exceeded the threshold • Check—SIB is in alarmed state where the SIB is partially operational because of link or destination errors. Only a SIB that is Online or Spare can transition to the Check state. <p>NOTE: If a SIB is not inserted properly, the SIB cannot transition to the Online or Spare state, and therefore cannot transition to the Check state.</p> | extensive |

Table 43: show chassis fabric plane Output Fields (*continued*)

| Field Name | Field Description | Level of output |
|-----------------------|---|-----------------|
| LCC SIB Link State | State of the LCC SIB link: <ul style="list-style-type: none"> • Links ok—Link is active. • Link error—Link is not operational. • Unused—SIB is not in use. | extensive |
| SG number Port number | State of the SG chip ports on the LCC: <ul style="list-style-type: none"> • Links ok—Link is active. • Link error—Link is not operational. • Unused—Port is not in use. | extensive |

Sample Output

show chassis fabric plane (M120 Router)

```

user@host> show chassis fabric plane
Fabric management PLANE state
Plane 0
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok
Plane 1
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok
Plane 2
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok
Plane 3
Plane state: ACTIVE
FEB 0: Links ok
FEB 1: Links ok
FEB 2: Links ok
FEB 3: Links ok
FEB 4: Links ok
FEB 5: Links ok

```

show chassis fabric plane (MX240 Router)

```

user@host> show chassis fabric plane
Plane 0
  Plane state: ACTIVE
    FPC 1
      PFE 0 :Links ok

```

```
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 1
    Plane state: ACTIVE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 2
    Plane state: ACTIVE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 3
    Plane state: ACTIVE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 4
    Plane state: SPARE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 5
    Plane state: SPARE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
```



```

        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 6
Plane state: SPARE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 7
Plane state: SPARE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
    FPC 2
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok

```

show chassis fabric plane (MX480 Router)

```

user@host> show chassis fabric plane
Fabric management PLANE state
Plane 0
Plane state: ACTIVE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 1
Plane state: ACTIVE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 2
Plane state: ACTIVE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok
        PFE 3 :Links ok
Plane 3
Plane state: ACTIVE
    FPC 1
        PFE 0 :Links ok
        PFE 1 :Links ok
        PFE 2 :Links ok

```

```
        PFE 3 :Links ok
Plane 4
  Plane state: SPARE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 5
  Plane state: SPARE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 6
  Plane state: SPARE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
Plane 7
  Plane state: SPARE
    FPC 1
      PFE 0 :Links ok
      PFE 1 :Links ok
      PFE 2 :Links ok
      PFE 3 :Links ok
```

**show chassis fabric
plane (MX960 Router)**

```
user@host> show chassis fabric plane
Plane 0
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
    FPC 2
      PFE 0 :Links ok
      PFE 1 :Links ok
Plane 1
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
    FPC 2
      PFE 0 :Links ok
      PFE 1 :Links ok
Plane 2
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
    FPC 2
      PFE 0 :Links ok
      PFE 1 :Links ok
Plane 3
  Plane state: ACTIVE
    FPC 0
      PFE 0 :Links ok
    FPC 2
      PFE 0 :Links ok
      PFE 1 :Links ok
```

**show chassis fabric
plane (TX Matrix Plus
Router)**

```
user@host> show chassis fabric plane
sfc0-re0:
```

| Plane | State | Uptime |
|-------|--------|--------------------------------|
| 0 | Spare | |
| 1 | Online | 1 hour, 11 minutes, 26 seconds |
| 2 | Online | 1 hour, 11 minutes, 25 seconds |
| 3 | Online | 1 hour, 11 minutes, 20 seconds |
| 4 | Online | 1 hour, 11 minutes, 12 seconds |

```
1cc0-re0:
```

| SIB | State | Uptime |
|-----|--------|---------------------------------|
| 0 | Spare | |
| 1 | Online | 5 hours, 11 minutes, 39 seconds |
| 2 | Online | 5 hours, 11 minutes, 39 seconds |
| 3 | Online | 5 hours, 11 minutes, 39 seconds |
| 4 | Online | 5 hours, 11 minutes, 39 seconds |

```
1cc1-re0:
```

| SIB | State | Uptime |
|-----|--------|---------------------------------|
| 0 | Spare | |
| 1 | Online | 5 hours, 11 minutes, 40 seconds |
| 2 | Online | 5 hours, 11 minutes, 40 seconds |
| 3 | Online | 5 hours, 11 minutes, 40 seconds |
| 4 | Online | 5 hours, 11 minutes, 40 seconds |

**show chassis fabric
plane detail (TX Matrix
Plus Router)**

```
user@host> show chassis fabric plane detail
sfc0-re0:
```

```
Fabric Management PLANE State:
```

```
PLANE 0: Spare
  SIB F13 0 : Spare
  SIB F13 1 : Empty
  SIB F2S 0/0 : Spare
  SIB F2S 0/2 : Spare
  SIB F2S 0/4 : Spare
  SIB F2S 0/6 : Spare
PLANE 1: Online
  SIB F13 3 : Online
  SIB F13 4 : Empty
  SIB F2S 1/0 : Online
  SIB F2S 1/2 : Online
  SIB F2S 1/4 : Online
  SIB F2S 1/6 : Online
PLANE 2: Online
  SIB F13 6 : Online
  SIB F13 7 : Empty
  SIB F2S 2/0 : Online
  SIB F2S 2/2 : Online
  SIB F2S 2/4 : Online
  SIB F2S 2/6 : Online
PLANE 3: Online
  SIB F13 8 : Online
  SIB F13 9 : Online
  SIB F2S 3/0 : Online
  SIB F2S 3/2 : Online
  SIB F2S 3/4 : Online
  SIB F2S 3/6 : Online
PLANE 4: Online
```

```

SIB F13 11 : Online
SIB F13 12 : Online
SIB F2S 4/0 : Online
SIB F2S 4/2 : Online
SIB F2S 4/4 : Online
SIB F2S 4/6 : Online

```

```
lcc0-re0:
```

```
-----
Fabric Management SIB State:
```

```

SIB 0 : Spare
SIB 1 : Online
SIB 2 : Online
SIB 3 : Online
SIB 4 : Online

```

```
lcc1-re0:
```

```
-----
Fabric Management SIB State:
```

```

SIB 0 : Spare
SIB 1 : Online
SIB 2 : Online
SIB 3 : Online
SIB 4 : Online

```

**show chassis fabric
plane extensive (TX
Matrix Plus Router)**

```
user@host> show chassis fabric plane extensive
```

```
sfc0-re0:
```

```
-----
Fabric Management PLANE State:
```

```
PLANE 0: Spare
```

```

SIB F13 0 : Spare
SIB F13 1 : Empty
SIB F2S 0/0 : Spare
SIB F2S 0/2 : Spare
SIB F2S 0/4 : Spare
SIB F2S 0/6 : Spare

```

```
SIB F13 0 Even:
```

```
  LCC 0, SIB 0 : Links ok
```

```
  SG 0
```

```

    Port 0 : Links ok
    Port 1 : Links ok
    Port 2 : Links ok
    Port 3 : Links ok

```

```
  SG 1
```

```

    Port 0 : Links ok
    Port 1 : Links ok
    Port 2 : Links ok
    Port 3 : Links ok

```

```
  SG 2
```

```

    Port 0 : Links ok
    Port 1 : Links ok
    Port 2 : Links ok
    Port 3 : Links ok

```

```
  SG 3
```

```

    Port 0 : Links ok
    Port 1 : Links ok
    Port 2 : Links ok
    Port 3 : Links ok

```

```
SIB F13 0 Odd:
```

```
  LCC 1, SIB 0 : Links ok
```

```
  SG 0
```

```

Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
SG 1
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
SG 2
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
SG 3
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
SIB F2S 0/0: Links ok
SIB F2S 0/2: Links ok
SIB F2S 0/4: Links ok
SIB F2S 0/6: Links ok
SIB F13 1 Even:
LCC 2, SIB 0 : Unused
SG 0
Port 0 : Unused
Port 1 : Unused
Port 2 : Unused
Port 3 : Unused
SG 1
Port 0 : Unused
Port 1 : Unused
Port 2 : Unused
Port 3 : Unused
SG 2
Port 0 : Unused
Port 1 : Unused
Port 2 : Unused
Port 3 : Unused
SG 3
Port 0 : Unused
Port 1 : Unused
Port 2 : Unused
Port 3 : Unused
SIB F13 1 Odd:
LCC 3, SIB 0 : Unused
SG 0
Port 0 : Unused
Port 1 : Unused
Port 2 : Unused
Port 3 : Unused
SG 1
Port 0 : Unused
Port 1 : Unused
Port 2 : Unused
Port 3 : Unused
SG 2
Port 0 : Unused
Port 1 : Unused
Port 2 : Unused

```

```

Port 3      : Unused
SG 3
Port 0      : Unused
Port 1      : Unused
Port 2      : Unused
Port 3      : Unused
SIB F2S 0/0: Unused
SIB F2S 0/2: Unused
SIB F2S 0/4: Unused
SIB F2S 0/6: Unused
PLANE 1:    Online
SIB F13 3   :    Online
SIB F13 4   :    Empty
SIB F2S 1/0 :    Online
SIB F2S 1/2 :    Online
SIB F2S 1/4 :    Online
SIB F2S 1/6 :    Online
SIB F13 3 Even:
...

```

**show chassis fabric
plane terse (TX Matrix
Plus Router)**

```
user@host> show chassis fabric plane terse
sfc0-re0:
```

```

-----
Plane  State          Uptime
0      Spare
1      Online          1 hour, 16 minutes, 14 seconds
2      Online          1 hour, 16 minutes, 13 seconds
3      Online          1 hour, 16 minutes, 8 seconds
4      Online          1 hour, 16 minutes

```

```
lcc0-re0:
```

```

-----
SIB    State          Uptime
0      Spare
1      Online          5 hours, 16 minutes, 27 seconds
2      Online          5 hours, 16 minutes, 27 seconds
3      Online          5 hours, 16 minutes, 27 seconds
4      Online          5 hours, 16 minutes, 27 seconds

```

```
lcc1-re0:
```

```

-----
SIB    State          Uptime
0      Spare
1      Online          5 hours, 16 minutes, 28 seconds
2      Online          5 hours, 16 minutes, 28 seconds
3      Online          5 hours, 16 minutes, 28 seconds
4      Online          5 hours, 16 minutes, 28 seconds

```

**show chassis fabric
plane lcc (TX Matrix
Plus Router)**

```
user@host> show chassis fabric plane lcc 7
lcc1-re0:
```

```

-----
SIB    State          Uptime
0      Spare
1      Online          5 hours, 17 minutes, 52 seconds
2      Online          5 hours, 17 minutes, 52 seconds
3      Online          5 hours, 17 minutes, 52 seconds
4      Online          5 hours, 17 minutes, 52 seconds

```

**show chassis fabric
plane sfc (TX Matrix
Plus Router)**

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

| Plane | State | Uptime |
|-------|--------|-------------------------------|
| 0 | Spare | |
| 1 | Online | 1 hour, 4 minutes, 43 seconds |
| 2 | Online | 1 hour, 4 minutes, 38 seconds |
| 3 | Online | 1 hour, 4 minutes, 35 seconds |
| 4 | Online | 1 hour, 4 minutes, 33 seconds |

```
1cc0-re0:
```

| SIB | State | Uptime |
|-----|--------|-------------------------------|
| 0 | Spare | |
| 1 | Online | 1 hour, 7 minutes, 24 seconds |
| 2 | Online | 1 hour, 7 minutes, 24 seconds |
| 3 | Online | 1 hour, 7 minutes, 24 seconds |
| 4 | Online | 1 hour, 7 minutes, 24 seconds |

```
1cc1-re0:
```

| SIB | State | Uptime |
|-----|---------|-------------------------------|
| 0 | Offline | |
| 1 | Online | 1 hour, 7 minutes, 22 seconds |
| 2 | Online | 1 hour, 7 minutes, 22 seconds |
| 3 | Online | 1 hour, 7 minutes, 22 seconds |
| 4 | Online | 1 hour, 7 minutes, 22 seconds |

**show chassis fabric
plane (T1600 Router)**

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

| Plane | State | Uptime |
|-------|--------|---------------------------------|
| 0 | Online | 15 hours, 42 minutes, 9 seconds |
| 1 | Online | 15 hours, 42 minutes, 9 seconds |
| 2 | Fault | |
| 3 | Online | 15 hours, 42 minutes, 9 seconds |
| 4 | Online | 15 hours, 42 minutes, 9 seconds |

**show chassis fabric
plane extensive
(T1600 Router)**

```
user@host> show chassis fabric plane extensive
```

```
Fabric Management PLANE State:
```

```
PLANE 0: Online
```

```
ST-SIB-L 0: Links ok
```

```
SG 0
```

```
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
```

```
SG 1
```

```
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
```

```
SG 2
```

```
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
```

```
SG 3
```

```
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
```

```
ST-SIB-L 0
  FPC 4
    PFE 0: Links ok
    PFE 1: Links ok
  FPC 6
    PFE 0: Links ok
    PFE 1: Links ok
  FPC 7
    PFE 0: Links ok
PLANE 1:  Online
ST-SIB-L 1: Links ok
  SG 0
    Port 0    : Links ok
    Port 1    : Links ok
    Port 2    : Links ok
    Port 3    : Links ok
  SG 1
    Port 0    : Links ok
    Port 1    : Links ok
    Port 2    : Links ok
    Port 3    : Links ok
  SG 2
    Port 0    : Links ok
    Port 1    : Links ok
    Port 2    : Links ok
    Port 3    : Links ok
  SG 3
    Port 0    : Links ok
    Port 1    : Links ok
    Port 2    : Links ok
    Port 3    : Links ok
ST-SIB-L 1
  FPC 4
    PFE 0: Links ok
    PFE 1: Links ok
  FPC 6
    PFE 0: Links ok
    PFE 1: Links ok
  FPC 7
    PFE 0: Links ok
PLANE 2:  Online
ST-SIB-L 2: Links ok
  SG 0
    Port 0    : Links ok
    Port 1    : Links ok
    Port 2    : Links ok
    Port 3    : Links ok
  SG 1
    Port 0    : Links ok
    Port 1    : Links ok
    Port 2    : Links ok
    Port 3    : Links ok
  SG 2
    Port 0    : Links ok
    Port 1    : Links ok
    Port 2    : Links ok
    Port 3    : Links ok
  SG 3
    Port 0    : Links ok
    Port 1    : Links ok
    Port 2    : Links ok
```



```

        Port 3      : Links ok
ST-SIB-L 2
  FPC 4
    PFE 0: Links ok
    PFE 1: Links ok
  FPC 6
    PFE 0: Links ok
    PFE 1: Links ok
  FPC 7
    PFE 0: Links ok
PLANE 3:   Spare
ST-SIB-L 3: Links ok
  SG 0
    Port 0      : Links ok
    Port 1      : Links ok
    Port 2      : Links ok
    Port 3      : Links ok
  SG 1
    Port 0      : Links ok
    Port 1      : Links ok
    Port 2      : Links ok
    Port 3      : Links ok
  SG 2
    Port 0      : Links ok
    Port 1      : Links ok
    Port 2      : Links ok
    Port 3      : Links ok
  SG 3
    Port 0      : Links ok
    Port 1      : Links ok
    Port 2      : Links ok
    Port 3      : Links ok
ST-SIB-L 3
  FPC 4
    PFE 0: Links ok
    PFE 1: Links ok
  FPC 6
    PFE 0: Links ok
    PFE 1: Links ok
  FPC 7
    PFE 0: Links ok
PLANE 4:   Online
ST-SIB-L 4: Links ok
  SG 0
    Port 0      : Links ok
    Port 1      : Links ok
    Port 2      : Links ok
    Port 3      : Links ok
  SG 1
    Port 0      : Links ok
    Port 1      : Links ok
    Port 2      : Links ok
    Port 3      : Links ok
  SG 2
    Port 0      : Links ok
    Port 1      : Links ok
    Port 2      : Links ok
    Port 3      : Links ok
  SG 3
    Port 0      : Links ok
    Port 1      : Links ok

```

```

Port 2      : Links ok
Port 3      : Links ok
ST-SIB-L 4
FPC 4
PFE 0: Links ok
PFE 1: Links ok
FPC 6
PFE 0: Links ok
PFE 1: Links ok
FPC 7
PFE 0: Links ok

```

**show chassis fabric
plane detail (T1600
Router)**

```

user@host> show chassis fabric plane detail
Fabric Management PLANE State:
PLANE 0:   Online
PLANE 1:   Online
PLANE 2:   Online
PLANE 3:   Spare
PLANE 4:   Online

```

**show chassis fabric
plane extensive (TX
Matrix Plus Router)**

```

user@host> show chassis fabric plane extensive
sfc0-re0:

```

```

-----
Fabric Management PLANE State:
PLANE 0:   Online
SIB F13 0   :   Online
SIB F13 1   :   Empty
SIB F2S 0/0 :   Online
SIB F2S 0/2 :   Online
SIB F2S 0/4 :   Online
SIB F2S 0/6 :   Online
SIB F13 0 Even:
LCC 0, SIB 0 : Unused
SG 0
Port 0      : Unused
Port 1      : Unused
Port 2      : Unused
Port 3      : Unused
SG 1
Port 0      : Unused
Port 1      : Unused
Port 2      : Unused
Port 3      : Unused
SG 2
Port 0      : Unused
Port 1      : Unused
Port 2      : Unused
Port 3      : Unused
SG 3
Port 0      : Unused
Port 1      : Unused
Port 2      : Unused
Port 3      : Unused
SIB F13 0 Odd:
LCC 1, SIB 0 : Links ok
SG 0
Port 0      : Links ok
Port 1      : Links ok
Port 2      : Links ok
Port 3      : Links ok
SG 1

```

```

        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    SG 2
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    SG 3
        Port 0      : Links ok
        Port 1      : Links ok
        Port 2      : Links ok
        Port 3      : Links ok
    SIB F2S 0/0: Links ok
    SIB F2S 0/2: Links ok
    SIB F2S 0/4: Links ok
    SIB F2S 0/6: Links ok
    SIB F13 1 Even:
        LCC 2, SIB 0 : Unused
        SG 0
            Port 0      : Unused
            Port 1      : Unused
            Port 2      : Unused
            Port 3      : Unused
        SG 1
    ...
            Port 0      : Unused
            Port 1      : Unused
            Port 2      : Unused
            Port 3      : Unused
        SG 2
            Port 0      : Unused
            Port 1      : Unused
            Port 2      : Unused
            Port 3      : Unused
        SG 3
            Port 0      : Unused
            Port 1      : Unused
            Port 2      : Unused
            Port 3      : Unused
    SIB F13 1 Odd:
        LCC 3, SIB 0 : Unused
        SG 0
            Port 0      : Unused
            Port 1      : Unused
            Port 2      : Unused
            Port 3      : Unused
        SG 1
            Port 0      : Unused
            Port 1      : Unused
            Port 2      : Unused
            Port 3      : Unused
        SG 2
            Port 0      : Unused
            Port 1      : Unused
            Port 2      : Unused
            Port 3      : Unused
        SG 3
            Port 0      : Unused
            Port 1      : Unused

```

```

Port 2      : Unused
Port 3      : Unused
SIB F2S 0/0: Unused
SIB F2S 0/2: Unused
SIB F2S 0/4: Unused
SIB F2S 0/6: Unused
PLANE 1:    Fault
SIB F13 3   : Fault
SIB F13 4   : Empty
SIB F2S 1/0 : Fault
SIB F2S 1/2 : Fault
SIB F2S 1/4 : Online
SIB F2S 1/6 : Online
SIB F13 3 Even:
LCC 0, SIB 1 : Unused
SG 0
Port 0      : Unused
Port 1      : Unused
Port 2      : Unused
Port 3      : Unused
SG 1
Port 0      : Unused
Port 1      : Unused
Port 2      : Unused
Port 3      : Unused
SG 2
Port 0      : Unused
Port 1      : Unused
Port 2      : Unused
Port 3      : Unused
SG 3
Port 0      : Unused
...
lcc1-re1:

```

```

-----
Fabric Management SIB State:
SIB 0 : Online
LCC SIB Link State : Links ok
SG 0
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
SG 1
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
SG 2
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
SG 3
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
SIB 1 : Fault
LCC SIB Link State : Link error
SG 0

```

```

Port 0 : Link error
Port 1 : Link error
Port 2 : Link error
Port 3 : Link error
SG 1
Port 0 : Link error
Port 1 : Link error
Port 2 : Link error
Port 3 : Link error
SG 2
Port 0 : Link error
Port 1 : Link error
Port 2 : Link error
Port 3 : Link error
SG 3
Port 0 : Link error
Port 1 : Link error
Port 2 : Link error
Port 3 : Link error
SIB 2 : Online
LCC SIB Link State : Links ok
SG 0
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
SG 1
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
SG 2
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
SG 3
Port 0 : Links ok
Port 1 : Links ok
Port 2 : Links ok
Port 3 : Links ok
SIB 3 : Check
LCC SIB Link State : Link error
SG 0
Port 0 : Link error
Port 1 : Link error
Port 2 : Link error

```

```

show chassis fabric plane (EX8200 Switch)
user@host> show chassis fabric plane
Fabric management PLANE state
Plane 0
Plane state: ACTIVE
Plane 1
Plane state: ACTIVE
Plane 2
Plane state: ACTIVE
Plane 3
Plane state: ACTIVE
Plane 4
Plane state: SPARE
Plane 5

```

Plane state: SPARE
Plane 6
Plane state: SPARE
Plane 7
Plane state: SPARE
Plane 8
Plane state: ACTIVE
Plane 9
Plane state: ACTIVE
Plane 10
Plane state: ACTIVE
Plane 11
Plane state: ACTIVE

show chassis fabric plane-location

| | |
|----------------------------------|---|
| Syntax | show chassis fabric plane-location |
| Syntax (MX Series Router) | show chassis fabric plane-location <all-members> <local> <member <i>member-id</i> > |
| Release Information | Command introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 9.4 for EX Series switches. Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches. |
| Description | (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 EX Series Switches Hardware and CLI Terminology Mapping. (TX Matrix Plus routers only) Display the SIB location of each fabric plane. (PTX Series Packet Transport Switches only) Display the fabric plane location of each SIB. |
| Options | 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. local —(MX Series routers only) (Optional) Display the CB location of each fabric plane on the Routing Engines in the local Virtual Chassis member. 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. |
| Required Privilege Level | view |
| List of Sample Output | show chassis fabric plane-location (M120 Router) on page 474 show chassis fabric plane-location (MX240 and MX480 Routers) on page 474 show chassis fabric plane-location (MX960 Router) on page 474 show chassis fabric plane-location (TX Matrix Plus Router) on page 474 show chassis fabric plane-location (EX8200 Switch) on page 475 show chassis fabric plane-location (PTX Series Packet Transport Switches) on page 475 |
| Output Fields | Table 44 on page 474 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 44: show chassis fabric plane-location Output Fields

| Field Name | Field Description |
|------------------------|---|
| Plane <i>n</i> | Plane number. (PTX Series Packet Transport Switches only) Plane numbers associated with the SIB. |
| Control Board <i>n</i> | Control board number. |
| SFC ABS-SIB-F13 | (TX Matrix Plus routers only) Switch Interface Board (SIB) slot number on the F13 SIB. |
| SFC ABS-SIB-F2S | (TX Matrix Plus routers only) SIB slot number on the F2S. |
| LCC ST-SIB-L | (TX Matrix Plus routers only) Line-card chassis (LCC) SIB slot number. |
| SIB | (PTX Series Packet Transport Switches only) SIB 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 (TX
Matrix Plus Router)

```
user@host> show chassis fabric plane-location
Fabric Plane Locations :
Plane      SFC ABS-SIB-F13      SFC ABS-SIB-F2      LCC ST-SIB-L
0          0, 1                0/0, 0/2, 0/4, 0/6      0
1          3, 4                1/0, 1/2, 1/4, 1/6      1
2          6, 7                2/0, 2/2, 2/4, 2/6      2
```


| | | | |
|---|--------|--------------------|---|
| 3 | 8, 9 | 3/0, 3/2, 3/4, 3/6 | 3 |
| 4 | 11, 12 | 4/0, 4/2, 4/4, 4/6 | 4 |

```

show chassis fabric plane-location
(EX8200 Switch)
user@host> show chassis fabric plane-location
-----Fabric Plane Locations-----
Plane 0          Control Board 0
Plane 1          Control Board 0
Plane 2          Control Board 0
Plane 3          Control Board 0
Plane 4          Control Board 1
Plane 5          Control Board 1
Plane 6          Control Board 1
Plane 7          Control Board 1
Plane 8          Control Board 2
Plane 9          Control Board 2
Plane 10         Control Board 2
Plane 11         Control Board 2

```

```

show chassis fabric plane-location (PTX
Series Packet
Transport Switches)
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 sibs

| | |
|---------------------------------|---|
| Syntax | <code>show chassis fabric sibs</code> <code><lcc <i>number</i> scc></code> |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | <p>(TX Matrix routers only) Display the state of the electrical and optical switch fabric link between the SIBs in the TX Matrix router (TX-SIBs) and the SIBs in the T640 routers (T640 LCC SIBs).</p> <p>(M320, T640, T1600, and T4000 routers) Display the state of the electrical switch fabric link between the SIBs and the FPCs.</p> |
| Options | <p>none—(TX Matrix routers only) Display the state of the electrical and optical switch fabric link between the SIBs in the TX Matrix router (TX-SIBs) and the SIBs in the T640 routers (T640 LCC SIBs).</p> <p>(M320, T640, T1600, and T4000 routers) Display the state of the electrical switch fabric link between the SIBs and the FPCs.</p> <p>lcc <i>number</i>—(Optional) Display the switching fabric link state for the T640 SIBs on a specified T640 router (or line-card chassis) connected to a TX Matrix router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(Optional) Display the switching fabric link state for the TX-SIBs on the TX Matrix router (or switch-card chassis).</p> |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none">• request chassis sib on page 231• show chassis sibs on page 654• Monitoring the SIBs• Redundant SIBs Overview |
| List of Sample Output | <p>show chassis fabric sibs (M320 Router) on page 477</p> <p>show chassis fabric sibs (T640 Router) on page 478</p> <p>show chassis fabric sibs (T1600 Router) on page 479</p> <p>show chassis fabric sibs (T4000 Core Router) on page 481</p> <p>show chassis fabric sibs (TX Matrix Router) on page 482</p> <p>show chassis fabric sibs lcc (TX Matrix Router) on page 484</p> <p>show chassis fabric sibs scc (TX Matrix Router) on page 485</p> |
| Output Fields | <p>Table 45 on page 477 lists the output fields for the show chassis fabric sibs command. Output fields are listed in the approximate order in which they appear.</p> |

Table 45: show chassis fabric sibs Output Fields

| Field Name | Field Description |
|------------------------------------|---|
| Fabric management SIB state | <p>Switching fabric link (link from FPC to SIB) state for each SIB:</p> <ul style="list-style-type: none"> • Unused—SIB is not present. • Links ok—Link between the SIB and the FPC is active. • Link error—Link between the SIB and the FPC is not operational. |
| Plane state | <p>Possible plane state of the M320 SIB, TX-SIB or T640 SIB:</p> <ul style="list-style-type: none"> • S_ACTIVE—Links on the SIB are operational, and the fabric plane (SIB) is operational and running. • S_SPARE—Links on the SIB are operational and the fabric plane (SIB) is redundant and can be operational if any of the fabric planes in the S_ACTIVE state encounters an error. <p>NOTE: If the plane is unusable by any of the Packet Forwarding Engines, the command output displays an additional string, plane has link errors on # pfes, where, # indicates the total number of links (both from SIB to FPC, and from FPC to SIB) having link errors (detected either during initialization time or runtime) in this particular plane. This does not count links having destination errors.</p> <ul style="list-style-type: none"> • S_EMPTY—No links are present on the SIB, and the fabric plane (SIB) is powered down. • S_ACTIVATING—Links on the SIB are coming online; this is a transitional state. • S_DEACTIVATING—Links on the SIB are going offline; this is a transitional state. • S_FAULTING—Links on the SIB are being marked faulty, and the fabric plane (SIB) is not operational. • S_FAULT—Links on the SIB are in an alarmed state, and the fabric plane (SIB) is not operational for the following reasons: <ul style="list-style-type: none"> • On-board F-chip is not operational. • Fiber optic connector faults. • FPC connector faults. |

Sample Output

show chassis fabric sibs (M320 Router)

```

user@host> show chassis fabric sibs
Fabric management SIB state:
SIB #0
  plane state: S_ACTIVE
  FPC #0
    PFE #1 : Links ok
  FPC #1
    PFE #1 : Links ok
  FPC #2
    PFE #1 : Links ok
  FPC #3
    PFE #1 : Links ok
SIB #1
  plane state: S_ACTIVE
  FPC #0

```

```
        PFE #1 : Links ok
FPC #1
        PFE #1 : Links ok
FPC #2
        PFE #1 : Links ok
FPC #3
        PFE #1 : Links ok
SIB #2
plane state: S_ACTIVE
FPC #0
        PFE #1 : Links ok
FPC #1
        PFE #1 : Links ok
FPC #2
        PFE #1 : Links ok
FPC #3
        PFE #1 : Links ok
SIB #3
plane state: S_ACTIVE
FPC #0
        PFE #1 : Links ok
FPC #1
        PFE #1 : Links ok
FPC #2
        PFE #1 : Links ok
FPC #3
        PFE #1 : Links ok
```

show chassis fabric sibs (T640 Router) user@host> **show chassis fabric sibs**
Fabric management SIB state:

```
SIB #0
plane state: S_SPARE
FPC #0
        PFE #1 : Links ok
FPC #2
        PFE #1 : Links ok
FPC #3
        PFE #0 : Links ok
        PFE #1 : Links ok
SIB #1
plane state: S_ACTIVE
FPC #0
        PFE #1 : Links ok
FPC #2
        PFE #1 : Links ok
FPC #3
        PFE #0 : Links ok
        PFE #1 : Links ok
SIB #2
plane state: S_ACTIVE
FPC #0
        PFE #1 : Links ok
FPC #2
        PFE #1 : Links ok
FPC #3
        PFE #0 : Links ok
        PFE #1 : Links ok
SIB #3
plane state: S_ACTIVE
FPC #0
        PFE #1 : Links ok
```

```

FPC #2
  PFE #1 : Links ok
FPC #3
  PFE #0 : Links ok
  PFE #1 : Links ok
SIB #4
  plane state: S_ACTIVE
  FPC #0
    PFE #1 : Links ok
  FPC #2
    PFE #1 : Links ok
  FPC #3
    PFE #0 : Links ok
    PFE #1 : Links ok

```

**show chassis fabric
sibs (T1600 Router)**

```

user@host> show chassis fabric sibs
SIB #0
  plane state: S_SPARE
  FPC #0
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #1
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #2
    PFE #0 : Links ok
  FPC #4
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #5
    PFE #0 : Links ok
  FPC #6
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #7
    PFE #0 : Links ok
    PFE #1 : Links ok
SIB #1
  plane state: S_ACTIVE , plane has link errors on 2 pfes
  FPC #0
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #1
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #3
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #4
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #5
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #7
    PFE #0 : Links ok
    PFE #1 : Links ok
SIB #2
  plane state: S_ACTIVE
SIB #2
  plane state: S_ACTIVE
FPC #0

```

```

        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #1
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #2
        PFE #0 : Links ok
FPC #4
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #5
        PFE #0 : Links ok
FPC #6
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #7
        PFE #0 : Links ok
        PFE #1 : Links ok
SIB #3
plane state: S_ACTIVE
FPC #0
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #1
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #2
        PFE #0 : Links ok
FPC #4
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #5
        PFE #0 : Links ok
FPC #6
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #7
        PFE #0 : Links ok
        PFE #1 : Links ok
SIB #4
plane state: S_ACTIVE
FPC #0
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #1
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #2
        PFE #0 : Links ok
FPC #4
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #5
        PFE #0 : Links ok
FPC #6
        PFE #0 : Links ok
        PFE #1 : Links ok
FPC #7
```

```

PFE #0 : Links ok
PFE #1 : Links ok

show chassis fabric sibs (T4000 Core Router)
user@host> show chassis fabric sibs
Fabric management SIB state:
SIB #0
  plane state: S_SPARE
  FPC #2
    PFE #0 : Links ok
  FPC #3
    PFE #0 : Links ok
  FPC #5
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #6
    PFE #0 : Links ok
    PFE #1 : Links ok
SIB #1
  plane state: S_ACTIVE
  FPC #2
    PFE #0 : Links ok
  FPC #3
    PFE #0 : Links ok
  FPC #5
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #6
    PFE #0 : Links ok
    PFE #1 : Links ok
SIB #2
  plane state: S_ACTIVE
  FPC #2
    PFE #0 : Links ok
  FPC #3
    PFE #0 : Links ok
  FPC #5
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #6
    PFE #0 : Links ok
    PFE #1 : Links ok
SIB #3
  plane state: S_ACTIVE
  FPC #2
    PFE #0 : Links ok
  FPC #3
    PFE #0 : Links ok
  FPC #5
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #6
    PFE #0 : Links ok
    PFE #1 : Links ok
SIB #4
  plane state: S_ACTIVE
  FPC #2
    PFE #0 : Links ok
  FPC #3
    PFE #0 : Links ok
  FPC #5
    PFE #0 : Links ok

```

```
        PFE #1 : Links ok
FPC #6
        PFE #0 : Links ok
        PFE #1 : Links ok
```

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

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

```
-----
Fabric management SIB state:
SIB #1
  plane state: S_ACTIVE , plane has link errors on 2 pfes
  FPC #0
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #1
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #3
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #4
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #5
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #7
    PFE #0 : Links ok
    PFE #1 : Links ok
SIB #2
  plane state: S_ACTIVE
  LCC #0      : Links ok
  LCC #1      : Links ok
SIB #3
  plane state: S_ACTIVE
  LCC #0      : Links ok
  LCC #1      : Links ok
SIB #4
  plane state: S_ACTIVE
  LCC #0      : Links ok
  LCC #1      : Links ok
```

```
lcc0-re0:
```

```
-----
Fabric management SIB state:
SIB #1
  plane state: S_ACTIVE
  FPC #0
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #1
    PFE #1 : Links ok
  FPC #2
    PFE #0 : Links ok
    PFE #1 : Links ok
  FPC #3
    PFE #1 : Links ok
  FPC #4
    PFE #1 : Links ok
  FPC #5
    PFE #0 : Links ok
```



```
FPC #6
  PFE #1 : Links ok
FPC #7
  PFE #1 : Links ok
SCC      : Links ok
SIB #2
plane state: S_ACTIVE
FPC #0
  PFE #0 : Links ok
  PFE #1 : Links ok
FPC #1
  PFE #1 : Links ok
FPC #2
  PFE #0 : Links ok
  PFE #1 : Links ok
FPC #3
  PFE #1 : Links ok
FPC #4
  PFE #1 : Links ok
FPC #5
  PFE #0 : Links ok
FPC #6
  PFE #1 : Links ok
FPC #7
  PFE #1 : Links ok
SCC      : Links ok
SIB #3
plane state: S_ACTIVE
FPC #0
  PFE #0 : Links ok
  PFE #1 : Links ok
FPC #1
  PFE #1 : Links ok
FPC #2
  PFE #0 : Links ok
  PFE #1 : Links ok
FPC #3
  PFE #1 : Links ok
FPC #4
  PFE #1 : Links ok
FPC #5
  PFE #0 : Links ok
FPC #6
  PFE #1 : Links ok
FPC #7
  PFE #1 : Links ok
SCC      : Links ok
SIB #4
plane state: S_ACTIVE
FPC #0
  PFE #0 : Links ok
  PFE #1 : Links ok
FPC #1
  PFE #1 : Links ok
FPC #2
  PFE #0 : Links ok
  PFE #1 : Links ok
FPC #3
  PFE #1 : Links ok
FPC #4
  PFE #1 : Links ok
```

```
FPC #5
  PFE #0 : Links ok
FPC #6
  PFE #1 : Links ok
FPC #7
  PFE #1 : Links ok
SCC      : Links o
```

```
show chassis fabric
sibs lcc (TX Matrix
Router)
```

```
user@host> show chassis fabric sibs lcc 0
lcc1-re0:
```

```
-----
Fabric management SIB state:
```

```
SIB #1
plane state: S_ACTIVE
FPC #0
  PFE #0 : Links ok
FPC #2
  PFE #1 : Links ok
FPC #4
  PFE #0 : Links ok
FPC #5
  PFE #1 : Links ok
FPC #7
  PFE #0 : Links ok
SCC      : Links ok
```

```
SIB #2
plane state: S_ACTIVE
FPC #0
  PFE #0 : Links ok
FPC #2
  PFE #1 : Links ok
FPC #4
  PFE #0 : Links ok
FPC #5
  PFE #1 : Links ok
FPC #7
  PFE #0 : Links ok
SCC      : Links ok
```

```
SIB #3
plane state: S_ACTIVE
FPC #0
  PFE #0 : Links ok
FPC #2
  PFE #1 : Links ok
FPC #4
  PFE #0 : Links ok
FPC #5
  PFE #1 : Links ok
FPC #7
  PFE #0 : Links ok
SCC      : Links ok
```

```
SIB #4
plane state: S_ACTIVE
FPC #0
  PFE #0 : Links ok
FPC #2
  PFE #1 : Links ok
FPC #4
  PFE #0 : Links ok
FPC #5
  PFE #1 : Links ok
```

```

FPC #7
  PFE #0 : Links ok
  SCC    : Links ok

show chassis fabric sibs scc (TX Matrix Router)
user@host> show chassis fabric sibs scc
scc-re0:
-----
Fabric management SIB state:
SIB #1
  plane state: S_ACTIVE
  LCC #0      : Links ok
  LCC #1      : Links ok
SIB #2
  plane state: S_ACTIVE
  LCC #0      : Links ok
  LCC #1      : Links ok
SIB #3
  plane state: S_ACTIVE
  LCC #0      : Links ok
  LCC #1      : Links ok
SIB #4
  plane state: S_ACTIVE
  LCC #0      : Links ok
  LCC #1      : Links ok

```

show chassis fabric 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 Switches) | 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 Switches. |
| 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 T1600 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 Switches 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 T1600 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 (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display the fabric topology state for a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> |

scc—(TX Matrix routers only) (Optional) Display the fabric topology state for the TX Matrix router (or switch-card chassis).

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

sib-slot—(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 490](#)
[show chassis fabric topology lcc on page 492](#)
[show chassis fabric topology \(TX Matrix Plus Router\) on page 494](#)
[show chassis fabric topology sfc \(TX Matrix Plus Router\) on page 496](#)
[show chassis fabric topology lcc \(TX Matrix Plus Router\) on page 497](#)
[show chassis fabric topology \(T4000 Core Router\) on page 498](#)
[show chassis fabric topology \(PTX Series Packet Transport Switches\) on page 499](#)

Output Fields [Table 46 on page 487](#) lists the output fields for the **show chassis fabric topology** command. Output fields are listed in the approximate order in which they appear.

Table 46: 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 46: 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 Switches.</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. |

Table 46: show chassis fabric topology Output Fields (*continued*)

| | |
|--|---|
| Out-Links: and In-Links (TX Matrix Plus router only) | <p>State of the links from the F13 SIB to the LCC or vice-versa. Out-Links indicate Tx links. In-Links indicate an Rx link. The following additional fields are displayed for each SIB:</p> <hr/> <ul style="list-style-type: none">• VCSEL Status—Optical (VCSEL channel) link status for the corresponding electrical (HSL2) link. The states include:<ul style="list-style-type: none">• OK—Optical signal power is good.• Error—Internal error.• LOS—Loss of Signal detected.• High Cur—The Tx Bias-current is higher than threshold on this channel. This is applicable only to Tx Channels.• Low Cur —The Tx Bias-current is lower than threshold on this channel. This is applicable only to Tx Channels.• HSL2 Channel—HSL2 is the electrical link used to connect ASICs to the in-link and out-link. The channel number corresponds to the link and varies based on the ASIC or configuration. <hr/> <ul style="list-style-type: none">• HSL2 Status —The status of the HSL2 Channel. Includes the following states:<ul style="list-style-type: none">• Up—Channel is up.• Down—Channel is down.• Reset—Channel has been reset.• Fault—Channel has faults. <p>The following is a sample output with description of the fields displayed in the output for Out-Links:</p> <p>Out-Links: =====</p> <p>SF_3_13_FB_A(21,09) -> FPC7_B_SG(3,3,6)_FB_A(18,09) OK 203 Up</p> <hr/> |
|--|---|

Table 46: show chassis fabric topology Output Fields (*continued*)

- **SF_3_13**—Name of the ASIC, with Fabric F1 or F3 mode. In this case, 3 is the F3 direction and is used in the Tx path. You can also have F1 mode and Rx path instead.
- **FB_A (21, 09)**—Fiber bundle A, with VCSEL unit number 21 within the SIB, and channel number 9 within the unit number.
- **FPC7_B_SG(3,3,6)**—FPC 7.with bottom Packet Forwarding Engine (T for top PFE and B for bottom PFE), SG ASIC, with number 3 and port number 3, with HSL2 link number with the SIB as 6.
- **FB_A(18, 09)**—Fiber Bundle, with VCSEL unit number 18 within the SIB, and VCSEL channel number 9 within the unit number.

The following is a sample output with description of the fields displayed in the output for In-Links:

In-Links:

=====

```
FPC0_T_SG(0,0,0)_FB_D(04,11)  -> SF_1_00_FB_D(01,11)      OK      0
Up
```

- **FPC0**—FPC 0.
- **T**—Top Packet Forwarding Engine.
- **SG (0, 0, 0)**—SG ASIC with port number 0 and link 0.
- **FB_D (04,11)**—Fiber Bundle D with VCSEL 4, channel 11.
- **SF_1**—Indicates F1 mode and Rx path.
- **SF_1_00_FB_D(01,11)** —Indicates F1 mode and Rx path with port 0, fiber bundle D, with VCSEL 1, channel 11.

Sample Output

show chassis fabric
topology scc (TX
Matrix Router)

