

# Chapter 7

## Chassis Monitoring and Troubleshooting

From the command-line interface (CLI), you can display information about the chassis components using the commands in the show chassis hierarchy. These commands get their information from the chassis software process, which runs when the router is up and running. If the SCB, SSB, SFM, or FEB is not running, no information about chassis components is available through the CLI.

Table 27 summarizes the CLI commands you can use to monitor the router chassis. In the table, the commands are grouped by functionality. In the remainder of this chapter, they are explained alphabetically.

**Table 27: Commands for Monitoring the Chassis**

Task or Information to Monitor	CLI Command
Chassis alarm status.	show chassis alarms on page 311
Clear the chassis alarms.	clear chassis craft-interface display on page 306
Clear the chassis craft-interface display	clear chassis craft-interface display on page 306
Class-of-service configuration.	show chassis cos on page 312
Chassis clock-source configuration.	request chassis pcg slot on page 306
Information currently on craft display.	show chassis craft-interface on page 313
Environmental information.	show chassis environment on page 315 show chassis feb on page 325 show chassis environment fpc on page 318 show chassis environment fpm on page 319 show chassis environment mcs on page 320 show chassis environment pcg on page 321 show chassis environment pem on page 322 show chassis environment routing engine on page 323 show chassis environment sfm on page 324
Firmware version.	show chassis firmware on page 326
FPC and PIC status.	show chassis fpc on page 327 request chassis fpc slot on page 306
Hardware inventory.	show chassis hardware on page 329
MAC address.	show chassis mac-addresses on page 333
Routing Engine.	show chassis routing-engine on page 333 request chassis routing-engine master on page 307

Task or Information to Monitor	CLI Command
FEB, SCB, SFM, or SSB status.	show chassis feb on page 325
	show chassis scb on page 337
	show chassis sfm on page 338 request chassis sfm slot on page 309
	show chassis ssb on page 340 request chassis ssb master switch on page 309
Display a message on the router's craft interface.	set chassis display message on page 310

## clear chassis craft-interface display

**Syntax** clear chassis craft-interface display

**Description** (M40 and M160 routers only) Clear all user-defined messages displayed. Issue this command after resolving causes of alarm.

**Required Privilege Level** clear

**Sample Output**

```
user@host> clear chassis craft-interface display
user@host>
```

## request chassis fpc slot

**Syntax** request chassis fpc slot <slot number> <offline | online | restart>

**Description** (M160 router only) Control the operation of the FPC.

**Options** offline—Take the FPC offline.

online—Put the FPC online.

restart—Restart the FPC.

slot *slot number*—FPC slot number. It can be 0, 1, 2, 3, 4, 5, 6, or 7.

**Required Privilege Level** maintenance

## request chassis pcg slot

**Syntax** request chassis pcg slot <slot number> (offline | online)

**Description** (M160 router only) Control the operation of the PCG.

**Options** offline—Take the PCG offline.

online—Put the PCG online.

restart—Restart the PCG.

slot *slot number*—PCG slot number. It can be 0 or 1.

**Required Privilege Level** maintenance

## request chassis pic slot

**Syntax** request chassis pic slot slot number <pic slot slot number> <offline | online >

**Description** (M5 and M10 routers only) Control the operation of the PIC.

**Options** fpc-slot *slot number*—FPC slot number. It can be 0 or 1.

offline—Take the PIC offline.

online—Put the PIC online.

pic slot *slot number*—PIC slot number. It can be 0, 1, 2, or 3.

**Required Privilege Level** maintenance

## request chassis routing-engine master

**Syntax** request chassis routing-engine master <acquire | release | switch>

**Description** For routers with multiple Routing Engines only, control which Routing Engine is the master.



For routers that have two Routing Engines, both Routing Engines must be running JUNOS Release 4.0 or later. Do not run JUNOS Release 3.4 on one of the Routing Engines and Release 4.0 on the other. (Note that JUNOS Release 3.4 does not support Routing Engine redundancy, so if you are using this release of the software, only one Routing Engine can be installed in the router. It can be installed in either slot.)

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 Internet Software Configuration Guide: Interfaces and Chassis*.

To force the backup Routing Engine to become the master Routing Engine, use the request chassis routing engine master 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.



The configurations on the two Routing Engines do not have to be the same, and they are not automatically synchronized. If you configure both Routing Engines as masters, when the chassis software restarts for any reason, the Routing Engine in slot 0 becomes the master and the one in slot 1 becomes the backup.

When both Routing Engines have the same configuration, and come up at the same time, the Routing Engine in slot 0 takes precedence over the one in slot 1. Table 28 indicates which Routing Engine takes the mastership based on the configuration of both Routing Engines.

Table 28: Routing Engine Mastership Election

		Slot 0 Configuration		
		Master	Backup	Disabled
Slot 1 Configuration	Master	Slot 0: master Slot 1: backup	Slot 0: backup Slot 1: master	Slot 0: disabled Slot 1: master
	Backup	Slot 0: master Slot 1: backup	Slot 0: master Slot 1: backup	Slot 0: disabled Slot 1: master
	Disabled	Slot 0: master Slot 1: disabled	Slot 0: master Slot 1: disabled	Slot 0: disabled Slot 1: disabled

**Options** acquire—(Optional) Attempt to become the master Routing Engine.

release—(Optional) Request the other Routing Engine to become the master.

switch—(Optional) Toggle mastership between Routing Engines.

**Required Privilege Level** maintenance

**See Also** The routing-engine statement at the [edit chassis redundancy] hierarchy level in the configuration in the *JUNOS Internet Software Configuration Guide: Interfaces and Chassis*.

**Sample Output**

```

user@m20-host> request chassis routing-engine master acquire force

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)

Switch the master from M20-host-0 to the other Routing Engine:

root@m20-host-0> 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.
root@m20-host-0>

Have the backup Routing Engine M20-host-0 become the master:

root@m20-host-0> 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.
root@m20-host-0>

```

## request chassis sfm slot

**Syntax** request chassis sfm slot < slot number> (offline | online | restart>

**Description** (M160 router only) Control the operation of an SFM.

offline—Take the SFM offline.

online—Put the SFM online.

restart—Restart the SFM.

slot *slot number*—SFM slot number. It can be 0, 1, 2, or 3.

**Required Privilege Level** maintenance

## request chassis ssb master switch

**Syntax** request chassis ssb master switch

**Description** (M20 routers only) Control which system switch board is master.



For routers that have two SSBs, both SSBs must be running JUNOS Release 4.0 or later. Do not run JUNOS Release 3.4 on one of the SSBs and Release 4.0 or later on the other. (Note that JUNOS Release 3.4 does not support SSB redundancy, so if you are using this release of the software, only one SSB can be installed in the router. It can be installed in either slot.)

By default, the SSB in slot 0 (SSB0) is the master and the SSB in slot 1 (SSB1) is the backup. To change the default master SSB include the `ssb` statement at the [edit chassis redundancy] hierarchy level in the configuration. For more information, see the *JUNOS Internet Software Configuration Guide: Interfaces and Chassis*.

