

Chapter 44

Monitoring Redundant SFMs

You monitor redundant Switching and Forwarding Modules (SFMs) to ensure that traffic transiting the router is handled properly. SFMs contain the Internet Processor II application-specific integration circuits (ASICs), which make forwarding decisions, and the Distributed Buffer Manager ASICs, which distribute data cells throughout memory and forward notification of outgoing packets. (See Table 123.)

Table 123: Checklist for Monitoring Redundant SFMs

Monitor Redundant SFM Tasks	Command or Action
Understanding Redundant SFMs on page 579	
Understanding M40e Router Redundant SFM Configuration on page 580	
Understanding M40e Router Redundant SFM Operation on page 580	
Understanding M160 Router Redundant SFM Operation on page 580	
Displaying Redundant SFM Hardware Information on page 581	show chassis hardware
Monitoring Redundant SFM Status on page 581	
1. Display the SFM Summary Status on page 582	show chassis sfm <i>sfm-slot</i> show chassis sfm detail <i>sfm-slot</i>
2. Display the SFM LED Status at the Command Line on page 584	show chassis craft-interface
3. Check the SFM LED Status on the Faceplate on page 584	Check the SFM faceplate at the back of the M40e and M160 router chassis.
4. Display the SFM Environmental Status on page 585	show chassis environment show chassis environment sfm <i>slot</i>
Displaying Redundant SFM Mastership on page 587	
1. Display SFM Mastership at the Command Line on page 587	show chassis sfm
2. Display SFM Mastership Information from the Craft Interface on page 588	show chassis craft-interface
Displaying Redundant SFM Alarms on page 588	
1. Display the Current Redundant SFM Alarms on page 588	show chassis alarms
2. Display SFM Error Messages in the System Log File on page 589	show log messages
3. Display SFM Error Messages in the Chassis Daemon Log File on page 589	show log chassisd match sfm

Monitor Redundant SFM Tasks	Command or Action
Verifying SFM Failure on page 590	
1. Check the SFM Connection on page 590	Check the thumbscrews on the SFM ejector locking tabs.
2. Restart the SFM on page 590	request chassis sfm slot <i>slot-number</i> restart
3. Perform an SFM Swap Test on page 591	1. Take the SFM offline. 2. Replace the SFM with one that you know works. 3. Bring the SFM online. 4. Check the SFM status by using the show chassis sfm CLI command.
Controlling Redundant SFMs on page 591	
1. Take an SFM Offline on page 592	request chassis sfm slot <i>slot-number</i> offline
2. Bring an SFM Online on page 592	request chassis sfm slot <i>slot-number</i> online
3. Switch SFM Mastership on page 593	(M40e router only) request chassis sfm master switch <no-confirm>
Replacing an SFM on page 593	
	1. Take the SFM offline. 2. Remove the failed SFM. 3. Install a new SFM. 4. Bring the SFM online. 5. Verify that SFM is online by using the show chassis sfm CLI command.

Understanding Redundant SFMs

Purpose Inspect redundant SFMs to ensure that all traffic leaving the Flexible PIC Concentrators (FPCs) is handled properly.

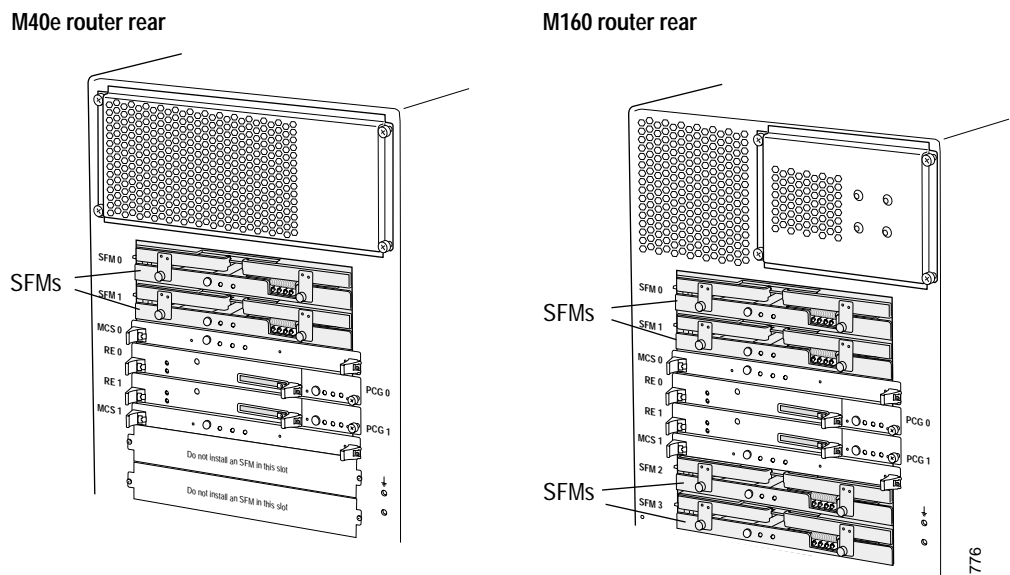
What Are Redundant SFMs SFMs are control boards that handle traffic transiting the router. The SFMs provide route lookup, filtering, and switching.