```
user@host> show chassis fabric topology scc
scc-re1:
```

```
-----
fchip (mode)
in-links      state  out-links      state
-----
```

Sib #0 :

SIB0_F0 (F2):

| | | | |
|---------------------------------|-------|---------------------------------|----|
| LCC0_SIB-L0_F0,03->SIB-S0_F0,00 | UP | SIB-S0_F0,00->LCC0_SIB-L0_F1,00 | UP |
| LCC1_SIB-L0_F0,03->SIB-S0_F0,01 | UP | SIB-S0_F0,01->LCC1_SIB-L0_F1,08 | UP |
| LCC2_SIB-L0_F0,03->SIB-S0_F0,02 | RESET | SIB-S0_F0,02->LCC2_SIB-L0_F1,08 | UP |
| LCC3_SIB-L0_F0,03->SIB-S0_F0,03 | RESET | SIB-S0_F0,03->LCC3_SIB-L0_F1,00 | UP |
| LCC0_SIB-L0_F0,02->SIB-S0_F0,04 | UP | SIB-S0_F0,04->LCC0_SIB-L0_F1,01 | UP |
| LCC1_SIB-L0_F0,02->SIB-S0_F0,05 | UP | SIB-S0_F0,05->LCC1_SIB-L0_F1,09 | UP |
| LCC2_SIB-L0_F0,02->SIB-S0_F0,06 | RESET | SIB-S0_F0,06->LCC2_SIB-L0_F1,09 | UP |
| LCC3_SIB-L0_F0,02->SIB-S0_F0,07 | RESET | SIB-S0_F0,07->LCC3_SIB-L0_F1,01 | UP |
| LCC0_SIB-L0_F0,07->SIB-S0_F0,08 | UP | SIB-S0_F0,08->LCC0_SIB-L0_F1,04 | UP |
| LCC1_SIB-L0_F0,07->SIB-S0_F0,09 | UP | SIB-S0_F0,09->LCC1_SIB-L0_F1,12 | UP |
| LCC2_SIB-L0_F0,07->SIB-S0_F0,10 | RESET | SIB-S0_F0,10->LCC2_SIB-L0_F1,12 | UP |
| LCC3_SIB-L0_F0,07->SIB-S0_F0,11 | RESET | SIB-S0_F0,11->LCC3_SIB-L0_F1,04 | UP |
| LCC0_SIB-L0_F0,06->SIB-S0_F0,12 | UP | SIB-S0_F0,12->LCC0_SIB-L0_F1,05 | UP |
| LCC1_SIB-L0_F0,06->SIB-S0_F0,13 | UP | SIB-S0_F0,13->LCC1_SIB-L0_F1,13 | UP |
| LCC2_SIB-L0_F0,06->SIB-S0_F0,14 | RESET | SIB-S0_F0,14->LCC2_SIB-L0_F1,13 | UP |
| LCC3_SIB-L0_F0,06->SIB-S0_F0,15 | RESET | SIB-S0_F0,15->LCC3_SIB-L0_F1,05 | UP |

SIB0_F1 (F2):

| | | | |
|---------------------------------|-------|---------------------------------|----|
| LCC0_SIB-L0_F0,11->SIB-S0_F1,00 | UP | SIB-S0_F1,00->LCC0_SIB-L0_F1,08 | UP |
| LCC1_SIB-L0_F0,11->SIB-S0_F1,01 | UP | SIB-S0_F1,01->LCC1_SIB-L0_F1,00 | UP |
| LCC2_SIB-L0_F0,11->SIB-S0_F1,02 | RESET | SIB-S0_F1,02->LCC2_SIB-L0_F1,00 | UP |
| LCC3_SIB-L0_F0,11->SIB-S0_F1,03 | RESET | SIB-S0_F1,03->LCC3_SIB-L0_F1,08 | UP |
| LCC0_SIB-L0_F0,10->SIB-S0_F1,04 | UP | SIB-S0_F1,04->LCC0_SIB-L0_F1,09 | UP |
| LCC1_SIB-L0_F0,10->SIB-S0_F1,05 | UP | SIB-S0_F1,05->LCC1_SIB-L0_F1,01 | UP |
| LCC2_SIB-L0_F0,10->SIB-S0_F1,06 | RESET | SIB-S0_F1,06->LCC2_SIB-L0_F1,01 | UP |
| LCC3_SIB-L0_F0,10->SIB-S0_F1,07 | RESET | SIB-S0_F1,07->LCC3_SIB-L0_F1,09 | UP |
| LCC0_SIB-L0_F0,15->SIB-S0_F1,08 | UP | SIB-S0_F1,08->LCC0_SIB-L0_F1,12 | UP |
| LCC1_SIB-L0_F0,15->SIB-S0_F1,09 | UP | SIB-S0_F1,09->LCC1_SIB-L0_F1,04 | UP |
| LCC2_SIB-L0_F0,15->SIB-S0_F1,10 | RESET | SIB-S0_F1,10->LCC2_SIB-L0_F1,04 | UP |
| LCC3_SIB-L0_F0,15->SIB-S0_F1,11 | RESET | SIB-S0_F1,11->LCC3_SIB-L0_F1,12 | UP |
| LCC0_SIB-L0_F0,14->SIB-S0_F1,12 | UP | SIB-S0_F1,12->LCC0_SIB-L0_F1,13 | UP |
| LCC1_SIB-L0_F0,14->SIB-S0_F1,13 | UP | SIB-S0_F1,13->LCC1_SIB-L0_F1,05 | UP |
| LCC2_SIB-L0_F0,14->SIB-S0_F1,14 | RESET | SIB-S0_F1,14->LCC2_SIB-L0_F1,05 | |
| UP | | | |
| LCC3_SIB-L0_F0,14->SIB-S0_F1,15 | RESET | SIB-S0_F1,15->LCC3_SIB-L0_F1,13 | |
| UP | | | |

SIB0_F2 (F2):

| | | | |
|---------------------------------|-------|---------------------------------|----|
| LCC3_SIB-L0_F0,13->SIB-S0_F2,00 | RESET | SIB-S0_F2,00->LCC3_SIB-L0_F1,14 | UP |
| LCC2_SIB-L0_F0,13->SIB-S0_F2,01 | RESET | SIB-S0_F2,01->LCC2_SIB-L0_F1,06 | |
| UP | | | |
| LCC1_SIB-L0_F0,13->SIB-S0_F2,02 | UP | SIB-S0_F2,02->LCC1_SIB-L0_F1,06 | UP |
| LCC0_SIB-L0_F0,13->SIB-S0_F2,03 | UP | SIB-S0_F2,03->LCC0_SIB-L0_F1,14 | UP |
| LCC3_SIB-L0_F0,12->SIB-S0_F2,04 | RESET | SIB-S0_F2,04->LCC3_SIB-L0_F1,15 | |
| UP | | | |
| LCC2_SIB-L0_F0,12->SIB-S0_F2,05 | RESET | SIB-S0_F2,05->LCC2_SIB-L0_F1,07 | UP |
| LCC1_SIB-L0_F0,12->SIB-S0_F2,06 | UP | SIB-S0_F2,06->LCC1_SIB-L0_F1,07 | UP |
| LCC0_SIB-L0_F0,12->SIB-S0_F2,07 | UP | SIB-S0_F2,07->LCC0_SIB-L0_F1,15 | UP |
| LCC3_SIB-L0_F0,09->SIB-S0_F2,08 | RESET | SIB-S0_F2,08->LCC3_SIB-L0_F1,10 | |
| UP | | | |
| LCC2_SIB-L0_F0,09->SIB-S0_F2,09 | RESET | SIB-S0_F2,09->LCC2_SIB-L0_F1,02 | |
| UP | | | |
| LCC1_SIB-L0_F0,09->SIB-S0_F2,10 | UP | SIB-S0_F2,10->LCC1_SIB-L0_F1,02 | UP |
| LCC0_SIB-L0_F0,09->SIB-S0_F2,11 | UP | SIB-S0_F2,11->LCC0_SIB-L0_F1,10 | UP |
| LCC3_SIB-L0_F0,08->SIB-S0_F2,12 | RESET | SIB-S0_F2,12->LCC3_SIB-L0_F1,11 | |
| UP | | | |
| LCC2_SIB-L0_F0,08->SIB-S0_F2,13 | RESET | SIB-S0_F2,13->LCC2_SIB-L0_F1,03 | |
| UP | | | |
| LCC1_SIB-L0_F0,08->SIB-S0_F2,14 | UP | SIB-S0_F2,14->LCC1_SIB-L0_F1,03 | UP |
| LCC0_SIB-L0_F0,08->SIB-S0_F2,15 | UP | SIB-S0_F2,15->LCC0_SIB-L0_F1,11 | UP |

SIB0_F3 (F2):

| | | | |
|---------------------------------|-------|---------------------------------|----|
| LCC3_SIB-L0_F0,05->SIB-S0_F3,00 | RESET | SIB-S0_F3,00->LCC3_SIB-L0_F1,06 | |
| UP | | | |
| LCC2_SIB-L0_F0,05->SIB-S0_F3,01 | RESET | SIB-S0_F3,01->LCC2_SIB-L0_F1,14 | |
| UP | | | |
| LCC1_SIB-L0_F0,05->SIB-S0_F3,02 | UP | SIB-S0_F3,02->LCC1_SIB-L0_F1,14 | UP |
| LCC0_SIB-L0_F0,05->SIB-S0_F3,03 | UP | SIB-S0_F3,03->LCC0_SIB-L0_F1,06 | UP |
| LCC3_SIB-L0_F0,04->SIB-S0_F3,04 | RESET | SIB-S0_F3,04->LCC3_SIB-L0_F1,07 | |
| UP | | | |
| LCC2_SIB-L0_F0,04->SIB-S0_F3,05 | RESET | SIB-S0_F3,05->LCC2_SIB-L0_F1,15 | |
| UP | | | |
| LCC1_SIB-L0_F0,04->SIB-S0_F3,06 | UP | SIB-S0_F3,06->LCC1_SIB-L0_F1,15 | UP |
| LCC0_SIB-L0_F0,04->SIB-S0_F3,07 | UP | SIB-S0_F3,07->LCC0_SIB-L0_F1,07 | UP |
| LCC3_SIB-L0_F0,01->SIB-S0_F3,08 | RESET | SIB-S0_F3,08->LCC3_SIB-L0_F1,02 | |
| UP | | | |
| LCC2_SIB-L0_F0,01->SIB-S0_F3,09 | RESET | SIB-S0_F3,09->LCC2_SIB-L0_F1,10 | |
| UP | | | |
| LCC1_SIB-L0_F0,01->SIB-S0_F3,10 | UP | SIB-S0_F3,10->LCC1_SIB-L0_F1,10 | UP |
| LCC0_SIB-L0_F0,01->SIB-S0_F3,11 | UP | SIB-S0_F3,11->LCC0_SIB-L0_F1,02 | UP |

```

LCC3_SIB-L0_F0,00->SIB-S0_F3,12  RESET      SIB-S0_F3,12->LCC3_SIB-L0_F1,03
UP
LCC2_SIB-L0_F0,00->SIB-S0_F3,13  RESET      SIB-S0_F3,13->LCC2_SIB-L0_F1,11
UP
LCC1_SIB-L0_F0,00->SIB-S0_F3,14  UP          SIB-S0_F3,14->LCC1_SIB-L0_F1,11  UP
LCC0_SIB-L0_F0,00->SIB-S0_F3,15  UP          SIB-S0_F3,15->LCC0_SIB-L0_F1,03  UP
Sib #1 :
-----
SIB1_F0 (F2 ):
LCC0_SIB-L1_F0,03->SIB-S1_F0,00  RESET      SIB-S1_F0,00->LCC0_SIB-L1_F1,00  UP
LCC1_SIB-L1_F0,03->SIB-S1_F0,01  RESET      SIB-S1_F0,01->LCC1_SIB-L1_F1,08  UP
LCC2_SIB-L1_F0,03->SIB-S1_F0,02  RESET      SIB-S1_F0,02->LCC2_SIB-L1_F1,08  UP
LCC3_SIB-L1_F0,03->SIB-S1_F0,03  RESET      SIB-S1_F0,03->LCC3_SIB-L1_F1,00  UP
LCC0_SIB-L1_F0,02->SIB-S1_F0,04  RESET      SIB-S1_F0,04->LCC0_SIB-L1_F1,01  UP
LCC1_SIB-L1_F0,02->SIB-S1_F0,05  RESET      SIB-S1_F0,05->LCC1_SIB-L1_F1,09  UP
LCC2_SIB-L1_F0,02->SIB-S1_F0,06  RESET      SIB-S1_F0,06->LCC2_SIB-L1_F1,09  UP
LCC3_SIB-L1_F0,02->SIB-S1_F0,07  RESET      SIB-S1_F0,07->LCC3_SIB-L1_F1,01  UP
LCC0_SIB-L1_F0,07->SIB-S1_F0,08  RESET      SIB-S1_F0,08->LCC0_SIB-L1_F1,04  UP
LCC1_SIB-L1_F0,07->SIB-S1_F0,09  RESET      SIB-S1_F0,09->LCC1_SIB-L1_F1,12  UP
LCC2_SIB-L1_F0,07->SIB-S1_F0,10  RESET      SIB-S1_F0,10->LCC2_SIB-L1_F1,12  UP
LCC3_SIB-L1_F0,07->SIB-S1_F0,11  RESET      SIB-S1_F0,11->LCC3_SIB-L1_F1,04  UP
LCC0_SIB-L1_F0,06->SIB-S1_F0,12  RESET      SIB-S1_F0,12->LCC0_SIB-L1_F1,05  UP
LCC1_SIB-L1_F0,06->SIB-S1_F0,13  RESET      SIB-S1_F0,13->LCC1_SIB-L1_F1,13  UP
LCC2_SIB-L1_F0,06->SIB-S1_F0,14  RESET      SIB-S1_F0,14->LCC2_SIB-L1_F1,13  UP
LCC3_SIB-L1_F0,06->SIB-S1_F0,15  RESET      SIB-S1_F0,15->LCC3_SIB-L1_F1,05  UP
SIB1_F1 (F2 ):
LCC0_SIB-L1_F0,11->SIB-S1_F1,00  RESET      SIB-S1_F1,00->LCC0_SIB-L1_F1,08  UP
LCC1_SIB-L1_F0,11->SIB-S1_F1,01  RESET      SIB-S1_F1,01->LCC1_SIB-L1_F1,00  UP
LCC2_SIB-L1_F0,11->SIB-S1_F1,02  RESET      SIB-S1_F1,02->LCC2_SIB-L1_F1,00  UP
LCC3_SIB-L1_F0,11->SIB-S1_F1,03  RESET      SIB-S1_F1,03->LCC3_SIB-L1_F1,08  UP
LCC0_SIB-L1_F0,10->SIB-S1_F1,04  RESET      SIB-S1_F1,04->LCC0_SIB-L1_F1,09  UP
LCC1_SIB-L1_F0,10->SIB-S1_F1,05  RESET      SIB-S1_F1,05->LCC1_SIB-L1_F1,01  UP
LCC2_SIB-L1_F0,10->SIB-S1_F1,06  RESET      SIB-S1_F1,06->LCC2_SIB-L1_F1,01  UP
LCC3_SIB-L1_F0,10->SIB-S1_F1,07  RESET      SIB-S1_F1,07->LCC3_SIB-L1_F1,09  UP
LCC0_SIB-L1_F0,15->SIB-S1_F1,08  RESET      SIB-S1_F1,08->LCC0_SIB-L1_F1,12  UP
LCC1_SIB-L1_F0,15->SIB-S1_F1,09  RESET      SIB-S1_F1,09->LCC1_SIB-L1_F1,04  UP
LCC2_SIB-L1_F0,15->SIB-S1_F1,10  RESET      SIB-S1_F1,10->LCC2_SIB-L1_F1,04  UP
LCC3_SIB-L1_F0,15->SIB-S1_F1,11  RESET      SIB-S1_F1,11->LCC3_SIB-L1_F1,12,05  UP
LCC0_SIB-L1_F0,14->SIB-S1_F1,12  RESET      SIB-S1_F1,12->LCC0_SIB-L1_F1,13  UP
LCC1_SIB-L1_F0,14->SIB-S1_F1,13  RESET      SIB-S1_F1,13->LCC1_SIB-L1_F1,05  UP
LCC2_SIB-L1_F0,14->SIB-S1_F1,14  RESET      SIB-S1_F1,14->LCC2_SIB-L1_F1,05  UP

```

show chassis fabric
topology lcc

```

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

```

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-----
      fchip (mode)
in-links      state      out-links      state
-----
Sib #2 :
-----
SIB2_F0 (F1 ):
FPC0_T->SIB-L2_F0,00  DOWN      SIB-L2_F0,00->SIB-S2_F3,15  DOWN
FPC0_B->SIB-L2_F0,01  UP        SIB-L2_F0,01->SIB-S2_F3,11  DOWN
FPC1_T->SIB-L2_F0,02  DOWN      SIB-L2_F0,02->SIB-S2_F0,04  DOWN
FPC1_B->SIB-L2_F0,03  DOWN      SIB-L2_F0,03->SIB-S2_F0,00  DOWN
FPC2_T->SIB-L2_F0,04  DOWN      SIB-L2_F0,04->SIB-S2_F3,07  DOWN
FPC2_B->SIB-L2_F0,05  DOWN      SIB-L2_F0,05->SIB-S2_F3,03  DOWN
FPC3_T->SIB-L2_F0,06  DOWN      SIB-L2_F0,06->SIB-S2_F0,12  DOWN
FPC3_B->SIB-L2_F0,07  DOWN      SIB-L2_F0,07->SIB-S2_F0,08  DOWN
FPC4_T->SIB-L2_F0,08  DOWN      SIB-L2_F0,08->SIB-S2_F2,15  DOWN
FPC4_B->SIB-L2_F0,09  DOWN      SIB-L2_F0,09->SIB-S2_F2,11  DOWN

```

```

FPC5_T->SIB-L2_F0,10    DOWN    SIB-L2_F0,10->SIB-S2_F1,04 DOWN
FPC5_B->SIB-L2_F0,11    DOWN    SIB-L2_F0,11->SIB-S2_F1,00 DOWN
FPC6_T->SIB-L2_F0,12    DOWN    SIB-L2_F0,12->SIB-S2_F2,07 DOWN
FPC6_B->SIB-L2_F0,13    UP      SIB-L2_F0,13->SIB-S2_F2,03 DOWN
FPC7_T->SIB-L2_F0,14    DOWN    SIB-L2_F0,14->SIB-S2_F1,12 DOWN
FPC7_B->SIB-L2_F0,15    DOWN    SIB-L2_F0,15->SIB-S2_F1,08 DOWN
SIB2_F1 (F3 ):
SIB-S2_F0,00->SIB-L2_F1,00 UP    SIB-L2_F1,00->FPC7_B    DOWN
SIB-S2_F0,04->SIB-L2_F1,01 UP    SIB-L2_F1,01->FPC7_T    DOWN
SIB-S2_F3,11->SIB-L2_F1,02 UP    SIB-L2_F1,02->FPC6_B    DOWN
SIB-S2_F3,15->SIB-L2_F1,03 UP    SIB-L2_F1,03->FPC6_T    DOWN
SIB-S2_F0,08->SIB-L2_F1,04 UP    SIB-L2_F1,04->FPC5_B    DOWN
SIB-S2_F0,12->SIB-L2_F1,05 UP    SIB-L2_F1,05->FPC5_T    DOWN
SIB-S2_F3,03->SIB-L2_F1,06 UP    SIB-L2_F1,06->FPC4_B    DOWN
SIB-S2_F3,07->SIB-L2_F1,07 UP    SIB-L2_F1,07->FPC4_T    DOWN
SIB-S2_F1,00->SIB-L2_F1,08 UP    SIB-L2_F1,08->FPC3_B    DOWN
SIB-S2_F1,04->SIB-L2_F1,09 UP    SIB-L2_F1,09->FPC3_T    DOWN
SIB-S2_F2,11->SIB-L2_F1,10 UP    SIB-L2_F1,10->FPC2_B    DOWN
SIB-S2_F2,15->SIB-L2_F1,11 UP    SIB-L2_F1,11->FPC2_T    DOWN
SIB-S2_F1,08->SIB-L2_F1,12 UP    SIB-L2_F1,12->FPC1_B    DOWN
SIB-S2_F1,12->SIB-L2_F1,13 UP    SIB-L2_F1,13->FPC1_T    DOWN
SIB-S2_F2,03->SIB-L2_F1,14 UP    SIB-L2_F1,14->FPC0_B    DOWN
SIB-S2_F2,07->SIB-L2_F1,15 UP    SIB-L2_F1,15->FPC0_T    DOWN
Sib #4 :
-----
SIB4_F0 (F1 ):
FPC0_T->SIB-L4_F0,00    RESET    SIB-L4_F0,00->SIB-S4_F3,15 UP
FPC0_B->SIB-L4_F0,01    UP        SIB-L4_F0,01->SIB-S4_F3,11 UP
FPC1_T->SIB-L4_F0,02    RESET    SIB-L4_F0,02->SIB-S4_F0,04 UP
FPC1_B->SIB-L4_F0,03    RESET    SIB-L4_F0,03->SIB-S4_F0,00 UP
FPC2_T->SIB-L4_F0,04    RESET    SIB-L4_F0,04->SIB-S4_F3,07 UP
FPC2_B->SIB-L4_F0,05    RESET    SIB-L4_F0,05->SIB-S4_F3,03 UP
FPC3_T->SIB-L4_F0,06    RESET    SIB-L4_F0,06->SIB-S4_F0,12 UP
FPC3_B->SIB-L4_F0,07    RESET    SIB-L4_F0,07->SIB-S4_F0,08 UP
FPC4_T->SIB-L4_F0,08    RESET    SIB-L4_F0,08->SIB-S4_F2,15 UP
FPC4_B->SIB-L4_F0,09    RESET    SIB-L4_F0,09->SIB-S4_F2,11 UP
FPC5_T->SIB-L4_F0,10    RESET    SIB-L4_F0,10->SIB-S4_F1,04 UP
FPC5_B->SIB-L4_F0,11    RESET    SIB-L4_F0,11->SIB-S4_F1,00 UP
FPC6_T->SIB-L4_F0,12    RESET    SIB-L4_F0,12->SIB-S4_F2,07 UP
FPC6_B->SIB-L4_F0,13    UP        SIB-L4_F0,13->SIB-S4_F2,03 UP
FPC7_T->SIB-L4_F0,14    RESET    SIB-L4_F0,14->SIB-S4_F1,12 UP
FPC7_B->SIB-L4_F0,15    RESET    SIB-L4_F0,15->SIB-S4_F1,08 UP
SIB4_F1 (F3 ):
SIB-S4_F0,00->SIB-L4_F1,00 UP    SIB-L4_F1,00->FPC7_B    UP
SIB-S4_F0,04->SIB-L4_F1,01 UP    SIB-L4_F1,01->FPC7_T    UP
SIB-S4_F3,11->SIB-L4_F1,02 UP    SIB-L4_F1,02->FPC6_B    UP
SIB-S4_F3,15->SIB-L4_F1,03 UP    SIB-L4_F1,03->FPC6_T    UP
SIB-S4_F0,08->SIB-L4_F1,04 UP    SIB-L4_F1,04->FPC5_B    UP
SIB-S4_F0,12->SIB-L4_F1,05 UP    SIB-L4_F1,05->FPC5_T    UP
SIB-S4_F3,03->SIB-L4_F1,06 UP    SIB-L4_F1,06->FPC4_B    UP
SIB-S4_F3,07->SIB-L4_F1,07 UP    SIB-L4_F1,07->FPC4_T    UP
SIB-S4_F1,00->SIB-L4_F1,08 UP    SIB-L4_F1,08->FPC3_B    UP
SIB-S4_F1,04->SIB-L4_F1,09 UP    SIB-L4_F1,09->FPC3_T    UP
SIB-S4_F2,11->SIB-L4_F1,10 UP    SIB-L4_F1,10->FPC2_B    UP
SIB-S4_F2,15->SIB-L4_F1,11 UP    SIB-L4_F1,11->FPC2_T    UP
SIB-S4_F1,08->SIB-L4_F1,12 UP    SIB-L4_F1,12->FPC1_B    UP
SIB-S4_F1,12->SIB-L4_F1,13 UP    SIB-L4_F1,13->FPC1_T    UP
SIB-S4_F2,03->SIB-L4_F1,14 UP    SIB-L4_F1,14->FPC0_B    UP
SIB-S4_F2,07->SIB-L4_F1,15 UP    SIB-L4_F1,15->FPC0_T    UP

```

**show chassis fabric
topology (TX Matrix
Plus Router)**

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

1cc0-re0:

SIB0

=====

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_1_00_FB_D(01,11) | OK | 12 | Up |
| FPC0_T_SG(0,0,1)_FB_D(04,10) | -> SF_1_00_FB_D(01,10) | OK | 12 | Up |
| FPC0_T_SG(0,0,2)_FB_D(04,09) | -> SF_1_00_FB_D(01,09) | OK | 12 | Up |
| FPC0_T_SG(0,0,3)_FB_D(04,08) | -> SF_1_00_FB_D(01,08) | OK | 12 | Up |
| FPC0_T_SG(0,0,4)_FB_D(04,07) | -> SF_1_00_FB_D(01,07) | OK | 12 | Up |
| FPC0_T_SG(0,0,5)_FB_D(04,06) | -> SF_1_00_FB_D(01,06) | OK | 12 | Up |
| FPC0_T_SG(0,0,6)_FB_D(04,05) | -> SF_1_00_FB_D(01,05) | OK | 12 | Up |
| FPC0_T_SG(0,0,7)_FB_D(04,04) | -> SF_1_00_FB_D(01,04) | OK | 12 | Up |
| FPC0_B_SG(0,1,0)_FB_D(03,07) | -> SF_1_10_FB_D(00,07) | OK | 15 | Up |
| FPC0_B_SG(0,1,1)_FB_D(03,06) | -> SF_1_10_FB_D(00,06) | OK | 15 | Up |
| FPC0_B_SG(0,1,2)_FB_D(03,05) | -> SF_1_10_FB_D(00,05) | OK | 15 | Up |
| FPC0_B_SG(0,1,3)_FB_D(03,04) | -> SF_1_10_FB_D(00,04) | OK | 15 | Up |
| FPC0_B_SG(0,1,4)_FB_D(03,03) | -> SF_1_10_FB_D(00,03) | OK | 15 | Up |
| FPC0_B_SG(0,1,5)_FB_D(03,02) | -> SF_1_10_FB_D(00,02) | OK | 15 | Up |
| FPC0_B_SG(0,1,6)_FB_D(03,01) | -> SF_1_10_FB_D(00,01) | OK | 15 | Up |
| FPC0_B_SG(0,1,7)_FB_D(03,00) | -> SF_1_10_FB_D(00,00) | OK | 15 | Up |
| FPC1_T_SG(0,2,0)_FB_D(05,08) | -> SF_1_02_FB_D(02,08) | OK | 18 | Up |
| FPC1_T_SG(0,2,1)_FB_D(05,07) | -> SF_1_02_FB_D(02,07) | OK | 18 | Up |
| FPC1_T_SG(0,2,2)_FB_D(05,06) | -> SF_1_02_FB_D(02,06) | OK | 18 | Up |
| FPC1_T_SG(0,2,3)_FB_D(05,05) | -> SF_1_02_FB_D(02,05) | OK | 18 | Up |
| FPC1_T_SG(0,2,4)_FB_D(05,03) | -> SF_1_02_FB_D(02,03) | OK | 18 | Up |
| FPC1_T_SG(0,2,5)_FB_D(05,02) | -> SF_1_02_FB_D(02,02) | OK | 18 | Up |
| FPC1_T_SG(0,2,6)_FB_D(05,01) | -> SF_1_02_FB_D(02,01) | HIGH | CUR | 18 |
| FPC1_T_SG(0,2,7)_FB_D(05,00) | -> SF_1_02_FB_D(02,00) | OK | 18 | Up |
| FPC1_B_SG(0,3,0)_FB_D(04,03) | -> SF_1_11_FB_D(01,03) | OK | 21 | Up |
| FPC1_B_SG(0,3,1)_FB_D(04,02) | -> SF_1_11_FB_D(01,02) | OK | 21 | Up |
| FPC1_B_SG(0,3,2)_FB_D(04,01) | -> SF_1_11_FB_D(01,01) | OK | 21 | Up |
| FPC1_B_SG(0,3,3)_FB_D(04,00) | -> SF_1_11_FB_D(01,00) | OK | 21 | Up |
| FPC1_B_SG(0,3,4)_FB_D(03,11) | -> SF_1_11_FB_D(00,11) | OK | 21 | Up |
| FPC1_B_SG(0,3,5)_FB_D(03,10) | -> SF_1_11_FB_D(00,10) | OK | 21 | Up |
| FPC1_B_SG(0,3,6)_FB_D(03,09) | -> SF_1_11_FB_D(00,09) | OK | 21 | Up |
| FPC1_B_SG(0,3,7)_FB_D(03,08) | -> SF_1_11_FB_D(00,08) | OK | 21 | Up |
| FPC2_T_SG(1,0,0)_FB_C(10,11) | -> SF_1_04_FB_C(07,11) | OK | 12 | Up |
| FPC2_T_SG(1,0,1)_FB_C(10,10) | -> SF_1_04_FB_C(07,10) | OK | 12 | Up |
| FPC2_T_SG(1,0,2)_FB_C(10,09) | -> SF_1_04_FB_C(07,09) | OK | 12 | Up |
| FPC2_T_SG(1,0,3)_FB_C(10,08) | -> SF_1_04_FB_C(07,08) | OK | 12 | Up |
| FPC2_T_SG(1,0,4)_FB_C(10,07) | -> SF_1_04_FB_C(07,07) | OK | 12 | Up |
| FPC2_T_SG(1,0,5)_FB_C(10,06) | -> SF_1_04_FB_C(07,06) | OK | 12 | Up |
| FPC2_T_SG(1,0,6)_FB_C(10,05) | -> SF_1_04_FB_C(07,05) | OK | 12 | Up |
| FPC2_T_SG(1,0,7)_FB_C(10,04) | -> SF_1_04_FB_C(07,04) | OK | 12 | Up |
| FPC2_B_SG(1,1,0)_FB_C(09,07) | -> SF_1_14_FB_C(06,07) | OK | 15 | Up |
| FPC2_B_SG(1,1,1)_FB_C(09,06) | -> SF_1_14_FB_C(06,06) | OK | 15 | Up |
| FPC2_B_SG(1,1,2)_FB_C(09,05) | -> SF_1_14_FB_C(06,05) | OK | 15 | Up |
| FPC2_B_SG(1,1,3)_FB_C(09,04) | -> SF_1_14_FB_C(06,04) | OK | 15 | Up |
| FPC2_B_SG(1,1,4)_FB_C(09,03) | -> SF_1_14_FB_C(06,03) | OK | 15 | Up |
| FPC2_B_SG(1,1,5)_FB_C(09,02) | -> SF_1_14_FB_C(06,02) | OK | 15 | Up |

| | | | | |
|------------------------------|------------------------|------|-----|----|
| FPC2_B_SG(1,1,6)_FB_C(09,01) | -> SF_1_14_FB_C(06,01) | OK | 15 | Up |
| FPC2_B_SG(1,1,7)_FB_C(09,00) | -> SF_1_14_FB_C(06,00) | OK | 15 | Up |
| FPC3_T_SG(1,2,0)_FB_C(11,08) | -> SF_1_06_FB_C(08,08) | OK | 18 | Up |
| FPC3_T_SG(1,2,1)_FB_C(11,07) | -> SF_1_06_FB_C(08,07) | OK | 18 | Up |
| FPC3_T_SG(1,2,2)_FB_C(11,06) | -> SF_1_06_FB_C(08,06) | OK | 18 | Up |
| FPC3_T_SG(1,2,3)_FB_C(11,05) | -> SF_1_06_FB_C(08,05) | OK | 18 | Up |
| FPC3_T_SG(1,2,4)_FB_C(11,03) | -> SF_1_06_FB_C(08,03) | OK | 18 | Up |
| FPC3_T_SG(1,2,5)_FB_C(11,02) | -> SF_1_06_FB_C(08,02) | OK | 18 | Up |
| FPC3_T_SG(1,2,6)_FB_C(11,01) | -> SF_1_06_FB_C(08,01) | OK | 18 | Up |
| FPC3_T_SG(1,2,7)_FB_C(11,00) | -> SF_1_06_FB_C(08,00) | OK | 18 | Up |
| FPC3_B_SG(1,3,0)_FB_C(10,03) | -> SF_1_15_FB_C(07,03) | OK | 21 | Up |
| FPC3_B_SG(1,3,1)_FB_C(10,02) | -> SF_1_15_FB_C(07,02) | OK | 21 | Up |
| FPC3_B_SG(1,3,2)_FB_C(10,01) | -> SF_1_15_FB_C(07,01) | HIGH | CUR | 21 |
| FPC3_B_SG(1,3,3)_FB_C(10,00) | -> SF_1_15_FB_C(07,00) | OK | 21 | Up |
| FPC3_B_SG(1,3,4)_FB_C(09,11) | -> SF_1_15_FB_C(06,11) | OK | 21 | Up |
| FPC3_B_SG(1,3,5)_FB_C(09,10) | -> SF_1_15_FB_C(06,10) | OK | 21 | Up |
| FPC3_B_SG(1,3,6)_FB_C(09,09) | -> SF_1_15_FB_C(06,09) | OK | 21 | Up |
| FPC3_B_SG(1,3,7)_FB_C(09,08) | -> SF_1_15_FB_C(06,08) | OK | 21 | Up |
| FPC4_T_SG(2,0,0)_FB_B(16,11) | -> SF_1_01_FB_B(13,11) | OK | 12 | Up |
| FPC4_T_SG(2,0,1)_FB_B(16,10) | -> SF_1_01_FB_B(13,10) | OK | 12 | Up |
| FPC4_T_SG(2,0,2)_FB_B(16,09) | -> SF_1_01_FB_B(13,09) | OK | 12 | Up |
| FPC4_T_SG(2,0,3)_FB_B(16,08) | -> SF_1_01_FB_B(13,08) | OK | 12 | Up |
| FPC4_T_SG(2,0,4)_FB_B(16,07) | -> SF_1_01_FB_B(13,07) | OK | 12 | Up |
| FPC4_T_SG(2,0,5)_FB_B(16,06) | -> SF_1_01_FB_B(13,06) | OK | 12 | Up |
| FPC4_T_SG(2,0,6)_FB_B(16,05) | -> SF_1_01_FB_B(13,05) | OK | 12 | Up |
| FPC4_T_SG(2,0,7)_FB_B(16,04) | -> SF_1_01_FB_B(13,04) | OK | 12 | Up |
| FPC4_B_SG(2,1,0)_FB_B(15,07) | -> SF_1_08_FB_B(12,07) | OK | 15 | Up |
| FPC4_B_SG(2,1,1)_FB_B(15,06) | -> SF_1_08_FB_B(12,06) | OK | 15 | Up |
| FPC4_B_SG(2,1,2)_FB_B(15,05) | -> SF_1_08_FB_B(12,05) | OK | 15 | Up |
| FPC4_B_SG(2,1,3)_FB_B(15,04) | -> SF_1_08_FB_B(12,04) | OK | 15 | Up |
| FPC4_B_SG(2,1,4)_FB_B(15,03) | -> SF_1_08_FB_B(12,03) | OK | 15 | Up |
| FPC4_B_SG(2,1,5)_FB_B(15,02) | -> SF_1_08_FB_B(12,02) | OK | 15 | Up |
| FPC4_B_SG(2,1,6)_FB_B(15,01) | -> SF_1_08_FB_B(12,01) | OK | 15 | Up |
| FPC4_B_SG(2,1,7)_FB_B(15,00) | -> SF_1_08_FB_B(12,00) | OK | 15 | Up |
| FPC5_T_SG(2,2,0)_FB_B(17,08) | -> SF_1_03_FB_B(14,08) | OK | 18 | Up |
| FPC5_T_SG(2,2,1)_FB_B(17,07) | -> SF_1_03_FB_B(14,07) | OK | 18 | Up |
| FPC5_T_SG(2,2,2)_FB_B(17,06) | -> SF_1_03_FB_B(14,06) | OK | 18 | Up |
| FPC5_T_SG(2,2,3)_FB_B(17,05) | -> SF_1_03_FB_B(14,05) | OK | 18 | Up |
| FPC5_T_SG(2,2,4)_FB_B(17,03) | -> SF_1_03_FB_B(14,03) | OK | 18 | Up |
| FPC5_T_SG(2,2,5)_FB_B(17,02) | -> SF_1_03_FB_B(14,02) | OK | 18 | Up |
| FPC5_T_SG(2,2,6)_FB_B(17,01) | -> SF_1_03_FB_B(14,01) | OK | 18 | Up |
| FPC5_T_SG(2,2,7)_FB_B(17,00) | -> SF_1_03_FB_B(14,00) | OK | 18 | Up |
| FPC5_B_SG(2,3,0)_FB_B(16,03) | -> SF_1_09_FB_B(13,03) | OK | 21 | Up |
| FPC5_B_SG(2,3,1)_FB_B(16,02) | -> SF_1_09_FB_B(13,02) | OK | 21 | Up |
| FPC5_B_SG(2,3,2)_FB_B(16,01) | -> SF_1_09_FB_B(13,01) | OK | 21 | Up |
| FPC5_B_SG(2,3,3)_FB_B(16,00) | -> SF_1_09_FB_B(13,00) | OK | 21 | Up |
| FPC5_B_SG(2,3,4)_FB_B(15,11) | -> SF_1_09_FB_B(12,11) | OK | 21 | Up |
| FPC5_B_SG(2,3,5)_FB_B(15,10) | -> SF_1_09_FB_B(12,10) | OK | 21 | Up |
| FPC5_B_SG(2,3,6)_FB_B(15,09) | -> SF_1_09_FB_B(12,09) | OK | 21 | Up |
| FPC5_B_SG(2,3,7)_FB_B(15,08) | -> SF_1_09_FB_B(12,08) | OK | 21 | Up |
| FPC6_T_SG(3,0,0)_FB_A(22,11) | -> SF_1_05_FB_A(19,11) | OK | 12 | Up |
| FPC6_T_SG(3,0,1)_FB_A(22,10) | -> SF_1_05_FB_A(19,10) | OK | 12 | Up |
| FPC6_T_SG(3,0,2)_FB_A(22,09) | -> SF_1_05_FB_A(19,09) | OK | 12 | Up |
| FPC6_T_SG(3,0,3)_FB_A(22,08) | -> SF_1_05_FB_A(19,08) | OK | 12 | Up |
| FPC6_T_SG(3,0,4)_FB_A(22,07) | -> SF_1_05_FB_A(19,07) | OK | 12 | Up |
| FPC6_T_SG(3,0,5)_FB_A(22,06) | -> SF_1_05_FB_A(19,06) | OK | 12 | Up |
| FPC6_T_SG(3,0,6)_FB_A(22,05) | -> SF_1_05_FB_A(19,05) | OK | 12 | Up |
| FPC6_T_SG(3,0,7)_FB_A(22,04) | -> SF_1_05_FB_A(19,04) | OK | 12 | Up |
| FPC6_B_SG(3,1,0)_FB_A(21,07) | -> SF_1_12_FB_A(18,07) | OK | 15 | Up |
| FPC6_B_SG(3,1,1)_FB_A(21,06) | -> SF_1_12_FB_A(18,06) | OK | 15 | Up |
| ... | | | | |

```
show chassis fabric topology sfc (TX
Matrix Plus Router)
```

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

```
F13_SIB0
```

```
=====
```

```
Out-Links:
```

```
=====
```

| SFC0_F13_SIB_00 | -> LCC00_ST_SIB_L00 | VCSEL Status | HSL2 Channel | HSL2 Status |
|---------------------|---------------------------------|-----------------|-----------------|----------------|
| ===== | | | | |
| SF_3_00_FB_D(04,11) | -> FPC0_T_SG(0,0,0)_FB_D(01,11) | OK | 112 | Up |
| SF_3_00_FB_D(04,10) | -> FPC0_T_SG(0,0,1)_FB_D(01,10) | OK | 112 | Up |
| SF_3_00_FB_D(04,09) | -> FPC0_T_SG(0,0,2)_FB_D(01,09) | OK | 112 | Up |
| SF_3_00_FB_D(04,08) | -> FPC0_T_SG(0,0,3)_FB_D(01,08) | OK | 112 | Up |
| SF_3_00_FB_D(04,07) | -> FPC0_T_SG(0,0,4)_FB_D(01,07) | OK | 112 | Up |
| SF_3_00_FB_D(04,06) | -> FPC0_T_SG(0,0,5)_FB_D(01,06) | OK | 112 | Up |
| SF_3_00_FB_D(04,05) | -> FPC0_T_SG(0,0,6)_FB_D(01,05) | OK | 112 | Up |
| SF_3_00_FB_D(04,04) | -> FPC0_T_SG(0,0,7)_FB_D(01,04) | OK | 112 | Up |
| SF_3_01_FB_B(16,11) | -> FPC4_T_SG(2,0,0)_FB_B(13,11) | OK | 119 | Up |
| SF_3_01_FB_B(16,10) | -> FPC4_T_SG(2,0,1)_FB_B(13,10) | OK | 119 | Up |
| SF_3_01_FB_B(16,09) | -> FPC4_T_SG(2,0,2)_FB_B(13,09) | OK | 119 | Up |
| SF_3_01_FB_B(16,08) | -> FPC4_T_SG(2,0,3)_FB_B(13,08) | OK | 119 | Up |
| SF_3_01_FB_B(16,07) | -> FPC4_T_SG(2,0,4)_FB_B(13,07) | OK | 119 | Up |
| SF_3_01_FB_B(16,06) | -> FPC4_T_SG(2,0,5)_FB_B(13,06) | OK | 119 | Up |
| SF_3_01_FB_B(16,05) | -> FPC4_T_SG(2,0,6)_FB_B(13,05) | OK | 119 | Up |
| SF_3_01_FB_B(16,04) | -> FPC4_T_SG(2,0,7)_FB_B(13,04) | OK | 119 | Up |
| SF_3_02_FB_D(05,08) | -> FPC1_T_SG(0,2,0)_FB_D(02,08) | OK | 126 | Up |
| SF_3_02_FB_D(05,07) | -> FPC1_T_SG(0,2,1)_FB_D(02,07) | OK | 126 | Up |
| SF_3_02_FB_D(05,06) | -> FPC1_T_SG(0,2,2)_FB_D(02,06) | OK | 126 | Up |
| SF_3_02_FB_D(05,05) | -> FPC1_T_SG(0,2,3)_FB_D(02,05) | OK | 126 | Up |
| SF_3_02_FB_D(05,03) | -> FPC1_T_SG(0,2,4)_FB_D(02,03) | OK | 126 | Up |
| SF_3_02_FB_D(05,02) | -> FPC1_T_SG(0,2,5)_FB_D(02,02) | OK | 126 | Up |
| SF_3_02_FB_D(05,01) | -> FPC1_T_SG(0,2,6)_FB_D(02,01) | OK | 126 | Up |
| SF_3_02_FB_D(05,00) | -> FPC1_T_SG(0,2,7)_FB_D(02,00) | OK | 126 | Up |
| SF_3_03_FB_B(17,08) | -> FPC5_T_SG(2,2,0)_FB_B(14,08) | OK | 133 | Up |
| SF_3_03_FB_B(17,07) | -> FPC5_T_SG(2,2,1)_FB_B(14,07) | OK | 133 | Up |
| SF_3_03_FB_B(17,06) | -> FPC5_T_SG(2,2,2)_FB_B(14,06) | OK | 133 | Up |
| SF_3_03_FB_B(17,05) | -> FPC5_T_SG(2,2,3)_FB_B(14,05) | OK | 133 | Up |
| SF_3_03_FB_B(17,03) | -> FPC5_T_SG(2,2,4)_FB_B(14,03) | OK | 133 | Up |
| SF_3_03_FB_B(17,02) | -> FPC5_T_SG(2,2,5)_FB_B(14,02) | OK | 133 | Up |
| SF_3_03_FB_B(17,01) | -> FPC5_T_SG(2,2,6)_FB_B(14,01) | OK | 133 | Up |
| SF_3_03_FB_B(17,00) | -> FPC5_T_SG(2,2,7)_FB_B(14,00) | OK | 133 | Up |
| SF_3_04_FB_C(10,11) | -> FPC2_T_SG(1,0,0)_FB_C(07,11) | OK | 140 | Up |
| SF_3_04_FB_C(10,10) | -> FPC2_T_SG(1,0,1)_FB_C(07,10) | OK | 140 | Up |
| SF_3_04_FB_C(10,09) | -> FPC2_T_SG(1,0,2)_FB_C(07,09) | OK | 140 | Up |
| SF_3_04_FB_C(10,08) | -> FPC2_T_SG(1,0,3)_FB_C(07,08) | OK | 140 | Up |
| SF_3_04_FB_C(10,07) | -> FPC2_T_SG(1,0,4)_FB_C(07,07) | OK | 140 | Up |
| SF_3_04_FB_C(10,06) | -> FPC2_T_SG(1,0,5)_FB_C(07,06) | OK | 140 | Up |
| SF_3_04_FB_C(10,05) | -> FPC2_T_SG(1,0,6)_FB_C(07,05) | OK | 140 | Up |
| SF_3_04_FB_C(10,04) | -> FPC2_T_SG(1,0,7)_FB_C(07,04) | OK | 140 | Up |
| SF_3_05_FB_A(22,11) | -> FPC6_T_SG(3,0,0)_FB_A(19,11) | OK | 147 | Up |
| SF_3_05_FB_A(22,10) | -> FPC6_T_SG(3,0,1)_FB_A(19,10) | OK | 147 | Up |
| SF_3_05_FB_A(22,09) | -> FPC6_T_SG(3,0,2)_FB_A(19,09) | OK | 147 | Up |
| SF_3_05_FB_A(22,08) | -> FPC6_T_SG(3,0,3)_FB_A(19,08) | OK | 147 | Up |
| SF_3_05_FB_A(22,07) | -> FPC6_T_SG(3,0,4)_FB_A(19,07) | OK | 147 | Up |
| SF_3_05_FB_A(22,06) | -> FPC6_T_SG(3,0,5)_FB_A(19,06) | OK | 147 | Up |
| SF_3_05_FB_A(22,05) | -> FPC6_T_SG(3,0,6)_FB_A(19,05) | HIGH | CUR | 147 |
| SF_3_05_FB_A(22,04) | -> FPC6_T_SG(3,0,7)_FB_A(19,04) | OK | 147 | Up |
| SF_3_06_FB_C(11,08) | -> FPC3_T_SG(1,2,0)_FB_C(08,08) | OK | 154 | Up |

```

SF_3_06_FB_C(11,07) -> FPC3_T_SG(1,2,1)_FB_C(08,07)    OK      154    Up
SF_3_06_FB_C(11,06) -> FPC3_T_SG(1,2,2)_FB_C(08,06)    OK      154    Up
SF_3_06_FB_C(11,05) -> FPC3_T_SG(1,2,3)_FB_C(08,05)    OK      154    Up
SF_3_06_FB_C(11,03) -> FPC3_T_SG(1,2,4)_FB_C(08,03)    OK      154    Up
SF_3_06_FB_C(11,02) -> FPC3_T_SG(1,2,5)_FB_C(08,02)    OK      154    Up
SF_3_06_FB_C(11,01) -> FPC3_T_SG(1,2,6)_FB_C(08,01)    OK      154    Up
...