To force the backup SSB to become the master SSB, use the `request chassis system-switch-board 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.



The configurations on the two SSBs do not have to be the same, and they are not automatically synchronized. If you configure both SSBs as masters, when the chassis software restarts for any reason, the SSB in slot 0 becomes the master and the one in slot 1 becomes the backup.

**Required Privilege Level** maintenance

**Sample Output** user@m20-host> `request chassis ssb master switch`

```
warning: Traffic will be interrupted while the PFE is re-initialized
Toggle mastership between system switch boards ? [yes,no] (no)
```

## set chassis display message

**Syntax** set chassis display message "*message*"

**Description** (M40 and M160 routers only) Display a text message on the craft interface display, which is on the front of the router. The craft interface alternates the display of text message and the standard craft interface messages, switching between messages every 2 seconds.

The text message is displayed for 5 minutes.

The craft interface display has four 20-character lines.

**Options** message "*message*"—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. To stop a message, enter the command, omitting the *message* string.

**Required Privilege Level** clear

**See Also** show chassis craft-interface on page 313

**Sample Output**

```
user@sheep> set chassis display message "NOC contact Dusty (888) 526-1234"
message sent
user@sheep> 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@sheep> set chassis display message ""
message sent
user@sheep> 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:
+-----+
| sheep  |
| Up: 0+17:05:47 |
|        |
| Temperature OK |
+-----+

```

## show chassis alarms

**Syntax** show chassis alarms

**Description** (M40 and M160 routers only) Display information about the conditions that have been configured to trigger alarms.

It is not possible to clear the alarms for chassis components. This design is intentional; you must remedy the cause of the alarm. The alarm lights on the chassis are bright and are meant to be annoying. When they are lit, it indicates that you are running the router in a manner that we do not recommend.

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) nor extinguish the alarm LEDs. In addition, new alarms that occur after silencing an external device reactivate the external device.

**Required Privilege Level** view

**See Also** clear chassis craft-interface display on page 306

- **Output Fields** Alarm time—Date and time alarm was first recorded.
- Class—Severity class for this alarm. It can be **Minor** or **Major**.
- Description—Information about the alarm.
- **Sample Output** On a router with the lower fan tray removed, Power Entry Module (PEM 1) removed, and the management ethernet disconnected:
 

```

user@host> show chassis alarm
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

After problems have been solved:

user@host> show chassis alarm
No alarms are currently active
```

## show chassis cos

- **Syntax** show chassis cos
- **Description** Display information about configured class-of-service parameters, including precedence queue mapping and drop profiles.
- **Required Privilege Level** view
- **Output Fields** Global precedence map—Global mappings of ToS values to queues.
  - FPC precedence map—Mapping of ToS values to queues for an individual FPC.
  - Queue, Default queue—Specific queue and ToS value mapped in that queue.
  - Stream drop profile—For RED drop profiles, the drop profile for the entire packet stream passing through a physical output interface.
  - PLP drop profile—For RED drop profiles, the drop profile for queues in which the packet at the head of the queue is a packet in which the PLP bit is set.
  - Non-PLP drop profile—For RED drop profiles, the drop profile for queues in which the packet at the head of the queue is a packet in which the PLP bit is not set.
- **Sample Output**

```

user@host> show chassis cos
COS information:
  Global precedence map:
    Queue 0:
    Queue 1: 000 010 011 100 101 110 111
    Queue 2: 001
    Queue 3:
    Default queue: 1
  Slot 1:
    FPC precedence map:
      Queue 0: 000
      Queue 1: 001 010 011 101 110 111
      Queue 2:
```

```

Queue 3: 100
Stream drop profile:
  Fill level: 70%   Drop probability: 70%
  Fill level: 80%   Drop probability: 92%
PLP drop profile:
  Fill level: 50%   Drop probability: 75%
  Fill level: 80%   Drop probability: 99%
Non-PLP drop profile:
  Fill level: 70%   Drop probability: 56%
  Fill level: 89%   Drop probability: 98%
Slot 2:
Stream drop profile:
  Fill level: 30%   Drop probability: 40%
  Fill level: 50%   Drop probability: 50%
  Fill level: 60%   Drop probability: 65%
  Fill level: 70%   Drop probability: 76%

```

## show chassis craft-interface

**Syntax** show chassis craft-interface

**Description** For routers that have a display on the craft interface, show the messages that are currently displayed.

**Required Privilege Level** view

**See Also** set chassis display message on page 310

**Output Fields** FPM Display contents—Display contents of the Front Panel Module display.

*router-name*—The first line shows the name of the router.

*Up*—How long the router has been operational, in days, hours, minutes, and seconds.

*message*—Information about the router traffic load, the power supply status, the fan status, and the temperature status. The display of this information changes every 2 seconds.

If a text message has been set with the **set chassis display** command, this message appears on all four lines of the craft interface display. The display alternates between the text message and the standard system status messages every 2 seconds.

Front Panel System LEDs—Displays status of the Front Panel System LEDs. A dot (.) indicates the LED is not lit. An asterisk (\*) indicates the LED is lit.

Front Panel Alarm Indicators—Displays status of the Front Panel Alarm Indicators. A dot (.) indicates the relay is off. An asterisk (\*) indicates the relay is active.

Front Panel FPC LEDs—Displays status of the Front Panel FPC LEDs. A dot (.) indicates the LED is not lit. An asterisk (\*) indicates the LED is lit.

MCS and SFM LEDs—Displays status of the MCS and SFM LEDs. A dot (.) indicates the LED is not lit. An asterisk (\*) indicates the LED is lit. When neither a dot nor an asterisk are displayed there is no board in that slot.

**Sample Output** The following example shows output from the `show chassis craft-interface` command for an M20 router:

```
user@sheep> show chassis craft-interface
```

```
Red alarm:      LED off, relay off
Yellow alarm:   LED on, relay on
Host OK LED:    On
Host fail LED:  Off
```

```
FPCs      0  1  2  3
```

```
-----
Green     .  *  *  .
Red       .  .  .  .
```

```
LCD screen:\LCD Screen:
```

```
+-----+
|sheep  |
|1 Alarm active|
|Y: FERF|
|       |
+-----+
```

The following example shows output from the `show chassis craft-interface` command for an M40 router:

```
user@sheep> show chassis craft-interface
```

```
Front Panel LCD Display: enabled
```

```
Red alarm:      LED off, relay off
Yellow alarm:   LED off, relay off
Host OK LED:    On
Host Fail LED:  Off
```

```
NICs      0  1  2  3  4  5  6  7
```

```
-----
Green     *  .  *  .  *  .  *  .
Red       .  .  .  .  .  .  .  .
```

```
LCD Screen:
```

```
+-----+
|sheep  |
|Up: 27+18:52:37|
|       |
|52.649kpps Load|
+-----+
```

The following example shows output from the `show chassis craft-interface` command for an M160 router:

```
user@sheeps> show chassis craft-interface
```

```
FPM Display contents:
```

```
+-----+
|sheeps |
|Up: 1+16:46|
|       |
|Fans OK |
+-----+
```

```
Front Panel System LEDs:
```

```
Host      0  1
```

```

OK          .      *
Fail        .      .
Master      .      *

Front Panel Alarm Indicators:
-----
Red LED     .
Yellow LED  .
Major relay .
Minor relay .

Front Panel FPC LEDs:
FPC   0  1  2  3  4  5  6  7
-----
Red   .  .  .  .  .  .  .  .
Green *  *  .  .  .  .  .  .

MCS and SFM LEDs:
MCS   0  1      SFM  0  1  2  3
-----
Amber .          .  .
Green .          .  .
Blue  *          *  *

```

## show chassis environment

**Syntax** show chassis environment

**Description** Display environmental information about the router chassis, including the temperature and information about the fans, power supplies, and Routing Engine.