```

show chassis fabric topology lcc (TX Matrix Plus Router)

```

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

```

SIB0

=====

Out-Links:

=====

| LCC00_ST_SIB_L00 | -> SFC0_F13_SIB_00 | VCSEL Status | HSL2 Channel | HSL2 Status |
|------------------------------|------------------------|--------------|--------------|-------------|
| FPC0_T_SG(0,0,0)_FB_D(04,11) | -> SF_1_00_FB_D(01,11) | OK | 12 | Up |
| FPC0_T_SG(0,0,1)_FB_D(04,10) | -> SF_1_00_FB_D(01,10) | OK | 12 | Up |
| FPC0_T_SG(0,0,2)_FB_D(04,09) | -> SF_1_00_FB_D(01,09) | OK | 12 | Up |
| FPC0_T_SG(0,0,3)_FB_D(04,08) | -> SF_1_00_FB_D(01,08) | OK | 12 | Up |
| FPC0_T_SG(0,0,4)_FB_D(04,07) | -> SF_1_00_FB_D(01,07) | OK | 12 | Up |
| FPC0_T_SG(0,0,5)_FB_D(04,06) | -> SF_1_00_FB_D(01,06) | OK | 12 | Up |
| FPC0_T_SG(0,0,6)_FB_D(04,05) | -> SF_1_00_FB_D(01,05) | OK | 12 | Up |
| FPC0_T_SG(0,0,7)_FB_D(04,04) | -> SF_1_00_FB_D(01,04) | OK | 12 | Up |
| FPC0_B_SG(0,1,0)_FB_D(03,07) | -> SF_1_10_FB_D(00,07) | OK | 15 | Up |
| FPC0_B_SG(0,1,1)_FB_D(03,06) | -> SF_1_10_FB_D(00,06) | OK | 15 | Up |
| FPC0_B_SG(0,1,2)_FB_D(03,05) | -> SF_1_10_FB_D(00,05) | OK | 15 | Up |
| FPC0_B_SG(0,1,3)_FB_D(03,04) | -> SF_1_10_FB_D(00,04) | OK | 15 | Up |
| FPC0_B_SG(0,1,4)_FB_D(03,03) | -> SF_1_10_FB_D(00,03) | OK | 15 | Up |
| FPC0_B_SG(0,1,5)_FB_D(03,02) | -> SF_1_10_FB_D(00,02) | OK | 15 | Up |
| FPC0_B_SG(0,1,6)_FB_D(03,01) | -> SF_1_10_FB_D(00,01) | OK | 15 | Up |
| FPC0_B_SG(0,1,7)_FB_D(03,00) | -> SF_1_10_FB_D(00,00) | OK | 15 | Up |
| FPC1_T_SG(0,2,0)_FB_D(05,08) | -> SF_1_02_FB_D(02,08) | OK | 18 | Up |
| FPC1_T_SG(0,2,1)_FB_D(05,07) | -> SF_1_02_FB_D(02,07) | OK | 18 | Up |
| FPC1_T_SG(0,2,2)_FB_D(05,06) | -> SF_1_02_FB_D(02,06) | OK | 18 | Up |
| FPC1_T_SG(0,2,3)_FB_D(05,05) | -> SF_1_02_FB_D(02,05) | OK | 18 | Up |
| FPC1_T_SG(0,2,4)_FB_D(05,03) | -> SF_1_02_FB_D(02,03) | OK | 18 | Up |
| FPC1_T_SG(0,2,5)_FB_D(05,02) | -> SF_1_02_FB_D(02,02) | OK | 18 | Up |
| FPC1_T_SG(0,2,6)_FB_D(05,01) | -> SF_1_02_FB_D(02,01) | HIGH | CUR | 18 |
| FPC1_T_SG(0,2,7)_FB_D(05,00) | -> SF_1_02_FB_D(02,00) | OK | 18 | Up |
| FPC1_B_SG(0,3,0)_FB_D(04,03) | -> SF_1_11_FB_D(01,03) | OK | 21 | Up |
| FPC1_B_SG(0,3,1)_FB_D(04,02) | -> SF_1_11_FB_D(01,02) | OK | 21 | Up |
| FPC1_B_SG(0,3,2)_FB_D(04,01) | -> SF_1_11_FB_D(01,01) | OK | 21 | Up |
| FPC1_B_SG(0,3,3)_FB_D(04,00) | -> SF_1_11_FB_D(01,00) | OK | 21 | Up |
| FPC1_B_SG(0,3,4)_FB_D(03,11) | -> SF_1_11_FB_D(00,11) | OK | 21 | Up |
| FPC1_B_SG(0,3,5)_FB_D(03,10) | -> SF_1_11_FB_D(00,10) | OK | 21 | Up |
| FPC1_B_SG(0,3,6)_FB_D(03,09) | -> SF_1_11_FB_D(00,09) | OK | 21 | Up |
| FPC1_B_SG(0,3,7)_FB_D(03,08) | -> SF_1_11_FB_D(00,08) | OK | 21 | Up |
| FPC2_T_SG(1,0,0)_FB_C(10,11) | -> SF_1_04_FB_C(07,11) | OK | 12 | Up |
| FPC2_T_SG(1,0,1)_FB_C(10,10) | -> SF_1_04_FB_C(07,10) | OK | 12 | Up |
| FPC2_T_SG(1,0,2)_FB_C(10,09) | -> SF_1_04_FB_C(07,09) | OK | 12 | Up |
| FPC2_T_SG(1,0,3)_FB_C(10,08) | -> SF_1_04_FB_C(07,08) | OK | 12 | Up |
| FPC2_T_SG(1,0,4)_FB_C(10,07) | -> SF_1_04_FB_C(07,07) | OK | 12 | Up |
| FPC2_T_SG(1,0,5)_FB_C(10,06) | -> SF_1_04_FB_C(07,06) | OK | 12 | Up |
| FPC2_T_SG(1,0,6)_FB_C(10,05) | -> SF_1_04_FB_C(07,05) | OK | 12 | Up |
| FPC2_T_SG(1,0,7)_FB_C(10,04) | -> SF_1_04_FB_C(07,04) | OK | 12 | Up |
| FPC2_B_SG(1,1,0)_FB_C(09,07) | -> SF_1_14_FB_C(06,07) | OK | 15 | Up |

```

FPC2_B_SG(1,1,1)_FB_C(09,06) -> SF_1_14_FB_C(06,06)    OK      15      Up
FPC2_B_SG(1,1,2)_FB_C(09,05) -> SF_1_14_FB_C(06,05)    OK      15      Up
FPC2_B_SG(1,1,3)_FB_C(09,04) -> SF_1_14_FB_C(06,04)    OK      15      Up
FPC2_B_SG(1,1,4)_FB_C(09,03) -> SF_1_14_FB_C(06,03)    OK      15      Up
FPC2_B_SG(1,1,5)_FB_C(09,02) -> SF_1_14_FB_C(06,02)    OK      15      Up
FPC2_B_SG(1,1,6)_FB_C(09,01) -> SF_1_14_FB_C(06,01)    OK      15      Up
FPC2_B_SG(1,1,7)_FB_C(09,00) -> SF_1_14_FB_C(06,00)    OK      15      Up
FPC3_T_SG(1,2,0)_FB_C(11,08) -> SF_1_06_FB_C(08,08)    OK      18      Up
FPC3_T_SG(1,2,1)_FB_C(11,07) -> SF_1_06_FB_C(08,07)    OK      18      Up
FPC3_T_SG(1,2,2)_FB_C(11,06) -> SF_1_06_FB_C(08,06)    OK      18      Up
FPC3_T_SG(1,2,3)_FB_C(11,05) -> SF_1_06_FB_C(08,05)    OK      18      Up
FPC3_T_SG(1,2,4)_FB_C(11,03) -> SF_1_06_FB_C(08,03)    OK      18      Up
FPC3_T_SG(1,2,5)_FB_C(11,02) -> SF_1_06_FB_C(08,02)    OK      18      Up
FPC3_T_SG(1,2,6)_FB_C(11,01) -> SF_1_06_FB_C(08,01)    OK      18      Up
...

```

**show chassis 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


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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 (PTX Series
Packet Transport
Switches)**

```

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 |

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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

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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 feb

| | |
|---------------------------------|--|
| Syntax | show chassis feb |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (M5, M10, and M120 routers only) Display Forwarding Engine Board (FEB) status information. |
| Options | This command has no options. |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none"> • request chassis feb on page 210 • show chassis fabric feb on page 419 • show chassis fpc-feb-connectivity on page 535 • feb • Switching Control Board Redundancy |
| List of Sample Output | show chassis feb (M10 Router) on page 503 show chassis feb (M120 Router) on page 503 show chassis feb detail (M120 Router) on page 503 |
| Output Fields | Table 47 on page 502 lists the output fields for the show chassis feb command. Output fields are listed in the approximate order in which they appear. |

Table 47: show chassis feb

| Field Name | Field Description |
|---------------------------------------|--|
| State | State of the FEB: <ul style="list-style-type: none"> • Offline—FEB is powered down. • Online—FEB is operational and running. • Check—FEB is in alarmed state where the Switch Interface Board (SIB) plane is partially operational for the following reasons: <ul style="list-style-type: none"> • FEB is not inserted properly. • Two or more links between the FEB and Packet Forwarding Engine fail. |
| Temp (C) or Intake temperature | Temperature of the air passing by the FEB, in degrees Celsius or in both degrees Celsius and degrees Fahrenheit. |
| CPU Utilization (%) | Percentage of CPU being used: <ul style="list-style-type: none"> • Total—Total percentage of CPU being used by the FEB processor. • Interrupt—Of the total CPU being used by the FEB processor, the percentage being used for interrupts. |
| Memory DRAM (MB) | Total DRAM, in megabytes, available to the FEB processor. |

Table 47: show chassis feb (continued)

| Field Name | Field Description |
|---------------------------------|---|
| Utilization (%) | Percentage of memory utilization: <ul style="list-style-type: none"> Heap—Percentage of heap space (dynamic memory) being used by the FEB processor. If this number exceeds 80 percent, you might experience a software problem (memory leak). Buffer—Percentage of buffer space being used by the FPC processor for buffering internal messages. |
| Exhaust A temperature | Temperature of the air flowing past Exhaust A. |
| Exhaust B temperature | Temperature of the air flowing past Exhaust B. |
| Total DDR DRAM | Amount of double data rate dynamic random access memory (DDR DRAM) available to the FEB CPU. |
| Total RDRAM | Amount of reduced latency dynamic random access memory (RDRAM) available to the FEB CPU. |
| Start time (Detail output only) | Time when the Routing Engine detected that the FEB was running. |
| Uptime (Detail output only) | How long the Routing Engine has been connected to the FEB, and therefore, how long the Flexible PIC Concentrator (PIC) has been up and running. |

Sample Output

```

show chassis feb (M10 Router) user@host> show chassis feb
                                FEB status:
                                Temperature      27 degrees C / 80 degrees F
                                CPU utilization    3 percent
                                Interrupt utilization 0 percent
                                Heap utilization  26 percent
                                Buffer utilization 50 percent
                                Total CPU DRAM    64 MB
                                Internet Processor II Version 1, Foundry IBM, Part number 9
                                Start time:      2010-05-23 13:59:51 PDT
                                Uptime:          6 hours, 33 minutes, 11 seconds

```

```

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

```

```

show chassis feb detail (M120 Router) user@host> show chassis feb detail
Slot 0 information:
State Online
Intake temperature 48 degrees C / 118 degrees F
Exhaust A temperature 51 degrees C / 123 degrees F
Exhaust B temperature 52 degrees C / 125 degrees F
Total DDR DRAM 512 MB
Total RDRAM 32 MB

```

```
Start time:                2006-06-28 15:00:40 PDT
Uptime:                    10 minutes, 21 seconds
Slot 1 information:
  State                     Online
  Intake temperature        55 degrees C / 131 degrees F
  Exhaust A temperature     46 degrees C / 114 degrees F
  Exhaust B temperature     45 degrees C / 113 degrees F
  Total DDR DRAM            512 MB
  Total RLD RAM             32 MB
  Start time:               2006-06-28 15:00:33 PDT
  Uptime:                   10 minutes, 28 seconds
Slot 2 information:
  State                     Online
  Intake temperature        50 degrees C / 122 degrees F
  Exhaust A temperature     47 degrees C / 116 degrees F
  Exhaust B temperature     47 degrees C / 116 degrees F
  Total DDR DRAM            512 MB
  Total RLD RAM             32 MB
  Start time:               2006-06-28 15:00:35 PDT
  Uptime:                   10 minutes, 26 seconds
Slot 3 information:
  State                     Online
  Intake temperature        49 degrees C / 120 degrees F
  Exhaust A temperature     47 degrees C / 116 degrees F
  Exhaust B temperature     49 degrees C / 120 degrees F
  Total DDR DRAM            512 MB
  Total RLD RAM             32 MB
  Start time:               2006-06-28 15:00:43 PDT
  Uptime:                   10 minutes, 18 seconds
Slot 4 information:
  State                     Online
  Intake temperature        45 degrees C / 113 degrees F
  Exhaust A temperature     42 degrees C / 107 degrees F
  Exhaust B temperature     42 degrees C / 107 degrees F
  Total DDR DRAM            512 MB
  Total RLD RAM             32 MB
  Start time:               2006-06-28 15:00:29 PDT
  Uptime:                   10 minutes, 32 seconds
Slot 5 information:
  State                     Online
  Intake temperature        35 degrees C / 95 degrees F
  Exhaust A temperature     33 degrees C / 91 degrees F
  Exhaust B temperature     40 degrees C / 104 degrees F
  Total DDR DRAM            512 MB
  Total RLD RAM             32 MB
  Start time:               2006-06-28 15:00:27 PDT
  Uptime:                   10 minutes, 34 seconds
```

show chassis firmware

| | |
|---------------------------------------|---|
| Syntax | show chassis firmware |
| Syntax (TX Matrix Router) | show chassis firmware <lcc <i>number</i> scc> |
| Syntax (TX Matrix Plus Router) | show chassis firmware <lcc <i>number</i> sfc <i>number</i> > |
| Syntax (MX Series Router) | show chassis firmware <all-members> <local> <member <i>member-id</i> > |
| Syntax (QFX Series) | show chassis firmware interconnect-device <i>name</i> node-device <i>name</i> |
| Release Information | <p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.4 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 for EX8200 switches in Junos OS Release 10.2 for EX Series switches.</p> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> |
| Description | <p>On routers and switches, display the version levels of the firmware running on the System Control Board (SCB), Switching and Forwarding Module (SFM), System and Switch Board (SSB), Forwarding Engine Board (FEB), Flexible PIC Concentrators (FPCs), and Routing Engines. On a TX Matrix Plus router, display the version levels of the firmware running on the FPCs and the Switch Processor Mezzanine Board (SPMBs).</p> <p>On EX2200, EX3200, and EX4200 switches, and the QFX Series, display the version levels of the firmware running on the switch. On an EX8208 switch, display the version levels of the firmware running on the Switch Fabric and Routing Engine (SRE) modules and on the line cards (shown as FPCs). On an EX8216 switch, display the version levels of the firmware running on the Routing Engine (RE) modules and on the line cards (shown as FPCs).</p> |
| Options | <p>none—Display the version levels of the firmware running. For an EX4200 switch that is a member of a Virtual Chassis, display version levels for all members. For a TX Matrix router, display version levels for the firmware on the TX Matrix router and on all the T640 routers connected to the TX Matrix router. For a TX Matrix Plus router, display version levels for the firmware on the TX Matrix Plus router and on all the T1600 routers connected to the TX Matrix Plus router.</p> <p>all-members—(MX Series routers only) (Optional) Display the version levels of the firmware running for all members of the Virtual Chassis configuration.</p> |

interconnect-device *name*—(QFabric switches) (Optional) Display the version levels of the firmware running on the Interconnect device.

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

local—(MX Series routers only) (Optional) Display the version levels of the firmware running for the local Virtual Chassis member.

member *member-id*—(MX Series routers only) (Optional) Display the version levels of the firmware running for the specified member of the Virtual Chassis configuration. Replace ***member-id*** with a value of **0** or **1**.

node-device—(QFabric switches only) (Optional) Display the version levels of the firmware running on the Node device.

scc—(TX Matrix router only) (Optional) Display version levels for the firmware on the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus router only) (Optional) Display version levels for the firmware on the TX Matrix Plus router (or switch-fabric chassis). Replace ***number*** with **0**.

**Required Privilege
Level**

view

**Related
Documentation**

- [Upgrading the HSM Firmware](#)

List of Sample Output

[show chassis firmware \(M10 Router\) on page 507](#)
[show chassis firmware \(M20 Router\) on page 507](#)
[show chassis firmware \(M40 Router\) on page 507](#)
[show chassis firmware \(M120 Router\) on page 507](#)
[show chassis firmware \(M160 Router\) on page 507](#)
[show chassis firmware \(MX240 Router\) on page 508](#)
[show chassis firmware \(MX480 Router\) on page 508](#)
[show chassis firmware \(MX960 Router\) on page 508](#)
[show chassis firmware \(EX4200 Switch\) on page 508](#)
[show chassis firmware \(EX8200 Switch\) on page 508](#)
[show chassis firmware lcc \(TX Matrix Router\) on page 508](#)
[show chassis firmware scc \(TX Matrix Router\) on page 509](#)
[show chassis firmware \(TX Matrix Plus Router\) on page 509](#)
[show chassis firmware lcc \(TX Matrix Plus Router\) on page 510](#)
[show chassis firmware sfc \(TX Matrix Plus Router\) on page 510](#)
[show chassis firmware \(QFX Series\) on page 511](#)
[show chassis firmware interconnect-device \(QFabric Switch\) on page 511](#)

Output Fields Table 48 on page 507 lists the output fields for the **show chassis firmware** command. Output fields are listed in the approximate order in which they appear.

Table 48: show chassis firmware Output Fields

| Field Name | Field Description |
|----------------|---|
| Part | Chassis part name. |
| Type | Type of firmware: On routers: ROM or O/S . On switches: uboot or loader . |
| Version | Version of firmware running on the chassis part. |

Sample Output

```

show chassis firmware user@host> show chassis firmware
(M10 Router)          Part      Type      Version
Forwarding engine board ROM      Juniper ROM Monitor Version 4.1b2
O/S              Version 4.1I1 by tlim on 2000-04-24 11:27

show chassis firmware user@host> show chassis firmware
(M20 Router)          Part      Type      Version
System switch board  ROM      Juniper ROM Monitor Version 3.4b26
O/S              Version 3.4I16 by smackie on 2000-02-29 2
FPC 1              ROM      Juniper ROM Monitor Version 3.0b1
O/S              Version 3.4I4 by smackie on 2000-02-25 21
FPC 2              ROM      Juniper ROM Monitor Version 3.0b1
O/S              Version 3.4I4 by smackie on 2000-02-25 21

show chassis firmware user@host> show chassis firmware
(M40 Router)          Part      Type      Version
System control board ROM      Juniper ROM Monitor Version 2.0i126Copyri
O/S              Version 2.0i1 by root on Thu Jul 23 00:51
FPC 5              ROM      Juniper ROM Monitor Version 2.0i49Copyrig
O/S              Version 2.0i1 by root on Thu Jul 23 00:59

show chassis firmware user@host> show chassis firmware
(M120 Router)         FPC 2      ROM      Juniper ROM Monitor Version 8.0b29
O/S              Version 8.2B1 by builder on 2006-10-18 16:2
FPC 3              ROM      Juniper ROM Monitor Version 8.0b29
O/S              Version 8.2B1 by builder on 2006-10-18 16:2
FPC 4              ROM      Juniper ROM Monitor Version 8.0b29
O/S              Version 8.2B1 by builder on 2006-10-18 16:2
FEB 3              ROM      Juniper ROM Monitor Version 8.0b29
O/S              Version 8.2B1 by builder on 2006-10-18 16:1
FEB 4              ROM      Juniper ROM Monitor Version 8.0b29
O/S              Version 8.2B1 by builder on 2006-10-18 16:1

show chassis firmware user@host> show chassis firmware
(M160 Router)         Part      Type      Version
SFM 0              ROM      Juniper ROM Monitor Version 4.0b2
O/S              Version 4.0I1 by tlim on 2000-02-29 11:50
SFM 1              ROM      Juniper ROM Monitor Version 4.0b2
O/S              Version 4.0I1 by tlim on 2000-02-29 11:50
FPC 0              ROM      Juniper ROM Monitor Version 4.0b2

```

| | | | |
|---|---|--------|---|
| | | O/S | Version 4.0I1 by tlim on 2000-02-29 11:56 |
| | FPC 1 | ROM | Juniper ROM Monitor Version 4.0b2 |
| | | O/S | Version 4.0I1 by tlim on 2000-02-29 11:56 |
| | FPC 2 | ROM | Juniper ROM Monitor Version 4.0b3 |
| | | O/S | Version 4.0I1 by tlim on 2000-02-29 11:56 |
| show chassis firmware (MX240 Router) | user@host> show chassis firmware | | |
| | Part | Type | Version |
| | FPC 1 | ROM | Juniper ROM Monitor Version 8.3b1 |
| | | O/S | Version 9.0-20080103.0 by builder on 2008-0 |
| | FPC 2 | ROM | Juniper ROM Monitor Version 8.3b1 |
| | | O/S | Version 9.0-20080103.0 by builder on 2008-0 |
| show chassis firmware (MX480 Router) | user@host> show chassis firmware | | |
| | Part | Type | Version |
| | FPC 1 | ROM | Juniper ROM Monitor Version 8.3b1 |
| | | O/S | Version 9.0-20070916.3 by builder on 2007-0 |
| show chassis firmware (MX960 Router) | user@host> show chassis firmware | | |
| | Part | Type | Version |
| | FPC 4 | ROM | Juniper ROM Monitor Version 8.0b8 |
| | | O/S | Version 8.2I59 by artem on 2006-10-31 19:22 |
| | FPC 7 | ROM | Juniper ROM Monitor Version 8.2b1 |
| | | O/S | Version 8.2-20061026.1 by builder on 2006-1 |
| show chassis firmware (EX4200 Switch) | user@host> show chassis firmware | | |
| | Part | Type | Version |
| | FPC 0 | uboot | U-Boot 1.1.6 (Feb 6 2008 - 11:27:42) |
| | | loader | FreeBSD/PowerPC U-Boot bootstrap loader 2.1 |
| | FPC 1 | uboot | U-Boot 1.1.6 (Feb 6 2008 - 11:27:42) |
| | | loader | FreeBSD/PowerPC U-Boot bootstrap loader 2.1 |
| | FPC 2 | uboot | U-Boot 1.1.6 (Feb 6 2008 - 11:27:42) |
| | | loader | FreeBSD/PowerPC U-Boot bootstrap loader 2.1 |
| show chassis firmware (EX8200 Switch) | user@host> show chassis firmware | | |
| | Part | Type | Version |
| | FPC 0 | U-Boot | U-Boot 1.1.6 (Mar 25 2009 - 06:13:12) 2.4.0 |
| | | loader | FreeBSD/PowerPC U-Boot bootstrap loader 2.2 |
| | FPC 3 | U-Boot | U-Boot 1.1.6 (Dec 4 2009 - 13:17:34) 3.1.0 |
| | | loader | FreeBSD/PowerPC U-Boot bootstrap loader 2.2 |
| | FPC 5 | U-Boot | U-Boot 1.1.6 (Mar 25 2009 - 06:13:12) 2.4.0 |
| | | loader | FreeBSD/PowerPC U-Boot bootstrap loader 2.2 |
| | FPC 7 | U-Boot | U-Boot 1.1.6 (Feb 6 2009 - 05:31:46) 2.4.0 |
| | | loader | FreeBSD/PowerPC U-Boot bootstrap loader 2.2 |
| | Routing Engine 0 | U-Boot | U-Boot 1.1.6 (Mar 25 2009 - 06:13:12) 2.4.0 |
| | | loader | FreeBSD/PowerPC U-Boot bootstrap loader 2.2 |
| | Routing Engine 1 | U-Boot | U-Boot 1.1.6 (Mar 25 2009 - 06:13:12) 2.4.0 |
| | | loader | FreeBSD/PowerPC U-Boot bootstrap loader 2.2 |
| show chassis firmware lcc (TX Matrix Router) | user@host> show chassis firmware lcc 0 | | |
| | lcc0-re0: | | |
| | ----- | | |
| | Part | Type | Version |
| | FPC 1 | ROM | Juniper ROM Monitor Version 6.4b18 |
| | | O/S | Version 7.0-20040804.0 by builder on 2004-0 |

```

FPC 2          ROM      Juniper ROM Monitor Version 6.4b20
                O/S      Version 7.0-20040804.0 by builder on 2004-0
SPMB 0          ROM      Juniper ROM Monitor Version 6.4b18
                O/S      Version 7.0-20040804.0 by builder on 2004-0

```

show chassis firmware user@host> **show chassis firmware scc**
scc (TX Matrix Router) scc-re0:

```

-----
Part          Type      Version
SPMB 0          ROM      Juniper ROM Monitor Version 6.4b18
                O/S      Version 7.0-20040804.0 by builder on 2004-0

```

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

```

-----
Part          Type      Version
Global FPC 4
Global FPC 6
Global FPC 7
Global FPC 12
Global FPC 14
Global FPC 15
Global FPC 20
Global FPC 21
Global FPC 22
Global FPC 23
Global FPC 24
Global FPC 25
Global FPC 26
Global FPC 28
Global FPC 29
Global FPC 31
SPMB 0          ROM      Juniper ROM Monitor Version 9.5b1
                O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 1          ROM      Juniper ROM Monitor Version 9.5b1
                O/S      Version 9.6-20090507.0 by builder on 2009-0

```

lcc0-re1:

```

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

```

lcc1-re1:

```

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

```

```

SPMB 1          O/S      Version 9.6-20090507.0 by builder on 2009-0
                ROM      Juniper ROM Monitor Version 9.5b1
                O/S      Version 9.6-20090507.0 by builder on 2009-0

```

```
lcc2-re1:
```

```

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

```

```
lcc3-re1:
```

```

-----
Part           Type      Version
FPC 0          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 1          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 2          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 4          ROM      Juniper ROM Monitor Version 7.5b4
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 5          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
FPC 7          ROM      Juniper ROM Monitor Version 9.0b2
                O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 0         ROM      Juniper ROM Monitor Version 9.5b1
                O/S      Version 9.6-20090507.0 by builder on 2009-0
SPMB 1         ROM      Juniper ROM Monitor Version 9.5b1
                O/S      Version 9.6-20090507.0 by builder on 2009-0

```

```

show chassis firmware user@host> show chassis firmware lcc 0
lcc (TX Matrix Plus lcc0-re1:
Router)

```

```

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

```

```

show chassis firmware user@host> show chassis firmware sfc 0
sfc (TX Matrix Plus sfc0-re0:
Router)

```

```

-----
Part           Type      Version
Global FPC 4
Global FPC 6

```

```

Global FPC 7
Global FPC 12
Global FPC 14
Global FPC 15
Global FPC 20
Global FPC 21
Global FPC 22
Global FPC 23
Global FPC 24
Global FPC 25
Global FPC 26
Global FPC 28
Global FPC 29
Global FPC 31
SPMB 0
ROM Juniper ROM Monitor Version 9.5b1
O/S Version 9.6-20090507.0 by builder on 2009-0
SPMB 1
ROM Juniper ROM Monitor Version 9.5b1
O/S Version 9.6-20090507.0 by builder on 2009-0

```

```

show chassis firmware user@switch> show chassis firmware
(QFX Series)
Part Type Version
FPC 0
Routing Engine 0 U-Boot U-Boot 1.1.6 (Sep 15 2010 - 02:11:11) 1.0.5
loader FreeBSD/MIPS U-Boot bootstrap loader 0.1

```

```

show chassis firmware user@switch> show chassis firmware interconnect-device interconnect1
interconnect-device
(QFabric Switch)
Part Type Version
Routing Engine 0 U-Boot U-Boot 1.1.6 (May 10 2011 - 04:52:59) 1.1.1
loader FreeBSD/MIPS U-Boot bootstrap loader 0.1
Routing Engine 1 U-Boot U-Boot 1.1.6 (May 10 2011 - 04:52:59) 1.1.1
loader FreeBSD/MIPS U-Boot bootstrap loader 0.1

```

show chassis forwarding

| | |
|---------------------------------|---|
| Syntax | show chassis forwarding |
| Release Information | Current—Command introduced before Junos OS Release 7.4. Now—Command introduced in Junos OS Release 7.4. Support for Branch SRX Series added in Junos OS Release 10.1 |
| Description | Display status of the forwarding process (fwdd). This command is supported on J Series and Branch SRX Series Services Gateways. |
| Options | This command has no options. |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none"> • show chassis feb on page 502 • request chassis feb on page 210 • Configuring FEB Redundancy on the M120 Router • CFEB Overview |
| List of Sample Output | show chassis forwarding on page 512 |
| Output Fields | Table 49 on page 512 lists the output fields for the show chassis forwarding command. Output fields are listed in the approximate order in which they appear. |

Table 49: show chassis forwarding Output Fields

| Field Name | Field Description |
|-------------|---|
| FWWD status | <p>Forwarding status:</p> <ul style="list-style-type: none"> • State: <ul style="list-style-type: none"> • Online—FWDD is operational and running. • Offline—FWDD is not running. • Microkernel CPU utilization—Percentage of microkernel CPU being used by the forwarding process. • Real-time threads CPU utilization—Percentage of CPU being used by the forwarding process. • Heap utilization—Percentage of heap space (dynamic memory) being used by the forwarding process. If this number exceeds 80 percent, there may be a software problem (memory leak). • Buffer utilization—Percentage of buffer space being used by the forwarding process for buffering internal messages. • Uptime—How long the forwarding process has been up and running. |

Sample Output

```

show chassis forwarding user@host> show chassis forwarding
FWDD status:
  State                               Online
  Microkernel CPU utilization         10 percent

```

```
Real-time threads CPU utilization  4 percent
Heap utilization                   26 percent
Buffer utilization                 0 percent
Uptime:                           1 day, 1 hour, 30 minutes, 11 seconds
```

show chassis fpc

| | |
|--|---|
| Syntax | show chassis fpc <detail <slot>> <pic-status <slot>> |
| Syntax (EX Series Switches) | show chassis fpc <detail <fpc-slot>> <pic-status <fpc-slot>> <fpc-slot> |
| Syntax (T4000 router) | show chassis fpc <detail <fpc-slot>> <pic-status <fpc-slot>> |
| Syntax (TX Matrix and TX Matrix Plus Router) | show chassis fpc <detail <fpc-slot>> <pic-status <fpc-slot>> <slot> |
| Syntax (MX Series Router) | show chassis fpc <detail <slot>> <pic-status <slot>> <all-members> <local> <member <i>member-id</i> > |
| 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 Switches) | show chassis fpc <detail <fpc-slot>> <pic-status <fpc-slot>> <fpc-slot> |
| Release Information | Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches. |
| Description | Display status information about the installed Flexible PIC Concentrators (FPCs) and PICs. |
| Options | none —Display status information for all FPCs. On a TX Matrix router, display status information for all FPCs on the attached T640 routers in the routing matrix. On a TX Matrix Plus router, display status information for all FPCs on the attached T1600 routers in the routing matrix. |



NOTE: In EX8200 switches, line cards initialize Packet Forwarding Engine during start up. 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 |

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 only) (Optional) Display status information for all FPCs on all members of the Virtual Chassis configuration.

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

```
user@host> show chassis fpc detail 1 lcc 1
user@host> show chassis fpc detail 9
```

- M120 router—Replace *fpc-slot* with a value from 0 through 5.
- MX80 router—Replace *fpc-slot* with a value from 0 through 1.
- MX240 router—Replace *fpc-slot* with a value from 0 through 2.
- MX480 router—Replace *fpc-slot* with a value from 0 through 5.
- MX-960 router—Replace *fpc-slot* with a value from 0 through 11.
- Other routers—Replace *fpc-slot* with a value from 0 through 7.
- EX Series switches:
 - EX3200 switches and EX4200 standalone switches—Replace *fpc-slot* with 0.
 - EX4200 switches in a Virtual Chassis configuration—Replace *fpc-slot* with a value from 0 through 9.
 - 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 switches—Replace *fpc-slot* with 0 through 31 on the Interconnect device.
- PTX Series Packet Transport Switches:
 - PTX5000 Packet Transport Switch—Replace *fpc-slot* a value from with 0 through 7.

local—(MX Series routers only) (Optional) Display status information for all FPCs on the local Virtual Chassis member.

member *member-id*—(MX Series routers 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 switches 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
```

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

Required Privilege Level view

Related Documentation

- [request chassis fpc on page 211](#)
- [show chassis fpc-feb-connectivity on page 535](#)
- [show chassis fabric fpcs on page 423](#)
- [Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online on page 101](#)

- MX960 Flexible PIC Concentrator Description

| | |
|------------------------------|--|
| List of Sample Output | show chassis fpc (EX6210 Switch) on page 520 |
| | show chassis fpc (M10 Router) on page 520 |
| | show chassis fpc (M20 Router) on page 520 |
| | show chassis fpc detail (M Series Routers) on page 521 |
| | show chassis fpc detail (MX80 Router) on page 521 |
| | show chassis fpc (MX240 Router) on page 521 |
| | show chassis fpc (MX480 Router) on page 521 |
| | show chassis fpc (MX480 Router with 100-Gigabit Ethernet CFP) on page 521 |
| | show chassis fpc pic-status (MX480 Router with 100-Gigabit Ethernet CFP) on page 522 |
| | show chassis fpc (MX960 Router) on page 522 |
| | show chassis fpc detail (MX Series Routers) on page 522 |
| | show chassis fpc (Hardware Not Supported) on page 522 |
| | show chassis fpc detail (Hardware Not Supported) on page 523 |
| | show chassis fpc pic-status on page 523 |
| | show chassis fpc pic-status (M Series Routers) on page 523 |
| | show chassis fpc pic-status (M120 Router) on page 524 |
| | show chassis fpc lcc (TX Matrix Router) on page 524 |
| | show chassis fpc pic-status (TX Matrix Router) on page 524 |
| | show chassis fpc pic-status lcc (TX Matrix Router) on page 525 |
| | show chassis fpc (TX Matrix Plus Router) on page 525 |
| | show chassis fpc lcc (TX Matrix Plus Router) on page 525 |
| | show chassis fpc detail (TX Matrix Plus Router) on page 526 |
| | show chassis fpc pic-status (TX Matrix Plus Router) on page 528 |
| | show chassis fpc (T1600 Router) on page 529 |
| | show chassis fpc detail (T1600 Router) on page 529 |
| | show chassis fpc slot (T1600 Router) on page 530 |
| | show chassis fpc pic-status (T1600 Router) on page 530 |
| | show chassis fpc (T4000 Router) on page 530 |
| | show chassis fpc detail (T4000 Router) on page 530 |
| | show chassis fpc pic-status (T4000 Router) on page 531 |
| | show chassis fpc (QFX Series) on page 531 |
| | show chassis fpc detail (QFX3500 Switches) on page 531 |
| | show chassis fpc pic-status (QFX3500 Switches) on page 531 |
| | show chassis fpc interconnect-device (QFabric Switch) on page 531 |
| | show chassis fpc interconnect-device (QFabric Switch) on page 532 |
| | show chassis fpc interconnect-device detail (QFabric Switch) on page 532 |
| | show chassis fpc pic-status interconnect-device (QFabric Switch) on page 532 |
| | show chassis fpc pic-status node-device (QFabric Switch) on page 533 |
| | show chassis fpc (PTX5000 Packet Transport Switch) on page 533 |
| | show chassis fpc detail (PTX5000 Packet Transport Switch) on page 533 |
| | show chassis fpc pic-status (PTX5000 Packet Transport Switch) on page 534 |

Output Fields [Table 50 on page 519](#) lists the output fields for the **show chassis fpc** command. Output fields are listed in the approximate order in which they appear.

Table 50: show chassis fpc Output Fields

| Field Name | Field Description | Level of Output |
|--------------------------------------|---|--------------------------|
| Slot or Slot State | Slot number and state. The state can be one of the following conditions: <ul style="list-style-type: none"> • Dead—Held in reset because of errors. • Diag—Slot is being ignored while the FPC is running diagnostics. • Dormant—Held in reset. • Empty—No FPC is present. • Online—FPC is online and running. • Present—FPC is detected by the chassis daemon but 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 |
| Temperature (PTX Series) | On, PTX Series Packet Transport Switches, temperature details are provided in degrees Celsius and Fahrenheit. Output includes: <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 (%) | Percentage of heap space (dynamic memory) being used by the FPC's processor. If this number exceeds 80 percent, there may be a software problem (memory leak). | none specified |
| Buffer Utilization (%) | Percentage of buffer space being used by the FPC's processor for buffering internal messages. | none specified |
| Total CPU DRAM | Amount of DRAM available to the FPC's CPU. | detail |

Table 50: show chassis fpc Output Fields (*continued*)

| Field Name | Field Description | Level of Output |
|--------------------------------------|---|-----------------|
| Total RLDRAM | Amount of reduced latency dynamic random access memory (RLDRAM) available to the FPC CPU. | detail |
| Total DDR DRAM | Amount of double data rate dynamic random access memory (DDR DRAM) available to the FPC CPU. | detail |
| Total SRAM | Amount of static RAM (SRAM) used by the FPC's CPU. | detail |
| Total SDRAM | Total amount of memory used for storing packets and notifications. | detail |
| I/O Manager ASICs information | I/O Manager version number, manufacturer, and part number. | detail |
| Start time | Time when the Routing Engine detected that the FPC was running. | detail |
| Uptime | How long the Routing Engine has been connected to the FPC and, therefore, how long the FPC has been up and running. | detail |
| PIC type | (pic-status output only) Type of PIC. | none specified |

Sample Output

```

show chassis fpc user@switch> show chassis fpc
(EX6210 Switch)
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
              (C)    Total  Interrupt           DRAM (MB) Heap      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 user@host> show chassis fpc
Router)
FPC status:
Temp
Slot State      (C)
0 Online       27
1 Online       28

show chassis fpc (M20 user@host> show chassis fpc
Router)
FPC status:
Temp  CPU Utilization (%)  Memory  Utilization (%)
      Total  Interrupt           DRAM (MB) Heap      Buffer
Slot State      (C)
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 (MX240 Router) user@host> show chassis fpc
Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
0 Empty
1 Online 34 6 0 1024 18 30
2 Online 33 9 0 1024 24 30

```

```

show chassis fpc (MX480 Router) user@host> show chassis fpc
Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
0 Empty
1 Online 36 9 0 1024 17 57
2 Empty
3 Empty
4 Empty
5 Empty

```

```

show chassis fpc (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
(MX960 Router)**

```

user@host> show chassis fpc
          Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt  DRAM (MB) Heap Buffer
0 Empty
1 Empty
2 Empty
3 Online    25    19          0    1024    15    57
4 Empty
5 Online    26    27          0    1024    15    57
6 Empty
7 Empty
8 Empty
9 Empty
10 Empty
11 Empty

```

**show chassis fpc detail
(MX Series Routers)**

```

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

```

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

```

user@host> show chassis fpc
show chassis fpc
          Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt  DRAM (MB) Heap Buffer
0 Online ----- CPU less FPC -----
1 Present ----- Hardware Not In Right Slot -----
2 Online          0          0          0          0          0
3 Present ----- Hardware Not Supported -----
4 Empty

```



```

5 Empty
6 Online          0          0          0          0          0

show chassis fpc detail user@host> show chassis fpc detail
(Hardware Not Supported) 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 user@host> show chassis fpc pic-status
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 user@host> show chassis fpc pic-status
pic-status (M Series Routers) Slot 1 Online FPC Type 1
                                PIC 0 Present 2x OC-3 ATM, MM- Hardware Error
                                PIC 1 Online 4x OC-3 SONET, SMIR
Slot 2 Online E-FPC Type 2
            PIC 0 Online 4x G/E, 1000 BASE-SX
            PIC 1 Online 2x G/E SFP, 1000 BASE
            PIC 3 Online 1x Tunnel
Slot 3 Online E-FPC Type 1
            PIC 0 Online 1x G/E IQ, 1000 BASE
            PIC 2 Online 1x G/E SFP, 1000 BASE
Slot 4 Online E-FPC Type 2
            PIC 0 Online 4x G/E SFP, 1000 BASE
            PIC 1 Online 4x G/E SFP, 1000 BASE
            PIC 2 Online 4x G/E SFP, 1000 BASE
            PIC 3 Online 4x G/E SFP, 1000 BASE
Slot 5 Online FPC Type 2
...

```

```

show chassis fpc pic-status (M120 Router)
user@host> show chassis fpc pic-status
Slot 1 Online M120 CFPC 10GE
PIC 0 Online 1x 10GE(LAN/WAN) XFP
Slot 3 Online M120 FPC Type 2 (proto)
PIC 0 Online 2x G/E IQ, 1000 BASE
PIC 1 Online 4x OC-3 SONET, SMIR
PIC 2 Online 2x G/E IQ, 1000 BASE
PIC 3 Online 8x 1GE(LAN), IQ2
Slot 4 Online M120 FPC Type 3 (proto)
PIC 0 Online 10x 1GE(LAN), 1000 BASE
Slot 5 Online M120 FPC Type 1 (proto)
PIC 0 Present 1x G/E, 1000 BASE-LX- Not Supported
PIC 1 Online 1x CHOC3 IQ SONET, SMLR
PIC 2 Online 4x CHDS3 IQ
PIC 3 Online 1x G/E SFP, 1000 BASE

```

```

show chassis fpc lcc (TX Matrix Router)
user@host> show chassis fpc lcc 0
lcc0-re0:
-----
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  CPU Utilization (%)  Memory  Utilization (%)
      (C)  Total  Interrupt  DRAM (MB) Heap      Buffer
0 Empty
1 Online        38      4          0      2048      3      24
2 Online        43      8          0      2048      6      24
3 Empty
4 Online        43      6          0      2048      6      24
5 Empty
6 Online        42     13          0      2048      6      24
7 Online        45      7          0      2048      3      24
```

```
lcc2-re0:
-----
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
      (C)  Total  Interrupt  DRAM (MB) Heap      Buffer
0 Online        42     10          0      2048      6      24
1 Empty
2 Online        42     11          0      2048      6      24
3 Online        40      5          0      2048      3      24
4 Online        33     26          0      1024      8      49
5 Empty
6 Online        43      8          0      2048      6      24
7 Online        46      6          0      2048      3      24
```

```
lcc3-re0:
-----
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
      (C)  Total  Interrupt  DRAM (MB) Heap      Buffer
0 Empty
1 Empty
2 Online        39     30          0      2048      7      24
3 Empty
4 Online        41      8          0      2048      6      24
5 Online        41     12          0      2048      6      24
6 Online        40      8          0      2048      6      24
7 Online        42      4          0      2048      3      24
```

show chassis fpc lcc
(TX Matrix Plus
Router)

```
user@host> show chassis fpc lcc 0
lcc0-re0:
-----
Slot State      Temp  CPU Utilization (%)  Memory  Utilization (%)
      (C)  Total  Interrupt  DRAM (MB) Heap      Buffer
0 Empty
1 Online        38      4          0      2048      3      24
2 Online        43      8          0      2048      6      24
3 Empty
```

| | | | | | | | |
|---|--------|----|----|---|------|---|----|
| 4 | Online | 43 | 6 | 0 | 2048 | 6 | 24 |
| 5 | Empty | | | | | | |
| 6 | Online | 42 | 14 | 0 | 2048 | 6 | 24 |
| 7 | Online | 45 | 6 | 0 | 2048 | 3 | 24 |

show chassis fpc detail
(TX Matrix Plus
Router)

user@host> show chassis fpc details

lcc0-re0:

Slot 1 information:

| | |
|----------------|--------------------------------|
| State | Online |
| Temperature | 38 degrees C / 100 degrees F |
| Total CPU DRAM | 2048 MB |
| Total SRAM | 64 MB |
| Total SDRAM | 1280 MB |
| Start time | 2010-10-04 20:06:22 PDT |
| Uptime | 1 hour, 32 minutes, 51 seconds |

Slot 2 information:

| | |
|----------------|--------------------------------|
| State | Online |
| Temperature | 43 degrees C / 109 degrees F |
| Total CPU DRAM | 2048 MB |
| Total SRAM | 128 MB |
| Total SDRAM | 2560 MB |
| Start time | 2010-10-04 20:06:37 PDT |
| Uptime | 1 hour, 32 minutes, 36 seconds |

Slot 4 information:

| | |
|----------------|--------------------------------|
| State | Online |
| Temperature | 43 degrees C / 109 degrees F |
| Total CPU DRAM | 2048 MB |
| Total SRAM | 128 MB |
| Total SDRAM | 2560 MB |
| Start time | 2010-10-04 20:06:40 PDT |
| Uptime | 1 hour, 32 minutes, 33 seconds |

Slot 6 information:

| | |
|----------------|--------------------------------|
| State | Online |
| Temperature | 42 degrees C / 107 degrees F |
| Total CPU DRAM | 2048 MB |
| Total SRAM | 128 MB |
| Total SDRAM | 2560 MB |
| Start time | 2010-10-04 20:06:42 PDT |
| Uptime | 1 hour, 32 minutes, 31 seconds |

Slot 7 information:

| | |
|----------------|--------------------------------|
| State | Online |
| Temperature | 45 degrees C / 113 degrees F |
| Total CPU DRAM | 2048 MB |
| Total SRAM | 64 MB |
| Total SDRAM | 1280 MB |
| Start time | 2010-10-04 20:06:43 PDT |
| Uptime | 1 hour, 32 minutes, 30 seconds |

lcc2-re0:

Slot 0 information:

| | |
|----------------|--------------------------------|
| State | Online |
| Temperature | 42 degrees C / 107 degrees F |
| Total CPU DRAM | 2048 MB |
| Total SRAM | 128 MB |
| Total SDRAM | 2560 MB |
| Start time | 2010-10-04 20:06:35 PDT |
| Uptime | 1 hour, 32 minutes, 38 seconds |

Slot 2 information:

```

State                               Online
Temperature                         42 degrees C / 107 degrees F
Total CPU DRAM                     2048 MB
Total SRAM                         128 MB
Total SDRAM                        2560 MB
Start time                         2010-10-04 20:06:37 PDT
Uptime                             1 hour, 32 minutes, 36 seconds

Slot 3 information:
State                               Online
Temperature                         40 degrees C / 104 degrees F
Total CPU DRAM                     2048 MB
Total SRAM                         64 MB
Total SDRAM                        1280 MB
Start time                         2010-10-04 20:06:28 PDT
Uptime                             1 hour, 32 minutes, 45 seconds

Slot 4 information:
State                               Online
Temperature                         33 degrees C / 91 degrees F
Total CPU DRAM                     1024 MB
Total SRAM                         64 MB
Total SDRAM                        1280 MB
Start time                         2010-10-04 20:08:03 PDT
Uptime                             1 hour, 31 minutes, 10 seconds

Slot 6 information:
State                               Online
Temperature                         43 degrees C / 109 degrees F
Total CPU DRAM                     2048 MB
Total SRAM                         128 MB
Total SDRAM                        2560 MB
Start time                         2010-10-04 20:06:44 PDT
Uptime                             1 hour, 32 minutes, 29 seconds

Slot 7 information:
State                               Online
Temperature                         46 degrees C / 114 degrees F
Total CPU DRAM                     2048 MB
Total SRAM                         64 MB
Total SDRAM                        1280 MB
Start time                         2010-10-04 20:06:46 PDT
Uptime                             1 hour, 32 minutes, 27 seconds

```

```
lcc3-re0:
```

```

-----
Slot 2 information:
State                               Online
Temperature                         38 degrees C / 100 degrees F
Total CPU DRAM                     2048 MB
Total SRAM                         128 MB
Total SDRAM                        2560 MB
Start time                         2010-10-04 20:17:31 PDT
Uptime                             1 hour, 21 minutes, 42 seconds

Slot 4 information:
State                               Online
Temperature                         41 degrees C / 105 degrees F
Total CPU DRAM                     2048 MB
Total SRAM                         128 MB
Total SDRAM                        2560 MB
Start time                         2010-10-04 20:17:34 PDT
Uptime                             1 hour, 21 minutes, 39 seconds

Slot 5 information:
State                               Online
Temperature                         41 degrees C / 105 degrees F

```

```

Total CPU DRAM          2048 MB
Total SRAM              128 MB
Total SDRAM             2560 MB
Start time              2010-10-04 20:17:36 PDT
Uptime                  1 hour, 21 minutes, 37 seconds

Slot 6 information:
State                   Online
Temperature             40 degrees C / 104 degrees F
Total CPU DRAM          2048 MB
Total SRAM              128 MB
Total SDRAM             2560 MB
Start time              2010-10-04 20:17:39 PDT
Uptime                  1 hour, 21 minutes, 34 seconds

Slot 7 information:
State                   Online
Temperature             42 degrees C / 107 degrees F
Total CPU DRAM          2048 MB
Total SRAM              64 MB
Total SDRAM             1280 MB
Start time              2010-10-04 20:17:41 PDT
Uptime                  1 hour, 21 minutes, 32 seconds

```

**show chassis fpc
pic-status (TX Matrix
Plus Router)**

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

```
1cc0-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

```

```
1cc2-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

```

```
1cc3-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 (%) Total Interrupt | Memory DRAM (MB) | Utilization (%) Heap Buffer |
|------|--------|-------------|--|---------------------|--------------------------------|
| 0 | Empty | | | | |
| 1 | Empty | | | | |
| 2 | Online | 49 | 3 0 | 2048 | 3 24 |
| 3 | Online | 46 | 6 0 | 2048 | 6 24 |
| 4 | Empty | | | | |
| 5 | Online | 46 | 5 0 | 2048 | 3 24 |
| 6 | Empty | | | | |
| 7 | Online | 44 | 8 0 | 1024 | 7 49 |

**show chassis fpc detail
(T1600 Router)**

```

user@host> show chassis fpc detail
show chassis fpc detail
Slot 2 information:
  State                Online
  Temperature          49 degrees C / 120 degrees F
  Total CPU DRAM       2048 MB
  Total SRAM           64 MB
  Total SDRAM          1280 MB
  Start time           2010-10-04 21:12:52 PDT
  Uptime               32 minutes, 9 seconds
Slot 3 information:
  State                Online
  Temperature          47 degrees C / 116 degrees F
  Total CPU DRAM       2048 MB
  Total SRAM           128 MB
  Total SDRAM          2560 MB
  Start time           2010-10-04 21:13:06 PDT
  Uptime               31 minutes, 55 seconds
Slot 5 information:
  State                Online
  Temperature          46 degrees C / 114 degrees F
  Total CPU DRAM       2048 MB
  Total SRAM           64 MB
  Total SDRAM          1280 MB
  Start time           2010-10-04 21:12:56 PDT
  Uptime               32 minutes, 5 seconds
Slot 7 information:
  State                Online
  Temperature          44 degrees C / 111 degrees F
  Total CPU DRAM       1024 MB
  Total SRAM           64 MB
  Total SDRAM          1280 MB
  Start time           2010-10-04 21:14:34 PDT
  Uptime               30 minutes, 27 seconds

```

**show chassis fpc slot
(T1600 Router)**

user@host> show chassis fpc slot 2

| Slot | State | Temp (C) | CPU Utilization (%) Total Interrupt | Memory DRAM (MB) | Utilization (%) 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 (%) Total Interrupt | Memory DRAM (MB) | Utilization (%) 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 Switch)
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 Switch) user@switch> show chassis fpc interconnect-device interconnect1 3
FPC status:
Slot State Temp
3 Online (C) 0

show chassis fpc interconnect-device detail (QFabric Switch) 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 Switch) 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    user@switch> show chassis fpc pic-status node-device node1
pic-status node-device
(QFabric Switch)   Slot node1 Online      QFX 48x10G 4x40G Switch
                   PIC 0 Online       48x 10G-SFP+
                   PIC 1 Online       4x 40G-QSFP+

show chassis fpc    user@host> show chassis fpc
(PTX5000 Packet    Temp CPU Utilization (%) Memory Utilization (%)
Transport Switch)   (C) Total Interrupt DRAM (MB) Heap Buffer

Slot State
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 user@host> show chassis fpc detail
(PTX5000 Packet    Slot 2 information:
Transport Switch)   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 | user@host> show chassis fpc pic-status |
| pic-status (PTX5000 | Slot 2 Online FPC |
| Packet Transport | PIC 0 Online 24x 10GE(LAN) SFP+ |
| Switch) | 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-feb-connectivity

| | |
|---------------------------------|--|
| Syntax | show chassis fpc-feb-connectivity |
| Release Information | Command introduced in Junos OS Release 8.0. |
| Description | (M120 router only) Display the Flexible PIC Concentrator (FPC) and Forwarding Engine Board (FEB) mapping and their respective states. |
| Options | This command has no options. |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none"> • request chassis fpc on page 211 • show chassis fpc on page 514 • show chassis fabric fpcs on page 423 • Configuring the Junos OS to Resynchronize FPC Sequence Numbers with Active FPCs when an FPC Comes Online on page 101 • MX960 Flexible PIC Concentrator Description |
| List of Sample Output | show chassis fpc-feb-connectivity on page 536 |
| Output Fields | Table 51 on page 535 lists the output fields for the show chassis fpc-feb-connectivity command. Output fields are listed in the approximate order in which they appear. |

Table 51: show chassis fpc-feb-connectivity Output Fields

| Field Name | Field Description |
|----------------------|---|
| FPC | Slot number of the Flexible PIC Concentrator (FPC). |
| FPC type | Type of FPC: Type 1 , Type 2 , Type 3 , or cFPC . |
| FPC state | <p>State of the FPC. State can be any of the following:</p> <ul style="list-style-type: none"> • Announce offline—Intermediate state where FPC is going down but is not offline and the Chassis manager acknowledges that the FPC is in the process of going offline. • Announce online—Intermediate state where FPC is coming up but is not online and the Chassis manager acknowledges that the FPC is in the process of coming online. • Empty—No FPC is present. • Offline—FPC is powered down. • Online—FPC is online and running. • Present—The chassis process has detected the FPC, but the FPC is either not supported by the current version of the Junos OS or FPC is coming up but is not online. • Ready—FPC is in transition state. |
| Connected FEB | Slot number of the Forwarding Engine Board (FEB) connected to the FPC or None if the FPC is not connected to a FEB. |

Table 51: show chassis fpc-feb-connectivity Output Fields (*continued*)

| Field Name | Field Description |
|--------------------|---|
| FEB state | <p>State of the FEB. State can be any of the following:</p> <ul style="list-style-type: none"> • Announce offline—Intermediate state where FEB is going down but is not offline and the Chassis manager acknowledges that the FEB is in the process of going offline. • Announce online—Intermediate state where FEB is coming up but is not online and the Chassis manager acknowledges that the FEB is in the process of coming online. • Empty—No FEB is present. • Offline—FEB is powered down. • Online—FEB is online and running. • Present—The chassis process has detected the FEB, but the FEB is either not supported by the current version of the Junos OS or FEB is coming up but is not online. • Ready—FEB is in transition state. |
| Link status | <p>Status of the link connecting the R-FEB and R-FPC:</p> <ul style="list-style-type: none"> • Error • Misconfiguration—Configuration between the R-FEB and the F-FPC is incorrect. • OK |

Sample Output

```

show chassis fpc-feb-connectivity user@host> show chassis fpc-feb-connectivity
fpc-feb-connectivity
FPC  FPC type  FPC state  Connected FEB  FEB state  Link status
0    cFPC      Online    0              Empty
1    cFPC      Online    1              Online    OK
2    Type 3   Online    3              Online    OK
3    Type 2   Online    None
4    Type 1   Online    4              Online    OK
5    Type 3   Online    None

FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Egress queues: 8 supported, 8 in use
Queue counters:      Queued packets  Transmitted packets      Dropped packets

0 best-effort          0              0              0
1 expedited-fo         0              0              0
2 assured-forw         0              0              0
3 network-cont         0              0              0

Active alarms : PLL, LOS, LINK
Active defects : PLL, LOF, LOS, SEF, LOP, BERR-SF, PLM-P, LINK
PCS statistics
  Bit errors          0
  Errored blocks      3
MAC statistics:
  Total octets        0
  Total packets       0
  Receive              0
  Transmit             0

```

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 Router) | show chassis hardware <detail extensive> <clei-models> <models> <all-members> <local> <member <i>member-id</i> > |
| 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 Switches) | show chassis hardware <clei-models> <detail extensive> <models> |
| Release Information | Command introduced before Junos OS Release 7.4. models option introduced in Junos OS Release 8.2. Command introduced in Junos OS Release 9.0 for EX Series switches. |

sfc option introduced 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 Switches.

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

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

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

On a QFX3500 standalone switch, both the FPC and FPC **number** are always 0.

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.

Options **none**—Display information about hardware. For a TX Matrix router, display information about the TX Matrix router and its attached T640 routers. For a TX Matrix Plus router, display information about the TX Matrix Plus router and its attached T1600 routers.

clei-models—(Optional) Display Common Language Equipment Identifier (CLEI) barcode and model number for orderable field-replaceable units (FRUs).

detail—(Optional) Include RAM and disk information in output.

extensive—(Optional) Display ID EEPROM information.

all-members—(MX Series routers only) (Optional) Display hardware-specific information for all the members of the Virtual Chassis configuration.

interconnect-device name—(QFabric switches only) (Optional) Display hardware-specific information for the Interconnect device.

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

local—(MX Series routers only) (Optional) Display hardware-specific information for the local Virtual Chassis members.

member *member-id*—(MX Series routers only) (Optional) Display hardware-specific information for the specified member of the Virtual Chassis configuration. Replace *member-id* with a value of 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 switches only) (Optional) Display hardware-specific information for the Node device.

scc—(TX Matrix router only) (Optional) Display hardware information for the TX Matrix router (or switch-card chassis).

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

Additional Information The **show chassis hardware detail** command now displays DIMM information for the following Routing Engines:

Table 52: 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

- [show chassis power on page 624](#)

List of Sample Output

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- [show chassis hardware clei-models \(EX8216 Switch\) on page 544](#)
- [show chassis hardware clei-models \(T1600 Router\) on page 545](#)
- [show chassis hardware detail \(EX4200 Switch\) on page 545](#)
- [show chassis hardware models \(EX4500 Switch\) on page 546](#)
- [show chassis hardware \(J6350 Router\) on page 546](#)
- [show chassis hardware \(J6300 Router\) on page 546](#)
- [show chassis hardware \(M7i Router\) on page 546](#)
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- [show chassis hardware \(M20 Router\) on page 548](#)
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- [show chassis hardware \(M40 Router\) on page 549](#)
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- [show chassis hardware \(M120 Router\) on page 550](#)
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[show chassis hardware \(Modular MX80 Router\) on page 558](#)
[show chassis hardware \(MX240 Router\) on page 558](#)
[show chassis hardware detail \(MX 240 Router with Routing Engine Displaying DIMM information\) on page 559](#)
[show chassis hardware \(MX240 Router with Enhanced MX SCB\) on page 559](#)
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Output Fields [Table 53 on page 541](#) lists the output fields for the **show chassis hardware** command. Output fields are listed in the approximate order in which they appear.

Table 53: show chassis hardware Output Fields

| Field Name | Field Description | Level of Output |
|-------------------------------|---|------------------|
| Item | Chassis component: <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 EX Series Switches Hardware and CLI Terminology Mapping. • (MX Series routers)—Information about the backplane, Routing Engine, Power Entry Modules (PEMs), and fan trays. Also displays information about Flexible PIC Concentrators (FPCs) and associated Physical Interface Cards (PICs), Modular Port Concentrators (MPCs) and associated Modular Interface Cards (MICs), or Dense Port Concentrators (DPCs). MX80 routers have a single Routing Engine and a built-in Packet Forwarding Engine 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). • (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, 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). | 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 or switch chassis. Use this serial number when you need to contact Juniper Networks Customer Support about the router or switch chassis. | All levels |
| Assb ID or Assembly ID | (extensive keyword only) Identification number that describes the FRU hardware. | extensive |

Table 53: show chassis hardware Output Fields (*continued*)

| Field Name | Field Description | Level of Output |
|-------------------------|---|------------------|
| 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) • 2x SHDSL (ATM)—G SHDSL PIM (2-port two-wire module or 1-port four-wire module) | All levels |

Table 53: show chassis hardware Output Fields (*continued*)

| Field Name | Field Description | Level of Output |
|------------|---|-----------------|
| | <ul style="list-style-type: none"> • 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 M16x10GE—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). • 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). • LCD description for MX Series routers | |

Sample Output

```

user@host> show chassis hardware
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 user@host> show chassis hardware clei-models

clei-models (EX8216
Switch)

| 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 | | | | 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      BUILTIN        EX4500-40F-FB-C
Power Supply 1 REV 01    740-029654  H884FS00JC09  EX4500-PWR1-AC-FB
```

show chassis hardware (J6350 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                                     JN1090E07ADB   JSR6350
Midplane      REV 03    710-014593  NP1265
System IO     REV 01    710-016210  NN9950         JX350 System IO
Crypto Module                                     Crypto Acceleration
Routing Engine REV 08    710-015273  NM6509         RE-J6350-3400
ad0          248 MB  256MB  CKS           00102006C24A00000039 Compact
Flash
FPC 0                                     FPC
PIC 0                                     4x GE Base PIC
FPC 1         REV 06    750-010355  AI07030023    FPC
PIC 0                                     2x T1
FPC 3         REV 06    750-011148  AJ06520151    FPC
PIC 0                                     2x E1
FPC 6         REV 06    750-013492  NC4170        FPC
PIC 0                                     4x FE
Power Supply 0
```

show chassis hardware (J6300 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                                     JN000164AB     J6300
Midplane      REV 02.04 710-010001  CORE99570
System IO     REV 02.00 710-010003  CORE100848     System IO board
Routing Engine RevX2.6   750-010006  IWGS40735390   RE-J.3
FPC 0                                     FPC
PIC 0                                     2x FE
FPC 1         RevX2.0   750-011380  N3960005       FPC
PIC 0                                     1xADSL pic Annex A
FPC 2         RevX2.0   750-011380  N3960002       FPC
PIC 0                                     1xADSL pic Annex B
FPC 3         REV 03    750-010354  N0780028       FPC
PIC 0                                     1x T3
```

show chassis hardware (M7i Router)

```
user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                                     31959          M7i
Midplane      REV 02    710-008761  CA0209         M7i Midplane
Power Supply 0 Rev 04    740-008537  PD10272        AC Power Supply
```


| | | | | |
|----------------|--------|------------|------------|-------------------------|
| Routing Engine | REV 01 | 740-008846 | 1000396803 | RE-5.0 |
| CFEB | REV 02 | 750-009492 | CA0166 | Internet Processor IIv1 |
| FPC 0 | | | | E-FPC |
| PIC 0 | REV 04 | 750-003163 | HJ6416 | 1x G/E, 1000 BASE-SX |
| PIC 1 | REV 04 | 750-003163 | HJ6423 | 1x G/E, 1000 BASE-SX |
| PIC 2 | REV 04 | 750-003163 | HJ6421 | 1x G/E, 1000 BASE-SX |
| PIC 3 | REV 02 | 750-003163 | HJ0425 | 1x G/E, 1000 BASE-SX |
| FPC 1 | | | | E-FPC |
| PIC 2 | REV 01 | 750-009487 | HM2275 | ASP - Integrated |
| PIC 3 | REV 01 | 750-009098 | CA0142 | 2x F/E, 100 BASE-TX |

Hardware inventory:

| Item | Version | Part number | Serial number | Description |
|----------------|---------|-------------|---------------|-----------------------|
| Chassis | | | B1157 | M7i |
| Midplane | REV 05 | 710-008761 | DM0840 | M7i Midplane |
| Power Supply 0 | Rev 08 | 740-008537 | TE53755 | AC Power Supply |
| Routing Engine | REV 07 | 740-011202 | 1000736567 | RE-850 |
| CFEB | REV 09 | 750-010463 | DK6952 | Internet Processor II |
| FPC 0 | | | | E-FPC |
| PIC 0 | REV 12 | 750-012838 | DL7993 | 4x 1GE(LAN), IQ2 |
| Xcvr 0 | REV 01 | 740-011614 | PD94TDJ | SFP-LX10 |
| Xcvr 1 | REV 01 | 740-011615 | PAD5EER | UNSUPPORTED |
| Xcvr 2 | REV 01 | 740-011614 | PD94THU | SFP-LX10 |
| Xcvr 3 | | NON-JNPR | PDC2E7A | SFP-LX10 |
| PIC 1 | REV 03 | 750-023116 | JT0203 | 4x CHSTM1 SDH CE SFP |
| Xcvr 0 | REV 01 | 740-012434 | AGT063832PS | SFP-SR |
| Xcvr 1 | REV 01 | 740-012434 | AGT063832LY | SFP-SR |
| Xcvr 3 | REV 01 | 740-016064 | C06J19018 | SFP-LR |
| PIC 2 | REV 15 | 750-014895 | DM5757 | MultiServices 100 |
| PIC 3 | REV 01 | 750-025390 | JW9448 | 12x T1/E1 CE |
| FPC 1 | | | | E-FPC |
| PIC 2 | | BUILTIN | BUILTIN | 1x Tunnel |
| PIC 3 | REV 09 | 750-009099 | DM0899 | 1x G/E, 1000 BASE |
| Xcvr 0 | REV 01 | 740-012434 | AGT07150HGJ | UNSUPPORTED |
| Fan Tray | | | | Rear Fan Tray |

show chassis hardware
(M10 Router)

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

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

show chassis hardware models
(M10 Router)

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

| Item | Version | Part number | CLEI code | FRU model number |
|----------------|---------|-------------|-----------|-------------------|
| Midplane | REV 04 | 710-008920 | | CHAS-MP-M10i-S |
| Power Supply 0 | Rev 06 | 740-008537 | | PWR-M10i-M7i-AC-S |
| Power Supply 1 | Rev 06 | 740-008537 | | PWR-M10i-M7i-AC-S |
| HCM 0 | REV 03 | 710-010580 | | HCM-M10i-S |
| HCM 1 | REV 03 | 710-010580 | | HCM-M10i-S |

| | | | |
|------------------|--------|------------|-----------------|
| Routing Engine 0 | REV 09 | 740-009459 | RE-400-256-S |
| CFEB 0 | REV 05 | 750-010465 | FEB-M10i-M7i-S |
| FPC 0 | | | |
| PIC 0 | REV 10 | 750-002971 | PE-40C3-SON-MM |
| PIC 1 | REV 11 | 750-002992 | PE-4FE-TX |
| PIC 2 | REV 03 | 750-002977 | PE-20C3-ATM-MM |
| PIC 3 | REV 08 | 750-005724 | PE-20C3-ATM2-MM |
| FPC 1 | | | |
| PIC 2 | REV 12 | 750-008425 | PE-AS |
| PIC 3 | REV 13 | 750-005636 | PE-4CHDS3-QPP |
| Fan Tray 0 | | | FANTRAY-M10I-S |
| Fan Tray 1 | | | FANTRAY-M10I-S |

show chassis hardware
(M20 Router)

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

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

```

```

show chassis hardware user@host> show chassis hardware
(M40 Router) 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 user@host> show chassis hardware
(M40e Router) 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 user@host> **show chassis hardware**
(M120 Router) Hardware inventory:

| Item | Version | Part number | Serial number | Description |
|------------------|---------|-------------|---------------|-------------------------|
| Chassis | | | JN000054AC | M120 |
| Midplane | REV 01 | 710-013667 | RB4170 | M120 Midplane |
| FPM Board | REV 02 | 710-011407 | CJ9186 | M120 FPM Board |
| FPM Display | REV 02 | 710-011405 | CJ9173 | M120 FPM Display |
| FPM CIP | REV 02 | 710-011410 | CJ9221 | M120 FPM CIP |
| PEM 0 | Rev 05 | 740-011936 | RM28320 | AC Power Entry Module |
| PEM 1 | Rev 05 | 740-011936 | RM28321 | AC Power Entry Module |
| Routing Engine 0 | REV 03 | 740-014080 | 1000642883 | RE-A-1000 |
| CB 0 | REV 03 | 710-011403 | CM8346 | M120 Control Board |
| CB 1 | REV 06 | 710-011403 | CP6728 | M120 Control Board |
| FPC 1 | REV 02 | 710-015908 | CP6925 | M120 CFPC 10GE |
| PIC 0 | | BUILTIN | BUILTIN | 1x 10GE(LAN/WAN) XFP |
| Xcvr 0 | REV 01 | 740-014279 | 62E204N00007 | XFP-10G-LR |
| FPC 3 | REV 03 | 710-011393 | CJ9234 | M120 FPC Type 2 |
| PIC 0 | REV 16 | 750-008155 | NB5229 | 2x G/E IQ, 1000 BASE |
| Xcvr 0 | REV 01 | 740-011613 | P9F15JB | SFP-SX |
| Xcvr 1 | REV 01 | 740-007326 | P4Q0R9G | SFP-SX |
| PIC 1 | REV 09 | 750-007745 | CG4360 | 4x OC-3 SONET, SMIR |
| PIC 2 | REV 16 | 750-008155 | ND7787 | 2x G/E IQ, 1000 BASE |
| Xcvr 0 | REV 01 | 740-011613 | P9F12AS | SFP-SX |
| Xcvr 1 | REV 01 | 740-011613 | P9F1ALU | SFP-SX |
| PIC 3 | REV 07 | 750-011800 | JW1284 | 8x 1GE(LAN), IQ2 |
| Xcvr 0 | REV 01 | 740-011613 | P9F1AM6 | SFP-SX |
| Xcvr 6 | REV 01 | 740-011613 | P9F16NN | SFP-SX |
| Xcvr 7 | REV 01 | 740-011782 | P8C29Y7 | SFP-SX |
| Board B | REV 02 | 710-011395 | CN3754 | M120 FPC Mezz |
| FPC 4 | REV 02 | 710-011398 | CP6741 | M120 FPC Type 3 |
| PIC 0 | REV 16 | 750-007141 | NB2855 | 10x 1GE(LAN), 1000 BASE |
| Xcvr 0 | REV 01 | 740-011782 | P922A1F | SFP-SX |
| Xcvr 1 | REV 01 | 740-011782 | P922A16 | SFP-SX |
| Xcvr 2 | REV 01 | 740-011782 | P922A0U | SFP-SX |
| Xcvr 3 | REV 01 | 740-011782 | P9229UZ | SFP-SX |
| Xcvr 4 | REV 01 | 740-009029 | P11JXWP | SFP-LX |
| Xcvr 6 | REV 01 | 740-011613 | P9F1ALW | SFP-SX |
| FPC 5 | REV 01 | 710-011388 | CJ9088 | M120 FPC Type 1 |

```

PIC 0          *** Hardware Not Supported ***
PIC 1          REV 05   750-012052   NB0410          1x CHOC3 IQ SONET, SMLR

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

```

show chassis hardware detail (M120 Router)

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

```
Hardware inventory:
```

| Item | Version | Part number | Serial number | Description |
|------------------|--------------------------------|--------------------|---------------------------|-------------------------|
| Chassis | | | JN000054AC | M120 |
| Midplane | REV 01 | 710-013667 | RB4170 | M120 Midplane |
| FPM Board | REV 02 | 710-011407 | CJ9186 | M120 FPM Board |
| FPM Display | REV 02 | 710-011405 | CJ9173 | M120 FPM Display |
| FPM CIP | REV 02 | 710-011410 | CJ9221 | M120 FPM CIP |
| PEM 0 | Rev 05 | 740-011936 | RM28320 | AC Power Entry Module |
| PEM 1 | Rev 05 | 740-011936 | RM28321 | AC Power Entry Module |
| Routing Engine 0 | REV 03 | 740-014080 | 1000642883 | RE-A-1000 |
| ad0 248 MB | | SILICONSYSTEMS INC | 256M 126CT505S0763SC00110 | Compact Flash |
| ad2 38154 MB | | HTE541040G9SA00 | MPBBT0X2HS2E3M | Hard Disk |
| CB 0 | REV 03 | 710-011403 | CM8346 | M120 Control Board |
| CB 1 | REV 06 | 710-011403 | CP6728 | M120 Control Board |
| FPC 1 | REV 02 | 710-015908 | CP6925 | M120 CFPC 10GE |
| PIC 0 | | BUILTIN | BUILTIN | 1x 10GE(LAN/WAN) XFP |
| Xcvr 0 | REV 01 | 740-014279 | 62E204N00007 | XFP-10G-LR |
| FPC 3 | REV 03 | 710-011393 | CJ9234 | M120 FPC Type 2 |
| PIC 0 | REV 16 | 750-008155 | NB5229 | 2x G/E IQ, 1000 BASE |
| Xcvr 0 | REV 01 | 740-011613 | P9F15JB | SFP-SX |
| Xcvr 1 | REV 01 | 740-007326 | P4Q0R9G | SFP-SX |
| PIC 1 | REV 09 | 750-007745 | CG4360 | 4x OC-3 SONET, SMIR |
| PIC 2 | REV 16 | 750-008155 | ND7787 | 2x G/E IQ, 1000 BASE |
| Xcvr 0 | REV 01 | 740-011613 | P9F12AS | SFP-SX |
| Xcvr 1 | REV 01 | 740-011613 | P9F1ALU | SFP-SX |
| PIC 3 | REV 07 | 750-011800 | JW1284 | 8x 1GE(LAN), IQ2 |
| Xcvr 0 | REV 01 | 740-011613 | P9F1AM6 | SFP-SX |
| Xcvr 6 | REV 01 | 740-011613 | P9F16NN | SFP-SX |
| Xcvr 7 | REV 01 | 740-011782 | P8C29Y7 | SFP-SX |
| Board B | REV 02 | 710-011395 | CN3754 | M120 FPC Mezz |
| FPC 4 | REV 02 | 710-011398 | CP6741 | M120 FPC Type 3 |
| PIC 0 | REV 16 | 750-007141 | NB2855 | 10x 1GE(LAN), 1000 BASE |
| Xcvr 0 | REV 01 | 740-011782 | P922A1F | SFP-SX |
| Xcvr 1 | REV 01 | 740-011782 | P922A16 | SFP-SX |
| Xcvr 2 | REV 01 | 740-011782 | P922A0U | SFP-SX |
| Xcvr 3 | REV 01 | 740-011782 | P9229UZ | SFP-SX |
| Xcvr 4 | REV 01 | 740-009029 | P11JXWP | SFP-LX |
| Xcvr 6 | REV 01 | 740-011613 | P9F1ALW | SFP-SX |
| FPC 5 | REV 01 | 710-011388 | CJ9088 | M120 FPC Type 1 |
| PIC 0 | *** Hardware Not Supported *** | | | |
| PIC 1 | REV 05 | 750-012052 | NB0410 | 1x CHOC3 IQ SONET, SMLR |
| PIC 2 | REV 01 | 750-013167 | CM3824 | 4x CHDS3 IQ |
| PIC 3 | REV 01 | 750-010240 | CB5366 | 1x G/E SFP, 1000 BASE |
| Board B | REV 01 | 710-011390 | CJ9103 | M120 FPC Mezz Board |

| | | | | |
|------------|--------|------------|--------|-----------------------|
| FEB 3 | REV 04 | 710-011663 | CP6673 | M120 FEB |
| FEB 4 | REV 04 | 710-011663 | CJ9368 | M120 FEB |
| FEB 5 | REV 04 | 710-011663 | CJ9386 | M120 FEB |
| Fan Tray 0 | | | | Front Top Fan Tray |
| Fan Tray 1 | | | | Front Bottom Fan Tray |
| Fan Tray 2 | | | | Rear Top Fan Tray |
| Fan Tray 3 | | | | Rear Bottom Fan Tray |

show chassis hardware models (M120 Router) user@host> show chassis hardware models

Hardware inventory:

| Item | Version | Part number | CLEI code | FRU model number |
|------------------|---------|-------------|-----------|----------------------|
| Midplane | REV 01 | 710-013667 | | |
| FPM CIP | REV 02 | 710-011410 | | CRAFT-M120-S |
| PEM 0 | Rev 05 | 740-011936 | | PWR-M120-AC-S |
| PEM 1 | Rev 05 | 740-011936 | | PWR-M120-AC-S |
| Routing Engine 0 | REV 03 | 740-014080 | | RE-A-1000-2048-S |
| CB 0 | REV 03 | 710-011403 | | CB-M120-S |
| CB 1 | REV 06 | 710-011403 | | CB-M120-S |
| FPC 1 | REV 02 | 710-015908 | | M120-cFPC-1XGE-XFP |
| FPC 3 | | | | |
| PIC 0 | REV 16 | 750-008155 | | PB-2GE-SFP-QPP |
| PIC 1 | REV 09 | 750-007745 | | PC-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 |

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FPC 2
  CPU          REV 03  710-001217  S/N AB3329
  PIC 0        REV 01
Fan Tray 0
Fan Tray 1
Fan Tray 2
Fan Tray 3
FPC Type OC192
1x OC-192 SM SR-2
Rear Bottom Blower
Rear Top Blower
Front Top Blower
Front Fan Tray

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show chassis hardware models (M160 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
FPM Display   REV 02   710-009351
CIP           REV 03   710-005926
PEM 2         Rev X4   740-009148
PEM 3         Rev X4   740-009148
Routing Engine 0 REV 02   740-008883
Routing Engine 1 REV 02   740-008883
FPC 0         REV 02   710-010419
  PIC 0       REV 01   750-001323
  PIC 1       REV 02   750-002987
  PIC 2       REV 04   750-001894
  PIC 3       REV 04   750-001896
FPC 1         REV 02   710-010419
  PIC 0       REV 04   750-001894
  PIC 1       REV 04   750-001894
  PIC 3       REV 03   750-001894
FPC 2         REV 02   710-010419
  PIC 0       REV 10   750-005634
  PIC 1       REV 10   750-005634
  PIC 2       REV 07   750-005634
  PIC 3       REV 07   750-005634
  PIC 1       REV 10   750-005634
  PIC 2       REV 07   750-005634
  PIC 3       REV 07   750-005634
FPC 3
  PIC 0       REV 03   750-001895
  PIC 1       REV 04   750-001894
  PIC 3       REV 04   750-003141
FPC 4         REV 02   710-010419
FPC 5         REV 02   710-010419
FPC 6         REV 02   710-010419
FPC 7
  PIC 0       REV 15   750-001901
  PIC 1       REV 06   750-001900
  PIC 2       REV 07   750-001900
  PIC 3       REV 05   750-003737
SIB 0         REV 03   710-009184
SIB 1         REV 03   710-009184
SIB 2         REV 03   710-009184
SIB 3         REV 03   710-009184
Fan Tray 0
Fan Tray 1
Fan Tray 2
CHAS-BP-M320-S
CRAFT-M320-S
CIP-M320-S
PWR-M-DC-S
PWR-M-DC-S
RE-1600-2048-S
RE-1600-2048-S
M320-FPC1
P-TUNNEL
PE-10C12-SON-SMIR
PB-1GE-SX
PB-10C12-SON-SMIR
M320-FPC1
PB-1GE-SX
PB-1GE-SX
PB-1GE-SX
M320-FPC1
PB-1CHOC12SMIR-QPP
PB-1CHOC12SMIR-QPP
PB-1CHOC12SMIR-QPP
PB-1CHOC12SMIR-QPP
PB-1CHOC12SMIR-QPP
PB-1CHOC12SMIR-QPP
PB-1CHOC12SMIR-QPP
PB-10C12-SON-MM
PB-1GE-SX
PB-1GE-SX-B
M320-FPC1
M320-FPC1
M320-FPC1
PB-40C12-SON-SMIR
PB-10C48-SON-SMSR
PB-10C48-SON-SMSR
PB-4GE-SX
SIB-M-S
SIB-M-S
SIB-M-S
SIB-M-S
FFANTRAY-M320-S
FFANTRAY-M320-S
RFANTRAY-M320-S

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show chassis hardware detail (M160 Router)

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user@host> show chassis hardware detail
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis
Midplane      REV 02   710-001245   S/N AB4107     M160
FPM CMB       REV 01   710-001642   S/N AA2911

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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
... SSRAM       REV 01  710-000077  S/N 306466  1 MB

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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

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| | | | | |
|------------------|--------|------------|--------------|-----------------------|
| 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:
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| 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 | Routing Engine |
| TFEB 0 | | BUILTIN | BUILTIN | Forwarding Engine |
| Processor | | | | |
| QXM 0 | REV 05 | 711-028408 | ZA9136 | MPC QXM |
| FPC 0 | | BUILTIN | BUILTIN | MPC BUILTIN |
| MIC 0 | | BUILTIN | BUILTIN | 4x 10GE XFP |
| PIC 0 | | BUILTIN | BUILTIN | 4x 10GE XFP |
| FPC 1 | | BUILTIN | BUILTIN | MPC BUILTIN |
| MIC 0 | REV 24 | 750-028392 | YX9820 | 3D 20x 1GE(LAN) SFP |
| PIC 0 | | BUILTIN | BUILTIN | 10x 1GE(LAN) SFP |
| Xcvr 0 | REV 01 | 740-031851 | AM1045SUAQ3 | SFP-SX |
| Xcvr 1 | REV 01 | 740-031851 | AM1045SUAPA | SFP-SX |
| Xcvr 2 | REV 01 | 740-031851 | AM1045SUAN7 | SFP-SX |
| Xcvr 3 | REV 01 | 740-031851 | AM1045SU91Q | SFP-SX |
| Xcvr 4 | REV 01 | 740-031851 | AM1045SUDDR | SFP-SX |
| Xcvr 9 | REV 01 | 740-011613 | AM0848SB6A1 | SFP-SX |
| PIC 1 | | BUILTIN | BUILTIN | 10x 1GE(LAN) SFP |
| Xcvr 0 | REV 01 | 740-031851 | 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 | 1x 10GE XFP |
| PIC 3 | | BUILTIN | BUILTIN | 1x 10GE XFP |
| Fan Tray | | | | Fan Tray |

show chassis hardware
(MX10 Router)

user@host> show chassis hardware

Hardware inventory:

| Item | Version | Part number | Serial number | Description |
|----------|---------|-------------|---------------|-----------------------|
| Chassis | | | E1372 | MX10-T |
| Midplane | REV 01 | 711-038211 | YF5285 | MX10-T |
| PEM 0 | Rev 04 | 740-028288 | VB01678 | AC Power Entry Module |

| | | | | |
|----------------|--------|------------|-------------|---------------------|
| Routing Engine | | BUILTIN | BUILTIN | Routing Engine |
| TFEB 0 | | BUILTIN | BUILTIN | Forwarding Engine |
| Processor | | | | |
| QXM 0 | REV 05 | 711-028408 | ZA9053 | MPC QXM |
| FPC 0 | | BUILTIN | BUILTIN | MPC BUILTIN |
| MIC 0 | | BUILTIN | BUILTIN | 4x 10GE XFP |
| PIC 0 | | BUILTIN | BUILTIN | 4x 10GE XFP |
| FPC 1 | | BUILTIN | BUILTIN | MPC BUILTIN |
| MIC 0 | REV 24 | 750-028392 | YX9436 | 3D 20x 1GE(LAN) SFP |
| PIC 0 | | BUILTIN | BUILTIN | 10x 1GE(LAN) SFP |
| Xcvr 0 | REV 01 | 740-031851 | AM1107SUFQW | SFP-SX |
| PIC 1 | | BUILTIN | BUILTIN | 10x 1GE(LAN) SFP |
| Fan Tray | | | | Fan Tray |

show chassis hardware
(MX40 Router)

user@host> show chassis hardware

Hardware inventory:

| Item | Version | Part number | Serial number | Description |
|----------------|---------|-------------|---------------|-----------------------|
| Chassis | | | E1367 | MX40-T |
| Midplane | REV 01 | 711-038211 | YF5284 | MX40-T |
| PEM 0 | Rev 04 | 740-028288 | VB01680 | AC Power Entry Module |
| PEM 1 | Rev 04 | 740-028288 | VB01700 | AC Power Entry Module |
| Routing Engine | | BUILTIN | BUILTIN | Routing Engine |
| TFEB 0 | | BUILTIN | BUILTIN | Forwarding Engine |
| Processor | | | | |
| QXM 0 | REV 05 | 711-028408 | ZA9048 | MPC QXM |
| FPC 0 | | BUILTIN | BUILTIN | MPC BUILTIN |
| 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                               Routing Engine
FEB 0                               Forwarding Engine Board
FPC 0                               MPC BUILTIN
  MIC 0                               4x 10GE XFP
  PIC 0                               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                               MPC BUILTIN
  MIC 0      REV 01   711-029399   JR6981        12x 1GE(LAN) RJ45
  PIC 0                               12x 1GE(LAN) RJ45
  PIC 1                               12x 1GE(LAN) RJ45
  MIC 1      REV 01   BUILTIN      BUILTIN        12x 1GE(LAN) RJ45
  PIC 2                               12x 1GE(LAN) RJ45
  PIC 3                               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                               Routing Engine
FEB 0                               Forwarding Engine Board

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

show chassis hardware
(MX240 Router)

```
user@host> show chassis hardware
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               MX240
Midplane      REV 01   710-021041   TR1502        MX240 Backplane
FPM Board     REV 01   710-017254   KD4017        Front Panel Display
PEM 0      Rev 02   740-017330   000332        PS 1.2-1.7kW; 100-240V
AC in
PEM 1      Rev 02   740-017330   000226        PS 1.2-1.7kW; 100-240V
AC in
```

| | | | | |
|------------------|--------|------------|------------|-------------------|
| Routing Engine 0 | REV 06 | 740-013063 | 1000703522 | RE-S-2000 |
| Routing Engine 1 | REV 06 | 740-015113 | 1000687625 | RE-S-1300 |
| CB 0 | REV 07 | 710-013385 | KC9057 | MX SCB |
| CB 1 | REV 05 | 710-013385 | JY4760 | MX SCB |
| FPC 1 | REV 01 | 750-021679 | KC7340 | DPCE 40x 1GE R |
| CPU | REV 06 | 710-013713 | KD4078 | DPC PMB |
| PIC 0 | | BUILTIN | BUILTIN | 10x 1GE(LAN) |
| Xcvr 0 | REV 01 | 740-011613 | P9F18ME | SFP-SX |
| PIC 1 | | BUILTIN | BUILTIN | 10x 1GE(LAN) |
| PIC 2 | | BUILTIN | BUILTIN | 10x 1GE(LAN) |
| PIC 3 | | BUILTIN | BUILTIN | 10x 1GE(LAN) |
| FPC 2 | REV 04 | 710-016669 | JS4529 | DPCE 40x 1GE R EQ |
| CPU | REV 06 | 710-013713 | KB3969 | DPC PMB |
| PIC 0 | | BUILTIN | BUILTIN | 10x 1GE(LAN) EQ |
| Xcvr 0 | REV 01 | 740-011613 | PBG3Y79 | SFP-SX |
| Xcvr 1 | REV 01 | 740-011613 | PBG3XU8 | SFP-SX |
| Xcvr 2 | REV 01 | 740-011613 | PBG3YG6 | SFP-SX |
| Xcvr 3 | REV 01 | 740-011613 | PBG3XUG | SFP-SX |
| Xcvr 4 | REV 01 | 740-011613 | PBG3XTJ | SFP-SX |
| PIC 1 | | BUILTIN | BUILTIN | 10x 1GE(LAN) EQ |
| Xcvr 0 | REV 01 | 740-011613 | PBG3ZUM | SFP-SX |
| Xcvr 1 | REV 01 | 740-011613 | PBG3Y5H | SFP-SX |
| Xcvr 2 | REV 01 | 740-011613 | PBG3UZT | SFP-SX |
| Xcvr 3 | REV 01 | 740-011613 | PBG3US1 | SFP-SX |
| PIC 2 | | BUILTIN | BUILTIN | 10x 1GE(LAN) EQ |
| Xcvr 0 | REV 01 | 740-011613 | PBG3YG7 | SFP-SX |
| Xcvr 1 | REV 01 | 740-011613 | PBG3XZ9 | SFP-SX |
| Xcvr 2 | REV 01 | 740-011613 | PBG3XTY | SFP-SX |
| Xcvr 3 | REV 01 | 740-011613 | PBG3UZG | SFP-SX |
| PIC 3 | | BUILTIN | BUILTIN | 10x 1GE(LAN) EQ |
| Xcvr 0 | REV 01 | 740-011613 | PBG3Y8W | SFP-SX |
| Xcvr 1 | REV 01 | 740-011613 | PBG3YVX | SFP-SX |
| Xcvr 2 | REV 01 | 740-011613 | PBG3YB3 | SFP-SX |
| Xcvr 3 | REV 01 | 740-011613 | PBG43VQ | SFP-SX |
| Fan Tray 0 | REV 01 | 710-021113 | JS4642 | MX240 Fan Tray |

**show chassis hardware
detail (MX 240 Router
with Routing Engine
Displaying DIMM
information)**

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

| Item | Version | Part number | Serial number | Description |
|------------------|------------------------------------|-------------|----------------------|-------------------------|
| Chassis | | | JN11279B4AFC | MX240 Backplane |
| Midplane | REV 07 | 760-021404 | TS2474 | MX240 Backplane |
| FPM Board | REV 03 | 760-021392 | XC2643 | Front Panel Display |
| PEM 0 | Rev 03 | 740-017343 | QCS0908A068 | DC Power Entry Module |
| Routing Engine 0 | | | 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 user@host> **show chassis hardware**

(MX480 Router with
Enhanced MX SCB)

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 user@host> **show chassis hardware**

(MX960 Router)

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 user@host> **show chassis hardware**

(MX960 Router with
Bidirectional Optics)

Hardware inventory:

| Item | Version | Part number | Serial number | Description |
|-----------|---------|-------------|---------------|---------------------|
| Chassis | | | JN10BA5B9AFA | MX960 |
| Midplane | REV 03 | 710-013698 | TR0234 | MX960 Backplane |
| FPM Board | REV 03 | 710-014974 | JA0878 | Front Panel Display |

| | | | | |
|------------------|--------|------------|--------------|---------------------------|
| PDM | Rev 03 | 740-013110 | QCS11135028 | Power Distribution Module |
| PEM 0 | Rev 03 | 740-013682 | QCS11154036 | PS 1.7kW; 200-240VAC in |
| PEM 1 | Rev 03 | 740-013682 | QCS11154010 | PS 1.7kW; 200-240VAC in |
| PEM 2 | Rev 03 | 740-013682 | QCS11154022 | PS 1.7kW; 200-240VAC in |
| Routing Engine 0 | REV 06 | 740-013063 | 1000691458 | RE-S-2000 |
| CB 0 | REV 07 | 710-013385 | KA2190 | MX SCB |
| CB 1 | REV 07 | 710-013385 | KA0837 | MX SCB |
| FPC 3 | REV 02 | 750-018122 | KB3890 | DPCE 40x 1GE R |
| CPU | | | | |
| FPC 4 | REV 01 | 750-018122 | KB3889 | DPCE 40x 1GE R |
| CPU | REV 06 | 710-013713 | KB3976 | DPC PMB |
| PIC 0 | | BUILTIN | BUILTIN | 10x 1GE(LAN) |
| Xcvr 1 | REV 01 | 740-020426 | 4910549 | SFP-1000BASE-BX40-D |
| Xcvr 2 | REV 01 | 740-020426 | 4910551 | SFP-1000BASE-BX40-D |
| Xcvr 5 | REV 01 | 740-021340 | 77E245N00006 | SFP-1000BASE-BX10-U |
| Xcvr 6 | REV 01 | 740-020425 | 4882821 | SFP-1000BASE-BX40-U |
| Xcvr 8 | REV 01 | 740-020425 | 4882820 | SFP-1000BASE-BX40-U |
| PIC 1 | | BUILTIN | BUILTIN | 10x 1GE(LAN) |
| Xcvr 0 | REV 01 | 740-020465 | 77E555N00894 | SFP-1000BASE-BX10-D |
| Xcvr 1 | REV 01 | 740-020465 | 75E467X00818 | SFP-1000BASE-BX10-D |
| Xcvr 2 | REV 01 | 740-020465 | 75E467X00573 | SFP-1000BASE-BX10-D |
| Xcvr 3 | REV 01 | 740-020465 | 4888227 | SFP-1000BASE-BX10-D |
| Xcvr 4 | REV 01 | 740-020465 | 4888241 | SFP-1000BASE-BX10-D |
| Xcvr 5 | REV 01 | 740-021340 | 77E245N00005 | SFP-1000BASE-BX10-U |
| Xcvr 6 | REV 01 | 740-021340 | 76E245X00487 | SFP-1000BASE-BX10-U |
| Xcvr 7 | REV 01 | 740-021341 | 5255889 | SFP-1000BASE-BX10-U |
| Xcvr 8 | REV 01 | 740-021341 | 5255887 | SFP-1000BASE-BX10-U |
| Xcvr 9 | REV 01 | 740-021340 | 77E245N00004 | SFP-1000BASE-BX10-U |
| PIC 2 | | BUILTIN | BUILTIN | 10x 1GE(LAN) |
| Xcvr 0 | REV 01 | 740-020424 | 5007582 | SFP-1000BASE-BX10-D |
| Xcvr 1 | REV 01 | 740-020424 | 4888187 | SFP-1000BASE-BX10-D |
| Xcvr 2 | REV 01 | 740-020424 | 4656500 | SFP-1000BASE-BX10-D |
| Xcvr 5 | REV 01 | 740-021341 | 5255886 | SFP-1000BASE-BX10-U |
| Xcvr 7 | REV 01 | 740-021340 | 77E245N00003 | SFP-1000BASE-BX10-U |
| Xcvr 8 | REV 01 | 740-021341 | 5255888 | SFP-1000BASE-BX10-U |
| PIC 3 | | BUILTIN | BUILTIN | 10x 1GE(LAN) |
| Xcvr 0 | REV 01 | 740-017726 | 74S184H30341 | SFP-EX |
| Xcvr 1 | REV 01 | 740-017726 | 4814061 | SFP-EX |
| Xcvr 5 | REV 01 | 740-017726 | 6ZS184H31108 | SFP-EX |
| Xcvr 9 | REV 01 | 740-021340 | 76E245X00486 | SFP-1000BASE-BX10-U |
| Fan Tray 0 | | | | |
| Fan Tray 1 | REV 03 | 740-014971 | TP0850 | Fan Tray |

show chassis hardware
(MX960 Router with
Enhanced MX SCB)

user@host> show chassis hardware

Hardware inventory:

| Item | Version | Part number | Serial number | Description |
|------------------|---------|-------------|---------------|---------------------------|
| Chassis | | | JN1096805AFA | MX960 |
| Midplane | REV 03 | 710-013698 | TR0183 | MX960 Backplane |
| Fan Extender | REV 02 | 710-018051 | JY5227 | Extended Cable Manager |
| FPM Board | REV 03 | 710-014974 | JZ6876 | Front Panel Display |
| PDM | Rev 03 | 740-013110 | QCS111035023 | 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 0C-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 0C-192 12xMM VSR |
| FPC 5 | REV 25 | 750-028467 | YM8256 | MPC 3D 16x 10GE |
| CPU | REV 10 | 711-029089 | YL3029 | AMPC PMB |
| PIC 0 | | BUILTIN | BUILTIN | 4x 10GE(LAN) SFP+ |
| Xcvr 1 | REV 01 | 740-031980 | AHNOX1Z | SFP+-10G-SR |
| PIC 1 | | BUILTIN | BUILTIN | 4x 10GE(LAN) SFP+ |
| PIC 2 | | BUILTIN | BUILTIN | 4x 10GE(LAN) SFP+ |
| PIC 3 | | BUILTIN | BUILTIN | 4x 10GE(LAN) SFP+ |
| FPC 7 | REV 02 | 750-031092 | JR6658 | MPC Type 1 3D Q |
| CPU | REV 01 | 711-030884 | JZ9038 | MPC PMB 2G |
| MIC 0 | REV 08 | 750-028392 | JZ8737 | 3D 20x 1GE(LAN) SFP |
| PIC 0 | | BUILTIN | BUILTIN | 10x 1GE(LAN) SFP |
| Xcvr 0 | REV 01 | 740-011782 | PBE2C6Y | SFP-SX |
| Xcvr 2 | | NON-JNPR | U8105N8 | SFP-SX |
| Xcvr 4 | REV 01 | 740-011613 | PFM18EF | SFP-SX |
| Xcvr 7 | REV 01 | 740-011613 | PFF2AM8 | SFP-SX |

| | | | | |
|------------|--------|------------|--------------|----------------------|
| Xcvr 8 | REV 01 | 740-011613 | PFF2CT6 | SFP-SX |
| PIC 1 | | BUILTIN | BUILTIN | 10x 1GE(LAN) SFP |
| Xcvr 0 | REV 01 | 740-011782 | PB82VHH | SFP-SX |
| Xcvr 1 | REV 01 | 740-011613 | PFF2CSW | SFP-SX |
| Xcvr 9 | REV 01 | 740-011613 | PFF2BY0 | SFP-SX |
| QXM 0 | REV 04 | 711-028408 | JR6372 | MPC QXM |
| FPC 8 | REV 05 | 750-024387 | JW9754 | MX FPC Type 2 |
| CPU | REV 03 | 710-022351 | KF1651 | DPC PMB |
| PIC 0 | REV 08 | 750-014730 | DM3664 | 4x OC-3 1x OC-12 SFP |
| Xcvr 0 | REV 01 | 740-016065 | 81S290N00077 | SFP-SR |
| Xcvr 1 | | NON-JNPR | 2191844 | SFP-SR |
| Xcvr 2 | REV 01 | 740-011618 | PD81EE5 | SFP-IR |
| PIC 1 | REV 08 | 750-014637 | DM3671 | 4x OC-12-3 SFP |
| Xcvr 0 | REV 01 | 740-011785 | PCK3UNK | SFP-SR |
| Xcvr 3 | REV 01 | 740-011785 | PDSOMPZ | SFP-SR |
| FPC 10 | REV 04 | 710-013699 | JY4654 | DPCE 40x 1GE R |
| CPU | REV 05 | 710-013713 | JS9717 | DPC PMB |
| PIC 0 | | BUILTIN | BUILTIN | 10x 1GE(LAN) |
| Xcvr 5 | REV 01 | 740-011782 | PAR1L72 | SFP-SX |
| Xcvr 6 | REV 01 | 740-011782 | P8N1YQ4 | SFP-SX |
| PIC 1 | | BUILTIN | BUILTIN | 10x 1GE(LAN) |
| PIC 2 | | BUILTIN | BUILTIN | 10x 1GE(LAN) |
| Xcvr 0 | REV 01 | 740-011782 | P8Q2AVL | SFP-SX |
| Xcvr 5 | REV 01 | 740-011782 | PAR1L7B | SFP-SX |
| Xcvr 6 | REV 01 | 740-011782 | PAR1L2J | SFP-SX |
| Xcvr 8 | REV 01 | 740-011782 | P8N1YMY | SFP-SX |
| PIC 3 | | BUILTIN | BUILTIN | 10x 1GE(LAN) |
| Fan Tray 0 | REV 03 | 740-014971 | TP0567 | Fan Tray |
| Fan Tray 1 | REV 03 | 740-014971 | TP0702 | Fan Tray |