**Required Privilege Level** view

**Output Fields** Power—(M20 and M40 routers only) Information about each power supply. Status can be OK, Testing (during initial power-on), Failed, or Absent.  
(M160 routers only) Information about the Power Entry Modules. Status can be OK, Testing (during initial power-on), Failed, or Absent.

Temp—Temperature of air flowing through the chassis.

Fans—Information about the fans. Status can be OK, Testing (during initial power-on), Failed, or Absent. Measurement indicates if spinning at normal or high speed.

Misc—Information about other components of the chassis. It could indicate the presence of one or more components.

On the M160 router, Misc includes CIP (Connector Interface Panel). OK indicates the CIP is present.

**Sample Output** The following example shows output from the `show chassis environment` command for an M5 router:

```

user@m5-host> show chassis environment
Class Item                Status      Measurement
-----
Power Power Supply A       OK
      Power Supply B       OK

Temp  FPC Slot 0              OK          32 degrees C / 89 degrees F
      FEB                  OK          31 degrees C / 87 degrees F
      PS Intake            OK          26 degrees C / 78 degrees F
      PS Exhaust           OK          31 degrees C / 87 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
    
```

The following example shows output from the `show chassis environment` command for an M10 router:

```

user@m10-host> show chassis environment
Class Item                Status      Measurement
-----
Power Power Supply A       OK
      Power Supply B       OK

Temp  FPC Slot 0              OK          32 degrees C / 89 degrees F
      FPC Slot 1            OK          32 degrees C / 89 degrees F
      FEB                  OK          31 degrees C / 87 degrees F
      PS Intake            OK          26 degrees C / 78 degrees F
      PS Exhaust           OK          31 degrees C / 87 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
    
```

The following example shows output from the `show chassis environment` command for an M20 router:

```
user@m20-host> show chassis environment
Class Item                Status      Measurement

Power Power Supply A       Absent
      Power Supply B       OK

Temp  FPC Slot 1              OK          37 degrees C / 98 degrees F
      FPC Slot 2              OK          38 degrees C / 100 degrees F
      Power Supply A         Absent
      Power Supply B         OK          37 degrees C / 98 degrees F
      SSB Slot 0              OK          36 degrees C / 96 degrees F
      Backplane               OK          32 degrees C / 89 degrees F

Fans  Rear Fan               OK          Spinning at normal speed
      Upper Fan              OK          Spinning at normal speed
      Middle Fan             OK          Spinning at normal speed
      Bottom Fan             OK          Spinning at normal speed

Misc  Craft Interface       OK
```

The following example shows output from the `show chassis environment` command for an M40 router:

```
user@m40-host> show chassis environment
Class Item                Status      Measurement

Power Power Supply A       OK
      Power Supply B       Absent

Temp  FPC Slot 0              OK          34 degrees C / 93 degrees F
      FPC Slot 2              OK          32 degrees C / 89 degrees F
      FPC Slot 4              OK          31 degrees C / 87 degrees F
      FPC Slot 5              OK          39 degrees C / 102 degrees F
      SCB                     OK          28 degrees C / 82 degrees F
      Backplane @ A1          OK          35 degrees C / 95 degrees F
      Backplane @ A2          OK          32 degrees C / 89 degrees F

Fans  Top Impeller           OK          Spinning at normal speed
      Bottom Impeller        OK          Spinning at normal speed
      Rear Fan 1              OK          Spinning at normal speed
      Rear Fan 2              OK          Spinning at normal speed
      Rear Fan 3              OK          Spinning at normal speed

Misc  Craft Interface       OK
```

The following example shows output from the `show chassis environment` command for an M160 router:

```
user@m160-host> show chassis environment
Class Item                Status      Measurement
Power PEM 0                OK
      PEM 1                OK
Temp  PCG 0                OK          41 degrees C / 105 degrees F
      PCG 1                OK          49 degrees C / 120 degrees F
Host  Host 0                Absent
      Host 1               OK          37 degrees C / 98 degrees F
      MCS 0                Absent
      MCS 1                OK          56 degrees C / 132 degrees F
      SPP 0                OK          40 degrees C / 104 degrees F
      SPR 0                OK          44 degrees C / 111 degrees F
      SPP 1                OK          43 degrees C / 109 degrees F
      SPR 1                OK          47 degrees C / 116 degrees F
      FPC 0                OK          41 degrees C / 105 degrees F
      FPC 1                OK          44 degrees C / 111 degrees F
      FPM CMB              OK          33 degrees C / 91 degrees F
      FPM Display         OK          34 degrees C / 93 degrees F
Fans  Rear Bottom Blower   OK          Spinning at high speed
      Rear Top Blower     OK          Spinning at high speed
      Front Top Blower    OK          Spinning at high speed
      Fan Tray Front Left OK          Spinning at high speed
      Fan Tray Front Right OK         Spinning at high speed
      Fan Tray Rear Left  OK          Spinning at high speed
      Fan Tray Rear Right OK          Spinning at high speed
Misc  CIP                  OK
```

## show chassis environment fpc

**Syntax** `show chassis environment fpc <slot>`

**Description** (M160 router only) Display environmental information about the FPC in the router.

**Options** none—Display environmental information about all FPCs.

*slot*—(Optional) Display environmental information about an individual FPC. *slot* can be value from 0 through 7.

**Required Privilege Level** view

**Output Fields** State—Status of the FPC. It can be Unknown, Empty, Present, Ready, Announce online, Online, Offline, or Diagnostics.

Temperature—Temperature of the air flowing past the FPC.

Power—Information about power supplies on the FPC.