**show chassis hardware
models (MX960
Router with Enhanced
MX SCB)**

user@host> show chassis hardware models
Hardware inventory:

| Item | Version | Part number | Serial number | FRU model number |
|------------------|---------|-------------|---------------|------------------------|
| Midplane | REV 03 | 710-013698 | TR0183 | CHAS-BP-MX960-S |
| Fan Extender | REV 02 | 710-018051 | JY5227 | ECM-MX960 |
| FPM Board | REV 03 | 710-014974 | JZ6876 | CRAFT-MX960-S |
| Routing Engine 0 | REV 06 | 740-013063 | 1000687969 | RE-S-2000-4096-S |
| Routing Engine 1 | REV 06 | 740-013063 | 1000687955 | RE-S-2000-4096-S |
| CB 0 | REV 11 | 750-031391 | YZ6072 | SCBE-MX-S |
| CB 1 | REV 11 | 750-031391 | YZ6068 | SCBE-MX-S |
| CB 2 | REV 11 | 750-031391 | YZ6081 | SCBE-MX-S |
| FPC 0 | REV 01 | 750-018122 | KA5576 | DPCE-R-40GE-SFP |
| FPC 1 | REV 16 | 750-031089 | YL0719 | MX-MPC2-3D |
| MIC 0 | REV 07 | 750-028387 | JR6500 | MIC-3D-4XGE-XFP |
| MIC 1 | REV 24 | 750-028387 | YJ3950 | MIC-3D-4XGE-XFP |
| FPC 2 | REV 08 | 710-014219 | JY9654 | DPC-R-4XGE-XFP |
| FPC 3 | REV 10 | 750-024199 | XJ6692 | MX-FPC3 |
| PIC 0 | REV 17 | 750-009553 | RJ2945 | PC-40C48-SON-SFP |
| PIC 1 | REV 32 | 750-003700 | DP2113 | PC-10C192-SON-VSR |
| FPC 5 | REV 25 | 750-028467 | YM8256 | MPC-3D-16XGE-SFPP |
| FPC 7 | REV 02 | 750-031092 | JR6658 | MX-MPC1-3D-Q |
| MIC 0 | REV 08 | 750-028392 | JZ8737 | MIC-3D-20GE-SFP |
| FPC 8 | REV 05 | 750-024387 | JW9754 | MX-FPC2 |
| PIC 0 | REV 08 | 750-014730 | DM3664 | PB-40C3-10C12-SON2-SFP |
| PIC 1 | REV 08 | 750-014637 | DM3671 | PB-40C3-40C12-SON-SFP |
| FPC 10 | REV 04 | 710-013699 | JY4654 | DPC-R-40GE-SFP |
| Fan Tray 0 | REV 03 | 740-014971 | TP0567 | FFANTRAY-MX960-S |
| Fan Tray 1 | REV 03 | 740-014971 | TP0702 | FFANTRAY-MX960-S |

**show chassis hardware
detail (MX960 Router)**

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

```
Hardware inventory:
```

| Item | Version | Part number | Serial number | Description |
|------------------|----------|-------------------|------------------|-------------------------|
| Chassis | | | | MX960 |
| Midplane | REV 01 | 710-013698 | AA6082 | MX960 Midplane |
| PIM | Rev 01 | 740-013110 | 000008 | Power Inlet Module |
| PEM 2 | | | | |
| PEM 3 | Rev 01 | 740-013682 | 000038 | PS 1.7kW; 200-240VAC in |
| Routing Engine 0 | REV 00 | 740-015113 | 1000617944 | RE-S-1300 |
| ad0 | 245 MB | SanDisk SDCFB-256 | 111419E1805T1141 | Compact Flash |
| ad2 | 38154 MB | FUJITSU MHT2040BH | NROWT5925N77 | Hard Disk |
| CB 0 | REV 05 | 710-013725 | JK6947 | MX960 Test SCB |
| FPC 4 | REV 01 | 710-013305 | JM7617 | MX960 Test DPC |
| CPU | | | | |
| PIC 0 | | BUILTIN | BUILTIN | 1x 10GE (LAN/WAN) |
| PIC 1 | | BUILTIN | BUILTIN | 10x 1GE |
| FPC 7 | REV 01 | 710-013305 | JL9634 | MX960 Test DPC |
| CPU | | | | |
| PIC 0 | | BUILTIN | BUILTIN | 1x 10GE (LAN/WAN) |
| Xcvr 0 | | NON-JNPR | MYBG65I82C | XFP-10G-SR |
| PIC 1 | | BUILTIN | BUILTIN | 10x 1GE |
| Xcvr 1 | REV 01 | 740-011782 | P7N0368 | SFP-SX |
| Xcvr 4 | REV 01 | 740-011782 | P8J1W27 | SFP-SX |
| Xcvr 6 | REV 01 | 740-011782 | P8J1VSD | SFP-SX |
| Xcvr 9 | REV 01 | 740-011782 | P8J1W25 | SFP-SX |
| Fan Tray 0 | | | | |
| Fan Tray 1 | | | | |

**show chassis hardware
(T320 Router)**

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

```
Hardware inventory:
```

| Item | Version | Part number | Serial number | Description |
|------------------|---------|-------------|---------------|--------------------|
| Chassis | | | 19093 | T320 |
| Midplane | REV 04 | 710-004339 | BC1436 | T320 Backplane |
| FPM GBUS | REV 03 | 710-004461 | BC1407 | T320 FPM Board |
| FPM Display | REV 04 | 710-002897 | BE0763 | FPM Display |
| CIP | REV 05 | 710-002895 | BB2311 | T Series CIP |
| PEM 0 | Rev 01 | 740-004359 | NB12546 | Power Entry Module |
| SCG 0 | REV 06 | 710-004455 | AY4522 | T320 Sonet |
| Clock Gen. | | | | |
| Routing Engine 0 | | | | unknown |
| CB 0 | REV 13 | 710-002728 | BC1577 | T Series |
| Control Board | | | | |
| CB 1 | REV 13 | 710-002728 | BC1595 | T Series |
| Control Board | | | | |
| FPC 1 | REV 09 | 710-007531 | HS1572 | FPC Type 2 |
| CPU | REV 15 | 710-001726 | HR8763 | FPC CPU |
| PIC 0 | REV 01 | 750-010618 | CB5579 | 4x G/E SFP, |
| 1000 BASE | | | | |
| SFP 0 | REV 01 | 740-007326 | P5809Z1 | SFP-SX |
| SFP 1 | REV 01 | 740-007326 | P4Q10XU | SFP-SX |
| SFP 2 | | NON-JNPR | RA45020031 | SFP-SX |
| SFP 3 | | NON-JNPR | RA45020032 | SFP-SX |
| PIC 1 | REV 01 | 750-010618 | CD9587 | 4x G/E SFP, |
| 1000 BASE | | | | |
| SFP 0 | | NON-JNPR | P5A08QZ | SFP-T |
| SFP 1 | REV 01 | 740-007326 | P4Q133K | SFP-SX |
| SFP 2 | REV 01 | 740-007326 | P5809YY | SFP-SX |
| SFP 3 | REV 01 | 740-007327 | 4C81704 | SFP-LX |
| MMB 1 | REV 03 | 710-005555 | HR9401 | MMB-288mbit |
| PPB 0 | REV 04 | 710-003758 | HR2886 | PPB Type 2 |
| FPC 2 | REV 07 | 710-005860 | HP2392 | FPC Type 1 |

| | | | | |
|-----------|--------|------------|---------|----------------|
| CPU | REV 14 | 710-001726 | HP7797 | FPC CPU |
| PIC 0 | REV 02 | 750-007643 | HM0853 | 1x G/E QPP, |
| 1000 BASE | | | | |
| SFP 0 | REV 01 | 740-007326 | P11E9JJ | SFP-SX |
| MMB 1 | REV 02 | 710-005555 | HN2379 | MMB-288mbit |
| PPB 0 | REV 04 | 710-003758 | HP8092 | PPB Type 2 |
| FPC 3 | REV 07 | 710-005860 | HP2393 | FPC Type 1 |
| CPU | REV 14 | 710-001726 | HP0968 | FPC CPU |
| PIC 0 | REV 01 | 750-010240 | CB5363 | 1x G/E SFP, |
| 1000 BASE | | | | |
| SFP 0 | REV 01 | 740-007326 | P4R0PNH | SFP-SX |
| PIC 1 | REV 03 | 750-003034 | HD2832 | 4x OC-3 SONET, |
| SMIR | | | | |
| MMB 1 | REV 02 | 710-005555 | HN6307 | MMB-288mbit |
| PPB 0 | REV 04 | 710-003758 | HP5051 | PPB Type 2 |
| FPC 4 | REV 01 | 710-010845 | JD3872 | FPC Type 4 |
| CPU | REV 02 | 710-011481 | JB6042 | FPC CPU |
| 5 | REV 01 | 710-005802 | BC1566 | FPC Type 2 |
| CPU | REV 09 | 710-001726 | AY4922 | FPC CPU |
| PIC 0 | REV 02 | 750-008155 | BE2114 | 2x G/E QPP, |
| 1000 BASE | | | | |
| SFP 0 | REV 01 | 740-007326 | P4R0PMQ | SFP-SX |
| SFP 1 | REV 01 | 740-007326 | P4R0PN9 | SFP-SX |
| PIC 1 | REV 01 | 750-008155 | BE2116 | 2x G/E QPP, |
| 1000 BASE | | | | |
| SFP 0 | REV 01 | 740-007326 | P4R0PNZ | SFP-SX |
| SFP 1 | | NON-JNPR | 2908 | SFP-T |
| MMB 1 | REV 01 | 710-005555 | AZ2246 | MMB-288mbit |
| PPB 0 | REV 03 | 710-003758 | AY4839 | PPB Type 2 |
| FPC 7 | REV 01 | 710-005803 | AZ2123 | FPC Type 3 |
| ... | | | | |

show chassis hardware
(T640 Router)

user@host> show chassis hardware

Hardware inventory:

| Item | Version | Part number | Serial number | Description |
|------------------|---------|-------------|---------------|------------------------|
| Chassis | | | 19182 | T640 |
| Midplane | REV 04 | 710-002726 | AX5608 | T640 Backplane |
| FPM GBUS | REV 02 | 710-002901 | HE3064 | T640 FPM Board |
| FPM Display | REV 02 | 710-002897 | HE7864 | FPM Display |
| CIP | REV 05 | 710-002895 | HA5024 | T Series CIP |
| PEM 0 | Rev 02 | 740-029522 | VH26235 | AC PEM 10kW US |
| PEM 1 | Rev 02 | 740-029522 | VH26230 | AC PEM 10kW US |
| SCG 0 | REV 03 | 710-003423 | HA4508 | T640 Sonet Clock Gen. |
| Routing Engine 0 | REV 02 | 740-005022 | 210865700483 | RE-3.0 (RE-600) |
| CB 0 | REV 01 | 710-002728 | HD3044 | T Series Control Board |
| FPC 2 | REV 04 | 710-001721 | HD5572 | FPC Type 3 |
| CPU | REV 06 | 710-001726 | HA4712 | FPC CPU |
| PIC 1 | REV 03 | 750-009567 | HV2331 | 1x 10GE(LAN),XENPAK |
| SFP 0 | REV 01 | 740-009898 | USC202R103 | XENPAK-SR |
| PIC 2 | REV 03 | 750-009567 | HV2332 | 1x 10GE(LAN),XENPAK |
| SFP 0 | REV 01 | 740-011268 | USC202R112 | XENPAK-ZR |
| PIC 3 | REV 03 | 750-009567 | HX4416 | 1x 10GE(LAN),XENPAK |
| SFP 0 | REV 01 | 740-012056 | 434TC004 | XENPAK-CX4 |
| PIC 4 | REV 03 | 750-009567 | HX4420 | 1x 10GE(LAN),XENPAK |
| SFP 0 | REV 01 | 740-012058 | 434TC124 | XENPAK-LX4 |
| FPC 5 | REV 01 | 710-013553 | JE4839 | E2-FPC Type 1 |
| CPU | REV 01 | 710-013569 | JW9163 | FPC CPU |
| PIC 0 | REV 01 | 750-009567 | HX4419 | 1x 10GE(LAN),XENPAK |
| SFP 0 | REV 01 | 740-009898 | USC202RT05 | XENPAK-LR |
| PIC 1 | REV 03 | 750-009567 | HN7426 | 1x 10GE(LAN),XENPAK |
| SFP 0 | REV 01 | 740-009550 | 03L90051 | XENPAK-ER |

| | | | | |
|------------|--------|------------|--------|-----------------------|
| PIC 2 | REV 03 | 750-009467 | HT7423 | 1x 10GE(LAN),XENPAK |
| SFP 0 | | NON-JNPR | | UNKNOWN |
| PIC 3 | REV 04 | 750-005100 | AY4850 | 1x 10GE(LAN),DWDM |
| FPC 4 | REV 01 | 710-010845 | JD3872 | FPC Type 4 |
| CPU | REV 02 | 710-011481 | JB6042 | FPC CPU |
| Fan Tray 0 | | | | Front Top Fan Tray |
| Fan Tray 1 | | | | Front Bottom Fan Tray |
| Fan Tray 2 | | | | Rear Fan Tray |

show chassis hardware models (T640 Router) user@host> show chassis hardware models

Hardware inventory:

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

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Hardware inventory:

| Item | Version | Part number | Serial number | Description |
|---------------------------|--|-------------------|---------------|-------------|
| Chassis | | | | T640 |
| Jedec Code: | 0x7fb0 | EEPROM Version: | 0x01 | |
| P/N: | | S/N: | | |
| Assembly ID: | 0x0507 | Assembly Version: | 00.00 | |
| Date: | 00-00-0000 | Assembly Flags: | 0x00 | |
| Version: | | | | |
| ID: | Gibson LCC Chassis | | | |
| Board Information Record: | | | | |
| Address 0x00: | 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | |
| I2C Hex Data: | | | | |
| Address 0x00: | 7f b0 01 ff 05 07 00 00 00 00 00 00 00 00 00 00 | | | |
| Address 0x10: | 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 | | | |
| Address 0x20: | ff ff ff ff ff ff ff ff ff ff ff ff ff 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 | | | |

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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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Hardware inventory:
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| 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 |

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Hardware inventory:

| Item | Version | Part number | CLEI code | FRU model number |
|------------------|---------|-------------|------------|-------------------|
| Midplane | REV 01 | 710-027486 | IPMJ700DRD | CHAS-BP-T1600-S |
| FPM Display | REV 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 |

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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 |
| 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)

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

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Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              REV 03    710-005608   65751          T640
Midplane             REV 09    710-002901   RA1408         T640 Backplane
FPM GBUS             REV 05    710-002897   RA2784         T640 FPM Board
FPM Display          REV 06    710-002895   RA2825         FPM Display
CIP                  REV 11    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)
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show chassis hardware user@host> **show chassis hardware scc**
scc (TX Matrix Router) scc-re0:

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Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              REV 04    710-004396   RB0014         TX Matrix
Midplane             REV 04    710-004617   HW9141         SCC Midplane
FPM GBUS             REV 04    710-004619   HS5950         SCC FPM Board
FPM Display          REV 01    710-010218   HV9151         SCC FPM
CIP 0                REV 01    710-010218   HV9152         SCC CIP
CIP 1                REV 01    710-010218   HV9152         SCC CIP
PEM 1                Rev 11    740-002595   QB13977        Power Entry Module
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| | | | | |
|------------------|--------|------------|--------------|-----------------------|
| 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)

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user@host> show chassis hardware
Hardware inventory:
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| 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 | P8POA3T | SFP-SX |
| Xcvr 1 | REV 01 | 740-013111 | 5090002 | SFP-T |
| Xcvr 2 | REV 01 | 740-011613 | AM0814S93BQ | SFP-SX |
| Xcvr 4 | | NON-JNPR | PDEOFAN | SFP-SX |
| Xcvr 5 | REV 01 | 740-011782 | P8Q20XY | SFP-SX |

| | | | | |
|----------|--------|------------|-------------|-------------------------|
| Xcvr 6 | REV 01 | 740-011613 | AM0812S8UJV | SFP-SX |
| Xcvr 7 | REV 01 | 740-011613 | AM0812S8UP7 | SFP-SX |
| PIC 2 | REV 05 | 750-004695 | HT4383 | 1x Tunnel |
| PIC 3 | REV 17 | 750-009553 | RL0204 | 4x OC-48 SONET |
| Xcvr 0 | REV 01 | 740-011785 | PDS3T23 | SFP-SR |
| Xcvr 1 | REV 01 | 740-011785 | P6Q0F3E | SFP-SR |
| MMB 0 | REV 03 | 710-004047 | HD5843 | MMB-288mbit |
| MMB 1 | REV 03 | 710-004047 | HE3208 | MMB-288mbit |
| PPB 0 | REV 02 | 710-002845 | HA4524 | PPB Type 3 |
| PPB 1 | REV 02 | 710-002845 | HA4766 | PPB Type 3 |
| FPC 3 | REV 01 | 710-010154 | HR0863 | E-FPC Type 3 |
| CPU | REV 01 | 710-010169 | HN3422 | FPC CPU-Enhanced |
| PIC 0 | REV 07 | 750-012793 | WF5096 | 1x 10GE(LAN/WAN) IQ2 |
| Xcvr 0 | | NON-JNPR | M64294TP | XFP-10G-LR |
| PIC 1 | REV 25 | 750-007141 | DV2127 | 10x 1GE(LAN), 1000 BASE |
| Xcvr 0 | REV 01 | 740-011613 | PFA6LTJ | SFP-SX |
| Xcvr 1 | REV 01 | 740-011782 | P9P0XV4 | SFP-SX |
| Xcvr 2 | REV 01 | 740-011782 | P9M0TNX | SFP-SX |
| Xcvr 4 | REV 01 | 740-011782 | P9B0TTP | SFP-SX |
| Xcvr 5 | | NON-JNPR | PBS4LED | SFP-SX |
| PIC 2 | REV 17 | 750-009553 | RL0212 | 4x OC-48 SONET |
| Xcvr 0 | REV 01 | 740-011785 | PDS3T8G | SFP-SR |
| PIC 3 | REV 32 | 750-003700 | DL1279 | 1x OC-192 12xMM VSR |
| MMB 0 | REV 01 | 710-010171 | HR0821 | MMB-288mbit |
| MMB 1 | REV 01 | 710-010171 | HR0818 | MMB-288mbit |
| FPC 4 | REV 16 | 710-013037 | EB4919 | FPC Type 4-ES |
| CPU | REV 09 | 710-016744 | BBAA4382 | ST-PMB2 |
| PIC 0 | REV 03 | 711-029996 | EB1569 | 100GE |
| PIC 1 | REV 05 | 711-029999 | EB9983 | 100GE CFP |
| Xcvr 0 | REV 0 | 740-032210 | J10G80746 | CFP-100G-LR4 |
| BRIDGE 0 | REV 02 | 711-029995 | EB2235 | 100GE Bridge Board |
| MMB 0 | REV 04 | 710-025563 | BBAA7112 | ST-MMB2 |
| MMB 1 | REV 04 | 710-025563 | BBAA7149 | ST-MMB2 |
| FPC 5 | REV 02 | 710-013037 | DE3407 | FPC Type 4-ES |
| CPU | REV 04 | 710-016744 | DA2124 | ST-PMB2 |
| PIC 0 | REV 16 | 750-012518 | DF2554 | 4x OC-192 SONET XFP |
| Xcvr 0 | REV 01 | 740-014279 | AA0745N1FX8 | XFP-OC192-SR |
| Xcvr 1 | REV 01 | 740-014279 | AA0748N1HN5 | XFP-OC192-SR |
| Xcvr 2 | REV 01 | 740-014279 | AA0748N1HT6 | XFP-OC192-SR |
| Xcvr 3 | REV 01 | 740-014279 | AA0744N1EC9 | XFP-OC192-SR |
| PIC 1 | REV 01 | 750-010850 | JA0329 | 1x OC-768 SONET SR |
| MMB 0 | REV 04 | 710-016036 | DE9577 | ST-MMB2 |
| MMB 1 | REV 04 | 710-016036 | DK4060 | ST-MMB2 |
| FPC 6 | REV 14 | 710-013037 | DV1431 | FPC Type 4-ES |
| CPU | REV 09 | 710-016744 | DT9020 | ST-PMB2 |
| PIC 0 | REV 11 | 750-017405 | DM6261 | 4x 10GE (LAN/WAN) XFP |
| Xcvr 0 | REV 01 | 740-014289 | C701XU05Q | XFP-10G-SR |
| Xcvr 1 | REV 01 | 740-014279 | AA0748N1HPT | XFP-10G-LR |
| Xcvr 2 | REV 01 | 740-014289 | T08E19189 | XFP-10G-SR |
| Xcvr 3 | REV 01 | 740-014289 | C715XU058 | XFP-10G-SR |
| PIC 1 | REV 13 | 750-017405 | DP8772 | 4x 10GE (LAN/WAN) XFP |
| Xcvr 0 | REV 02 | 740-011571 | C850XJ037 | XFP-10G-SR |
| Xcvr 1 | REV 02 | 740-014289 | C839XU0L9 | XFP-10G-SR |
| Xcvr 2 | REV 02 | 740-014289 | C834XU05A | XFP-10G-SR |
| Xcvr 3 | REV 02 | 740-014289 | C810XU0CE | XFP-10G-SR |
| MMB 0 | REV 01 | 710-025563 | DT8454 | ST-MMB2 |
| MMB 1 | REV 01 | 710-025563 | DT8366 | ST-MMB2 |
| FPC 7 | REV 09 | 710-007529 | HZ7624 | FPC Type 3 |
| CPU | REV 15 | 710-001726 | HZ1413 | FPC CPU |
| PIC 0 | REV 10 | 750-012793 | DM5627 | 1x 10GE(LAN/WAN) IQ2 |

| | | | | |
|------------|--------|------------|-------------|------------------------|
| Xcvr 0 | REV 02 | 740-011571 | C831XJ062 | XFP-10G-SR |
| PIC 1 | REV 01 | 750-015217 | JT6762 | 8x 1GE(TYPE3), IQ2 |
| Xcvr 0 | REV 01 | 740-011782 | P8Q25JU | SFP-SX |
| Xcvr 1 | REV 01 | 740-011782 | P9B0U0K | SFP-SX |
| PIC 2 | REV 01 | 750-015217 | JS4268 | 8x 1GE(TYPE3), IQ2 |
| Xcvr 0 | REV 01 | 740-011613 | AM0812S8XBZ | SFP-SX |
| Xcvr 1 | REV 01 | 740-011613 | AM0812S8XAP | SFP-SX |
| Xcvr 2 | REV 01 | 740-011613 | AM0812S8XBY | SFP-SX |
| Xcvr 3 | REV 01 | 740-011613 | AM0812S8XBX | SFP-SX |
| Xcvr 4 | REV 01 | 740-011613 | P9F1652 | SFP-SX |
| Xcvr 5 | REV 01 | 740-011782 | P8Q21YC | SFP-SX |
| Xcvr 6 | REV 01 | 740-011782 | P8Q27HQ | SFP-SX |
| Xcvr 7 | REV 01 | 740-011613 | P8E2SSU | SFP-SX |
| PIC 3 | REV 15 | 750-009450 | NB6790 | 1x OC-192 SM SR2 |
| MMB 0 | REV 03 | 710-005555 | HZ3450 | MMB-288mbit |
| MMB 1 | REV 03 | 710-005555 | HZ3415 | MMB-288mbit |
| PPB 0 | REV 04 | 710-002845 | HP0887 | PPB Type 3 |
| PPB 1 | REV 04 | 710-002845 | HW5255 | PPB Type 3 |
| SPMB 0 | REV 10 | 710-003229 | HX3699 | T-series Switch CPU |
| SPMB 1 | REV 12 | 710-003229 | DT3091 | T-series Switch CPU |
| SIB 0 | REV 07 | 710-013074 | DS4747 | SIB-I8-SF |
| SIB 1 | REV 07 | 710-013074 | DS4942 | SIB-I8-SF |
| SIB 2 | REV 07 | 710-013074 | DS4965 | SIB-I8-SF |
| SIB 3 | REV 07 | 710-013074 | DS4990 | SIB-I8-SF |
| SIB 4 | REV 07 | 710-013074 | DS4944 | SIB-I8-SF |
| Fan Tray 0 | | | | Front Top Fan Tray |
| Fan Tray 1 | | | | Front Bottom Fan Tray |
| Fan Tray 2 | | | | Rear Fan Tray -- Rev 2 |

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

| ----- | | | | |
|---------------------|---------|-------------|---------------|--------------------|
| Hardware inventory: | | | | |
| Item | Version | Part number | Serial number | Description |
| Chassis | | | JN113186EAHB | TXP |
| Midplane | REV 05 | 710-022574 | TS3822 | SFC Midplane |
| FPM Display | REV 03 | 710-024027 | DW4701 | TXP FPM Display |
| CIP 0 | REV 05 | 710-023792 | DW7998 | TXP CIP |
| CIP 1 | REV 05 | 710-023792 | DW7999 | TXP CIP |
| PEM 0 | Rev 04 | 740-027463 | UM26367 | Power Entry Module |
| PEM 1 | Rev 04 | 740-027463 | UM26346 | Power Entry Module |
| Routing Engine 0 | REV 06 | 740-026942 | 737A-1081 | RE-DUO-2600 |
| Routing Engine 1 | REV 06 | 740-026942 | 737A-1043 | RE-DUO-2600 |
| CB 0 | REV 05 | 710-022606 | DW4435 | SFC Control Board |
| CB 1 | REV 09 | 710-022606 | DW6100 | SFC Control Board |
| SPMB 0 | | BUILTIN | | SFC Switch CPU |
| SPMB 1 | | BUILTIN | | SFC Switch CPU |
| SIB F13 0 | REV 04 | 750-024564 | DW5764 | F13 SIB |
| B Board | REV 03 | 710-023431 | DW9053 | F13 SIB Mezz |
| SIB F13 3 | REV 04 | 750-024564 | DW5785 | F13 SIB |
| B Board | REV 03 | 710-023431 | DW9030 | F13 SIB Mezz |
| SIB F13 6 | | | | |
| SIB F13 8 | REV 04 | 750-024564 | DW5752 | F13 SIB |
| B Board | REV 03 | 710-023431 | DW9051 | F13 SIB Mezz |
| SIB F13 11 | REV 04 | 750-024564 | DW5782 | F13 SIB |
| B Board | REV 03 | 710-023431 | DW9058 | F13 SIB Mezz |
| SIB F13 12 | REV 03 | 750-024564 | DT9466 | F13 SIB |
| B Board | REV 02 | 710-023431 | DT6556 | F13 SIB Mezz |
| SIB F2S 0/0 | REV 05 | 710-022603 | DW7898 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7625 | F2S SIB Mezz |
| SIB F2S 0/2 | REV 05 | 710-022603 | DW7811 | F2S SIB |

| | | | | |
|-------------|--------|------------|--------|----------------|
| B Board | REV 05 | 710-023787 | DW7550 | F2S SIB Mezz |
| SIB F2S 0/4 | REV 04 | 710-022603 | DW4873 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW8509 | F2S SIB Mezz |
| SIB F2S 0/6 | REV 04 | 710-022603 | DW4867 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW8472 | F2S SIB Mezz |
| SIB F2S 1/0 | REV 04 | 710-022603 | DW4871 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW8497 | F2S SIB Mezz |
| SIB F2S 1/2 | REV 05 | 710-022603 | DW7868 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7551 | F2S SIB Mezz |
| SIB F2S 1/4 | REV 04 | 710-022603 | DW4854 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW8496 | F2S SIB Mezz |
| SIB F2S 1/6 | REV 05 | 710-022603 | DW7889 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7496 | F2S SIB Mezz |
| SIB F2S 2/0 | REV 04 | 710-022603 | DW4852 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW8498 | F2S SIB Mezz |
| SIB F2S 2/2 | REV 04 | 710-022603 | DW4845 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW8457 | F2S SIB Mezz |
| SIB F2S 2/4 | REV 05 | 710-022603 | DW7802 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7562 | F2S SIB Mezz |
| SIB F2S 2/6 | REV 04 | 710-022603 | DW4822 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW8467 | F2S SIB Mezz |
| SIB F2S 3/0 | REV 05 | 710-022603 | DW7815 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7518 | F2S SIB Mezz |
| SIB F2S 3/2 | REV 03 | 710-022603 | DV0068 | F2S SIB |
| B Board | REV 03 | 710-023787 | DT9974 | F2S SIB Mezz |
| SIB F2S 3/4 | REV 05 | 710-022603 | DW7874 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7601 | F2S SIB Mezz |
| SIB F2S 3/6 | REV 03 | 710-022603 | DV0033 | F2S SIB |
| B Board | REV 03 | 710-023787 | DT9969 | F2S SIB Mezz |
| SIB F2S 4/0 | REV 03 | 710-022603 | DV0043 | F2S SIB |
| B Board | REV 03 | 710-023787 | DT9948 | F2S SIB Mezz |
| SIB F2S 4/2 | REV 05 | 710-022603 | DW5446 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7611 | F2S SIB Mezz |
| SIB F2S 4/4 | REV 04 | 710-022603 | DW4826 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW8458 | F2S SIB Mezz |
| SIB F2S 4/6 | REV 03 | 710-022603 | DV0026 | F2S SIB |
| B Board | REV 03 | 710-023787 | DT9963 | F2S SIB Mezz |
| Fan Tray 0 | REV 02 | 760-024497 | DR8290 | Front Fan Tray |
| Fan Tray 1 | REV 02 | 760-024497 | DR8293 | Front Fan Tray |
| Fan Tray 2 | REV 05 | 760-024502 | DR8280 | Rear Fan Tray |
| Fan Tray 3 | | | | |
| Fan Tray 4 | REV 05 | 760-024502 | DR8276 | Rear Fan Tray |
| Fan Tray 5 | REV 02 | 760-024502 | DP5643 | Rear Fan Tray |

lcc0-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 |

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|--------|--------|------------|-------------|--------------------------|
| 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, SMR |
| 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 |

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|------------|--------|------------|-------------|------------------------|
| 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 |

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lcc1-re0:
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Hardware inventory:
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| 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 |

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|----------|--------|------------|--------------|-------------------------|
| 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 | P9MOU3Z | SFP-SX |
| Xcvr 5 | REV 01 | 740-011782 | P9MOU0C | SFP-SX |
| Xcvr 6 | REV 01 | 740-011782 | P9M0TLG | SFP-SX |
| Xcvr 7 | REV 01 | 740-011782 | P9MOU0F | SFP-SX |
| Xcvr 8 | REV 01 | 740-011613 | PFA6LAP | SFP-SX |
| Xcvr 9 | REV 01 | 740-011782 | PCH2POU | SFP-SX |
| PIC 1 | REV 16 | 750-009450 | CV2565 | 1x OC-192 SM SR2 |
| PIC 2 | REV 05 | 750-004424 | HH3057 | 1x 10GE(LAN),10GBASE-LR |
| PIC 3 | REV 12 | 750-013423 | DP0403 | MultiServices 500 |
| MMB 0 | REV 04 | 710-016036 | DK1988 | ST-MMB2 |
| FPC 5 | REV 07 | 710-013560 | DR0004 | E2-FPC Type 3 |
| CPU | REV 05 | 710-013563 | DR0089 | FPC CPU-Enhanced |
| PIC 0 | REV 11 | 750-012793 | DR6107 | 1x 10GE(LAN/WAN) IQ2 |
| Xcvr 0 | REV 01 | 740-014289 | C743XU074 | XFP-10G-SR |
| PIC 1 | REV 01 | 750-004695 | HD5980 | 1x Tunnel |
| PIC 2 | REV 32 | 750-003700 | DL3770 | 1x OC-192 12xMM VSR |
| PIC 3 | REV 12 | 750-009553 | WB8901 | 4x OC-48 SONET |
| Xcvr 0 | REV 01 | 740-011785 | P9D1GTQ | SFP-SR |
| Xcvr 1 | REV 01 | 740-011785 | PDSOMMB | SFP-SR |
| Xcvr 3 | REV 01 | 740-011785 | PDE1KXP | SFP-SR |
| MMB 0 | REV 07 | 710-010171 | DP7374 | MMB-5M3-288mbit |
| MMB 1 | REV 07 | 710-010171 | DP7404 | MMB-5M3-288mbit |
| FPC 6 | REV 07 | 710-013035 | DM0994 | FPC Type 3-ES |
| CPU | REV 07 | 710-016744 | DM3651 | ST-PMB2 |
| PIC 0 | REV 07 | 750-015217 | DN4743 | 8x 1GE(TYPE3), IQ2 |
| Xcvr 3 | REV 01 | 740-011613 | AM0812S8XB0 | SFP-SX |
| Xcvr 4 | REV 01 | 740-011782 | PB829RB | SFP-SX |
| Xcvr 5 | REV 01 | 740-011782 | P8J1SYX | SFP-SX |
| PIC 1 | REV 03 | 750-003336 | HJ9954 | 4x OC-48 SONET, SMSR |
| PIC 3 | REV 02 | 750-012793 | JM7665 | 1x 10GE(LAN/WAN) IQ2 |
| MMB 0 | REV 04 | 710-016036 | DN6913 | ST-MMB2 |
| FPC 7 | REV 08 | 710-010845 | JM3958 | FPC Type 4 |
| CPU | REV 04 | 710-011481 | JK3669 | FPC CPU-Enhanced |
| PIC 0 | REV 11 | 750-017405 | DP8837 | 4x 10GE (LAN/WAN) XFP |
| Xcvr 1 | REV 01 | 740-014279 | 753019A00277 | XFP-10G-LR |
| Xcvr 2 | REV 02 | 740-011571 | C850XJ00P | XFP-10G-SR |
| Xcvr 3 | REV 01 | 740-014279 | AA0813N1RTG | XFP-10G-LR |

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|------------|--------|------------|--------|------------------------|
| MMB 0 | REV 04 | 710-010842 | JN1971 | ST-MMB |
| SPMB 0 | REV 04 | 710-023321 | DW3629 | LCC Switch CPU |
| SPMB 1 | REV 04 | 710-023321 | DW3621 | LCC Switch CPU |
| SIB 0 | REV 07 | 710-022594 | DW4200 | LCC SIB |
| B Board | REV 07 | 710-023185 | DW3932 | LCC SIB Mezz |
| SIB 1 | REV 07 | 710-022594 | DW4193 | LCC SIB |
| B Board | REV 07 | 710-023185 | DW3904 | LCC SIB Mezz |
| SIB 2 | | | | |
| SIB 3 | REV 07 | 710-022594 | DW4210 | LCC SIB |
| B Board | REV 06 | 710-023185 | DT5780 | LCC SIB Mezz |
| SIB 4 | REV 08 | 710-022594 | DW8019 | LCC SIB |
| B Board | REV 06 | 710-023185 | DT5795 | LCC SIB Mezz |
| Fan Tray 0 | | | | Front Top Fan Tray |
| Fan Tray 1 | | | | Front Bottom Fan Tray |
| Fan Tray 2 | | | | Rear Fan Tray -- Rev 3 |

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show chassis hardware user@host> show chassis hardware sfc 0
sfc0-re0:
Router)
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Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis              REV 05    710-022574   JN112F007AHB  TXP
Midplane             REV 03    710-024027   DX0282        SFC Midplane
FPM Display          REV 04    710-023792   DW4889        TXP FPM Display
CIP 0                REV 04    710-023792   DW4887        TXP CIP
CIP 1                REV 07    740-027463   UM26368       Power Entry Module
PEM 0                REV 01    740-026942   737A-1064     SFC RE
Routing Engine 0     REV 01    740-026942   737A-1082     SFC RE
Routing Engine 1     REV 09    710-022606   DW6099        SFC Control Board
CB 0                 REV 09    710-022606   DW6096        SFC Control Board
CB 1                 REV 09    BUILTIN      BUILTIN       SFC Switch CPU
SPMB 0               REV 04    710-022600   DX0841        F13 SIB
SPMB 1               REV 03    710-023431   DX0966        F13 SIB Mezz
SIB F13 0            REV 04    750-024564   DW5776        F13 SIB
SIB F13 1            REV 03    710-023431   DW9028        F13 SIB
SIB F13 3            REV 04    750-024564   DW5762        F13 SIB
SIB F13 4            REV 03    710-023431   DW9059        F13 SIB
SIB F13 6            REV 04    750-024564   DW5797        F13 SIB
SIB F13 7            REV 03    710-023431   DW9041        F13 SIB
SIB F13 8            REV 04    750-024564   DW5770        F13 SIB
SIB F13 9            REV 03    710-023431   DW9079        F13 SIB Mezz
SIB F13 11           REV 04    750-024564   DW5758        F13 SIB
SIB F13 12           REV 03    710-023431   DW9047        F13 SIB
SIB F13 12           REV 04    750-024564   DW5761        F13 SIB
SIB F13 12           REV 03    710-023431   DW9043        F13 SIB Mezz
SIB F13 12           REV 04    750-024564   DW5754        F13 SIB
SIB F13 12           REV 03    710-023431   DW9078        F13 SIB Mezz
SIB F13 12           REV 04    710-022600   DX0826        F13 SIB
SIB F13 12           REV 03    710-023431   DX0967        F13 SIB Mezz
SIB F13 12           REV 04    750-024564   DW5794        F13 SIB
SIB F13 12           REV 03    710-023431   DW9044        F13 SIB Mezz
SIB F2S 0/0          REV 05    710-022603   DW7897        F2S SIB
SIB F2S 0/2          REV 05    710-023787   DW7657        NEO PMB
SIB F2S 0/2          REV 05    710-022603   DW7833        F2S SIB
SIB F2S 0/2          REV 05    710-023787   DW7526        NEO PMB
SIB F2S 0/4          REV 05    710-022603   DW7875        F2S SIB
SIB F2S 0/4          REV 05    710-023787   DW7588        NEO PMB
SIB F2S 0/6          REV 05    710-022603   DW7860        F2S SIB
SIB F2S 0/6          REV 05    710-023787   DW7589        NEO PMB
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|-------------|--------|------------|--------|----------------|
| SIB F2S 1/0 | REV 04 | 710-022603 | DW4820 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW8510 | NEO PMB |
| SIB F2S 1/2 | REV 05 | 710-022603 | DW7849 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7525 | NEO PMB |
| SIB F2S 1/4 | REV 05 | 710-022603 | DW7927 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7556 | F2S SIB Mezz |
| SIB F2S 1/6 | REV 05 | 710-022603 | DW7866 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7651 | NEO PMB |
| SIB F2S 2/0 | REV 05 | 710-022603 | DW7880 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7523 | NEO PMB |
| SIB F2S 2/2 | REV 05 | 710-022603 | DW7895 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7591 | NEO PMB |
| SIB F2S 2/4 | REV 05 | 710-022603 | DW7907 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7590 | NEO PMB |
| SIB F2S 2/6 | REV 05 | 710-022603 | DW7785 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7524 | NEO PMB |
| SIB F2S 3/0 | REV 05 | 710-022603 | DW7782 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7634 | NEO PMB |
| SIB F2S 3/2 | REV 05 | 710-022603 | DW7793 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7548 | NEO PMB |
| SIB F2S 3/4 | REV 05 | 710-022603 | DW7779 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7587 | NEO PMB |
| SIB F2S 3/6 | REV 05 | 710-022603 | DW7930 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7505 | NEO PMB |
| SIB F2S 4/0 | REV 05 | 710-022603 | DW7867 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7656 | NEO PMB |
| SIB F2S 4/2 | REV 05 | 710-022603 | DW7917 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7640 | NEO PMB |
| SIB F2S 4/4 | REV 05 | 710-022603 | DW7929 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7643 | NEO PMB |
| SIB F2S 4/6 | REV 05 | 710-022603 | DW7870 | F2S SIB |
| B Board | REV 05 | 710-023787 | DW7635 | NEO PMB |
| Fan Tray 0 | REV 06 | 760-024497 | DV7831 | Front Fan Tray |
| Fan Tray 1 | REV 06 | 760-024497 | DV9614 | Front Fan Tray |
| Fan Tray 2 | REV 06 | 760-024502 | DV9618 | Rear Fan Tray |
| Fan Tray 3 | REV 06 | 760-024502 | DV9616 | Rear Fan Tray |
| Fan Tray 4 | REV 06 | 760-024502 | DV7807 | Rear Fan Tray |
| Fan Tray 5 | REV 06 | 760-024502 | DV7828 | Rear Fan Tray |

show chassis hardware
extensive (TX Matrix
Plus Router)

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

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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

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Midplane          REV 05   710-022574   TS4027          SFC Midplane
Jedec Code:      0x7fb0          EEPROM Version:  0x01
P/N:             710-022574      S/N:            S/N TS4027
Assembly ID:     0x0962          Assembly Version: 01.05
Date:            03-23-2009      Assembly Flags:  0x00
Version:         REV 05
ID: SFC Midplane
Board Information Record:
  Address 0x00: ad 01 ff ff 00 1d b5 14 00 00 ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 01 ff 09 62 01 05 52 45 56 20 30 35 00 00
  Address 0x10: 00 00 00 00 37 31 30 2d 30 32 32 35 37 34 00 00
  Address 0x20: 53 2f 4e 20 54 53 34 30 32 37 00 00 00 17 03 07
  Address 0x30: d9 ff ff ff ad 01 ff ff 00 1d b5 14 00 00 ff ff
  Address 0x40: ff ff ff ff 00 ff ff ff ff ff ff ff ff ff ff
  Address 0x50: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x60: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
FPM Display       REV 03   710-024027   DX0282          TXP FPM Display
Jedec Code:      0x7fb0          EEPROM Version:  0x01
P/N:             710-024027      S/N:            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
  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
  Address 0x60: 00 00 00 00 00 00 ff ff ff ff ff ff ff ff ff
  Address 0x70: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
CIP 0             REV 04   710-023792   DW4889          TXP CIP
Jedec Code:      0x7fb0          EEPROM Version:  0x01
P/N:             710-023792      S/N:            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)**

```

user@host> show chassis hardware clei-models
sfc0-re0:

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Hardware inventory:
Item          Version  Part number  CLEI code          FRU model number
Midplane      REV 05   710-022574          CHAS-BP-TXP-S
FPM Display   REV 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          PWR-TXP-7-60-DC
PEM 1         Rev 04   740-027463          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

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| | | | |
|-------------|--------|------------|-----------------|
| SIB F13 0 | REV 04 | 750-024564 | SIB-TXP-F13 |
| SIB F13 3 | REV 04 | 750-024564 | SIB-TXP-F13 |
| SIB F13 8 | REV 04 | 750-024564 | SIB-TXP-F13 |
| SIB F13 11 | REV 04 | 750-024564 | SIB-TXP-F13 |
| SIB F13 12 | REV 03 | 750-024564 | SIB-TXP-F13 |
| SIB F2S 0/0 | REV 05 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 0/2 | REV 05 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 0/4 | REV 04 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 0/6 | REV 04 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 1/0 | REV 04 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 1/2 | REV 05 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 1/4 | REV 04 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 1/6 | REV 05 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 2/0 | REV 04 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 2/2 | REV 04 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 2/4 | REV 05 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 2/6 | REV 04 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 3/0 | REV 05 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 3/2 | REV 03 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 3/4 | REV 05 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 3/6 | REV 03 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 4/0 | REV 03 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 4/2 | REV 05 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 4/4 | REV 04 | 710-022603 | SIB-TXP-F2S-S |
| SIB F2S 4/6 | REV 03 | 710-022603 | SIB-TXP-F2S-S |
| Fan Tray 0 | REV 02 | 760-024497 | FANTRAY-TXP-H-S |
| Fan Tray 1 | REV 02 | 760-024497 | FANTRAY-TXP-H-S |
| Fan Tray 2 | REV 05 | 760-024502 | FANTRAY-TXP-V-S |
| Fan Tray 3 | | | |
| Fan Tray 4 | REV 05 | 760-024502 | FANTRAY-TXP-V-S |
| Fan Tray 5 | REV 02 | 760-024502 | FANTRAY-TXP-V-S |

lcc0-re0:

Hardware inventory:

| Item | Version | Part number | CLEI code | FRU model number |
|------------------|---------|-------------|------------|-------------------------|
| Midplane | REV 03 | 710-017247 | | CHAS-BP-T1600-S |
| FPM Display | REV 01 | 710-021387 | | CRAFT-T1600-S |
| CIP | REV 06 | 710-002895 | | CIP-L-T640-S |
| PEM 1 | Rev 02 | 740-023211 | IPUPAC8KTA | PWR-T1600-4-60-DC-S |
| SCG 0 | REV 15 | 710-003423 | | SCG-T-S |
| SCG 1 | REV 15 | 710-003423 | | SCG-T-S |
| Routing Engine 0 | REV 01 | 740-026941 | | RE-DUO-C1800-8G-S |
| Routing Engine 1 | REV 01 | 740-026941 | | RE-DUO-C1800-8G-S |
| CB 0 | REV 06 | 710-022597 | | CB-LCC-S |
| CB 1 | REV 06 | 710-022597 | | CB-LCC-S |
| FPC 1 | REV 07 | 710-013035 | | T640-FPC3-ES |
| PIC 0 | REV 05 | 750-015217 | | PC-8GE-TYPE3-SFP-IQ2 |
| PIC 1 | REV 03 | 750-004424 | | PC-1XGE-LR |
| PIC 2 | REV 01 | 750-003336 | | PC-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 |

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Fan Tray 0
Fan Tray 1
Fan Tray 2
FANTRAY-T-S
FANTRAY-T-S
FANTRAY-TXP-R-S

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show chassis hardware
detail (TX Matrix Plus
Router)

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user@host> show chassis hardware detail
sfc0-re0:
-----
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               JN111B023AHB  TXP
Midplane      REV 01   710-022574   TR7990         SFC Midplane
FPM Display   REV 03   710-024027   DW4699         TXP FPM Display
CIP 0         REV 01   710-023792   DR1437         TXP CIP
CIP 1         REV 02   710-023792   DS4564         TXP CIP
PEM 0         Rev 07   740-027463   UM26360        Power Entry Module
Routing Engine 0 REV 01   740-026942   737A-1024      SFC RE
  ad0 3887 MB SMART CF 200811050193CEB1CEB1 Compact Flash
  ad1 30533 MB SAMSUNG MCBQE32G8MPP-0V SY814A0762 Disk 1
Routing Engine 1 REV 01   740-026942   737A-1024      SFC RE
  ad0 3887 MB SMART CF 20081105004C19A019A0 Compact Flash
  ad1 30533 MB SAMSUNG MCBQE32G8MPP-0V SY814A0794 Disk 1
CB 0          REV 03   710-022606   DR7134         SFC Control Board
CB 1          REV 01   710-022606   DP8890         SFC Control Board
SPMB 0        BUILTIN                               SFC Switch CPU
SPMB 1        BUILTIN                               SFC Switch CPU
SIB F13 0     REV 03   750-024564   DT9478         F13 SIB
  B Board    REV 02   710-023431   DT6554         F13 SIB
SIB F13 1     REV 03   750-024564   DT9454         F13 SIB
  B Board    REV 02   710-023431   DT6551         F13 SIB
SIB F2S 0/0   REV 02   710-022603   DT2838         F2S SIB
  B Board    REV 02   710-023787   DT1725         NEO PMB
SIB F2S 0/2   REV 02   710-022603   DT2824         F2S SIB
  B Board    REV 02   710-023787   DT1706         NEO PMB
SIB F2S 0/4   REV 02   710-022603   DT2822         F2S SIB
  B Board    REV 02   710-023787   DT1696         NEO PMB
SIB F2S 0/6   REV 02   710-022603   DT2823         F2S SIB
  B Board    REV 02   710-023787   DT1717         NEO PMB
SIB F2S 1/0   REV 03   710-022603   DV0059         F2S SIB
  B Board    REV 03   710-023787   DT9942         NEO PMB
SIB F2S 1/2   REV 02   710-022603   DT2826         F2S SIB
  B Board    REV 02   710-023787   DT1713         NEO PMB
SIB F2S 1/4   REV 03   710-022603   DV0092         F2S SIB
  B Board    REV 03   710-023787   DV0000         NEO PMB
SIB F2S 1/6   REV 03   710-022603   DV0079         F2S SIB
  B Board    REV 03   710-023787   DT9972         NEO PMB
SIB F2S 2/0   REV 03   710-022603   DV0100         F2S SIB
  B Board    REV 03   710-023787   DT9925         NEO PMB
SIB F2S 2/2   REV 03   710-022603   DV0050         F2S SIB
  B Board    REV 03   710-023787   DV0005         NEO PMB
SIB F2S 2/4   REV 03   710-022603   DV0097         F2S SIB
  B Board    REV 03   710-023787   DT9936         NEO PMB
Fan Tray 0    REV 02   760-024497   DR8286         Front Fan Tray
Fan Tray 1    REV 06   760-024497   DV9624         Front Fan Tray
Fan Tray 2    REV 02   760-024502   DR8259         Rear Fan Tray
Fan Tray 3    REV 02   760-024502   DR8270         Rear Fan Tray
Fan Tray 4    REV 02   760-024502   DR8284         Rear Fan Tray
Fan Tray 5    REV 06   760-024502   DV7813         Rear Fan Tray

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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)

```
user@host> show chassis hardware models
sfc0-re0:
```

Hardware inventory:

| Item | Version | Part number | Serial number | FRU model number |
|------------------|---------|-------------|---------------|-------------------------|
| FPM Display | REV 03 | 710-024027 | DX0282 | CRAFT-TXP |
| CIP 0 | REV 04 | 710-023792 | DW4889 | CIP-TXP |
| CIP 1 | REV 04 | 710-023792 | DW4887 | CIP-TXP |
| PEM 0 | Rev 07 | 740-027463 | UM26368 | yyyyyyyyyyyyyyyyyyyy |
| Routing Engine 0 | REV 01 | 740-026942 | 737A-1064 | RE-TXP-SFC-DU0-2600-16G |
| Routing Engine 1 | REV 01 | 740-026942 | 737A-1082 | RE-TXP-SFC-DU0-2600-16G |
| CB 0 | REV 09 | 710-022606 | DW6099 | CB-TXP |
| CB 1 | REV 09 | 710-022606 | DW6096 | CB-TXP |
| SIB F13 1 | REV 04 | 750-024564 | DW5776 | SIB-TXP-F13 |
| SIB F13 3 | REV 04 | 750-024564 | DW5762 | SIB-TXP-F13 |
| SIB F13 4 | REV 04 | 750-024564 | DW5797 | SIB-TXP-F13 |

| | | | | |
|-------------|--------|------------|--------|---------------|
| SIB F13 6 | REV 04 | 750-024564 | DW5770 | SIB-TXP-F13 |
| SIB F13 7 | REV 04 | 750-024564 | DW5758 | SIB-TXP-F13 |
| SIB F13 8 | REV 04 | 750-024564 | DW5761 | SIB-TXP-F13 |
| SIB F13 9 | REV 04 | 750-024564 | DW5754 | SIB-TXP-F13 |
| SIB F13 12 | REV 04 | 750-024564 | DW5794 | SIB-TXP-F13 |
| SIB F2S 0/0 | REV 05 | 710-022603 | DW7897 | |
| SIB F2S 0/2 | REV 05 | 710-022603 | DW7833 | |
| SIB F2S 0/4 | REV 05 | 710-022603 | DW7875 | |
| SIB F2S 0/6 | REV 05 | 710-022603 | DW7860 | |
| SIB F2S 1/0 | REV 04 | 710-022603 | DW4820 | |
| SIB F2S 1/2 | REV 05 | 710-022603 | DW7849 | |
| SIB F2S 1/4 | REV 05 | 710-022603 | DW7927 | SIB-TXP-F2S |
| SIB F2S 1/6 | REV 05 | 710-022603 | DW7866 | |
| SIB F2S 2/0 | REV 05 | 710-022603 | DW7880 | |
| SIB F2S 2/2 | REV 05 | 710-022603 | DW7895 | |
| SIB F2S 2/4 | REV 05 | 710-022603 | DW7907 | |
| SIB F2S 2/6 | REV 05 | 710-022603 | DW7785 | |
| SIB F2S 3/0 | REV 05 | 710-022603 | DW7782 | |
| SIB F2S 3/2 | REV 05 | 710-022603 | DW7793 | |
| SIB F2S 3/4 | REV 05 | 710-022603 | DW7779 | |
| SIB F2S 3/6 | REV 05 | 710-022603 | DW7930 | |
| SIB F2S 4/0 | REV 05 | 710-022603 | DW7867 | |
| SIB F2S 4/2 | REV 05 | 710-022603 | DW7917 | |
| SIB F2S 4/4 | REV 05 | 710-022603 | DW7929 | |
| SIB F2S 4/6 | REV 05 | 710-022603 | DW7870 | |
| Fan Tray 0 | REV 06 | 760-024497 | DV7831 | FANTRAY-TXP-F |
| Fan Tray 1 | REV 06 | 760-024497 | DV9614 | FANTRAY-TXP-F |
| Fan Tray 2 | REV 06 | 760-024502 | DV9618 | FANTRAY-TXP-R |
| Fan Tray 3 | REV 06 | 760-024502 | DV9616 | FANTRAY-TXP-R |
| Fan Tray 4 | REV 06 | 760-024502 | DV7807 | FANTRAY-TXP-R |
| Fan Tray 5 | REV 06 | 760-024502 | DV7828 | FANTRAY-TXP-R |

lcc0-re0:

Hardware inventory:

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

Fan Tray 2

FANTRAY-TXP-R-S

lcc1-re0:

Hardware inventory:

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

lcc2-re0:

Hardware inventory:

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

```
lcc3-re0:
```

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

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

```
show chassis hardware
(16-Port 10-Gigabit
Ethernet MPC with
SFP+ Optics [MX
Series Routers])
```

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

```
Hardware inventory:
```

| Item | Version | Part number | Serial number | Description |
|------------------|---------|-------------|---------------|----------------------|
| Chassis | | | JN112D865AFA | MX960 |
| Midplane | REV 03 | 710-013698 | TS3339 | MX960 Backplane |
| FPM Board | REV 03 | 710-014974 | WW6267 | Front Panel Display |
| PDM | Rev 03 | 740-013110 | QCS12485026 | Power Distribution |
| Module | | | | |
| PEM 0 | Rev 04 | 740-013682 | QCS12434086 | PS 1.7kW; 200-240VAC |
| in | | | | |
| PEM 1 | Rev 04 | 740-013682 | QCS1243408Z | PS 1.7kW; 200-240VAC |
| in | | | | |
| PEM 2 | Rev 04 | 740-013682 | QCS1243407X | PS 1.7kW; 200-240VAC |
| in | | | | |
| Routing Engine 0 | REV 07 | 740-015113 | 9009009677 | RE-S-1300 |
| Routing Engine 1 | REV 07 | 740-015113 | 9009011510 | RE-S-1300 |
| CB 0 | REV 03 | 710-021523 | XF0394 | MX SCB |
| CB 1 | REV 03 | 710-021523 | XF0550 | MX SCB |
| CB 2 | REV 03 | 710-021523 | XD7455 | MX SCB |
| FPC 4 | REV 02 | 750-028467 | JR6127 | MPC M 16x 10GE |
| CPU | REV 02 | 711-029089 | JX0129 | AS PMB |
| PIC 0 | | BUILTIN | BUILTIN | 4x 10GE(LAN) SFP+ |
| PIC 1 | | BUILTIN | BUILTIN | 4x 10GE(LAN) SFP+ |

| | | | | |
|------------|--------|------------|---------|-------------------|
| PIC 2 | | BUILTIN | BUILTIN | 4x 10GE(LAN) SFP+ |
| PIC 3 | | BUILTIN | BUILTIN | 4x 10GE(LAN) SFP+ |
| Fan Tray 0 | REV 05 | 740-014971 | TP9990 | Fan Tray |
| Fan Tray 1 | REV 05 | 740-014971 | VS1709 | Fan Tray |

show chassis hardware
(MPC3E [MX Series
Routers])

user@host> show chassis hardware

Hardware inventory:

| Item | Version | Part number | Serial number | Description |
|------------------|-------------|-------------|---------------|------------------------|
| Chassis | | | JN1101AFEAFB | MX480 |
| Midplane | REV 05 | 710-017414 | TR4444 | MX480 Midplane |
| FPM Board | REV 02 | 710-017254 | KG6056 | Front Panel Display |
| PEM 0 | Rev 03 | 740-017330 | QCS082090FC | PS 1.2-1.7kW; 100-240V |
| PEM 1 | Rev 03 | 740-017330 | QCS082090FD | PS 1.2-1.7kW; 100-240V |
| Routing Engine 0 | REV 07 | 740-013063 | 9009004124 | RE-S-2000 |
| Routing Engine 1 | REV 07 | 740-013063 | 9009005569 | RE-S-2000 |
| CB 0 | REV 07 | 710-021523 | XZ3587 | MX SCB |
| CB 1 | REV 03 | 710-021523 | KH8306 | MX SCB |
| FPC 1 | REV 04.1.07 | 750-033205 | P1240 | MPC Type 3 |
| CPU | REV 01 | 711-035209 | YL0504 | HMPC PMB 2G |
| MIC 1 | REV 10 | 750-033199 | YX4495 | 1X100GE CFP |
| PIC 2 | | BUILTIN | BUILTIN | 1X100GE CFP |
| Xcvr 0 | REV 01 | 740-032210 | C22CQNE | CFP-100G-LR4 |
| FPC 2 | REV 26 | 750-016670 | KH0045 | DPCE 40x 1GE R EQ |
| CPU | REV 07 | 710-013713 | KF5448 | DPC PMB |
| PIC 0 | | BUILTIN | BUILTIN | 10x 1GE(LAN) EQ |
| Xcvr 0 | REV 01 | 740-011613 | PF21JHU | SFP-SX |
| PIC 1 | | BUILTIN | BUILTIN | 10x 1GE(LAN) EQ |
| Xcvr 9 | REV 01 | 740-011613 | AM0813S8ZL6 | SFP-SX |
| PIC 2 | | BUILTIN | BUILTIN | 10x 1GE(LAN) EQ |
| Xcvr 0 | REV 02 | 740-011613 | PGL2KYF | SFP-SX |
| Xcvr 2 | REV 01 | 740-011613 | AM0806S8N4P | SFP-SX |
| PIC 3 | | BUILTIN | BUILTIN | 10x 1GE(LAN) EQ |
| Xcvr 5 | REV 01 | 740-011613 | AM0815S967N | SFP-SX |
| Xcvr 7 | REV 01 | 740-011613 | AM0806S8N1X | SFP-SX |
| Xcvr 8 | REV 01 | 740-011613 | AM0815S967J | SFP-SX |
| Xcvr 9 | REV 01 | 740-011613 | AM0815S967M | SFP-SX |
| FPC 3 | REV 12.2.09 | 750-033205 | YR9443 | MPC Type 3 |
| CPU | REV 03 | 711-035209 | YL6931 | HMPC PMB 2G |
| MIC 0 | REV 05 | 750-033199 | YR3269 | 1X100GE CFP |
| PIC 0 | | BUILTIN | BUILTIN | 1X100GE CFP |
| Xcvr 0 | REV 01 | 740-032210 | ULH0KG3 | CFP-100G-LR4 |
| MIC 1 | REV 02 | 750-033199 | YG3245 | 1X100GE CFP |
| PIC 2 | | BUILTIN | BUILTIN | 1X100GE CFP |
| Xcvr 0 | REV 01 | 740-032210 | ULH0KGF | CFP-100G-LR4 |
| FPC 4 | REV 12.3.09 | 750-033205 | YR9437 | MPC Type 3 |
| CPU | REV 03 | 711-035209 | YT5857 | HMPC PMB 2G |
| MIC 0 | REV 05 | 750-033199 | YR3295 | 1X100GE CFP |
| PIC 0 | | BUILTIN | BUILTIN | 1X100GE CFP |
| Xcvr 0 | | NON-JNPR | X12000187 | CFP-100G-SR10 |
| MIC 1 | REV 10 | 750-033199 | YX4518 | 1X100GE CFP |
| PIC 2 | | BUILTIN | BUILTIN | 1X100GE CFP |
| Xcvr 0 | REV 01 | 740-035329 | X12J00008 | CFP-100G-SR10 |
| FPC 5 | REV 06 | 750-024884 | JW9769 | MPC Type 2 3D EQ |
| CPU | REV 02 | 711-028401 | JR6158 | MPC PMB 2G Proto |
| MIC 0 | REV 05 | 750-028387 | JR6197 | 3D 4x 10GE XFP |
| PIC 0 | | BUILTIN | BUILTIN | 2x 10GE XFP |
| Xcvr 0 | REV 01 | 740-014289 | T07M71112 | XFP-10G-SR |
| Xcvr 1 | REV 02 | 740-014289 | T08L85610 | XFP-10G-SR |

| | | | | |
|----------|--------|------------|-------------|---------------------|
| PIC 1 | | BUILTIN | BUILTIN | 2x 10GE XFP |
| MIC 1 | REV 22 | 750-028392 | YM0053 | 3D 20x 1GE(LAN) SFP |
| PIC 2 | | BUILTIN | BUILTIN | 10x 1GE(LAN) SFP |
| Xcvr 0 | REV 01 | 740-011613 | AM0703S005B | SFP-SX |
| Xcvr 1 | REV 01 | 740-011613 | E07L01352 | SFP-SX |
| PIC 3 | | BUILTIN | BUILTIN | 10x 1GE(LAN) SFP |
| Xcvr 5 | REV 01 | 740-013111 | 6500217 | SFP-T |
| Xcvr 9 | REV 02 | 740-013111 | 8499527 | SFP-T |
| Fan Tray | | | | Left Fan Tray |

The PIC number for MIC 1 always starts from 2 (even if the first MIC is a 1X100GE CFP or a legacy MIC).

show chassis hardware (QFX3500 Switches)

```
user@switch> show chassis hardware
```

Hardware inventory:

| Item | Version | Part number | Serial number | Description |
|------------------|---------|-------------|---------------|-----------------------|
| Chassis | | | | QFX3500 |
| Routing Engine 0 | | BUILTIN | BUILTIN | QFX Routing Engine |
| FPC 0 | REV 04 | 750-044071 | BBAR3902 | QFX3500-48S4Q-AFI |
| CPU | | BUILTIN | BUILTIN | FPC CPU |
| PIC 0 | | BUILTIN | BUILTIN | 48x 10G-SFP+ |
| PIC 1 | | BUILTIN | BUILTIN | 15x 10G-SFP+ |
| MGMT BRD | REV 02 | 750-044063 | BBAR0398 | QFX3500-MGMT-SFP-AFO |
| Xcvr 0 | REV 01 | 740-011614 | AC0946S0BD1 | SFP-LX10 |
| Xcvr 1 | REV 02 | 740-013111 | A281922 | SFP-T |
| Power Supply 0 | Rev 04 | 740-032091 | UI00677 | JPSU-650W-AC-AFI |
| Power Supply 1 | REV 00 | 740-041741 | VJ00162 | JPSU-650W-AC-AFO |
| Fan Tray 0 | | | | QFX Fan Tray, Back to |
| Front Airflow | | | | |
| Fan Tray 1 | | | | QFX Fan Tray, Back to |
| Front Airflow | | | | |
| Fan Tray 2 | | | | QFX Fan Tray, Back to |
| Front Airflow | | | | |

show chassis hardware detail (QFX3500 Switches)

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

Hardware inventory:

| Item | Version | Part number | Serial number | Description |
|------------------|---------|-------------|---------------|--------------------|
| Chassis | | | JN000TEST5 | QFX3500 |
| Routing Engine 0 | | BUILTIN | BUILTIN | QFX Routing Engine |
| FPC 0 | REV 05 | 750-036931 | EE0823 | QFX3500-48S4Q-AFI |
| CPU | | BUILTIN | BUILTIN | FPC CPU |
| PIC 0 | | BUILTIN | BUILTIN | 48x 10G-SFP+ |
| Xcvr 0 | REV 01 | 740-030589 | S99E270079 | SFP+-10G-LPBK |
| Xcvr 1 | REV 01 | 740-030589 | S9AK450099 | SFP+-10G-LPBK |
| Xcvr 2 | REV 01 | 740-030589 | S99E270078 | SFP+-10G-LPBK |
| Xcvr 3 | REV 01 | 740-030589 | S9AK450098 | SFP+-10G-LPBK |
| Xcvr 4 | REV 01 | 740-030589 | S99E270075 | SFP+-10G-LPBK |
| Xcvr 5 | REV 01 | 740-030589 | S9AK450093 | SFP+-10G-LPBK |
| Xcvr 6 | REV 01 | 740-030589 | S9AK450097 | SFP+-10G-LPBK |
| Xcvr 7 | REV 01 | 740-030589 | S9AK450095 | SFP+-10G-LPBK |
| Xcvr 8 | REV 01 | 740-030589 | S99E270072 | SFP+-10G-LPBK |
| Xcvr 9 | REV 01 | 740-030589 | S99E270073 | SFP+-10G-LPBK |
| Xcvr 10 | REV 01 | 740-030589 | S99E270080 | SFP+-10G-LPBK |
| Xcvr 11 | REV 01 | 740-030589 | S9AK450169 | SFP+-10G-LPBK |
| Xcvr 12 | REV 01 | 740-030589 | S99E270076 | SFP+-10G-LPBK |
| Xcvr 13 | REV 01 | 740-030589 | S9AK450167 | SFP+-10G-LPBK |
| Xcvr 14 | REV 01 | 740-030589 | S9AK450170 | SFP+-10G-LPBK |

| | | | | |
|----------------|--------|------------|------------|----------------|
| Xcvr 15 | REV 01 | 740-030589 | S9AK450166 | SFP+-10G-LPBK |
| Xcvr 16 | REV 01 | 740-030589 | S9AK450092 | SFP+-10G-LPBK |
| Xcvr 17 | REV 01 | 740-030589 | S9AK450163 | SFP+-10G-LPBK |
| Xcvr 18 | REV 01 | 740-030589 | S9AK450094 | SFP+-10G-LPBK |
| Xcvr 19 | REV 01 | 740-030589 | S9AK450100 | SFP+-10G-LPBK |
| Xcvr 20 | REV 01 | 740-030589 | S9AK450168 | SFP+-10G-LPBK |
| Xcvr 21 | REV 01 | 740-030589 | S9AK450165 | SFP+-10G-LPBK |
| Xcvr 22 | REV 01 | 740-030589 | S9AK450073 | SFP+-10G-LPBK |
| Xcvr 23 | REV 01 | 740-030589 | S9AK450164 | SFP+-10G-LPBK |
| Xcvr 24 | REV 01 | 740-030589 | S9AK450074 | SFP+-10G-LPBK |
| Xcvr 25 | REV 01 | 740-030589 | SA62270195 | SFP+-10G-LPBK |
| Xcvr 26 | REV 01 | 740-030589 | S9AK450078 | SFP+-10G-LPBK |
| Xcvr 27 | REV 01 | 740-030589 | S9AK450024 | SFP+-10G-LPBK |
| Xcvr 28 | REV 01 | 740-030589 | S9AK450027 | SFP+-10G-LPBK |
| Xcvr 29 | REV 01 | 740-030589 | S9AK450080 | SFP+-10G-LPBK |
| Xcvr 30 | REV 01 | 740-030589 | S9AK450030 | SFP+-10G-LPBK |
| Xcvr 31 | REV 01 | 740-030589 | S9AK450025 | SFP+-10G-LPBK |
| Xcvr 32 | REV 01 | 740-030589 | S9AK450023 | SFP+-10G-LPBK |
| Xcvr 33 | REV 01 | 740-030589 | S9AK450075 | SFP+-10G-LPBK |
| Xcvr 34 | REV 01 | 740-030589 | S9AK450161 | SFP+-10G-LPBK |
| Xcvr 35 | REV 01 | 740-030589 | S9AK450071 | SFP+-10G-LPBK |
| Xcvr 36 | REV 01 | 740-030589 | S9AK450072 | SFP+-10G-LPBK |
| Xcvr 37 | REV 01 | 740-030589 | S9AK450022 | SFP+-10G-LPBK |
| Xcvr 38 | REV 01 | 740-030589 | S9AK450021 | SFP+-10G-LPBK |
| Xcvr 39 | REV 01 | 740-030589 | S9AK450175 | SFP+-10G-LPBK |
| Xcvr 40 | REV 01 | 740-030589 | S9AK450162 | SFP+-10G-LPBK |
| Xcvr 41 | REV 01 | 740-030589 | S99E270074 | SFP+-10G-LPBK |
| Xcvr 42 | REV 01 | 740-030589 | S9AK450174 | SFP+-10G-LPBK |
| Xcvr 43 | REV 01 | 740-030589 | S9AK450077 | SFP+-10G-LPBK |
| Xcvr 44 | REV 01 | 740-030589 | S9AK450076 | SFP+-10G-LPBK |
| Xcvr 45 | REV 01 | 740-030589 | S9AK450026 | SFP+-10G-LPBK |
| Xcvr 46 | REV 01 | 740-030589 | S9AK450079 | SFP+-10G-LPBK |
| Xcvr 47 | REV 01 | 740-030589 | S9AK450029 | SFP+-10G-LPBK |
| PIC 1 | | BUILTIN | BUILTIN | 15x 10G-SFP+ |
| Xcvr 1 | REV 01 | 740-032986 | QA170087 | QSFP+-40G-SR4 |
| Xcvr 4 | REV 01 | 740-032986 | QA360442 | QSFP+-40G-SR4 |
| Xcvr 8 | REV 01 | 740-032986 | QA170091 | QSFP+-40G-SR4 |
| Xcvr 12 | REV 01 | 740-032986 | QA170042 | QSFP+-40G-SR4 |
| MGMT BRD | REV 08 | 750-036946 | EE0731 | QFX3500-MB |
| Power Supply 0 | Rev 04 | 740-032091 | UI00690 | QFX PS 650W AC |
| Power Supply 1 | Rev 04 | 740-032091 | UI00679 | QFX PS 650W AC |
| Fan Tray 0 | | | | QFX Fan Tray |
| Fan Tray 1 | | | | QFX Fan Tray |

```

show chassis hardware user@switch> show chassis hardware models
models (QFX3500 Hardware inventory:
Switches) 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 user@switch> show chassis hardware clei-models
clei-models (QFX3500 Hardware inventory:
Switches) 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 Switches)
user@switch> show chassis hardware interconnect-device interconnect1
Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis             REV 07                    BH0208188289  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 Switches)
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
PIC 0
Xcvr 8              REV 01    740-030658    AD0946A028B  FPC CPU
                                      48x 10G-SFP+
                                      SFP+-10G-USR
...

```

```

show chassis hardware (PTX5000 Packet Transport Switch)
user@switch> show chassis hardware
Hardware inventory:
Item                Version  Part number  Serial number  Description
Chassis             REV 03    711-031896    ABAC5589      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
  PSM 3              Rev 04    750-030653    EG3703        Clock Generator
CCG 0               REV 04    750-030653    EG3698        Clock Generator
CCG 1               REV 05    740-026942    P737A-002231  RE-DUO-2600
Routing Engine 0    REV 06    740-026942    P737A-002438  RE-DUO-2600
Routing Engine 1    REV 08    750-030625    EG5519        Control Board
CB 0                REV 08    750-030625    EG5516        Control Board
CB 1                REV 18    750-036844    EJ3080        FPC
FPC 0               REV 12    711-030686    EJ3260        SNG PMB
  CPU               REV 13    750-036844    EG5065        FPC
FPC 2               REV 09    711-030686    EG4082        SNG PMB
  CPU               REV 14    750-031913    EG5127        24x 10GE(LAN) SFP+
  PIC 0              REV 01    740-031980    143363A00240  SFP+-10G-SR
    Xcvr 0            REV 01    740-031981    UK90PZ1       SFP+-10G-LR
    Xcvr 1            REV 01    740-031980    AD1141A04XH   SFP+-10G-SR
    Xcvr 2            REV 01    740-031981    UK90Q46       SFP+-10G-LR
    Xcvr 3            REV 01    740-031980    AD1141A04X4   SFP+-10G-SR
    Xcvr 4            REV 01    740-031980    B11H02560     SFP+-10G-SR
    Xcvr 5            REV 01    740-031980    B11C01589     SFP+-10G-SR
    Xcvr 6            REV 01    740-031980    AD1141A04XF   SFP+-10G-SR
    Xcvr 7            REV 01    740-031980    123363A01094  SFP+-10G-SR
    Xcvr 8            REV 01    740-031980    AK80LKF       SFP+-10G-SR
    Xcvr 9            REV 01    740-031980    183363A01528  SFP+-10G-SR
    Xcvr 10           REV 01    740-031980    193363A01079  SFP+-10G-SR
    Xcvr 11           REV 01    740-031980    AK80MC8       SFP+-10G-SR
    Xcvr 12           REV 01    740-031980    AJCOBHC       SFP+-10G-SR
    Xcvr 13           REV 01    740-021309    J08D26856     SFP+-10G-LR
    Xcvr 14           REV 01    740-031980    AK80KCT       SFP+-10G-SR
    Xcvr 15           REV 01    740-031981    UK90PZL       SFP+-10G-LR
    Xcvr 16           REV 01    740-031980    AK80N1V       SFP+-10G-SR
    Xcvr 17           REV 13    750-036844    EG5074        FPC
    CPU              REV 09    711-030686    EG4064        SNG PMB
    PIC 1             REV 10    750-031903    EG0325        SNG Load

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| | | | | |
|------------|--------|------------|--------------|---------------------|
| FPC 5 | REV 06 | 750-036844 | EH3198 | FPC |
| CPU | | | | |
| PIC 0 | REV 14 | 750-031913 | EG5134 | 24x 10GE(LAN) SFP+ |
| Xcvr 0 | REV 01 | 740-031980 | AK80LBH | SFP+-10G-SR |
| Xcvr 1 | REV 01 | 740-031980 | B11B03724 | SFP+-10G-SR |
| Xcvr 2 | REV 01 | 740-031980 | AK80FMH | SFP+-10G-SR |
| Xcvr 5 | REV 01 | 740-031980 | B11J00818 | SFP+-10G-SR |
| Xcvr 6 | REV 01 | 740-031980 | 193363A00743 | SFP+-10G-SR |
| Xcvr 7 | REV 01 | 740-031980 | B11B06125 | SFP+-10G-SR |
| Xcvr 10 | REV 01 | 740-031980 | B11H02529 | SFP+-10G-SR |
| Xcvr 11 | REV 01 | 740-031980 | AK80LFB | SFP+-10G-SR |
| Xcvr 12 | REV 01 | 740-031980 | 193363A01061 | SFP+-10G-SR |
| Xcvr 15 | REV 01 | 740-031980 | B11J00687 | SFP+-10G-SR |
| Xcvr 16 | REV 01 | 740-031980 | 193363A00738 | SFP+-10G-SR |
| Xcvr 18 | REV 01 | 740-031980 | AK80MQX | SFP+-10G-SR |
| Xcvr 19 | REV 01 | 740-021309 | J08C17257 | SFP+-10G-LR |
| Xcvr 22 | REV 01 | 740-031980 | B11J00730 | SFP+-10G-SR |
| Xcvr 23 | REV 01 | 740-031980 | AK80KEE | SFP+-10G-SR |
| PIC 1 | REV 08 | 750-036710 | EG3105 | 2x 40GE CFP |
| Xcvr 0 | REV 01 | 740-034554 | B260HLT | CFP-40G-LR4 |
| Xcvr 1 | REV 01 | 740-034554 | B11C02847 | CFP-40G-LR4 |
| FPC 6 | REV 18 | 750-036844 | EJ4391 | FPC |
| CPU | REV 12 | 711-030686 | EJ3257 | SNG PMB |
| FPC 7 | REV 18 | 750-036844 | EJ4382 | FPC |
| CPU | REV 12 | 711-030686 | EJ3238 | SNG PMB |
| SPMB 0 | REV 10 | 711-030686 | EG5418 | SNG PMB |
| SPMB 1 | REV 09 | 711-030686 | EG5373 | SNG PMB |
| SIB 0 | REV 07 | 750-030631 | EG4858 | SIB-I-8S |
| SIB 1 | REV 07 | 750-030631 | EG4872 | SIB-I-8S |
| SIB 2 | REV 07 | 750-030631 | EG4866 | SIB-I-8S |
| SIB 3 | REV 07 | 750-030631 | EG6011 | SIB-I-8S |
| SIB 4 | REV 07 | 750-030631 | EG4907 | SIB-I-8S |
| SIB 5 | REV 07 | 750-030631 | EG4879 | SIB-I-8S |
| SIB 6 | REV 07 | 750-030631 | EG4864 | SIB-I-8S |
| SIB 7 | REV 07 | 750-030631 | EG4899 | SIB-I-8S |
| SIB 8 | REV 07 | 750-030631 | EG4880 | SIB-I-8S |
| Fan Tray 0 | REV 04 | 760-032784 | EG1496 | Vertical Fan Tray |
| Fan Tray 1 | REV 04 | 760-030642 | EG1335 | Horizontal Fan Tray |
| Fan Tray 2 | REV 02 | 760-030642 | ED4952 | Horizontal Fan Tray |

show chassis hardware
clei-models (PTX5000
Packet Transport
Switch)

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
Switch)

user@switch> show chassis hardware detail

Hardware inventory:

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

| | | | | | |
|------------|--------|------------|--------------|---------------------|--|
| CPU | | | | | |
| PIC 0 | REV 14 | 750-031913 | EG5134 | 24x 10GE(LAN) SFP+ | |
| Xcvr 0 | REV 01 | 740-031980 | AK80LBH | SFP+-10G-SR | |
| Xcvr 1 | REV 01 | 740-031980 | B11B03724 | SFP+-10G-SR | |
| Xcvr 2 | REV 01 | 740-031980 | AK80FMH | SFP+-10G-SR | |
| Xcvr 5 | REV 01 | 740-031980 | B11J00818 | SFP+-10G-SR | |
| Xcvr 6 | REV 01 | 740-031980 | 193363A00743 | SFP+-10G-SR | |
| Xcvr 7 | REV 01 | 740-031980 | B11B06125 | SFP+-10G-SR | |
| Xcvr 10 | REV 01 | 740-031980 | B11H02529 | SFP+-10G-SR | |
| Xcvr 11 | REV 01 | 740-031980 | AK80LFB | SFP+-10G-SR | |
| Xcvr 12 | REV 01 | 740-031980 | 193363A01061 | SFP+-10G-SR | |
| 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
Switch)**

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
Switch)**

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 ff | | | | |

show chassis in-service-upgrade

Syntax `show chassis in-service-upgrade`

Release Information Command introduced in Junos OS Release 9.0.

Description Display the status of Flexible PIC Concentrators (FPCs) and their corresponding PICs after the most recent unified in-service software upgrade (ISSU). This command must be issued on the master Routing Engine.



NOTE: Only Intelligent Queuing (IQ) PICs are displayed by this command output. Unified ISSU status for other PIC types is controlled internally by the FPC.

Options This command has no options.

Required Privilege Level view

Related Documentation

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

List of Sample Output [show chassis in-service-upgrade on page 599](#)

Output Fields [Table 54 on page 599](#) lists the output fields for the `show chassis in-service-upgrade` command. Output fields are listed in the approximate order in which they appear.

Table 54: show chassis in-service-upgrade Output Fields

| Field Name | Field Description |
|---------------|--|
| Item | Flexible PIC Concentrator (FPC) slot number. |
| Status | FPC and corresponding PIC state. State can be either of the following: <ul style="list-style-type: none"> Online—FPC is online and running. Offline—FPC is powered down. |
| Reason | Reason for the state (if offline). |

Sample Output

```

show chassis in-service-upgrade user@host> show chassis in-service-upgrade
  Item      Status      Reason
  FPC 0     Online
  FPC 1     Online
  FPC 2     Online
  PIC 0     Online

```

| | | |
|-------|---------|-------------------------|
| PIC 1 | Online | |
| FPC 3 | Offline | Offlined by CLI command |
| FPC 4 | Online | |
| PIC 1 | Online | |
| FPC 5 | Online | |
| PIC 0 | Online | |
| FPC 6 | Online | |
| PIC 3 | Online | |
| FPC 7 | Online | |

show chassis lccs

| | |
|---------------------------------|--|
| Syntax | show chassis lccs |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the status of all T640 routers (or line-card chassis) connected to the TX Matrix router. On a TX Matrix Plus router, display the status of all T1600 routers (or line-card chassis) connected to the TX Matrix Plus router. |
| Options | This command has no options. |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none"> • request chassis lcc on page 216 • Configuring Line-Card Upgrade Groups for Nonstop Software Upgrade (CLI Procedure) • fpc |
| List of Sample Output | show chassis lccs on page 601 |
| Output Fields | Table 55 on page 601 lists the output fields for the show chassis lccs command. Output fields are listed in the approximate order in which they appear. |

Table 55: show chassis lccs Output Fields

| Field Name | Field Description |
|---------------|--|
| Slot | LCC slot number. |
| State | LCC status: <ul style="list-style-type: none"> • Online—LCC is online and running. • Offline—LCC is powered down. • Empty—No LCC is present. |
| Uptime | How long the LCC has been up and running. |

Sample Output

```

show chassis lccs user@host> show chassis lccs
Slot  State                Uptime
0     Online                 3 minutes, 17 seconds
1     Empty
2     Online                 3 minutes, 23 seconds
3     Empty

```

show chassis location

| | |
|---------------------------------------|---|
| Syntax | show chassis location |
| Syntax (TX Matrix Router) | show chassis location <fpc interface (by-name <i>name</i> by-slot fpc <i>number</i> lcc <i>number</i>) lcc <i>number</i> scc> |
| Syntax (TX Matrix Plus Router) | show chassis location <fpc interface (by-name <i>name</i> by-slot fpc <i>number</i> lcc <i>number</i>) lcc <i>number</i> sfc <i>number</i> > |
| Syntax (MX Series Router) | show chassis location <all-members> <local> <member <i>member-id</i> > |
| Syntax (QFX Series) | show chassis location <interconnect-device <i>name</i> > <node-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. |
| Description | Display the physical location of the chassis. This command can only be used on the master Routing Engine. |
| Options | <p>none—Display all information about the physical location of the chassis. On a TX Matrix router, display all information about the physical location of the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display all information about the physical location of the TX Matrix Plus router and its attached T1600 routers.</p> <p>all-members—(MX Series routers only) (Optional) Display the physical location of the chassis for all the member routers in the Virtual Chassis configuration.</p> <p>fpc—(TX Matrix and TX Matrix Plus routers only) (Optional) Display the physical location of all Flexible PIC Concentrators (FPCs).</p> <p>interconnect-device <i>name</i>—(QFabric switches only) (Optional) Display the physical location of the Interconnect device.</p> <p>interface by-name <i>name</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) Display the physical location of a specified interface name. On a TX Matrix router, this option displays the FPC number and T640 router (or line-card chassis) number associated with the specified interface. On a TX Matrix Plus router, this option displays the FPC number and T1600 router (or line-card chassis) number associated with the specified interface.</p> <p>interface by-slot fpc <i>number</i> lcc <i>number</i>—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display the global FPC number of an interface by</p> |

specifying its local FPC number and T640 router (or line-card chassis) number. On a TX Matrix Plus router, display the global FPC number of an interface by specifying its local FPC number and T1600 router (or line-card chassis) number.

- The global FPC number is the FPC slot number when all the FPC slots in the routing matrix are considered: **0** through **31**. The local FPC number is the FPC slot number on a particular T640 router.
- For **fpc**, replace **number** with a value from **0** through **7**.
- For **lcc**, replace **number** with a value from **0** through **3**.

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

local—(MX Series routers only) (Optional) Display the physical location of the chassis for the local Virtual Chassis member.

member member-id—(MX Series routers only) (Optional) Display the physical location of the chassis for the specified member of the Virtual Chassis configuration. Replace **member-id** with a value of **0** or **1**.

node-device name—(QFabric switches only) (Optional) Display the physical location of the Node device.

scc—(TX Matrix routers only) (Optional) Display the physical location of the TX Matrix router (or switch-card chassis).

sfc—(TX Matrix Plus routers only) (Optional) Display the physical location of the TX Matrix Plus router (or switch-fabric chassis).

Required Privilege Level view

List of Sample Output [show chassis location on page 604](#)
[show chassis location fpc \(TX Matrix Router\) on page 604](#)
[show chassis location interface by-slot \(TX Matrix Router\) on page 604](#)
[show chassis location fpc \(TX Matrix Plus Router\) on page 604](#)
[show chassis location interface by-slot \(TX Matrix Plus Router\) on page 604](#)
[show chassis location \(QFX3500 Switches\) on page 604](#)
[show chassis location \(QFabric Switches\) on page 605](#)

Output Fields [Table 56 on page 603](#) lists the output fields for the **show chassis location** command. Output fields are listed in the approximate order in which they appear.

Table 56: show chassis location Output Fields

| Field Name | Field Description |
|--------------|---------------------------|
| country-code | Country code information. |

Table 56: show chassis location Output Fields (*continued*)

| Field Name | Field Description |
|--------------------|--|
| postal-code | Postal code information. |
| Building | Building information. |
| Floor | Floor information. |
| Global FPC | Global FPC number. The FPC slot number, when all FPC slots in the routing matrix are considered. The range of values is 0 through 31 . |
| LCC | Line-card chassis number. On a TX Matrix router, the number of a particular T640 router connected to the TX Matrix router. On a TX Matrix Plus router, the number of a particular T1600 router connected to the TX Matrix Plus router. |
| Local FPC | Local FPC number. On a TX Matrix router, the FPC slot number on a particular T640 router. On a TX Matrix Plus router, the FPC slot number on a particular T1600 router. |

Sample Output

```

show chassis location user@host> show chassis location
country-code: US
postal-code: 94404
Building: Building 2, Floor: 2

show chassis location user@host> show chassis location fpc
fpc (TX Matrix Router) Global FPC    LCC      Local FPC
                        17          2         1
                        21          2         5

show chassis location user@host> show chassis location interface by-slot fpc 1 lcc 1
interface by-slot      Global FPC: 9
(TX Matrix Router)

show chassis location user@host> show chassis location fpc
fpc (TX Matrix Plus   Global FPC    LCC      Local FPC
Router)               0          0         0
                        1          0         1

show chassis location user@host> show chassis location interface by-slot fpc 2 lcc 1
interface by-slot      Global FPC: 10
(TX Matrix Plus
Router)

show chassis location user@switch> show chassis location
(QFX3500 Switches) country-code: US
postal-code: 94404
Building: Building 2, Floor: 2

```

```
show chassis location      user@switch> show chassis location interconnect-device interconnect1
(QFabric Switches)        country-code: US
                           postal-code: 94404
                           Building: Building 2, Floor: 2
```

show chassis mac-addresses

| | |
|---------------------------------------|---|
| Syntax | show chassis mac-addresses |
| Syntax (TX Matrix Router) | show chassis mac-addresses <lcc <i>number</i> scc> |
| Syntax (TX Matrix Plus Router) | show chassis mac-addresses <lcc <i>number</i> sfc <i>number</i> > |
| Syntax (MX Series Router) | show chassis mac-addresses <all-members> <local> <member <i>member-id</i> > |
| Syntax (QFX Series) | show chassis mac-addresses <interconnect-device <i>name</i> > <node-group <i>name</i> > |
| Release Information | Command introduced before JUNOS Release 7.4. Command introduced in JUNOS Release 9.0 for EX Series switches. sfc option introduced for the TX Matrix Plus router in JUNOS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series. |
| Description | Display the media access control (MAC) addresses for the router, switch chassis, or switch. |
| Options | <p>none—(TX Matrix, TX Matrix Plus routers, and the QFX Series) Display the MAC addresses for the router chassis or switch. On a TX Matrix router, display MAC addresses on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display MAC addresses on the TX Matrix Plus router and its attached T1600 routers.</p> <p>all-members—(MX Series routers only) (Optional) Display the MAC addresses for all the member routers of the Virtual Chassis configuration.</p> <p>interconnect-device <i>name</i>—(QFabric switches only) (Optional) Display the MAC addresses for the Interconnect device.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display MAC addresses for a specified T640 router (or line-card chassis) that is connected to the TX Matrix Plus router. On a TX Matrix Plus router, display MAC addresses for a specified T640 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(MX Series routers only) (Optional) Display the MAC addresses for the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(MX Series routers only) (Optional) Display the MAC addresses for the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value of 0 or 1.</p> |

node-group *name*—(QFabric switches only) (Optional) Display the MAC addresses for the specified Node group.

scc—(TX Matrix routers only) (Optional) Display MAC addresses for the TX Matrix router (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display MAC addresses for the TX Matrix Plus router (or switch-fabric chassis).

Required Privilege Level view

List of Sample Output [show chassis mac-addresses on page 607](#)
[show chassis mac-addresses \(TX Matrix Router\) on page 607](#)
[show chassis mac-addresses \(TX Matrix Plus Router\) on page 608](#)
[show chassis mac-addresses \(QFX3500 Switches\) on page 608](#)
[show chassis mac-addresses interconnect-device \(QFabric Switches\) on page 609](#)
[show chassis mac-addresses node-group \(QFabric Switches\) on page 609](#)

Output Fields [Table 57 on page 607](#) lists the output fields for the **show chassis mac-addresses** command. Output fields are listed in the approximate order in which they appear.