CMB Revision—Revision level of the chassis management bus slave.

```

Sample Output user@m160-host> show chassis environment fpc
FPC 0 status:
  State                Online
  Temperature          42 degrees C / 107 degrees F
  Power:
    1.5 V              1500 mV
    2.5 V              2509 mV
    3.3 V              3308 mV
    5.0 V              4991 mV
    5.0 V bias         4952 mV
    8.0 V bias         8307 mV
  CMB Revision         12
FPC 1 status:
  State                Online
  Temperature          45 degrees C / 113 degrees F
  Power:
    1.5 V              1498 mV
    2.5 V              2501 mV
    3.3 V              3319 mV
    5.0 V              5020 mV
    5.0 V bias         5025 mV
    8.0 V bias         8307 mV
  CMB Revision         12

```

## show chassis environment fpm

**Syntax** show chassis environment fpm

**Description** (M160 router only) Display environmental information about the front panel module (craft interface) in the router.

**Required Privilege Level** view

**Output Fields** State—Status of the front panel module. It can be Online or Offline.

FPM CMB Voltage—Information about the power supplied to FPM Chassis Management Bus (CMB) cord.

FPM Display Voltage—Information about FPM display power supply.

FPM CMB Temperature—Temperature of the air flowing past the FPM CMB.

FPM Display Temperature—Temperature of the air flowing past the FPM display.

CMB Revision—Revision level of the chassis management bus slave.

```

Sample Output user@m160-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 mcs

**Syntax** show chassis environment fpc <slot>

**Description** (M160 router only) Display environmental information about the Miscellaneous Control Subsystem (MCS).

**Options** none—Display environmental information about both MCSs.

*slot*—(Optional) Display environmental information about an individual MCS. *slot* can be 0 or 1.

**Required Privilege Level** view

**Output Fields** State—Status of the MCS. It can be Present, Online, Offline, or Empty. Also indicates Master.

Temperature—Temperature of the air flowing past the MCS.

Power—Information about MCS power supplies.

FPGA Revision—Field Programmable Gate Array revision information.

CMB Revision—Revision level of the chassis management bus slave.

**Sample Output**

```

user@m160-host> show chassis environment mcs
MCS 0 status:
  State                Online Master
  Temperature          0 degrees C / 32 degrees F
  Power:
    3.3 V              3318 mV
    5.0 V              5001 mV
    12.0 V             11833 mV
    5.0 V bias         4991 mV
    8.0 V bias         8341 mV
  CMB Revision         12
  FPGA Revision        12
MCS 1 status:
  State                Present
  Power:
    3.3 V              3308 mV
    5.0 V              5013 mV
    12.0 V             11809 mV
    5.0 V bias         4952 mV
    8.0 V bias         8346 mV
  CMB Revision         12

```

## show chassis environment pcg

<b>Syntax</b>	show chassis environment pcg <slot>
<b>Description</b>	(M160 router only) Display environmental information about the PFE Clock Generator (PCG).
<b>Options</b>	none—Display environmental information about both PCGs.  slot—(Optional) Display environmental information about an individual PCG. slot can be 0 or 1.
<b>Required Privilege Level</b>	view
<b>Output Fields</b>	PCG slot—Slot number. It can be 0 or 1.  State—Status of PCG. It can be Present, Online, Offline, or Empty. If Online, it can be the current PFE clock source or backup.  Temperature—Temperature of the air flowing past the PCG.  Frequency—Frequency setting and measurement for PCG.  Power—Information about PCG power supplies.  CMB Revision—Revision level of the chassis management bus slave.

**Sample Output**

```

user@m160-host> show chassis environment pcg
PCG 0 status:
  State                Online - PFE clock source
  Temperature          42 degrees C / 107 degrees F
  Frequency:
    Setting             125 MHz
    Measurement         125 MHz
  Power:
    3.3 V               3267 mV
    5.0 V bias          4932 mV
    8.0 V bias          8224 mV
  CMB Revision         12
PCG 1 status:
  State                Online
  Temperature          49 degrees C / 120 degrees F
  Frequency:
    Setting             125 MHz
    Measurement         125 MHz
  Power:
    3.3 V               3264 mV
    5.0 V bias          4967 mV
    8.0 V bias          8236 mV
  CMB Revision         12

```

## show chassis environment pem

**Syntax** show chassis environment pem <slot>

**Description** (M160 router only) Display environmental information about the Power Entry Module (PEM).

**Options** none—Display environmental information about both PEMs.

*slot*—(Optional) Display environmental information about an individual PEM. *slot* can be 0 or 1.

**Required Privilege Level** view

**Output Fields** slot—Name of PEM slot.

State—Status of PEM.

Temperature—Temperature of the air flowing past the PEM.

DC Input—Status of DC input.

DC Output—Status of DC output.

Load—Information about the load on supply, in percent of rated current being used.

Voltage—Information about voltage of PEM.

**Sample Output**

```

user@m160-host> show chassis environment pcg
PEM 0 status:
  State                Online
  Temperature          OK
  DC input             OK
  DC output            OK
  Load                 Less than 20 percent
  Voltage:
    48.0 V input       69028 mV
    48.0 V fan supply  48839 mV
    5.0 V bias         5013 mV
    8.0 V bias         8253 mV
PEM 1 status:
  State                Online
  Temperature          OK
  DC input             OK
  DC output            OK
  Load                 Less than 20 percent
  Voltage:
    48.0 V input       69307 mV
    48.0 V fan supply  49170 mV
    5.0 V bias         4991 mV
    8.0 V bias         8263 mV

```

## show chassis environment routing engine

<b>Syntax</b>	show chassis environment routing engine <slot>
<b>Description</b>	(M160 router only) Display environmental information about the Routing Engine.
<b>Options</b>	<p>none—Display environmental information about all Routing Engines.</p> <p>slot—(Optional) Display environmental information about an individual Routing Engine. slot can be 0 or 1.</p>
<b>Required Privilege Level</b>	view
<b>Output Fields</b>	<p>Routing engine slot—(For systems with multiple routing engines) Number of the routing engine slot. It can be 0 or 1.</p> <p>State—Status of routing engine. It can be <b>Present</b> or <b>Empty</b>. If <b>Present</b> it can be <b>Master</b>.</p> <p>Temperature—Temperature of the air flowing past the Routing Engine.</p>
<b>Sample Output</b>	<pre>user@m160-host&gt; show chassis environment re Route engine 0 status:   State:                Present Master   Temperature:          0 degrees C / 32 degrees F Route engine 1 status:   State:                Present</pre>

## show chassis environment sfm

**Syntax** show chassis environment sfm

**Description** (M160 router only) Display environmental information about the Switching and Forwarding Module (SFM).

**Options** none—Display environmental information about all SFMs.

*slot*—(Optional) Display environmental information about an individual SFC. *slot* can be 0 through 3.

**Required Privilege Level** view

**Output Fields** *sfm plane*—Slot number of SFM. It can be 0, 1, 2, or 3.

State—Status of the SFM.

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.

SPP Power—Information about Switch plane Processor card power supplies.

SPR Power—Information about Switch Plane Router power supplies.

CMB Revision—Chassis Management Bus slave revision identification.