Table 57: show chassis mac-addresses Output Fields

| Field Name | Field Description |
|--------------------------------|---|
| MAC address information | |
| Public base address | Base address of the MAC addresses allocated to this router or switch. |
| Public count | Number of allocated public addresses. |
| Private base address | Base address of the private MAC addresses allocated to this router or switch. |
| Private count | Number of allocated private addresses. |

Sample Output

```

show chassis mac-addresses user@host> show chassis mac-addresses
MAC address information
  Public base address  0:90:69:0:4:0
  Public count         1008
  Private base address 0:90:69:0:7:f0
  Private count        16

```

```

show chassis mac-addresses (TX user@host> show chassis mac-addresses
Matrix Router) scc-re0:
-----
MAC address information:
  Public base address  00:05:85:9e:cc:00
  Public count         8064
  Private base address 00:05:85:9e:eb:80

```

```

    Private count          128
1cc0-re0:
-----
MAC address information:
  Public base address     00:05:85:68:98:00
  Public count            2032
  Private base address    00:05:85:68:9f:f0
  Private count           16
1cc2-re0:
-----
MAC address information:
  Public base address     00:05:85:68:78:00
  Public count            2032
  Private base address    00:05:85:68:7f:f0
  Private count           16

show chassis user@host> show chassis mac-addresses
mac-addresses (TX sfc0-re0:
Matrix Plus Router) -----
MAC address information:
  Public base address     00:1d:b5:14:00:00
  Public count            65023
  Private base address    00:1d:b5:14:fd:ff
  Private count           512

1cc0-re0:
-----
MAC address information:
  Public base address     00:1f:12:7a:84:00
  Public count            2032
  Private base address    00:1f:12:7a:8b:f0
  Private count           16

1cc1-re0:
-----
MAC address information:
  Public base address     00:22:83:42:48:00
  Public count            2032
  Private base address    00:22:83:42:4f:f0
  Private count           16

1cc2-re0:
-----
MAC address information:
  Public base address     00:1f:12:c3:58:00
  Public count            2032
  Private base address    00:1f:12:c3:5f:f0
  Private count           16

1cc3-re0:
-----
MAC address information:
  Public base address     00:21:59:ef:b8:00
  Public count            2032
  Private base address    00:21:59:ef:bf:f0
  Private count           16

show chassis user@switch> show chassis mac-addresses
mac-addresses MAC address information:
(QFX3500 Switches) Public base address 02:00:08:00:00:00
Public count 512

```

```

Private base address 02:00:00:00:00:00
Private count 64

show chassis user@switch> show chassis mac-addresses interconnect-device interconnect1
mac-addresses MAC address information:
interconnect-device Public base address 00:1f:12:30:9c:c0
Public count 58
(QFabric Switches) Private base address 00:1f:12:30:9c:fa
Private count 6

show chassis user@switch> show chassis mac-addresses node-group NW-NG-0
mac-addresses MAC address information:
node-group (QFabric Switches) -----
RE:
FC MAC base 00:11:00:00:00:00
FC MAC count 2
VLAN MAC 00:11:00:00:00:09
EC6007
Base address 00:00:01:76:00:00
Count 64
EC6008
Base address 00:22:83:22:52:ae
Count 260

```

show chassis network services

| | |
|---------------------------------|---|
| Syntax | show chassis network services |
| Release Information | Command introduced in Junos OS Release 9.4. |
| Description | (MX Series routers only) Display the network services mode that the router is configured to run in—IP Network Services mode, Ethernet Network Services mode, Enhanced IP Network Services mode, or Enhanced Ethernet Network Services mode. |
| Options | This command has no options. |
| Required Privilege Level | view |
| Output Fields | Table 58 on page 610 lists the output fields for the show chassis network services command. Output fields are listed in the approximate order in which they appear. |

Table 58: show chassis network services Output Fields

| Field Name | Field Description |
|------------------------------|--|
| Network Services Mode | Network services mode configured for the MX Series router: <ul style="list-style-type: none">• IP—IP Network Services mode.• Ethernet—Ethernet Network Services mode.• enhanced-ip—Enhanced IP Network Services mode• enhanced-ethernet—Enhanced Ethernet Network Services mode |

show chassis network services

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


show chassis pic

| | |
|--|--|
| Syntax | <code>show chassis pic fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i></code> |
| Syntax (TX Matrix and TX Matrix Plus Routers) | <code>show chassis pic fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i> <fcc <i>number</i>></code> |
| Syntax (MX Series Router) | <code>show chassis pic fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i> <all-members> <local> <member <i>member-id</i>></code> |
| Syntax (QFX Series) | <code>show chassis pic <interconnect-device <i>name</i> (fpc-slot <i>slot-number</i> pic-slot <i>slot-number</i>)> <node-device <i>name</i> pic-slot <i>slot-number</i>></code> |
| Release Information | Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 11.1 for the QFX Series. |
| Description | Display status information about the PIC installed in the specified Flexible PIC Concentrator (FPC) and PIC slot. |
| Options | <p>fpc-slot <i>slot-number</i>—Display information about the PIC in this particular FPC slot:</p> <ul style="list-style-type: none"> On a TX Matrix router, if you specify the number of the T640 router by using the fcc <i>number</i> option (the recommended method), replace <i>slot-number</i> with a value from 0 through 7. Otherwise, replace <i>slot-number</i> with a value from 0 through 31. <p>Likewise, on a TX Matrix Plus router, if you specify the number of the T1600 router by using the fcc <i>number</i> option (the recommended method), replace <i>slot-number</i> with a value from 0 through 7. Otherwise, replace <i>slot-number</i> with a value from 0 through 31. For example, the following commands have the same result:</p> <pre>user@host> show chassis pic fpc-slot 1 fcc 1 pic-slot 1 user@host> show chassis pic fpc-slot 9 pic-slot 1</pre> <ul style="list-style-type: none"> M120 routers only—Replace <i>slot-number</i> with a value from 0 through 5. MX80 routers only—Replace <i>slot-number</i> with a value from 0 through 1. MX240 routers only—Replace <i>slot-number</i> with a value from 0 through 2. MX480 routers only—Replace <i>slot-number</i> with a value from 0 through 5. MX960 routers only—Replace <i>slot-number</i> with a value from 0 through 11. Other routers—Replace <i>slot-number</i> with a value from 0 through 7. EX Series switches: |

- EX3200 switches and EX4200 standalone switches—Replace **slot-number** with 0.
- EX4200 switches in a Virtual Chassis configuration—Replace **slot-number** with a value from 0 through 9 (switch's member ID).
- EX8208 switches—Replace **slot-number** with a value from 0 through 7 (line card).
- EX8216 switches—Replace **slot-number** with a value from 0 through 15 (line card).
- QFX Series:
 - QFX3500 switches—Replace **slot-number** with 0. In the command output, FPC refers to a line card. The FPC number equals the slot number for the line card.
 - QFabric switches—Replace **slot-number** with any number between 0 and 15. In the command output, FPC refers to a line card. The FPC number equals the slot number for the line card.

all-members—(MX Series routers only) (Optional) Display PIC information for all member routers in the Virtual Chassis configuration.

interconnect-device name—(QFabric switches only) (Optional) Display PIC information for a specified Interconnect device.

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

local—(MX Series routers only) (Optional) Display PIC information for the local Virtual Chassis member.

member member-id—(MX Series routers only) (Optional) Display PIC information for the specified member of the Virtual Chassis configuration. Replace **member-id** with a value of 0 or 1.

node-device name—(QFabric switches only) (Optional) Display PIC information for a specified Node device.

pic-slot slot-number—Display information about the PIC in this particular PIC slot. For routers, replace **slot-number** with a value from 0 through 3. For EX3200 and EX4200 switches, replace **slot-number** with 0 for built-in network interfaces and 1 for interfaces on uplink modules. For EX8208 and EX8216 switches, replace **slot-number** with 0. For the QFX3500 standalone switch and the QFabric switch, replace **slot-number** with 0 or 1.

Required Privilege
Level view

- Related Documentation**
- [request chassis pic on page 220](#)
 - [show chassis hardware on page 537](#)
 - Configuring the PIC Type
 - 100-Gigabit Ethernet PIC Overview

- List of Sample Output**
- [show chassis pic fpc-slot pic-slot on page 615](#)
 - [show chassis pic fpc-slot pic-slot \(PIC Offline\) on page 615](#)
 - [show chassis pic fpc-slot pic-slot \(FPC Offline\) on page 615](#)
 - [show chassis pic fpc-slot pic-slot \(FPC Not Present\) on page 615](#)
 - [show chassis pic fpc-slot pic-slot \(PIC Not Present\) on page 615](#)
 - [show chassis pic fpc-slot 3 pic-slot 0 \(M120 Router\) on page 615](#)
 - [show chassis pic fpc-slot pic-slot \(MX960 Router Bidirectional Optics\) on page 616](#)
 - [show chassis pic fpc-slot pic-slot \(MX480 Router with 100-Gigabit Ethernet MIC\) on page 616](#)
 - [show chassis pic fpc-slot pic-slot \(T1600 Router with 100-Gigabit Ethernet PIC\) on page 616](#)
 - [show chassis pic fpc-slot pic-slot lcc \(TX Matrix Router\) on page 617](#)
 - [show chassis pic fpc-slot pic-slot lcc \(TX Matrix Plus Router\) on page 617](#)
 - [show chassis pic fpc-slot pic-slot \(Next-Generation SONET/SDH SFP\) on page 617](#)
 - [show chassis pic fpc-slot pic-slot \(12-Port T1/E1\) on page 617](#)
 - [show chassis pic fpc-slot 0 pic-slot 1 \(4x CHOC3 SONET CE SFP\) on page 618](#)
 - [show chassis pic fpc-slot 0 pic-slot 0 \(SONET/SDH OC3/STM1 \[Multi-Rate\] MIC with SFP\) on page 618](#)
 - [show chassis pic fpc-slot 3 pic-slot 0 \(8-port Channelized SONET/SDH OC3/STM1 \[Multi-Rate\] MIC with SFP\) on page 618](#)
 - [show chassis pic fpc-slot 5 pic-slot 0 \(4-port Channelized SONET/SDH OC3/STM1 \[Multi-Rate\] MIC with SFP\) on page 618](#)
 - [show chassis pic fpc-slot 1 pic-slot 2 \(8-port DS3/E3 MIC\) on page 619](#)
 - [show chassis pic fpc-slot pic-slot \(OTN\) on page 619](#)
 - [show chassis pic fpc-slot pic-slot \(QFX3500 Switch\) on page 619](#)
 - [show chassis pic interconnect-device fpc-slot pic-slot \(QFabric Switches\) on page 619](#)
 - [show chassis pic node-device fpc-slot pic-slot \(QFabric Switch\) on page 619](#)

- Output Fields** [Table 59 on page 613](#) lists the output fields for the **show chassis pic** command. Output fields are listed in the approximate order in which they appear.

Table 59: show chassis pic Output Fields

| Field Name | Field Description |
|------------------|--|
| Type | PIC type. |
| ASIC type | Type of ASIC on the PIC. |
| State | Status of the PIC. State is displayed only when a PIC is in the slot. <ul style="list-style-type: none"> • Online— PIC is online and running. • Offline—PIC is powered down. |

Table 59: show chassis pic Output Fields (*continued*)

| Field Name | Field Description |
|---|--|
| PIC version | PIC hardware version. |
| Uptime | How long the PIC has been online. |
| Package | (Multiservices PICs only) Services package supported: Layer-2 or Layer-3 . |
| Port Number | Port number for the PIC. |
| Cable Type | Type of cable connected to the port: LH , LX , or SX . |
| PIC Port Information (MX480 Router 100-Gigabit Ethernet CFP) | Port-level information for the PIC. <ul style="list-style-type: none"> • Port—Port number • Cable type—Type of optical transceiver installed. • Fiber type—Type of fiber. SM is single-mode. • Xcvr vendor—Transceiver vendor name. • Xcvr vendor part number—Transceiver vendor part number. • Wavelength—Wavelength of the transmitted signal. Uplinks and downlinks are always 1550 nm. There is a separate fiber for each direction |
| PIC Port Information (MX960 Router Bidirectional Optics) | Port-level information for the PIC. <ul style="list-style-type: none"> • Port—Port number • Cable type—Type of small form-factor pluggable (SFP) optical transceiver installed. Uplink interfaces display -U. Down link interfaces display -D. • Fiber type—Type of fiber. SM is single-mode. • Xcvr vendor—Transceiver vendor name. • Xcvr vendor part number—Transceiver vendor part number. <ul style="list-style-type: none"> • BX10-10-km bidirectional optics. • BX40-40-km bidirectional optics. • SFP-LX-40-km SFP optics. • Wavelength—Wavelength of the transmitted signal. Uplinks are always 1310 nm. Downlinks are either 1490 nm or 1550 nm. |

Table 59: show chassis pic Output Fields (*continued*)

| Field Name | Field Description |
|---|--|
| PIC Port Information (Next-Generation SONET/SDH SFP) | Port-level information for the next-generation SONET/SDH SFP PIC. <ul style="list-style-type: none"> • Port—Port number. • Cable type—Type of small form-factor pluggable (SFP) optical transceiver installed. • Fiber type—Type of fiber: SM (single-mode) or MM (multimode). • Xcvr vendor—Transceiver vendor name. • Xcvr vendor part number—Transceiver vendor part number. • Wavelength—Wavelength of the transmitted signal. Next-generation SONET/SDH SFPs use 1310 nm. |
| Multirate Mode | Rate-selectability status for the MIC: Enabled or Disabled . |
| Channelization | Indicates whether channelization is enabled or disabled on the DS3/E3 MIC. |

Sample Output

```

show chassis pic fpc-slot pic-slot
user@host> show chassis pic fpc-slot 2 pic-slot 0
PIC fpc slot 2 pic slot 0 information:
  Type                10x 1GE(LAN), 1000 BASE
  ASIC type           H chip
  State               Online
  PIC version         1.1
  Uptime              1 day, 50 minutes, 58 seconds
PIC Port Information:
  Port      Cable      Xcvr      Xcvr Vendor
  Number    Type        Vendor Name  Part Number
  0          GIGE 1000EX  FINISAR CORP.  FTRJ8519P1BNL-J3
  1          GIGE 1000EX  FINISAR CORP.  FTRJ-8519-7D-JUN

show chassis pic fpc-slot pic-slot
(PIC Offline)
user@host> show chassis pic fpc-slot 1 pic-slot 0
PIC fpc slot 1 pic slot 0 information:
  State                Offline

show chassis pic fpc-slot pic-slot
(FPC Offline)
user@host> show chassis pic fpc-slot 1 pic-slot 0
FPC 1 is not online

show chassis pic fpc-slot pic-slot
(PIC Not Present)
user@host> show chassis pic fpc-slot 4 pic-slot 0
FPC slot 4 is empty

show chassis pic fpc-slot pic-slot
(PIC Not Present)
user@host> show chassis pic fpc-slot 5 pic-slot 2
FPC 5, PIC 2 is empty

show chassis pic fpc-slot 3 pic-slot 0
(M120 Router)
user@host> show chassis pic fpc-slot 3 pic-slot 0
PC slot 3, PIC slot 0 information:
  Type                2x G/E IQ, 1000 BASE

```

```

ASIC type                IQ GE 2 VLAN-TAG FPGA
State                    Online
PIC version              1.16
Uptime                   3 hours, 3 minutes

PIC Port Information:
Port      Cable      Xcvr      Xcvr Vendor
Number    Type        Vendor Name Part Number
0         GIGE 1000SX   FINISAR CORP. FTRJ8519P1BNL-J3
1         GIGE 1000SX   FINISAR CORP. FTRJ-8519-7D-JUN

show chassis pic         user@host> show chassis pic fpc-slot 4 pic-slot 1
fpc-slot pic-slot       FPC slot 4, PIC slot 1 information:
(MX960 Router           Type                10x 1GE(LAN)
Bidirectional Optics)  State                Online
                        PIC version          0.0
                        Uptime              18 days, 5 hours, 41 minutes, 54 seconds

PIC port information:
Port  Cable type      Fiber type  Xcvr vendor      Xcvr vendor      Wavelength
                                part number
0     SFP-1000BASE-BX10-D SM SumitomoElectric SBP6H44-J3-BW-49 1490 nm
1     SFP-1000BASE-BX10-D SM SumitomoElectric SBP6H44-J3-BW-49 1490 nm
2     SFP-1000BASE-BX10-D SM SumitomoElectric SBP6H44-J3-BW-49 1490 nm
3     SFP-1000BASE-BX10-D SM OCP              TRXBG1LXDBVM2-JW 1490 nm
4     SFP-1000BASE-BX10-D SM OCP              TRXBG1LXDBVM2-JW 1490 nm
5     SFP-1000BASE-BX10-U SM SumitomoElectric SBP6H44-J3-BW-31 1310 nm
6     SFP-1000BASE-BX10-U SM SumitomoElectric SBP6H44-J3-BW-31 1310 nm
7     SFP-1000BASE-BX10-U SM OCP              TRXBG1LXDBBMH-J1 1310 nm
8     SFP-1000BASE-BX10-U SM OCP              TRXBG1LXDBBMH-J1 1310 nm
9     SFP-1000BASE-BX10-U SM SumitomoElectric SBP6H44-J3-BW-31 1310 nm

show chassis pic         user@host> show chassis pic fpc-slot 1 pic-slot 2
fpc-slot pic-slot       FPC slot 1, PIC slot 2 information:
(MX480 Router with      Type                1X100GE CFP
100-Gigabit Ethernet    State                Online
MIC)                    PIC version          2.10
                        Uptime              4 minutes, 48 seconds

PIC port information:
Fiber
Port  Cable type      type  Xcvr vendor      Xcvr vendor      Wavelength
                                part number
0     100GBASE LR4    SM    FINISAR CORP.    FTLC1181RDN3-J3 1310 nm

Xcvr vendor
firmware version
1.8

show chassis pic         user@host> run show chassis pic fpc-slot 3 pic-slot 1
fpc-slot pic-slot       FPC slot 3, PIC slot 1 information:
(T1600 Router with      Type                100GE SLOT1
100-Gigabit Ethernet    ASIC type          Brooklyn 100GE FPGA
PIC)                    State                Online
                        PIC version          1.3
                        Uptime              10 minutes, 44 seconds

PIC port information:
Fiber
Xcvr vendor

```

| Port | Cable type | type | Xcvr vendor | part number | Wavelength |
|------|--------------|------|-------------|------------------|------------|
| 0 | 100GBASE LR4 | SM | Opnext Inc. | TRC5E20ENFSF000F | 1310 nm |

show chassis pic fpc-slot pic-slot lcc (TX Matrix Router)

```

user@host> show chassis pic fpc-slot 1 pic-slot 1 lcc 0
lcc0-re0:
-----
PIC fpc slot 1 pic slot 1 information:
  Type                4x OC-3 SONET, SMIR
  ASIC type           D chip
  State               Online
  PIC version         1.2
  Uptime              5 days, 2 hours, 12 minutes, 8 seconds

```

show chassis pic fpc-slot pic-slot lcc (TX Matrix Plus Router)

```

user@host> show chassis pic pic-slot 0 fpc-slot 8
lcc0-re0:
-----
FPC slot 8, PIC slot 0 information:
  Type                1x 10GE(LAN/WAN)
  State               Online
  Uptime              2 hours, 46 minutes, 23 seconds

PIC port information:

```

| Port | Cable type | Fiber type | Xcvr vendor | part number | Wavelength |
|------|------------|------------|---------------|-----------------|------------|
| 0 | 10GBASE ZR | SM | Opnext Inc. | TRF7061BN-LF150 | 1550 nm |
| 0 | 10GBASE ZR | SM | FINISAR CORP. | FTRX-1811-3-J2 | 1550 nm |

show chassis pic fpc-slot pic-slot (Next-Generation SONET/SDH SFP)

```

user@host> show chassis pic fpc-slot 4 pic-slot 0
FPC slot 4, PIC slot 0 information:
  Type                4x OC-3 1x OC-12 SFP
  ASIC type           D FPGA
  State               Online
  PIC version         1.3
  Uptime              1 day, 50 minutes, 4 seconds

PIC port information:

```

| Port | Cable type | Fiber type | Xcvr vendor | Xcvr vendor part number | Wavelength |
|------|------------------|------------|---------------|-------------------------|------------|
| 0 | OC48 short reach | SM | FINISAR CORP. | FTRJ1321P1BTL-J2 | 1310 nm |
| 1 | OC3 short reach | MM | OCF | TRPA03MM3BAS-JE | 1310 nm |
| 2 | OC3 short reach | MM | OCF | TRXA03MM3BAS-JW | 1310 nm |
| 3 | OC12 inter reach | SM | FINISAR CORP. | FTLF1322P1BTR | 1310 nm |

show chassis pic fpc-slot pic-slot (12-Port T1/E1)

```

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

```

```

show chassis pic fpc-slot 0 pic-slot 1 (4x CHOC3 SONET CE SFP)
user@host> show chassis pic fpc-slot 0 pic-slot 1
FPC slot 0, PIC slot 1 information:
  Type          4x CHOC3 SONET CE SFP
  State          Online
  PIC version    1.3
  CPU load average 1 percent
  Interrupt load average 0 percent
  Total DRAM size 128 MB
  Memory buffer utilization 99 percent
  Memory heap utilization 4 percent
  Uptime         1 day, 22 hours, 55 minutes, 37 seconds
  Internal Clock Synchronization Normal

PIC port information:
  Port  Cable type  Fiber type  Xcvr vendor  Xcvr vendor part number  Wavelength
  0     OC3 short reach MM      AVAGO        HFBR-57E0P-JU2  n/a
  1     OC3 short reach MM      AVAGO        HFBR-57E0P-JU2  n/a
  3     OC3 long reach  SM      OPNEX INC    TRF5456AVLB314  1310 nm

show chassis pic fpc-slot 0 pic-slot 0 (SONET/SDH OC3/STM1 [Multi-Rate] MIC with SFP)
user@host> show chassis pic fpc-slot 0 pic-slot 0
FPC slot 0, PIC slot 0 information:
  Type          MIC-3D-80C30C12-40C48
  State          Online
  PIC version    1.8
  Uptime         3 days, 22 hours, 3 minutes, 50 seconds

PIC port information:
  Port  Cable type  Fiber type  Xcvr vendor  Xcvr vendor part number  Wavelength
  1     OC12 inter reach SM      FINISAR CORP  FTRJ1322P1BTR-J3  1310 nm
  7     OC12 inter reach SM      FINISAR CORP  FTRJ1322P1BTR-J3  1310 nm
Multirate Mode Enabled

show chassis pic fpc-slot 3 pic-slot 0 (8-port Channelized SONET/SDH OC3/STM1 [Multi-Rate] MIC with SFP)
user@host> show chassis pic fpc-slot 3 pic-slot 0
FPC slot 3, PIC slot 0 information:
  Type          MIC-3D-8CHOC3-4CHOC12
  State          Online
  PIC version    1.9
  Uptime         1 hour, 21 minutes, 24 seconds

PIC port information:
  Port  Cable type  Fiber type  Xcvr vendor  Xcvr vendor part number  Wavelength
  0     OC12 short reach SM      FINISAR CORP.  FTRJ1322P1BTR-J3  1310 nm
  1     OC12 short reach SM      FINISAR CORP.  FTRJ1322P1BTR-J3  1310 nm
  2     OC12 inter reach SM      FINISAR CORP.  FTRJ1322P1BTR-J2  1310 nm
  4     OC12 short reach SM      FINISAR CORP.  FTRJ1322P1BTR-J3  1310 nm
  5     OC12 short reach SM      FINISAR CORP.  FTRJ1322P1BTR-J3  1310 nm
  6     OC12 short reach SM      FINISAR CORP.  FTRJ1322P1BTR-J3  1310 nm
  7     OC12 short reach SM      FINISAR CORP.  FTRJ1322P1BTR-J3  1310 nm

show chassis pic fpc-slot 5 pic-slot 0 (4-port Channelized SONET/SDH OC3/STM1)
user@host> show chassis pic fpc-slot 5 pic-slot 0
FPC slot 5, PIC slot 0 information:
  Type          MIC-3D-4CHOC3-2CHOC12
  State          Online
  PIC version    1.9
  Uptime         1 hour, 21 minutes

```



```
[Multi-Rate] MIC with SFP) PIC port information:
```

| Port | Cable type | Fiber type | Xcvr vendor | Xcvr vendor part number | Wavelength |
|------|------------------|------------|---------------|-------------------------|------------|
| 1 | OC12 inter reach | SM | FINISAR CORP. | FTRJ1322P1BTR-J3 | 1310 nm |
| 2 | OC12 inter reach | SM | FINISAR CORP. | FTRJ1322P1BTR-J3 | 1310 nm |
| 3 | OC12 short reach | SM | FINISAR CORP. | FTRJ1322P1BTR-J3 | 1310 nm |


```
show chassis pic fpc-slot 1 pic-slot 2
(8-port DS3/E3 MIC) user@host> show chassis pic fpc-slot 1 pic-slot 2
FPC slot 1, PIC slot 2 information:
```

| | |
|---------------------|--|
| Type | MIC-3D-8DS3-E3 |
| State | Online |
| PIC version | 1.10 |
| Uptime | 4 days, 1 hour, 29 minutes, 19 seconds |
| Channelization Mode | Disabled |


```
show chassis pic fpc-slot pic-slot (OTN)
user@host> show chassis pic fpc-slot 5 pic-slot 0
PIC fpc slot 5 pic slot 0 information:
```

| | |
|-------------|-----------------------|
| Type | 1x10GE(LAN),OTN |
| ASIC type | H chip |
| State | Online |
| PIC version | 1.0 |
| Uptime | 5 minutes, 50 seconds |


```
show chassis pic fpc-slot pic-slot (QFX3500 Switch)
user@switch> show chassis pic fpc-slot 0 pic-slot 0
FPC slot 0, PIC slot 0 information:
```

| | |
|--------|--|
| Type | 48x 10G-SFP+ Builtin |
| State | Online |
| Uptime | 3 days, 3 hours, 5 minutes, 20 seconds |


```
show chassis pic interconnect-device fpc-slot pic-slot (QFabric Switches)
user@switch> show chassis pic interconnect-device interconnect1 fpc-slot 9 pic-slot 0
FPC slot 9, PIC slot 0 information:
```

| | |
|--------|---------------------------------|
| Type | 16x 40G-GE Builtin |
| State | Online |
| Uptime | 2 hours, 47 minutes, 40 seconds |


```
show chassis pic node-device fpc-slot pic-slot (QFabric Switch)
user@switch> show chassis pic node-device node1 pic-slot 0
FPC slot node1, PIC slot 0 information:
```

| | |
|--------|---------------------------------|
| Type | 48x 10G-SFP+ Builtin |
| State | Online |
| Uptime | 2 hours, 52 minutes, 37 seconds |


```
PIC port information:
```

| Port | Cable type | Fiber type | Xcvr vendor | Xcvr vendor part number | Wavelength |
|------|------------|------------|------------------|-------------------------|------------|
| 0 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 1 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 2 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 3 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 4 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 5 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 6 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 7 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 8 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 9 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 10 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 11 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 12 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 13 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 14 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 15 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |

| | | | | | |
|----|------------|----|------------------|--------------|--------|
| 16 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 17 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 18 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 19 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 20 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 21 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 22 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 23 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 24 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 25 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 26 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 27 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 28 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 29 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 30 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 31 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 32 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 33 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 34 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 35 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 36 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 37 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 38 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 39 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 40 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 41 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 42 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 43 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 44 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 45 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 46 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |
| 47 | 10GBASE SR | MM | SumitomoElectric | SPP5101SR-J3 | 850 nm |

show chassis power-ratings

| | |
|---------------------------------|---|
| Syntax | show chassis power-ratings |
| Release Information | Command introduced in Junos OS Release 8.4. |
| Description | (J Series routers only) Display the low-power consumption, high-power consumption, and heat dissipation ratings of the router. Low-power consumption, high-power consumption, and heat dissipation values are represented in nondimensional tokens. |
| Options | This command has no options. |
| Required Privilege Level | view |
| List of Sample Output | show chassis power-ratings on page 623 show chassis power-ratings (Power Management Disabled) on page 623 |
| Output Fields | Table 60 on page 621 lists the output fields for the show chassis power-ratings command. Output fields are listed in the approximate order in which they appear. |

Table 60: show chassis power-ratings Output Fields

| Field Name | Field Description |
|---------------------|---|
| Device | Physical Interface Module (PIM) slot. (PIM slot numbers appear as FPC numbers in the output.) |
| Total Tokens | <p>Maximum number of low-power, high-power, and heat tokens available for the router:</p> <ul style="list-style-type: none"> • Low Power—Maximum number of low-power consumption tokens available for the router. • High Power—Maximum number of high-power consumption tokens available for the router. • Heat—Maximum number of heat tokens available for the router. |

Table 60: show chassis power-ratings Output Fields (*continued*)

| Field Name | Field Description |
|--------------------|--|
| FPC number | <p>PIM slot number and power and heat information for the PIM in this slot:</p> <ul style="list-style-type: none"> • Low Power—PIM low-power consumption. The number of low-power tokens used by the PIM. • High Power—PIM high-power consumption. The number of high-power tokens used by the PIM. • Heat—The number of PIM heat dissipation tokens used by this PIM. • Ratings—Status of the PIM slot. The status of the slot is based on either the configuration of the slot or the power use and heat dissipation of the PIM in that slot: <p>NOTE: The request chassis fpc command has no effect on the status of the PIM slot.</p> <ul style="list-style-type: none"> • OK—The PIM in this PIM slot can be brought online. • Exceeded—The PIM cannot be brought online because the PIM slot has been disabled by J Series power management. The PIM in this PIM slot exceeds the maximum number of low-power tokens, high-power tokens, or heat tokens. • Empty—No PIM is installed in the PIM slot. • Cfg offline—The PIM cannot be brought online because the PIM slot has been disabled by the set chassis fpc offline command. |
| Tokens Used | <p>Total number of low-power, high-power, and heat tokens used by the router:</p> <ul style="list-style-type: none"> • Low Power—The total number of low-power tokens used by the router. • High Power—The total number of high-power tokens used by the router. • Heat—Number of heat tokens used by the router. • Ratings—If blank, J Series power management is enabled. No Power Mgmt indicates that J Series power management has been disabled by the set chassis disable_power_management command. <p>NOTE: Use extreme caution when disabling J Series power management. To prevent equipment damage, do not install a combination of PIMs that exceeds the power and heat capacity of the router when J Series power management is disabled.</p> |

Sample Output

```

show chassis power-ratings user@host> show chassis power-ratings
Device Low High Heat Ratings
Power Power
Total Tokens 83 83 83 -
FPC 1 6 27 21 OK
FPC 2 3 27 18 OK
FPC 3 0 0 0 Empty
FPC 4 0 0 0 Empty
FPC 5 2 0 2 Exceeded
Tokens Used 11 54 41 -

show chassis power-ratings (Power user@host> show chassis power-ratings
Management Disabled) Device Low High Heat Ratings
Power Power
Total Tokens 83 83 83 -
FPC 1 6 27 21 OK
FPC 2 3 27 18 OK
FPC 3 0 0 0 Empty
FPC 4 0 0 0 Empty
FPC 5 2 0 2 Exceeded
Tokens Used 11 54 41 No Power Mgmt

```

show chassis power

Syntax (MX Series Router) show chassis power
 <all-members>
 <local>
 <member *member-id*>

Syntax (PTX Series) show chassis power
 <detail>

Release Information Command introduced in Junos OS Release 10.0
 Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches.

Description (MX Series 3D Universal Edge Routers and PTX Series Packet Transport Switches only)
 Display power limits and usage information for the AC or DC power sources.

- On the MX Series 3D Universal Edge Routers, power is supplied by Power Entry Modules (PEMs).



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.

- On the PTX Series Packet Transport Switches, power is supplied by power distribution units (PDUs). Each PDU contains up to four Power Supply Modules (PSMs).

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
- [show chassis power on page 624](#)

- Checklist for Monitoring Power Supplies

List of Sample Output [show chassis power \(MX960 Router with DC PEM\) on page 626](#)
[show chassis power \(MX960 Router with AC PEM\) on page 627](#)
[show chassis power \(MX480 Router with AC PEM\) on page 628](#)
[show chassis power \(MX240 Router with DC PEM\) on page 628](#)
[show chassis power \(PTX5000 Packet Transport Switch\) on page 629](#)
[show chassis power detail \(PTX5000 Packet Transport Switch\) on page 629](#)

Output Fields [Table 61 on page 625](#) lists the output fields for the **show chassis power** command. Output fields are listed in the approximate order in which they appear.

Table 61: show chassis power Output Fields

| Field Name | Field Description | Level of Output |
|-------------------|---|-----------------|
| PEM number | <p>(MX Series 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 61: show chassis power Output Fields (*continued*)

| Field Name | Field Description | Level of Output |
|--------------------|---|-----------------|
| System | (MX Series only) Overall power statistics for the system zone: <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. | All levels |
| Total Power | (PTX Series only) Total power used by the switch (displayed in watts). | All levels |
| PDU number | (PTX Series only) ID number of the power distribution unit (PDU) on the chassis.. | All levels |
| PSM number | (PTX Series only) ID number of the Power Supply Unit contained in the PDU. The following output fields are displayed for each PSM: <ul style="list-style-type: none"> • Input (V)—Voltage supplied to the PSM. • Used (W)—Actual power usage for the PSM (measured in watts). | All levels |
| Item | (PTX Series only) (detail keyword only) Actual power usage (measured in watts) for individual FRUs. PTX Switches include the following FRUs: <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, 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 user@host> show chassis power
(MX960 Router with PEM 0:
DC PEM)           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 user@host> show chassis power
(PTX5000 Packet    Chassis Power      Input(V)      Used(W)
Transport Switch)
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 user@host> show chassis power detail
detail (PTX5000    Chassis Power      Input(V)      Used(W)
Packet Transport  Switch)
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 psd

| | |
|---------------------------------|---|
| Syntax | show chassis psd |
| Release Information | Command introduced in Junos OS Release 9.1. |
| Description | (Root System Domain [RSD] only) Display information about Protected System Domains (PSDs). A PSD is initially created by the RSD configuration. An RSD and PSDs are supported on a T320 or T640 router, or a T1600 routing node, or a TX Matrix Plus Platform that is interconnected with the JCS1200 platform. |
| Options | This command has no options. |
| Additional Information | For more information about PSDs, RSDs, and the JCS1200 platform, see the <i>Junos OS Protected System Domain Configuration Guide</i> . |
| Required Privilege Level | view |
| List of Sample Output | show chassis psd on page 631 |
| Output Fields | Table 62 on page 631 lists the output fields for the show chassis psd command. Output fields are listed in the approximate order in which they appear. |

Table 62: show chassis psd Output Fields

| Field Name | Field Description |
|-------------------------|---|
| Slot Description | PSD identification. |
| State | PSD status: <ul style="list-style-type: none"> • Online—PSD is online and running. • Offline—PSD is powered down. |
| Uptime | Length of time that the PSD has been up and running. |

Sample Output

```

show chassis psd {master}

user@host> show chassis psd
Slot Description      State      Uptime
1                    Online    12 hours, 19 minutes, 51 seconds
2                    Online    2 hours, 18 minutes, 17 seconds
3                    Online    12 hours, 19 minutes, 51 seconds

```

show chassis redundancy feb

| | |
|---------------------------------|--|
| Syntax | <code>show chassis redundancy feb</code> <code><errors></code> <code><redundancy-group group-name></code> |
| Release Information | Command introduced in Junos OS Release 8.2. |
| Description | (M120 routers only) Display information about the status of configured Forwarding Engine Board (FEB) redundancy groups. |
| Options | <p>none—Display information about the status of all configured FEB redundancy groups.</p> <p>redundancy-group group-name—(Optional) Display information about the specified configured redundancy group.</p> <p>errors—(Optional) Display information about any errors encountered on the components in configured redundancy groups or on links between a FEB and a Flexible PIC Concentrator (FPC).</p> |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none"> • request chassis redundancy feb slot on page 223 • Configuring FEB Redundancy on the M120 Router • Switching Control Board Redundancy |
| List of Sample Output | <p>show chassis redundancy feb on page 633</p> <p>show chassis redundancy feb redundancy-group grp1 on page 633</p> <p>show chassis redundancy feb redundancy-group grp0 errors on page 633</p> |
| Output Fields | Table 63 on page 632 lists the output fields for the show chassis redundancy feb command. Output fields are listed in the approximate order in which they appear. |

Table 63: show chassis redundancy feb Output Fields

| Field name | Field Description |
|-----------------|--|
| Group | Name of configured redundancy group. |
| FEB | Slot number of each FEB included in redundancy groups. |
| State | State of each FEB: <ul style="list-style-type: none"> • Online—FEB is online and running. • Offline—FEB is powered down. |
| Priority | (Standard and redundancy-group option) Status of FEB in the redundancy group: Backup , Primary , or null. |

Table 63: show chassis redundancy feb Output Fields (*continued*)

| Field name | Field Description |
|------------------|--|
| Connected FPCs | (Standard and redundancy-group option) Slot number of each FPC connected to the FEB. The status Check is displayed when an error might have occurred. |
| Redundancy State | (Standard and redundancy-group option) Status of the FEB: <ul style="list-style-type: none"> • Active—FEB is currently active. • Ready—Backup FEB is ready for a switchover • Not Ready—Backup FEB is not ready for a switchover. |
| Auto-failover | (Standard and redundancy-group option) Automatic failover status of redundancy group: Enabled or Disabled . |
| Switch-reason | (Standard and redundancy-group option) Reason a switchover occurred to the backup FEB in the redundancy group. |
| Hard error: Yes | (errors option only) Displayed when a hard error occurs on a FEB. |
| FPC | (errors option only) Slot number and status of FPC: link ok or link error . |
| Fabric plane | (errors option only) Slot number and status of fabric plane. |

Sample Output

```

show chassis redundancy feb user@host> show chassis redundancy feb
Group:          cfpc
FEB  State      Priority  Connected FPCs  Redundancy state
0    Offline    Backup
1    Online      5          Active
Auto-failover: Enabled
Group:          grp0
FEB  State      Priority  Connected FPCs  Redundancy state
3    Offline    Backup
5    Online      Primary   0              Active
Auto-failover: Enabled

show chassis redundancy feb user@host> show chassis redundancy feb redundancy-group grp1
redundancy-group grp1 Group: grp1
FEB  State      Priority  Connected FPC(s)  Redundancy state
0    Online      Backup    5                 Active
3    Online      3         Active
5    Online      Primary   3                 Ready
Auto-failover: Enabled
Switch-reason: Switchover from CLI

show chassis redundancy feb user@host> show chassis redundancy feb redundancy-group grp0 errors
redundancy-group grp0 errors Group: grp0
FEB: 0    State: Online
FPC 0 link OK
Fabric plane 0 OK
Fabric plane 1 OK
Fabric plane 2 OK

```

```
Fabric plane 3 OK
FEB: 1    State: Online
FPC 0 link OK
Fabric plane 0 OK
Fabric plane 1 OK
Fabric plane 2 OK
Fabric plane 3 OK
FEB: 2    State: Online
FPC 2 link OK
Fabric plane 0 OK
Fabric plane 1 OK
Fabric plane 2 OK
Fabric plane 3 OK
FEB: 3    State: Online
FPC 3 link OK
Fabric plane 0 OK
Fabric plane 1 OK
Fabric plane 2 OK
Fabric plane 3 OK
FEB: 4    State: Online
FPC 4 link OK
Fabric plane 0 OK
Fabric plane 1 OK
Fabric plane 2 OK
Fabric plane 3 OK
FEB: 5    State: Online
FPC 5 link OK
Fabric plane 0 OK
Fabric plane 1 OK
Fabric plane 2 OK
Fabric plane 3 OK
```


show chassis routing-engine

| | |
|---------------------------------------|---|
| Syntax | show chassis routing-engine <bios <i>slot</i> > |
| Syntax (EX Series Switches) | show chassis routing-engine < <i>slot</i> > |
| Syntax (T4000 routers) | show chassis routing-engine < <i>slot</i> > <bios > |
| Syntax (TX Matrix Router) | show chassis routing-engine <bios <i>slot</i> > <lcc <i>number</i> scc> |
| Syntax (TX Matrix Plus Router) | show chassis routing-engine <bios <i>slot</i> > <lcc <i>number</i> sfc <i>number</i> > |
| Syntax (QFX Series) | show chassis routing-engine <interconnect-device <i>name</i> > <node-device <i>name</i> > |
| Syntax (MX Series Router) | show chassis routing-engine <bios <i>slot</i> > <all-members> <local> <member <i>member-id</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 in 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series. |
| Description | Display the status of the Routing Engine. |
| Options | <p>none—Display information about one or more Routing Engines. On a TX Matrix router, display information about all Routing Engines on the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display information about all Routing Engines on the TX Matrix Plus router and its attached T1600 routers.</p> <p>all-members—(MX Series routers only) (Optional) Display Routing Engine information for all members of the Virtual Chassis configuration.</p> <p>bios—(Optional) Display the (BIOS) firmware version.</p> <p>interconnect-device <i>number</i>—(QFabric switches only) (Optional) Display Routing Engine information for a specified Interconnect device.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display Routing Engine information for a specified T640 router (or line-card chassis)</p> |

that is connected to the TX Matrix router. On a TX Matrix Plus router, display Routing Engine information for a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace **number** with a value from **0** through **3**.

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 switches 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 (or switch-card chassis).

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

slot—(Systems with multiple Routing Engines) (Optional) Display information for an individual Routing Engine. Replace **slot** with 0 or 1. 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 on page 224](#)
- 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 638](#)
[show chassis routing-engine \(M10 Router\) on page 638](#)
[show chassis routing-engine \(M20 Router\) on page 639](#)
[show chassis routing-engine \(M40 Router\) on page 639](#)
[show chassis routing-engine \(M120 Router\) on page 640](#)
[show chassis routing-engine \(M160 Router\) on page 640](#)
[show chassis routing-engine \(MX240 Router\) on page 641](#)
[show chassis routing-engine \(MX480 Router\) on page 641](#)
[show chassis routing-engine \(MX960 Router\) on page 642](#)
[show chassis routing-engine \(T4000 router\) on page 642](#)
[show chassis routing-engine \(TX Matrix Router\) on page 643](#)
[show chassis routing-engine lcc \(TX Matrix Router\) on page 644](#)
[show chassis routing-engine bios \(TX Matrix Router\) on page 644](#)
[show chassis routing-engine \(TX Matrix Plus Router\) on page 645](#)
[show chassis routing-engine lcc \(TX Matrix Plus Router\) on page 646](#)
[show chassis routing-engine bios \(TX Matrix Plus Router\) on page 647](#)
[show chassis routing-engine \(QFX Series\) on page 647](#)

[show chassis routing-engine \(PTX Series Packet Transport Switch\) on page 647](#)

Output Fields [Table 64 on page 637](#) lists the output fields for the **show chassis routing-engine** command. Output fields are listed in the approximate order in which they appear.

Table 64: 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. |
| DRAM | Total DRAM available to the Routing Engine's processor. |
| Memory utilization | Percentage of Routing Engine memory being used. |
| CPU utilization | Information about the Routing Engine's CPU utilization: <ul style="list-style-type: none"> • User—Percentage of CPU time being used by user processes. • Background—Percentage of CPU time being used by background processes. • Kernel—Percentage of CPU time being used by kernel processes. • Interrupt—Percentage of CPU time being used by interrupts. • Idle—Percentage of CPU time that is idle. |
| Model | Routing Engine model number. |
| Serial ID | (Systems with multiple Routing Engines) Identification number of the Routing Engine in this slot. |
| Start time | Time at which the Routing Engine started running. |
| Uptime | How long the Routing Engine has been running. |

Table 64: show chassis routing-engine Output Fields (*continued*)

| Field Name | Field Description |
|--------------------|---|
| Last reboot reason | Reason for last reboot, including: <ul style="list-style-type: none"> power cycle/failure—Reboot due to the switching off of the power button behind the Routing Engine, not the power button on the chassis. watchdog—Reboot due to a hardware watchdog. reset-button reset—(Not available on the J Series router or EX Series switch) Reboot due to pressing of the reset button on the Routing Engine. power-button hard power off—Reboot due to pressing of the power button. misc hardware reason—Reboot due to miscellaneous hardware reasons. thermal shutdown—Reboot due to the router or switch reaching a critical temperature at which point it is unsafe to continue operations. hard disk failure—Reboot due to a hard disk failure. reset from debugger—Reboot due to reset from the debugger. chassis control reset—Reboot due to a chassis control reset. bios auto recovery reset—Reboot due to a BIOS auto-recovery reset. could not be determined—Reboot due to an undetermined reason. Router rebooted after a normal shutdown—Reboot due to a normal shutdown. |
| Load averages | Routing Engine load averages for the last 1, 5, and 15 minutes. |

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 user@host> show chassis routing-engine
routing-engine (M20 Router) 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 user@host> show chassis routing-engine
routing-engine (M40 Router) 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
routing-engine (M120 Router)
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
routing-engine (M160 Router)
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 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 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 (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-DUO-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

```

lcc0-re0:

Routing Engine status:

Slot 0:

```

Current state          Master
Election priority       Master (default)
Temperature             33 degrees C / 91 degrees F
CPU temperature         30 degrees C / 86 degrees F
DRAM                   2048 MB
Memory utilization      12 percent
CPU utilization:
  User                  0 percent
  Background            0 percent
  Kernel                1 percent
  Interrupt             0 percent
  Idle                  98 percent
Model                  RE-3.0
Serial ID               210865700363
Start time              2004-08-05 18:42:05 PDT
Uptime                  9 days, 22 hours, 48 minutes, 20 seconds
Last reboot reason      Router rebooted after a normal shutdown
Load averages:          1 minute   5 minute  15 minute
                        0.00        0.02    0.00

```

```
lcc2-re0:
```

```
-----
Routing Engine status:
```

```
Slot 0:
```

| | |
|--------------------|---|
| Current state | Master |
| Election priority | Master (default) |
| Temperature | 34 degrees C / 93 degrees F |
| CPU temperature | 35 degrees C / 95 degrees F |
| DRAM | 2048 MB |
| Memory utilization | 12 percent |
| CPU utilization: | |
| User | 0 percent |
| Background | 0 percent |
| Kernel | 2 percent |
| Interrupt | 0 percent |
| Idle | 98 percent |
| Model | RE-4.0 |
| Serial ID | P11123900126 |
| Start time | 2004-08-05 18:42:05 PDT |
| Uptime | 9 days, 22 hours, 49 minutes, 4 seconds |
| Last reboot reason | Router rebooted after a normal shutdown |
| Load averages: | 1 minute 5 minute 15 minute |
| | 0.01 0.01 0.0 |

```
show chassis
routing-engine lcc (TX
Matrix Router)
```

```
user@host> show chassis routing-engine 0 lcc 0
```

```
lcc0-re0:
```

```
-----
Routing Engine status:
```

```
Slot 0:
```

| | |
|--------------------|---|
| Current state | Master |
| Election priority | Master (default) |
| Temperature | 33 degrees C / 91 degrees F |
| CPU temperature | 30 degrees C / 86 degrees F |
| DRAM | 2048 MB |
| Memory utilization | 12 percent |
| CPU utilization: | |
| User | 0 percent |
| Background | 0 percent |
| Kernel | 1 percent |
| Interrupt | 0 percent |
| Idle | 98 percent |
| Model | RE-3.0 |
| Serial ID | 210865700363 |
| Start time | 2004-08-05 18:42:05 PDT |
| Uptime | 7 days, 22 hours, 49 minutes, 6 seconds |
| Last reboot reason | Router rebooted after a normal shutdown |
| Load averages: | 1 minute 5 minute 15 minute |
| | 0.00 0.00 0.00 |

```
show chassis
routing-engine bios
(TX Matrix Router)
```

```
user@host> show chassis routing-engine bios
```

```
scc-re0:
```

```
-----
Routing Engine BIOS Version: V1.0.0
```

```
lcc0-re0:
```

```
-----
Routing Engine BIOS Version: V1.0.17
```

```
lcc2-re0:
```

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

Routing Engine BIOS Version: V1.0.0

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
lcc0-re0:
-----
Routing Engine status:
Slot 0:
  Current state           Master
  Election priority       Master (default)
  Temperature             30 degrees C / 86 degrees F
  CPU temperature         43 degrees C / 109 degrees F
  DRAM                   3327 MB
  Memory utilization      9 percent
  CPU utilization:
    User                  0 percent
    Background            0 percent
    Kernel                2 percent
    Interrupt             0 percent
    Idle                  98 percent
  Model                  RE-TXP-LCC
  Serial ID              737F-1024
  Start time             2009-05-11 17:40:32 PDT
  Uptime                  3 hours, 45 minutes, 26 seconds
  Last reboot reason      Router rebooted after a normal shutdown.
  Load averages:        1 minute   5 minute   15 minute
                           0.00       0.00       0.00

Routing Engine status:
Slot 1:
  Current state           Backup
  Election priority       Backup (default)
  Temperature             30 degrees C / 86 degrees F
  CPU temperature         43 degrees C / 109 degrees F
  DRAM                   3327 MB
  Memory utilization      9 percent

```

```

CPU utilization:
  User          0 percent
  Background    0 percent
  Kernel        0 percent
  Interrupt     0 percent
  Idle          100 percent
Model          RE-TXP-LCC
Serial ID      737F-1024
Start time     2009-05-06 17:31:32 PDT
Uptime        5 days, 3 hours, 54 minutes, 59 seconds
Last reboot reason Router rebooted after a normal shutdown.