```

Sample Output user@m160-host> show chassis environment sfm 0
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                               1504 mV
    2.5 V                               2479 mV
    3.3 V                               3285 mV
    5.0 V                               5028 mV
    5.0 V bias                          4967 mV
  SPR Power:
    1.5 V                               1501 mV
    2.5 V                               2485 mV
    3.3 V                               3291 mV
    5.0 V                               5023 mV
    5.0 V bias                          4967 mV
    8.0 V bias                          8351 mV
  CMB Revision                          12
SFM 1 status:
  State                               Online
  SPP temperature                       44 degrees C / 111 degrees F
  SPR temperature                       47 degrees C / 116 degrees F
  SPP Power:
    1.5 V                               1498 mV
    2.5 V                               2494 mV
    3.3 V                               3293 mV
    5.0 V                               5020 mV
    5.0 V bias                          5001 mV

```

```

SPR Power:
  1.5 V          1500 mV
  2.5 V          2496 mV
  3.3 V          3296 mV
  5.0 V          5013 mV
  5.0 V bias    4998 mV
  8.0 V bias    8358 mV
CMB Revision    12

```

## show chassis feb

**Syntax** show chassis feb

**Description** (M5 and M10 routers only) Display status information about the FEB (Forwarding Engine Board).

**Required Privilege Level** view

**Sample Output**

```

user@host> show chassis feb
FEB status:
  Temperature          37 Centigrade
  CPU utilization      0 percent
  Interrupt utilization 0 percent
  Heap utilization     16 percent
  Buffer utilization    43 percent
  DRAM                 64 Mbytes
  Internet Processor II Version 1, Foundry IBM, Part number 9
  Start time          1999-01-24 16:24:42 UTC
  Uptime              2 hours, 21 minutes, 28 seconds

```

## show chassis firmware

**Syntax** show chassis firmware

**Description** Display the version levels of the firmware running on the SCB, SFM, SSB, FEB, and FPCs.

**Required Privilege Level** view

### Sample Output

```

user@m10-host> show chassis firmware
Part                Type          Version
Forwarding engine board ROM           Juniper ROM Monitor Version 4.1b2
                   O/S           Version 4.1I1 by tlim on 2000-04-24 11:27

user@m20-host> show chassis firmware
Part                Type          Version
System switch board ROM           Juniper ROM Monitor Version 3.4b26
                   O/S           Version 3.4I16 by smackie on 2000-02-29 2
FPC 1                ROM           Juniper ROM Monitor Version 3.0b1
                   O/S           Version 3.4I4 by smackie on 2000-02-25 21
FPC 2                ROM           Juniper ROM Monitor Version 3.0b1
                   O/S           Version 3.4I4 by smackie on 2000-02-25 21

user@m40-host> show chassis firmware
Part                Type          Version
System control board ROM           Juniper ROM Monitor Version 2.0i126Copyri
                   O/S           Version 2.0i1 by root on Thu Jul 23 00:51
FPC 5                ROM           Juniper ROM Monitor Version 2.0i49Copyrig
                   O/S           Version 2.0i1 by root on Thu Jul 23 00:59

user@m160-host> show chassis firmware
Part                Type          Version
SFM 0                ROM           Juniper ROM Monitor Version 4.0b2
                   O/S           Version 4.0I1 by tlim on 2000-02-29 11:50
SFM 1                ROM           Juniper ROM Monitor Version 4.0b2
                   O/S           Version 4.0I1 by tlim on 2000-02-29 11:50
FPC 0                ROM           Juniper ROM Monitor Version 4.0b2
                   O/S           Version 4.0I1 by tlim on 2000-02-29 11:56
FPC 1                ROM           Juniper ROM Monitor Version 4.0b2
                   O/S           Version 4.0I1 by tlim on 2000-02-29 11:56
FPC 2                ROM           Juniper ROM Monitor Version 4.0b3
                   O/S           Version 4.0I1 by tlim on 2000-02-29 11:56

```

## show chassis fpc

<b>Syntax</b>	show chassis fpc <pic-status <fpc-slot>> <detail <fpc-slot>>
<b>Description</b>	Display status information about the installed FPCs and PICs.
<b>Options</b>	<p>none—Display brief information about the state of the FPCs.</p> <p>detail &lt;fpc-slot&gt;—(Optional) Display detailed status information for the all FPCs or for the specified FPC.</p> <p>pic-status &lt;fpc-slot&gt;—Display information for all PICs or for the PICs in the specified slot.</p>
<b>Required Privilege Level</b>	view
<b>Output Fields</b>	<p>Slot—Slot number and state. The state can be one of the following:</p> <ul style="list-style-type: none"> <li>dead—Held in reset because of errors.</li> <li>diag—Slot is being ignored while the FPC is running diagnostics.</li> <li>dormant—Held in reset.</li> <li>empty—No FPC is present.</li> <li>online—FPC is online and running.</li> <li>probed—Probe is complete; awaiting restart of PFE.</li> <li>probe-wait—Waiting to be probed.</li> </ul> <p>Logical slot—Slot number.</p> <p>Temp (C) or Temperature—Temperature of the air passing by the FPC, in degrees Centigrade.</p> <p>Total CPU Utilization (%)—(Standard output only) Total percentage of CPU being used by the FPC's processor.</p> <p>Interrupt CPU Utilization (%)—(Standard output only) Of the total CPU being used by the FPC's processor, the percentage being used for interrupts.</p> <p>Memory DRAM—(Standard output only) Total DRAM available to the FPC's processor, in megabytes.</p> <p>Heap Utilization (%)—(Standard output only) Percentage of heap space (dynamic memory) being used by the FPC's processor. If this number exceeds 80%, it might indicate a software problem (memory leak).</p> <p>Buffer Utilization (%)—(Standard output only) Percentage of buffer space being used by the FPC's processor for buffering internal messages.</p> <p>Total CPU DRAM—(Detail output only) Amount of DRAM available to the FPC's CPU.</p> <p>Total SRAM—(Detail output only) Amount of SRAM used by the FPC's CPU.</p> <p>Total SDRAM—(Detail output only) Total amount of memory used for storing packets and notifications.</p>

Total notification SDRAM—(Detail output only) Amount of memory used by the Packet Forwarding Engine for packet buffer and packet notification space.

I/O Manager ASIC information—(Detail output only) For the I/O Manager, identifies the version number, manufacturer, and part number.

Start time—(Detail output only) Time when the Routing Engine noticed that the FPC was running.

Uptime—(Detail output only) How long the Routing Engine has been connected to the FPC and, therefore, how long the FPC has been up and running.

PIC type—(pic-status output only) Type of PIC at each PIC location

**Sample Output: show chassis fpc**

```
user@m10-host> show chassis fpc
FPC status:
          Temp
Slot State (C)
  0 Online   27
  1 Online   28
```

```
user@m20-host> show chassis fpc
FPC status:
```

Slot	State	Temp (C)	CPU Utilization (%)		Memory		Utilization (%)
			Total	Interrupt	DRAM (MB)	Heap	Buffer
0	Empty	0	0	0	0	0	0
1	Online	38	0	0	8	0	4
2	Online	35	0	0	8	0	3
3	Empty	0	0	0	0	0	0

**Sample Output: show chassis fpc detail**

```
user@host> show chassis fpc detail 1
Slot 1 information:
  State                               Online
  Temperature                          48 degrees C
  Total CPU DRAM                       32 Mbytes
  Total SRAM                           4 Mbytes
  Total SDRAM                          256 Mbytes
  I/O Manager ASICs information        Version 2.0, Foundry IBM, Part number 0
  I/O Manager ASICs information        Version 2.0, Foundry IBM, Part number 0
  Start time                           2000-02-08 02:18:49 UTC
  Uptime                               14 hours, 41 minutes, 41 seconds
```

**Sample Output: show chassis fpc pic-status**

```
user@host> show chassis fpc pic-status
Slot 0 Online
  PIC 1  1x OC-12 ATM, MM
  PIC 2  1x OC-12 ATM, MM
  PIC 3  1x OC-12 ATM, MM
Slot 1 Online
  PIC 0  1x OC-48 SONET, SMIR
Slot 2 Online
  PIC 0  1x OC-192 SONET, SMSR
```

## show chassis hardware

**Syntax** show chassis hardware <detail>

**Description** Display a list of all FPCs and PICs installed in the router chassis, including the hardware version level and serial number.

**Options** none—Display information about hardware.

detail—Display detailed information about hardware, including memory, the hardware version level, serial number, and additional information about memory.

**Required Privilege Level** view

**Output Fields** Item—Chassis component. Information is displayed about the backplane, the power supplies, the maxicab (the connection between the Routing Engine and the backplane), the SCB, SSB, SFM, or FEB and each of the FPCs and PICs.

Version—Revision level of the chassis component.

Part number—Part number of the chassis component.

Serial number—Serial number of the chassis component. The serial number of the backplane is also the serial number of the router chassis. Use this serial number when you need to contact technical support about the router chassis.

Description—Brief description of hardware item.

For the power supplies, the type of supply.

For the PICs, the type of PIC.

For FPC, the type of FPC. It can be FPC Type 1, FPC Type 2, or FPC Type OC192.

**Sample Output: show chassis hardware (standard)** The following example shows output from the `show chassis hardware` command for an M10 router:

```
user@m10-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 Present
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
```

The following example shows output from the `show chassis hardware` command for an M20 router:

```
user@m20-host> show chassis hardware
Hardware inventory:
Item              Version  Part number  Serial number  Description
Chassis           REV 07   710-001517  S/N AA7940    M20
Backplane         Rev 01   740-001465  S/N 000001    AC
Power supply B    REV 02   710-001519  S/N AA9704
Host 0            98000004f8f27501 Present
SSB slot 0        REV 01   710-001951  S/N AD5905    Internet Processor II
  SSRAM bank 0    REV 01   710-001385  S00480        2 Mbytes
  SSRAM bank 1    REV 01   710-001385  S00490        2 Mbytes
  SSRAM bank 2    REV 01   710-001385  S001:?        2 Mbytes
  SSRAM bank 3    REV 01   710-001385  S00483        2 Mbytes
SSB slot 1        N/A      N/A          N/A           Backup
FPC 1             REV 01   710-001292  S/N AB7528
  SSRAM           REV 01   710-000077  S/N 304209    1 Mbyte
  SDRAM bank 0    REV 01   710-000099  S/N 000603    64 Mbytes
  SDRAM bank 1    REV 01   710-000099  S/N 000414    64 Mbytes
  PIC 0           REV 03   750-000612  S/N AB8433    2x OC-3 ATM, MM
  PIC 1           REV 01   750-000616  S/N AA1168    1x OC-12 ATM, MM
  PIC 2           REV 01   750-000613  S/N AA1008    1x OC-12 SONET, SMIR
  PIC 3           REV 01   750-002501  S/N AD5810    4x E3
FPC 2             REV 01   710-001292  S/N AC0119
  SSRAM           REV 01   710-000077  S/N 503241    1 Mbyte
  SDRAM bank 0    REV 01   710-000099  S/N 306835    64 Mbytes
  SDRAM bank 1    REV 01   710-000099  S/N 306832    64 Mbytes
```

The following example shows output from the `show chassis hardware` command for an M40 router:

```
user@m40-host> show chassis hardware
Hardware inventory:
Item              Version  Part number  Serial number  Description
Backplane         REV 02   710-000073  S/N AA0053
Power supply A    Rev 2    740-000235  S/N 000042    DC
Maxicab          REV X1   710-000229  S/N AA0139
Minicab          REV X1   710-000482  S/N AA0201
Display          REV 06   710-000150  S/N AA0905
SCB              REV X1   710-000075  S/N AA0158    Internet Processor I
  SSRAM bank 0    REV 02   710-000077  S/N AA2267    1 Mbyte
  SSRAM bank 1    REV 02   710-000077  S/N AA2270    1 Mbyte
  SSRAM bank 2    REV 02   710-000077  S/N AA2269    1 Mbyte
  SSRAM bank 3    REV 02   710-000077  S/N AA2268    1 Mbyte
FPC 0            REV 01   710-000175  S/N AA0048
  SSRAM           REV 01   710-000077  S/N AA2333    1 Mbyte
  SDRAM bank 0    REV 01   710-000099  S/N AA2332    64 Mbytes
  SDRAM bank 1    REV X1   710-000099  S/N AA2337    64 Mbytes
  PIC 0           REV 04   750-000613  S/N aa0343    1x OC-12 SONET, SMIR
  PIC 1           REV 04   750-000613  S/N AA0379    1x OC-12 SONET, SMIR
  PIC 2           REV 04   750-000613  S/N AA0377    1x OC-12 SONET, SMIR
  PIC 3           REV 04   750-000613  S/N AA0378    1x Tunnel
FPC 2            REV 01   710-000175  S/N AA0042
  SSRAM           REV 02   710-000077  S/N AA2288    1 Mbyte
  SDRAM bank 0    REV 01   710-000099  S/N AA2331    64 Mbytes
  SDRAM bank 1    REV 01   710-000099  S/N AA2330    64 Mbytes
  PIC 0           REV X1   750-000603  S/N AA0143    4x OC-3 SONET, SMIR
  PIC 1           REV X1   750-000615  S/N AA0149    4x OC-3 SONET, MM
  PIC 2           REV X1   750-000611  S/N AA0148    4x OC-3 SONET, MM
  PIC 3           REV 04   750-000613  S/N AA0330    1x OC-12 SONET, SMIR
```