```

```

show chassis routing-engine bios
(TX Matrix Plus
Router)
user@host> show chassis routing-engine bios
sfc0-re0:
-----
Routing Engine BIOS Version: V0.0.Z

```

```

1cc0-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 Switch)
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 scb

| | |
|---------------------------------|---|
| Syntax | show chassis scb |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (M40 router only) Display System Control Board (SCB) status information. |
| Options | This command has no options. |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none"> Checklist for Monitoring the SCB |
| List of Sample Output | show chassis scb on page 650 |
| Output Fields | Table 65 on page 649 lists the output fields for the show chassis scb command. Output fields are listed in the approximate order in which they appear. |

Table 65: show chassis scb Output Fields

| Field Name | Field Description |
|---------------------------|--|
| Temperature | Temperature of the air passing by the SCB, in degrees Celsius. |
| CPU utilization | Total percentage of CPU being used by the SCB's processor. |
| Interrupt utilization | Of the total CPU being used by the SCB's processor, the percentage being used for interrupts. |
| Heap utilization | Percentage of heap space being used by the SCB's processor. |
| Buffer utilization | Percentage of buffer space being used by the SCB's processor. |
| DRAM | Total DRAM available to the SCB's processor. |
| Start time | Time when the SCB started running. |
| Uptime | How long the SCB has been running. |
| Internet Processor memory | Information about the memory of the Internet Processor ASIC on the SCB: <ul style="list-style-type: none"> IP routes—Number of IP routes known to the Internet Processor. MPLS routes—Number of MPLS routes known to the Internet Processor. SRAM banks enabled—Which SRAM banks are enabled. SRAM size—Size of SCB SRAM, in bytes. SRAM used—Amount of SRAM used, in bytes. SRAM utilization—Percentage of SRAM used. |

Sample Output

```
show chassis scb user@host> show chassis scb
SCB status:
  Temperature:          30 Centigrade
  CPU utilization:      5 percent
  Interrupt utilization: 0 percent
  Heap utilization:     0 percent
  Buffer utilization:    2 percent
  DRAM:                 64 Mbytes
  Start time:           1998-10-28 18:35:46 UTC
  Uptime:               6 minutes, 16 seconds
Internet Processor memory:
  IP routes:            16
  MPLS routes:          1
  SRAM banks enabled:   [ 1 1 1 1 ]
  SRAM size:            4 Mbytes
  SRAM used:            256 bytes
  SRAM utilization:     0 percent
```


show chassis sfm

| | |
|---------------------------------|---|
| Syntax | show chassis sfm <detail < <i>sfm-slot</i> >> |
| Release Information | Command introduced before Junos OS Release 7.4. |
| Description | (M40e and M160 routers only) Display Switching and Forwarding Module (SFM) status information. |
| Options | <p>none—Display standard status information about all SFMs.</p> <p>detail—(Optional) Display detailed SFM status information.</p> <p><i>sfm-slot</i>—(Optional) Display status information about the SFM in the specified slot only. For the M40e router, replace <i>sfm-slot</i> with 0 or 1. For the M160 router, replace <i>sfm-slot</i> with a value from 0 through 3.</p> |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none"> • request chassis sfm on page 230 • request chassis sfm master switch on page 229 • Switching the Global Master and Backup Roles in a Virtual Chassis Configuration |
| List of Sample Output | show chassis sfm (M160 Router) on page 652 show chassis sfm detail (M40e Router) on page 652 show chassis sfm detail (M160 Router) on page 653 |
| Output Fields | Table 66 on page 651 lists the output fields for the show chassis sfm command. Output fields are listed in the approximate order in which they appear. |

Table 66: show chassis sfm Output Fields

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

Table 66: show chassis sfm Output Fields (*continued*)

| Field Name | Field Description | Level of Output |
|-------------------------------|---|-----------------|
| Total | Total percentage of the CPU being used by the SFM's processor. | All levels |
| Interrupt | Of the total CPU being used by the SFM's processor, the percentage being used for interrupts. | All levels |
| Memory Utilization | Information about memory usage. | none specified |
| DRAM | Total DRAM available to the SFM's processor, in megabytes (MB). | All levels |
| Heap | Percentage of heap space (dynamic memory) being used by the SFM's processor. If this number exceeds 80 percent, it might indicate a software problem (memory leak). | All levels |
| Buffer | Percentage of buffer space being used by the SFM's processor for buffering internal messages. | All levels |
| SPP Temperature | Temperature of air passing by the Switch Plane Processor card, in degrees Celsius and Fahrenheit | detail |
| SPR Temperature | Temperature of air passing by the Switch Plane Router card, in degrees Celsius and Fahrenheit. | detail |
| Total CPU DRAM | Total amount of CPU DRAM being used by the SFM's processor. | detail |
| Total SSRAM | Total amount of SSRAM being used by the SFM's processor. | detail |
| Internet processor II | (M160 router only) Processor type. | detail |
| Start time | Time this SFM became active. | detail |
| Uptime | How long the SFM has been up and running. | detail |
| Packet scheduling mode | (M160 router only) Enabled or disabled. | detail |

Sample Output

show chassis sfm
(M160 Router)

```
user@host> show chassis sfm
SFM status:
```

| Slot | State | Temp (C) | CPU Utilization (%) | | Memory DRAM (MB) | Utilization (%) | |
|------|--------|----------|---------------------|-----------|------------------|-----------------|--------|
| | | | Total | Interrupt | | Heap | Buffer |
| 0 | Online | 39 | 0 | 0 | 64 | 0 | 6 |
| 1 | Online | 43 | 0 | 0 | 64 | 0 | 6 |
| 2 | Empty | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | Empty | 0 | 0 | 0 | 0 | 0 | 0 |

show chassis sfm
detail (M40e Router)

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

```

Slot 0 information:
  State                Offline
  Reason:              - power configured off
Slot 1 information:
  State                Present
  SPP temperature      0 degrees C / 32 degrees F
  SPR temperature      0 degrees C / 32 degrees F
  Total CPU DRAM       0 MB
  Total SSRAM          0 MB

show chassis sfm      user@host> show chassis sfm detail
detail (M160 Router) Slot 0 information:
  State                Online
  SPP temperature      37 degrees C / 98 degrees F
  SPR temperature      39 degrees C / 102 degrees F
  Total CPU DRAM       64 MB
  Total SSRAM          8 MB
  Internet Processor II Version 1, Foundry IBM, Part number 9
  Start time:          2004-08-17 09:23:08 PDT
  Uptime:              72 days, 1 hour, 15 minutes, 57 seconds
Slot 1 information:
  State                Online
  SPP temperature      36 degrees C / 96 degrees F
  SPR temperature      37 degrees C / 98 degrees F
  Total CPU DRAM       64 MB
  Total SSRAM          8 MB
  Internet Processor II Version 1, Foundry IBM, Part number 9
  Start time:          2004-08-17 09:23:08 PDT
  Uptime:              72 days, 1 hour, 15 minutes, 57 seconds
Slot 2 information:
  ....
Packet scheduling mode : Disabled

```

show chassis sibs

| | |
|--|---|
| Syntax | show chassis sibs |
| Syntax (TX Matrix Router) | show chassis sibs <lcc <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 Switches) | 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 Switches.</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 Switch in Junos OS Release 12.1</p> |
| Description | (M320 and T Series routers only) Display Switch Interface Boards (SIBs) status information. |
| Options | <p>none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the SIB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display the SIB status for the TX Matrix Plus router and its attached T1600 routers.</p> <p>detail—(PTX Series) (Optional) Display detailed SIB status information.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus router only) (Optional) On a TX Matrix router, display SIB status information for a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display SIB status information for a specified T1600 router that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display SIB status information for the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display SIB status information for the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p> <p>slot—(PTX Series) (Optional) Display status information about the SIB in the specified slot only. The range of values is 0 through 8.</p> |
| Required Privilege Level | view |

- Related Documentation**
- [request chassis sib on page 231](#)
 - [show chassis spmb sibs on page 669](#)
 - [show chassis environment sib on page 372](#)
 - Monitoring the SIBs
 - M320 SIB Description

- List of Sample Output**
- [show chassis sibs \(T640 Router\) on page 657](#)
 - [show chassis sibs \(T4000 Router\) on page 657](#)
 - [show chassis sibs \(TX Matrix Router\) on page 658](#)
 - [show chassis sibs \(T1600 Router\) on page 658](#)
 - [show chassis sibs \(TX Matrix Plus Router\) on page 658](#)
 - [show chassis sibs sfc \(TX Matrix Plus Router\) on page 659](#)
 - [show chassis sibs lcc \(TX Matrix Plus Router\) on page 660](#)
 - [show chassis sibs \(M320 Router\) on page 660](#)
 - [show chassis sibs \(PTX Series\) on page 660](#)
 - [show chassis sibs \(PTX Series\) on page 660](#)

- Output Fields** Table 67 on page 655 lists the output fields for the **show chassis sibs** command. Output fields are listed in the approximate order in which they appear.

Table 67: 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 | <p>SIB status:</p> <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. • 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 (or 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. • 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> |

Table 67: show chassis sibs Output Fields (*continued*)

| Field Name | Field Description |
|------------|---|
| | <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 Switches, 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 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). • 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. |

Table 67: show chassis sibs Output Fields (*continued*)

| Field Name | Field Description |
|---------------------|---|
| | <ul style="list-style-type: none"> 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 Switches.</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. 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. |

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      Uptime
0      Offline                    SIB F13   --- Offlined by cli command ---
1      Online                     SIB F13   4 hours, 1 minute, 39 seconds
2      Invalid
3      Empty
4      Empty
5      Invalid
6      Empty
7      Empty
8      Empty
9      Empty
10     Invalid
11     Empty
12     Empty
13     Invalid
14     Invalid
15     Invalid
0/0    Online                     SIB F2S   4 hours, 2 minutes, 17 seconds
0/2    Online                     SIB F2S   4 hours, 2 minutes, 15 seconds
0/4    Online                     SIB F2S   4 hours, 2 minutes, 14 seconds
0/6    Online                     SIB F2S   4 hours, 2 minutes, 13 seconds

```


| | | | |
|-----|--------|---------|--------------------------------|
| 1/0 | Online | SIB F2S | 4 hours, 2 minutes, 25 seconds |
| 1/2 | Online | SIB F2S | 4 hours, 2 minutes, 24 seconds |
| 1/4 | Online | SIB F2S | 4 hours, 2 minutes, 23 seconds |
| 1/6 | Online | SIB F2S | 4 hours, 2 minutes, 22 seconds |
| 2/0 | Online | SIB F2S | 4 hours, 2 minutes, 20 seconds |
| 2/2 | Online | SIB F2S | 4 hours, 2 minutes, 19 seconds |
| 2/4 | Online | SIB F2S | 4 hours, 2 minutes, 18 seconds |
| 2/6 | Empty | | |
| 3/0 | Empty | | |
| 3/2 | Empty | | |
| 3/4 | Empty | | |
| 3/6 | Empty | | |
| 4/0 | Empty | | |
| 4/2 | Empty | | |
| 4/4 | Empty | | |
| 4/6 | Empty | | |

lcc0-re0:

| Slot | State | Uptime |
|------|----------------------------|---------------------------------|
| 0 | Check (destination errors) | 2 hours, 23 minutes, 2 seconds |
| 1 | Offline | --- Offlined by cli command --- |
| 2 | Check (destination errors) | 2 hours, 23 minutes, 3 seconds |
| 3 | Check (destination errors) | 2 hours, 23 minutes, 3 seconds |
| 4 | Check (destination errors) | 2 hours, 23 minutes, 3 seconds |

use "show chassis fabric fpcs" and "show chassis fabric sibs" for more details

show chassis sibs sfc
(TX Matrix Plus
Router)

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

| Slot | State | Type | Uptime |
|------|---------|---------|---------------------------------|
| 0 | Online | SIB F13 | 4 hours, 15 minutes, 29 seconds |
| 1 | Offline | | --- Offlined by cli command --- |
| 2 | Invalid | | |
| 3 | Empty | | |
| 4 | Empty | | |
| 5 | Invalid | | |
| 6 | Empty | | |
| 7 | Empty | | |
| 8 | Empty | | |
| 9 | Empty | | |
| 10 | Invalid | | |
| 11 | Empty | | |
| 12 | Empty | | |
| 13 | Invalid | | |
| 14 | Invalid | | |
| 15 | Invalid | | |
| 0/0 | Online | SIB F2S | 4 hours, 15 minutes, 50 seconds |
| 0/2 | Online | SIB F2S | 4 hours, 15 minutes, 48 seconds |
| 0/4 | Online | SIB F2S | 4 hours, 15 minutes, 47 seconds |
| 0/6 | Online | SIB F2S | 4 hours, 15 minutes, 46 seconds |
| 1/0 | Online | SIB F2S | 4 hours, 15 minutes, 58 seconds |
| 1/2 | Online | SIB F2S | 4 hours, 15 minutes, 57 seconds |
| 1/4 | Online | SIB F2S | 4 hours, 15 minutes, 56 seconds |
| 1/6 | Online | SIB F2S | 4 hours, 15 minutes, 55 seconds |
| 2/0 | Online | SIB F2S | 4 hours, 15 minutes, 53 seconds |
| 2/2 | Online | SIB F2S | 4 hours, 15 minutes, 52 seconds |
| 2/4 | Online | SIB F2S | 4 hours, 15 minutes, 51 seconds |
| 2/6 | Empty | | |
| 3/0 | Empty | | |

```
3/2 Empty
3/4 Empty
3/6 Empty
4/0 Empty
4/2 Empty
4/4 Empty
4/6 Empty
```

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

```
-----
Slot State           Uptime
0     SFC error      3 seconds
1     Offline        --- Offlined by cli command ---
2     Empty
3     Online          1 hour, 18 minutes, 18 seconds
4     Online          1 hour, 18 minutes, 3 seconds
```

show chassis sibs user@host> **show chassis sibs**
 (M320 Router)

```
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 user@host> **show chassis sibs**
 (PTX Series)

```
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 user@host> **show chassis sibs detail**
 (PTX Series) Slot 4 information

```
State           Offline
Reason           Offlined by cli command
Fabric links      Unused
Errors            None
```

show chassis spmb

| | |
|--|---|
| Syntax | show chassis spmb |
| Syntax (T4000 Routers) | show chassis spmb <sibs> |
| Syntax (TX Matrix Routers) | show chassis spmb <sibs> <lcc <i>number</i> scc> |
| Syntax (TX Matrix Plus Routers) | show chassis spmb <sibs> <lcc <i>number</i> sfc <i>number</i> > |
| Release Information | Command introduced before Junos OS Release 7.4. sibs option introduced for the T1600 and TX Matrix Plus routers in Junos OS Release 9.6. |
| Description | (T Series routers only) Display Switch Processor Mezzanine Board (SPMB) status information. |
| Options | <p>none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display SPMB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display SPMB status for the TX Matrix Plus router and its attached T1600 routers.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display information about the SPMB on a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display information about the SPMB on a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix routers only) (Optional) Display information about the SPMB on the TX Matrix router (or switch-card chassis).</p> <p>sfc <i>number</i>—(TX Matrix Plus routers only) (Optional) Display information about the SPMB on the TX Matrix Plus router (or switch-fabric chassis). Replace <i>number</i> with 0.</p> <p>sibs—(TX Matrix and TX Matrix Plus routers only) (Optional) Display information about the SIBS on the TX Matrix router (or switch-card chassis) or TX Matrix Plus routers (or switch-fabric chassis). The sibs option has the following sub-options:</p> <p>lcc <i>number</i> (TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display information about the SIBs on a specified T640 router (or line-card chassis) that is connected to the TX Matrix router. On a TX Matrix Plus router, display information about the SIBS on a specified T1600 router (or line-card chassis) that is connected to the TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> |

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

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

Required Privilege Level view

Related Documentation

- [request chassis sib on page 231](#)
- [show chassis spmb sibs on page 669](#)

List of Sample Output

- [show chassis spmb on page 663](#)
- [show chassis spmb \(T4000 Router\) on page 663](#)
- [show chassis spmb lcc \(TX Matrix Router\) on page 663](#)
- [show chassis spmb scc \(TX Matrix Router\) on page 663](#)
- [show chassis spmb \(T1600 Router\) on page 664](#)
- [show chassis spmb sibs \(T1600 Router\) on page 664](#)
- [show chassis spmb \(TX Matrix Plus Router\) on page 664](#)
- [show chassis spmb lcc \(TX Matrix Plus Router\) on page 666](#)
- [show chassis spmb scc \(TX Matrix Plus Router\) on page 666](#)
- [show chassis spmb sibs \(TX Matrix Plus Router\) on page 666](#)

Output Fields [Table 68 on page 662](#) lists the output fields for the **show chassis spmb** command. Output fields are listed in the approximate order in which they appear.

Table 68: show chassis spmb Output Fields

| Field Name | Field Description |
|-------------------------------|---|
| Slot | SPMB slot number: 0 or 1. |
| State | SPMB status: <ul style="list-style-type: none"> • Online—SPMB is operational and running. • Offline—SPMB is powered down. |
| Total CPU Utilization (%) | Total percentage of CPU being used by the SPMB processor. |
| Interrupt CPU Utilization (%) | Of the total CPU being used by the SPMB processor, the percentage being used for interrupts. |
| Memory Heap Utilization (%) | Percentage of heap space (dynamic memory) being used by the FPC processor. If this number exceeds 80 percent, there may be a software problem (memory leak). |
| Buffer Utilization (%) | Percentage of buffer space being used by the SPMB processor for buffering internal messages. |
| Start time | Time at which the SPMB last came online. |

Table 68: show chassis spmb Output Fields (*continued*)

| Field Name | Field Description |
|---------------|--|
| Uptime | How long the SPMB has been up and running. |

Sample Output

```

show chassis spmb  user@host> show chassis spmb
Slot 0 information:
  State                Online
  Total CPU Utilization 1%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    40%
  Start time:          2001-08-27 14:05:04 PDT
  Uptime:              46 minutes, 36 seconds

```

```

show chassis spmb  user@host> show chassis spmb
(T4000 Router)
Slot 0 information:
  State                Online
  Total CPU Utilization 18%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    22%
  Start time:          2012-02-09 22:51:09 PST
  Uptime:              2 hours, 25 minutes, 45 seconds
Slot 1 information:
  State                Online - Standby
  Total CPU Utilization 0%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    22%
  Start time:          2012-02-09 22:51:10 PST
  Uptime:              2 hours, 25 minutes, 44 seconds

```

```

show chassis spmb lcc user@host> show chassis spmb lcc 0
(TX Matrix Router)  lcc0-re0:
-----
Slot 0 information:
  State                Online
  Total CPU Utilization 0%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    42%
  Start time:          2004-08-05 18:43:38 PDT
  Uptime:              8 days, 55 minutes, 52 seconds

```

```

show chassis spmb scc user@host> show chassis spmb scc
(TX Matrix Router)  scc-re0:
-----
Slot 0 information:
  State                Online
  Total CPU Utilization 1%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    42%

```

```

Start time:                2004-08-05 18:43:37 PDT
Uptime:                    8 days, 1 hour, 6 minutes, 51 seconds

show chassis spmb          user@host> show chassis spmb
(T1600 Router)            Slot 0 information:
                          State                Online
                          Total CPU Utilization 2%
                          Interrupt CPU Utilization 0%
                          Memory Heap Utilization 0%
                          Buffer Utilization 24%
                          Start time:          2009-05-07 22:34:03 PDT
                          Uptime:              3 days, 4 hours, 14 minutes, 33 seconds
                          Slot 1 information:
                          State                Online - Standby
                          Total CPU Utilization 0%
                          Interrupt CPU Utilization 0%
                          Memory Heap Utilization 0%
                          Buffer Utilization 24%
                          Start time:          2009-05-07 22:34:02 PDT
                          Uptime:              3 days, 4 hours, 14 minutes, 34 seconds

```

```

show chassis spmb          user@host> show chassis spmb sibs
sibs (T1600 Router)       Slot  State                Uptime
                          0    Check                3 days, 4 hours, 11 minutes, 59 seconds
                          1    Disconnected         3 days, 4 hours, 12 minutes, 36 seconds
                          2    Disconnected         3 days, 4 hours, 12 minutes, 26 seconds
                          3    Disconnected         3 days, 4 hours, 12 minutes, 17 seconds
                          4    Disconnected         3 days, 4 hours, 12 minutes, 8 seconds

```

```

show chassis spmb          user@host> show chassis spmb
(TX Matrix Plus           sfc0-re0:
Router)                   -----
                          Slot 0 information:
                          State                Online
                          Total CPU Utilization 84%
                          Interrupt CPU Utilization 0%
                          Memory Heap Utilization 0%
                          Buffer Utilization 24%
                          Start time:          2009-05-11 01:25:20 PDT
                          Uptime:              46 minutes, 6 seconds
                          Slot 1 information:
                          State                Online - Standby
                          Total CPU Utilization 0%
                          Interrupt CPU Utilization 0%
                          Memory Heap Utilization 0%
                          Buffer Utilization 24%
                          Start time:          2009-05-11 01:25:20 PDT
                          Uptime:              46 minutes, 6 seconds

                          lcc0-re1:
                          -----
                          Slot 0 information:
                          State                Online - Standby
                          Total CPU Utilization 0%
                          Interrupt CPU Utilization 0%
                          Memory Heap Utilization 0%
                          Buffer Utilization 24%
                          Start time:          2009-05-11 01:25:09 PDT
                          Uptime:              46 minutes, 24 seconds
                          Slot 1 information:

```

```

State                               Online
Total CPU Utilization              5%
Interrupt CPU Utilization           0%
Memory Heap Utilization             0%
Buffer Utilization                  24%
Start time:                        2009-05-11 01:25:08 PDT
Uptime:                            46 minutes, 25 seconds

```

```
lcc1-re1:
```

```

-----
Slot 0 information:
State                               Online - Standby
Total CPU Utilization              1%
Interrupt CPU Utilization           0%
Memory Heap Utilization             0%
Buffer Utilization                  24%
Start time:                        2009-05-11 01:25:09 PDT
Uptime:                            46 minutes, 24 seconds

```

```

Slot 1 information:
State                               Online
Total CPU Utilization              5%
Interrupt CPU Utilization           0%
Memory Heap Utilization             0%
Buffer Utilization                  24%
Start time:                        2009-05-11 01:25:10 PDT
Uptime:                            46 minutes, 23 seconds

```

```
lcc2-re1:
```

```

-----
Slot 0 information:
State                               Online - Standby
Total CPU Utilization              0%
Interrupt CPU Utilization           0%
Memory Heap Utilization             0%
Buffer Utilization                  24%
Start time:                        2009-05-11 01:25:08 PDT
Uptime:                            46 minutes, 25 seconds

```

```

Slot 1 information:
State                               Online
Total CPU Utilization              5%
Interrupt CPU Utilization           0%
Memory Heap Utilization             0%
Buffer Utilization                  24%
Start time:                        2009-05-11 01:25:10 PDT
Uptime:                            46 minutes, 23 seconds

```

```
lcc3-re1:
```

```

-----
Slot 0 information:
State                               Online - Standby
Total CPU Utilization              1%
Interrupt CPU Utilization           0%
Memory Heap Utilization             0%
Buffer Utilization                  24%
Start time:                        2009-05-11 01:25:10 PDT
Uptime:                            46 minutes, 23 seconds

```

```

Slot 1 information:
State                               Online
Total CPU Utilization              5%
Interrupt CPU Utilization           0%
Memory Heap Utilization             0%

```

```

Buffer Utilization          24%
Start time:                 2009-05-11 01:25:09 PDT
Uptime:                     46 minutes, 24 seconds

```

show chassis spmb lcc
(TX Matrix Plus
Router)

```

user@host> show chassis spmb lcc 2
lcc2-re1:
-----
Slot 0 information:
  State                Online - Standby
  Total CPU Utilization 0%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    24%
  Start time:          2009-05-11 01:25:08 PDT
  Uptime:              45 minutes, 18 seconds
Slot 1 information:
  State                Online
  Total CPU Utilization 6%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    24%
  Start time:          2009-05-11 01:25:10 PDT
  Uptime:              45 minutes, 16 seconds

```

show chassis spmb scc
(TX Matrix Plus
Router)

```

user@host> show chassis spmb sfc 0
sfc0-re0:
-----
Slot 0 information:
  State                Online
  Total CPU Utilization 87%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    24%
  Start time:          2009-05-11 01:25:20 PDT
  Uptime:              43 minutes, 32 seconds
Slot 1 information:
  State                Online - Standby
  Total CPU Utilization 0%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    24%
  Start time:          2009-05-11 01:25:20 PDT
  Uptime:              43 minutes, 32 seconds

```

show chassis spmb
sibs (TX Matrix Plus
Router)

```

user@host> show chassis spmb sibs
sfc0-re0:
-----
Slot  State                Type                Uptime
0      Online                SIB F13            1 hour, 18 minutes, 54 seconds
1      Online                SIB F13            1 hour, 18 minutes, 45 seconds
2      Invalid
3      Online                SIB F13            1 hour, 20 minutes, 21 seconds
4      Online                SIB F13            1 hour, 20 minutes, 18 seconds
5      Invalid
6      Online                SIB F13            1 hour, 19 minutes, 51 seconds
7      Fault                 SIB F13
8      Online                SIB F13            1 hour, 19 minutes, 17 seconds
9      Online                SIB F13            1 hour, 19 minutes, 13 seconds
10     Invalid
11     Online                SIB F13            1 hour, 17 minutes, 54 seconds

```


| | | | |
|-----|---------|---------|--------------------------------|
| 12 | Online | SIB F13 | 1 hour, 17 minutes, 51 seconds |
| 13 | Invalid | | |
| 14 | Invalid | | |
| 15 | Invalid | | |
| 0/0 | Online | SIB F2S | 1 hour, 18 minutes, 52 seconds |
| 0/2 | Online | SIB F2S | 1 hour, 18 minutes, 51 seconds |
| 0/4 | Online | SIB F2S | 1 hour, 18 minutes, 49 seconds |
| 0/6 | Online | SIB F2S | 1 hour, 18 minutes, 48 seconds |
| 1/0 | Online | SIB F2S | 1 hour, 20 minutes, 16 seconds |
| 1/2 | Online | SIB F2S | 1 hour, 20 minutes, 15 seconds |
| 1/4 | Online | SIB F2S | 1 hour, 20 minutes, 14 seconds |
| 1/6 | Online | SIB F2S | 1 hour, 20 minutes, 13 seconds |
| 2/0 | Online | SIB F2S | 1 hour, 19 minutes, 48 seconds |
| 2/2 | Online | SIB F2S | 1 hour, 19 minutes, 47 seconds |
| 2/4 | Online | SIB F2S | 1 hour, 19 minutes, 46 seconds |
| 2/6 | Online | SIB F2S | 1 hour, 19 minutes, 44 seconds |
| 3/0 | Online | SIB F2S | 1 hour, 19 minutes, 24 seconds |
| 3/2 | Online | SIB F2S | 1 hour, 19 minutes, 22 seconds |
| 3/4 | Online | SIB F2S | 1 hour, 19 minutes, 21 seconds |
| 3/6 | Online | SIB F2S | 1 hour, 19 minutes, 20 seconds |
| 4/0 | Online | SIB F2S | 1 hour, 18 minutes, 2 seconds |
| 4/2 | Online | SIB F2S | 1 hour, 18 minutes |
| 4/4 | Online | SIB F2S | 1 hour, 17 minutes, 58 seconds |
| 4/6 | Online | SIB F2S | 1 hour, 17 minutes, 58 seconds |

lcc0-re1:

| Slot | State | Uptime |
|------|--------|--------------------------------|
| 0 | Online | 1 hour, 18 minutes, 58 seconds |
| 1 | Online | 1 hour, 20 minutes, 25 seconds |
| 2 | Fault | |
| 3 | Online | 1 hour, 18 minutes, 30 seconds |
| 4 | Online | 1 hour, 18 minutes, 28 seconds |

lcc1-re1:

| Slot | State | Uptime |
|------|--------|--------------------------------|
| 0 | Online | 1 hour, 18 minutes, 58 seconds |
| 1 | Online | 1 hour, 20 minutes, 26 seconds |
| 2 | Fault | |
| 3 | Online | 1 hour, 18 minutes, 22 seconds |
| 4 | Online | 1 hour, 18 minutes, 20 seconds |

lcc2-re1:

| Slot | State | Uptime |
|------|--------|--------------------------------|
| 0 | Online | 1 hour, 18 minutes, 19 seconds |
| 1 | Online | 1 hour, 20 minutes, 25 seconds |
| 2 | Fault | |
| 3 | Online | 1 hour, 18 minutes, 17 seconds |
| 4 | Online | 1 hour, 18 minutes, 15 seconds |

lcc3-re1:

| Slot | State | Uptime |
|------|--------|--------------------------------|
| 0 | Online | 1 hour, 18 minutes, 27 seconds |
| 1 | Online | 1 hour, 20 minutes, 24 seconds |
| 2 | Fault | |
| 3 | Online | 1 hour, 18 minutes, 25 seconds |
| 4 | Online | 1 hour, 18 minutes, 23 seconds |

show chassis spmb sibs

| | |
|---------------------------------------|--|
| Syntax | show chassis spmb sibs |
| Syntax (TX Matrix Router) | show chassis spmb sibs <lcc <i>number</i> scc> |
| Syntax (TX Matrix Plus Router) | show chassis spmb sibs <lcc <i>number</i> sfc <i>number</i> > |
| Release Information | Command introduced before Junos OS Release 7.4. sfc option introduced for the TX Matrix Plus router in Junos OS Release 9.6. |
| Description | (T Series routers only) Display Switch Processor Mezzanine Board (SPMB) Switch Interface Board (SIB) status information. |
| Options | <p>none—(TX Matrix and TX Matrix Plus routers only) On a TX Matrix router, display the SIB status for the TX Matrix router and its attached T640 routers. On a TX Matrix Plus router, display the SIB status for the TX Matrix Plus router and its attached T1600 routers.</p> <p>lcc <i>number</i>—(TX Matrix and TX Matrix Plus routers only) (Optional) On a TX Matrix router, display SIB status information for a specified T640 router (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display SIB status information for a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>scc—(TX Matrix router only) (Optional) Display SIB status information for the TX Matrix router (or switch-card chassis).</p> <p>sfc—(TX Matrix Plus router only) (Optional) Display SIB status information for the TX Matrix Plus router (or switch-fabric chassis).</p> |
| Additional Information | On a T Series router, you can use either this command or the show chassis sibs command to produce the same output. The show chassis sibs command is supported on the M320 router and on the T Series routers. |
| Required Privilege Level | view |
| Related Documentation | <ul style="list-style-type: none"> • show chassis sibs on page 654 • request chassis sib on page 231 • request chassis spmb restart on page 237 |
| List of Sample Output | show chassis spmb sibs (T320 Router) on page 670 show chassis-spmb-sibs (T1600 Router) on page 671 show chassis spmb sibs (T4000 Router) on page 671 show chassis spmb sibs (TX Matrix Router) on page 671 |

[show chassis spmb sibs lcc \(TX Matrix Router\) on page 671](#)
[show chassis spmb sibs scc \(TX Matrix Router\) on page 671](#)
[show chassis spmb sibs \(TX Matrix Plus Router\) on page 671](#)
[show chassis spmb sibs sfc \(TX Matrix Plus Router\) on page 672](#)

Output Fields Table 69 on page 670 lists the output fields for the **show chassis spmb sibs** command. Output fields are listed in the approximate order in which they appear.

Table 69: show chassis spmb sibs Output Fields

| Field Name | Field Description |
|---------------|--|
| Slot | <p>SIB slot number:</p> <ul style="list-style-type: none"> T640 router, T1600 router or TX Matrix router—0 through 4 TX Matrix Plus router: <ul style="list-style-type: none"> TXP-F13 SIB Slots—0 through 16 TXP-F2S SIB Slots —0 – 4/[0 2 4 6] T320 router—0 through 2 |
| State | <p>SIB status:</p> <ul style="list-style-type: none"> Disconnected—SIBs on all T640 routers on the TX Matrix router (or 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. Online—SPMB is operational and running. Offline—SPMB is powered down. Spare—SIB is redundant and will move to active state if one of the working SIBs fail to pass traffic. Empty—No SPMB is present. Fault—SIB is in alarmed state where the SIB's plane is not operational for the following reasons: <ul style="list-style-type: none"> On-board F-chip is not operational. Fiber optic connector faults. FPC connector faults. SIB midplane connector faults. Check—SIB is in alarmed state where the SIB's plane is partially operational for the following reasons: <ul style="list-style-type: none"> SIB is not inserted properly. Two or more links between the SIB and PFE fails. |
| Uptime | How long the SIB has been up and running. |

Sample Output

```

show chassis spmb sibs (T320 Router) user@host> show chassis spmb sibs
Slot  State
0     Spare

```

```

1    Online
2    Online

show chassis-spmbs (T1600 Router) user@host> show chassis spmb sibs
Slot State
0     Spare
1     Online
2     Empty
3     Online
4     Offline

show chassis spmb sibs (T4000 Router) user@host> show chassis spmb sibs
Slot State Uptime
0     Spare
1     Online 2 hours, 28 minutes, 13 seconds
2     Online 2 hours, 27 minutes, 57 seconds
3     Online 2 hours, 27 minutes, 40 seconds
4     Online 2 hours, 27 minutes, 24 seconds

show chassis spmb sibs (TX Matrix Router) user@host> show chassis spmb sibs
Slot State
0     Online
1     Online
2     Empty
3     Online
4     Offline

show chassis spmb sibs lcc (TX Matrix Router) user@host> show chassis spmb sibs lcc 0
lcc0-re0:
-----
Slot State Uptime
0     Empty
1     Empty
2     Empty
3     Disconnected 8 days, 48 minutes, 58 seconds
4     Online 8 days, 48 minutes, 57 seconds

show chassis spmb sibs scc (TX Matrix Router) user@host> show chassis spmb sibs scc
scc-re0:
-----
Slot State Uptime
0     Empty
1     Empty
2     Empty
3     Offline
4     Online 8 days, 54 minutes, 1 second

show chassis spmb sibs (TX Matrix Plus Router) user@host> show chassis spmb sibs
sfc0-re0:
-----
Slot State Type Uptime
0     Online SIB F13 1 hour, 52 minutes, 55 seconds
1     Empty
2     Invalid
3     Online SIB F13 1 hour, 53 minutes, 3 seconds
4     Empty
5     Invalid
6     Empty

```

```

7      Empty
8      Empty
9      Empty
10     Invalid
11     Empty
12     Empty
13     Invalid
14     Invalid
15     Invalid
0/0    Online          SIB F2S          1 hour, 53 minutes, 2 seconds
0/2    Online          SIB F2S          1 hour, 53 minutes, 1 second
0/4    Online          SIB F2S          1 hour, 52 minutes, 59 seconds
0/6    Online          SIB F2S          1 hour, 52 minutes, 58 seconds
1/0    Online          SIB F2S          1 hour, 53 minutes, 10 seconds
1/2    Online          SIB F2S          1 hour, 53 minutes, 8 seconds
1/4    Online          SIB F2S          1 hour, 53 minutes, 7 seconds
1/6    Online          SIB F2S          1 hour, 53 minutes, 6 seconds
2/0    Empty
2/2    Empty
2/4    Empty
2/6    Empty
3/0    Empty
3/2    Empty
3/4    Empty
3/6    Empty
4/0    Empty
4/2    Empty
4/4    Empty
4/6    Empty

```

lcc0-re0:

```

-----
Slot  State          Uptime
0      Online         1 hour, 53 minutes, 1 second
1      Online         1 hour, 53 minutes, 3 seconds
2      Empty
3      Empty
4      Empty

```

lcc1-re1:

```

-----
Slot  State          Uptime
0      Online         1 hour, 47 minutes, 13 seconds
1      Online         1 hour, 47 minutes, 15 seconds
2      Empty
3      Empty
4      Empty

```

**show chassis spmb
sibs sfc (TX Matrix
Plus Router)**

```

user@host> show chassis spmb sibs sfc 0
sfc0-re0:

```

```

-----
Slot 0 information:
  State                Online
  Total CPU Utilization 16%
  Interrupt CPU Utilization 0%
  Memory Heap Utilization 0%
  Buffer Utilization    24%
  Start time:          2009-06-17 20:59:47 PDT
  Uptime:               1 hour, 56 minutes, 30 seconds
Slot 1 information:
  State                Online - Standby

```

| | |
|---------------------------|--------------------------------|
| Total CPU Utilization | 0% |
| Interrupt CPU Utilization | 0% |
| Memory Heap Utilization | 0% |
| Buffer Utilization | 24% |
| Start time: | 2009-06-17 20:59:48 PDT |
| Uptime: | 1 hour, 56 minutes, 29 seconds |

show chassis 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 Switches. |
| Description | (M320, M40e, M120, T320, T640, and T1600 routers and PTX Series Packet Transport Switches 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• Configuring an External Clock Synchronization Interface for MX Series Routers on page 121• Supported Time Synchronization Standard |
| List of Sample Output | show chassis synchronization on page 676 show chassis synchronization master on page 676 show chassis synchronization backup on page 676 show chassis synchronization extensive on page 676 show chassis synchronization (T320, T640, and T1600 Routers) on page 676 show chassis synchronization (PTX Series Packet Transport Switches) on page 677 |
| Output Fields | Table 70 on page 675 lists the output fields for the <code>show chassis synchronization</code> command. Output fields are listed in the approximate order in which they appear. |

Table 70: show chassis synchronization Output Fields

| Field Name | Field Description |
|--------------------------------|--|
| Current state | Indicates current status of external clock sources: <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 Switches) Source is the master clock. Source is online. • Online-Standby—(PTX Series Packet Transport Switches) Source is the standby (backup) clock. Source is online. |
| Current clock state | Indicates current source of external synchronization: <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 Switches) 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 | Indicates priority of external clock sources: <ul style="list-style-type: none"> • primary—Source is a primary reference. • secondary—Source is a secondary reference. |
| Deviation (in ppm) | Current difference in clock timing, in ppm: <ul style="list-style-type: none"> • measuring—Establishing source deviation. • number—Deviation in ppm. |
| Last deviation (in ppm) | Previous difference in clock timing, in ppm: <ul style="list-style-type: none"> • number—Deviation in ppm. |
| Status | Indicates status of external sources: <ul style="list-style-type: none"> • present—Source is configured and present. • qualified—Source is eligible for synchronization source. |

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 Switches)
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 temperature-thresholds

| | |
|---------------------------------------|---|
| Syntax | show chassis temperature-thresholds |
| Syntax (TX Matrix Router) | show chassis temperature-thresholds <lcc <i>number</i> scc> |
| Syntax (TX Matrix Plus Router) | show chassis temperature-thresholds <lcc <i>number</i> sfc <i>number</i> > |
| Syntax (MX Series Router) | show chassis temperature-thresholds <all-members> <local> <member <i>member-id</i> > |
| Syntax (QFX Series) | show chassis temperature-thresholds <interconnect-device <i>name</i> > <node-device <i>name</i> > |
| Release Information | Command introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 9.0 for EX Series switches. sfc command introduced for the TX Matrix Plus router in Junos OS Release 9.6. Command introduced in Junos OS Release 11.1 for the QFX Series. Command introduced in Junos OS Release 12.1 for the T4000 Core Routers. Command introduced in Junos OS Release 12.1 for PTX Series Packet Transport Switches. |
| 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 switches 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 (or line-card chassis) that is connected to a TX Matrix router. On a TX Matrix Plus router, display the temperature threshold details of a specified T1600 router (or line-card chassis) that is connected to a TX Matrix Plus router. Replace <i>number</i> with a value from 0 through 3.</p> <p>local—(MX Series routers only) (Optional) Display the chassis temperature threshold settings of the local Virtual Chassis member.</p> <p>member <i>member-id</i>—(MX Series routers only) (Optional) Display the chassis temperature threshold settings of the specified member of the Virtual Chassis configuration. Replace <i>member-id</i> with a value of 0 or 1.</p> |

node-device *name*—(QFabric switches 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 (or switch-card chassis).

sfc *number*—(TX Matrix Plus routers only) (Optional) Display the temperature threshold details of the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

Required Privilege Level view

Related Documentation • Defining Alarm Thresholds for System Temperature Sensors

List of Sample Output [show chassis temperature-thresholds on page 680](#)
[show chassis temperature-thresholds \(T4000 Core Routers\) on page 680](#)
[show chassis temperature-thresholds \(TX Matrix Plus Router\) on page 680](#)
[show chassis temperature-thresholds lcc \(TX Matrix Plus Router\) on page 682](#)
[show chassis temperature-thresholds sfc \(TX Matrix Plus Router\) on page 682](#)
[show chassis temperature-thresholds \(QFX3500 Switch\) on page 683](#)
[show chassis temperature-thresholds interconnect-device \(QFabric Switch\) on page 683](#)
[show chassis temperature-thresholds \(PTX5000 Packet Transport Switch\) on page 683](#)

Output Fields [Table 71 on page 679](#) lists the output fields for the **show chassis temperature-thresholds** command. Output fields are listed in the approximate order in which they appear.

Table 71: 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>Temperature threshold settings, in degrees Celsius, for the fans to operate at normal and high speeds.</p> <ul style="list-style-type: none"> Normal—The fans operate at normal speed if the component is at or below this temperature and all the fans are present and functioning normally. High—The fans operate at high speed if the component has exceeded this temperature or a fan has failed or is missing. <p>An alarm is not triggered until the temperature exceeds the threshold settings for a yellow alarm or a red alarm.</p> |
| Yellow alarm | <p>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. |

Table 71: show chassis temperature-thresholds Output Fields (*continued*)

| Field name | Field Description |
|----------------------|--|
| Red alarm | Temperature threshold settings, in degrees Celsius, that trigger a red alarm. <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 and PTX Series Packet Transport Switches 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 (T4000 Core Routers) 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 |
| 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 user@host> show chassis temperature-thresholds
sfc0-re0:
```

**(TX Matrix Plus
Router)**

| 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 (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 |
| 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 (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 |


```

show chassis temperature-thresholds
(QFX3500 Switch)
user@switch> 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 |
| FPC Sensor TopLeft I | 30 | 65 | 55 | 45 | 60 | 50 |
| FPC Sensor TopRight I | 30 | 65 | 55 | 45 | 60 | 50 |
| FPC Sensor TopLeft E | 30 | 65 | 55 | 45 | 60 | 50 |
| FPC Sensor TopRight E | 30 | 65 | 55 | 45 | 60 | 50 |
| FPC Sensor TopMiddle I | 30 | 65 | 55 | 45 | 60 | 50 |
| FPC Sensor TopMiddle E | 30 | 65 | 55 | 45 | 60 | 50 |
| FPC Sensor Bottom I | 30 | 65 | 55 | 45 | 60 | 50 |
| FPC Sensor Bottom E | 30 | 65 | 55 | 45 | 60 | 50 |
| FPC Sensor Die Temp | 30 | 65 | 55 | 45 | 60 | 50 |
| FPC Sensor Mgmt Brd I | 30 | 65 | 55 | 45 | 60 | 50 |
| FPC Sensor Switch I | 30 | 60 | 55 | 45 | 70 | 60 |

```

show chassis temperature-thresholds interconnect-device interconnect1
(QFabric Switch)
user@switch> show chassis temperature-thresholds interconnect-device interconnect1

```

| Item | Fan speed | | Yellow alarm | | Red alarm | |
|-----------------|-----------|------|--------------|---------|-----------|---------|
| | Normal | High | Normal | Bad fan | Normal | Bad fan |
| Chassis default | 48 | 54 | 65 | 55 | 75 | 65 |

```

show chassis temperature-thresholds
(PTX5000 Packet Transport Switch)
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 |

PART 4

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