```

FPC 4          REV 01  710-000175  S/N AA0050
  SSRAM        REV 01  710-000077  S/N AA2327      1 Mbyte
  SDRAM bank 0 REV 01  710-000099  S/N AA2329      64 Mbytes
  SDRAM bank 1 REV 01  710-000099  S/N AA2328      64 Mbytes
  PIC 0        REV 04  750-000613  S/N AA0320      1x OC-12 SONET, SMIR
  PIC 2        REV 05  750-000616  S/N AA1341      1x OC-12 ATM, MM
  PIC 3        REV 08  750-001072  S/N AB2462      1x G/E, 1000 BASE-SX
FPC 5          REV 10  710-000175  S/N AA7663
  SSRAM        REV 01  710-000077  S/N 501590      1 Mbyte
  SDRAM bank 0 REV 01  710-000099  S/N 300949      64 Mbytes
  SDRAM bank 1 REV 01  710-000099  S/N 300868      64 Mbytes
  PIC 1        REV 01  750-001323  S/N AB1670      1x Tunnel

```

The following example shows output from the `show chassis hardware` command for an M160 router:

```

user@m160-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 Present
MCS 1         REV 03  710-001226  S/N AA9777
SFM 0 SPP     REV 04  710-001228  S/N AA2975
SFM 0 SPR     REV 02  710-001224  S/N AA9838      Internet Processor I
SFM 1 SPP     REV 04  710-001228  S/N AA2860
SFM 1 SPR     REV 01  710-001224  S/N AB0139      Internet Processor I
FPC 0         REV 03  710-001255  S/N AA9806      FPC Type 1
  CPU         REV 02  710-001217  S/N AA9590
  PIC 1       REV 05  750-000616  S/N AA1527      1x OC-12 ATM, MM
  PIC 2       REV 05  750-000616  S/N AA1535      1x OC-12 ATM, MM
  PIC 3       REV 01  750-000616  S/N AA1519      1x OC-12 ATM, MM
FPC 1         REV 02  710-001611  S/N AA9523      FPC Type 2
  CPU         REV 02  710-001217  S/N AA9571
  PIC 0       REV 03  750-001900  S/N AA9626      1x STM-16 SDH, SMIR
  PIC 1       REV 01  710-002381  S/N AD3633      2x G/E, 1000 BASE-SX
FPC 2         REV 02  710-001611  S/N AA9523      FPC Type 2
  CPU         REV 03  710-001217  S/N AB3329
  PIC 0       REV 01  710-002381  S/N AD3633      1x OC-192 SM SR-2

```

**Sample Output: show chassis hardware detail**

```

user@host> show chassis hardware detail
Hardware inventory:
Item          Version  Part number  Serial number  Description
Chassis                               101          M160
Midplane      REV 02  710-001245  S/N AB4107
FPM CMB       REV 01  710-001642  S/N AA2911
FPM Display   REV 01  710-001647  S/N AA2999
CIP           REV 02  710-001593  S/N AA9563
PEM 0         Rev 01  740-001243  S/N KJ35769    DC
PEM 1         Rev 01  740-001243  S/N KJ35765    DC
PCG 0         REV 01  710-001568  S/N AA9794
PCG 1         REV 01  710-001568  S/N AA9804
Host 1                               da000004f8d57001 Present
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

```



## show chassis mac-addresses

<b>Syntax</b>	show chassis mac-addresses
<b>Description</b>	Display the MAC addresses for the router chassis.
<b>Required Privilege Level</b>	view
<b>Output Fields</b>	Public base address—Base address of the MAC addresses allocated to this router. Public count—Number of allocated public addresses. Private base address—Base address of the private MAC addresses allocated to this router. Private count—Number of allocated private addresses.
<b>Sample Output</b>	<pre> user@host&gt; 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 </pre>

## show chassis routing-engine

<b>Syntax</b>	show chassis routing-engine <slot >
<b>Description</b>	Display information about the Routing Engine.
<b>Options</b>	none—Display information about all Routing Engines.  <i>slot</i> —(Optional for routers with multiple routing engines) Display information for an individual Routing Engine. <i>slot</i> can be 0 or 1.
<b>Required Privilege Level</b>	view
<b>Output Fields</b>	Slot—(For routers that support multiple routing engines) Slot number. Current state—(For routers that support multiple routing engines) Current state of Routing Engine. It can be Master, Backup, or Disabled. Election priority—(For routers that support multiple routing engines) Election priority for the Routing Engine. It can be Master or Backup. Temperature—Temperature of the air flowing past the Routing Engine. DRAM—Total DRAM available to the Routing Engine's processor.

CPU utilization—Information about the Routing Engine's CPU utilization:

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.

Serial ID—(For routers that support multiple routing engines) Identification number of routing engine in this slot.

Start time—Time at which the Routing Engine started running.

Uptime—How long the Routing Engine has been running.

Load averages—Routing Engine load averages for the last 1, 5, and 15 minutes.

**Sample Output** The following example shows output from the `show chassis routing-engine` command for an M5 router:

```
user@m5-host> show chassis routing-engine
Routing Engine status:
  Temperature          29 Centigrade
  DRAM                 253 Mbytes
CPU utilization:
  User                 0 percent
  Background          0 percent
  Kernel              0 percent
  Interrupt            0 percent
  Idle                100 percent
Start time            2000-08-28 14:01:06 PDT
Uptime                4 hours, 40 minutes, 5 seconds
Load averages:       1 minute 5 minute 15 minute
                    0.00      0.00      0.00
```

The following example shows output from the `show chassis routing-engine` command for an M10 router:

```
user@m10-host> show chassis routing-engine
Routing Engine status:
  Temperature          29 degrees C / 84 degrees F
  DRAM                 768 Mbytes
CPU utilization:
  User                 0 percent
  Background          0 percent
  Kernel              0 percent
  Interrupt            0 percent
  Idle                100 percent
Start time            2000-08-23 19:53:31 PDT
Uptime                4 days, 21 hours, 53 minutes, 38 seconds
Load averages:       1 minute 5 minute 15 minute
                    0.12      0.03      0.01
```

The following example shows output from the `show chassis routing-engine` command for an M20 router:

```

user@m20-host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state           Master
  Election priority       Master (default)
  Temperature             37 Centigrade
  DRAM                   765 Mbytes
  CPU utilization:
    User                  0 percent
    Background            0 percent
    Kernel                0 percent
    Interrupt             0 percent
    Idle                  100 percent
  Serial ID              98000004f8f27501
  Start time              2000-03-01 06:27:42 PST
  Uptime                  5 hours, 3 minutes, 35 seconds
  Load averages:         1 minute   5 minute   15 minute
                        0.00       0.00       0.00
Slot 1:                  Empty

```

The following example shows output from the `show chassis routing-engine` command for an M40 router:

```

user@m40-host> show chassis routing-engine
Routing Engine status:
  Temperature             48 Centigrade
  DRAM                   253 Mbytes
  CPU utilization:
    User                  51 percent
    Background            0 percent
    Kernel                47 percent
    Interrupt             1 percent
    Idle                  0 percent
  Start time              2000-03-01 06:57:08 PST
  Uptime                  4 hours, 45 minutes, 59 seconds
  Load averages:         1 minute   5 minute   15 minute
                        1.62       1.62       1.54

```

The following example shows output from the show chassis routing-engine command for an M160 router:

```
user@m160-host> show chassis routing-engine
Routing Engine status
Slot 0
  Current state: Master
  Election priority: Master
  Temperature          41 C / 105 degrees F
  DRAM                 765 Mbytes
  CPU utilization
    User                0 percent
    Background          0 percent
    Kernel              0 percent
    Interrupt           0 percent
    Idle                100 percent
  Serial ID            39000004f8bdec01
  Start time           2000-01-04 22:02:58 UTC
  Uptime               14 hours, 45 minutes, 40 seconds
  Load averages
    1 minute           0.05
    5 minute           0.04
    15 minute          0.01
Slot 1
  Current state Backup
  Election priority Backup (default)
  Temperature          41 C / 105 degrees F
  DRAM                 765 Mbytes
  CPU utilization
    User                0 percent
    Background          0 percent
    Kernel              0 percent
    Interrupt           2 percent
    Idle                98 percent
  Serial ID            f2000004f903a801
  Start time           2000-01-04 01:28:02 UTC
  Uptime               20 hours, 38 minutes, 1 seconds
```

## show chassis scb

<b>Syntax</b>	show chassis scb
<b>Description</b>	(M40 router only) Display status information about the SCB.
<b>Required Privilege Level</b>	view
<b>Output Fields</b>	<p>Temperature—Temperature of the air passing by the SCB, in degrees Centigrade.</p> <p>CPU utilization—Total percentage of CPU being used by the SCB's processor.</p> <p>Interrupt utilization—Of the total CPU being used by the SCB's processor, the percentage being used for interrupts.</p> <p>Heap utilization—Percentage of heap space being used by the SCB's processor.</p> <p>Buffer utilization—Percentage of buffer space being used by the SCB's processor.</p> <p>DRAM—Total DRAM available to the SCB's processor.</p> <p>Start time—Time when the SCB started running.</p> <p>Uptime—How long the SCB has been running.</p> <p>Internet Processor memory—Information about the memory of the Internet Processor ASIC on the SCB:</p> <p>    IP routes—Number of IP routes known to the Internet Processor.</p> <p>    MPLS routes—Number of MPLS routes known to the Internet Processor.</p> <p>    SRAM banks enabled—Which SRAM banks are enabled.</p> <p>    SRAM size—Size of SCB SRAM in bytes.</p> <p>    SRAM used—Amount of SRAM used, in bytes.</p> <p>    SRAM utilization—Percentage of SRAM used.</p>

**Sample Output**

```

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>

**Description** (M160 router only) Display status information about the System Forwarding Modules (SFMs).

**Options** detail—(Optional) Display detailed information.

**Required Privilege Level** view

**Sample Output** Sample Output: show chassis sfm (Standard) on page 339  
Sample Output: show chassis sfm detail on page 339

**Output Fields** Slot—Slot number. It can be 0, 1, 2 or 3.

Temp—(Standard output only) Temperature of air passing by the SFM, in degrees Centigrade.

CPU Utilization (%)—(Standard output only) Information about CPU usage.

Total—Total percentage CPU being used by the SFM's processor.

Interrupt—Of the total CPU being used by the SFM's processor, the percentage being used for interrupts.

Memory Utilization (%)—(Standard output only) Information about memory usage.

DRAM—Total DRAM available to the SFM's processor, in megabytes.

Heap—Percentage of heap space (dynamic memory) being used by the SFM's processor.  
If this number exceeds 80%, it might indicate a software problem (memory leak).

Buffer—Percentage of buffer space being used by the SFM's processor for buffering internal messages.

State—(Detail output only) Status of the Switching and Forwarding Modules. It can be Online, Offline, or Empty.

SPP Temperature—(Detail output only) Temperature of air passing by the Switch Plane Processor card, in degrees Centigrade.

SPR Temperature—(Detail output only) Temperature of air passing by the Switch Plane Router card, in degrees Centigrade.

Total CPU DRAM—(Detail output only) Total amount of CPU DRAM being used by the SFM's processor.

Total SRAM—(Detail output only) Total amount of SRAM being used by the SFM's processor.

Start time—(Detail output only) Time this SFM became active.

Uptime—(Detail output only) How long the SFM has been up and running.

**Sample Output: show chassis sfm (Standard)**

```
user@m160-host> show chassis sfm
SFM status:

```

Slot	State	Temp (C)	CPU Utilization (%) Total	Interrupt	Memory DRAM (MB)	Utilization (%) Heap	Buffer
0	Online	39	0	0	64	0	6
1	Online	43	0	0	64	0	6
2	Empty	0	0	0	0	0	0
3	Empty	0	0	0	0	0	0

**Sample Output: show chassis sfm detail**

```
user@host> show chassis sfm detail
Slot 0 information:
  State: Online
  SPP Temperature: 38 Centigrade
  SPR Temperature: 48 Centigrade
  Total CPU DRAM: 64 Mbytes
  Total SRAM: 4 Mbytes
  Start time: 2000-01-13 17:58:11 UTC
  Uptime: 6 hours, 26 minutes, 10 seconds
Slot 1 information:
  State: Online
  SPP Temperature: 42 Centigrade
  SPR Temperature: 50 Centigrade
  Total CPU DRAM: 64 Mbytes
  Total SRAM: 4 Mbytes
  Start time: 2000-01-13 06:08:02 UTC
  Uptime: 18 hours, 16 minutes, 19 seconds
```

• show chassis ssb

• **Syntax** show chassis ssb

• **Description** (M20 router only) Display status information about the SSB.

• **Options** none—Display information about all SSB slots.

• *slot*—(Optional) Display information about specific SSB slot.

• **Required Privilege Level** view

• **Output Fields** Failover—Number of times the mastership has changed.

• Slot—Name of slot. It can be 0 or 1.

• State—Current state of SSB in this slot. Can be **Master**, **Backup**, or **Empty**.

• Temperature—Temperature of the air passing by the SSB, in degrees Centigrade.

• CPU utilization—Total percentage of CPU being used by the SSB's processor.

• Interrupt utilization—Of the total CPU being used by the SSB's processor, the percentage being used for interrupts.

• Heap utilization—Percentage of heap space being used by the SSB's processor.

• Buffer utilization—Percentage of buffer space being used by the SSB's processor.

• DRAM—Total DRAM available to the SSB's processor.

• Start time—Time when the SSB started running.

• Uptime—How long the SSB has been running.

• **Sample Output** user@m20-host> **show chassis ssb**

```
SSB status:
  Failover:                0 time
  Slot 0:
    State:                  Master
    Temperature:           33 Centigrade
    CPU utilization:        0 percent
    Interrupt utilization:  0 percent
    Heap utilization:       0 percent
    Buffer utilization:      6 percent
    DRAM:                   64 Mbytes
    Start time:             1999-01-15 22:05:36 UTC
    Uptime:                 21 hours, 21 minutes, 22 seconds
  Slot 1:
    State:                  Backup
```