Up to four interconnected SFMs can be installed in the M160 router, providing a total of 160 million packets per second (Mpps) of forwarding. Up to two SFMs can be installed in the M40e router. Each SFM can process 40 Mpps.

The SFM is a two-board system containing the Switch Plane Processor (SPP) card and the Switch Plane Router (SPR) card. When the serial stream of bits leaves the FPC, it is directed to one of the SFMs. The Distributed Buffer Manager ASIC on the SFM distributes the data cells throughout memory banks that are shared over all FPCs. The Internet Processor II ASIC on the SFM performs route lookups and makes forwarding decisions. The Internet Processor II ASIC notifies a second Distributed Buffer Manager ASIC SFM, which forwards the notifications to the outbound interface. Each SFM effectively handles from one-half to one-quarter of the traffic on each FPC.

The SFMs are hot-removable and hot-insertable. Inserting or removing an SFM causes a brief interruption in forwarding performance (about 500 ms) as the Packet Forwarding Engine reconfigures the distribution of packets across the remaining SFMs.

Figure 229: M40e and M160 Router SFM Location



Understanding M40e Router Redundant SFM Configuration

You can configure which SFM is the master and which is the backup. By default, the SFM in slot 0 is the master and the SFM in slot 1 is the backup. You can modify the default configuration by including the `sfm` statement at the [edit chassis redundancy] hierarchy level.



NOTE: We recommend that both Routing Engines have the same configuration.

To display the current SFM redundancy configuration, follow these steps:

1. Enter the CLI configuration mode using the following command:

```
user@host# configure
```

2. Go to the [edit chassis redundancy] hierarchy level.

3. Show the SFM configuration using the following command:

```
user@host# show
```

Understanding M40e Router Redundant SFM Operation

One or two SFMs can be installed into the midplane from the rear of the M40e router chassis, as shown in Figure 229 on page 579. Only one SFM is active at a time, with the optional second SFM in standby mode. Removing the standby SFM has no effect on router function. If the active SFM fails or is removed from the chassis, what happens depends on the number of SFMs installed:

If there is only one SFM, forwarding halts until the SFM is replaced and online.

If there are two SFMs, forwarding halts until the standby SFM boots and becomes active.

It takes approximately 1 minute for the new SFM to become active. Synchronizing router configuration information can take additional time, depending on the complexity of the configuration.

Understanding M160 Router Redundant SFM Operation

Up to four SFMs can be installed into the midplane from the rear of the M160 router chassis, as shown in Figure 229 on page 579. All SFMs are active at the same time. A failure or taking an SFM offline has no effect on router function unless it is the only SFM installed. If only one SFM is installed, forwarding halts until the SFM is replaced and is back online. If two or more SFMs are installed, forwarding continues uninterrupted.

Displaying Redundant SFM Hardware Information

Action To display redundant SFM hardware information, use the following JUNOS software command-line interface (CLI) command:

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

Sample Output For M40e routers:

```
user@host> show chassis hardware
Hardware inventory:
Item      Version  Part number  Serial number  Description
Chassis                               M40e
[...Output truncated...]
SFM 0 SPP  REV 07   710-001228  AF2247
SFM 0 SPR  REV 05   710-002189  AF1847      Internet Processor II
SFM 1 SPP  REV 07   710-001228  BE0175
SFM 1 SPR  REV 05   710-002189  BE0201      Internet Processor II
```

For M160 routers:

```
user@host> show chassis hardware
Item      Version  Part number  Serial number  Description
Chassis                               M160
[...Output truncated...]
SFM 0 SPP  REV 04   710-001228  AA2860
SFM 0 SPR  REV 01   710-001224  AB0139      Internet Processor I
SFM 1 SPP  REV 04   710-001228  AA2859
SFM 1 SPR  REV 02   710-001224  AA9861      Internet Processor I
SFM 2 SPP  REV 06   710-001228  AB3082
SFM 2 SPR
SFM 3 SPP  REV 04   710-001228  AA1998
SFM 3 SPR  REV 01   710-001224  AB0137      Internet Processor I
[...Output truncated...]
```

What it Means The command output displays the SFM slot number and SFM serial component (SPP and SPR) card names, and the SFM revision level, part number, serial number, and description.

Monitoring Redundant SFM Status

Steps To Take To monitor the SFM status, follow these steps:

1. Display the SFM Summary Status on page 582
2. Display the SFM LED Status at the Command Line on page 584
3. Check the SFM LED Status on the Faceplate on page 584
4. Display the SFM Environmental Status on page 585

Step 1: Display the SFM Summary Status

Action To display the SFM summary status, use the following CLI command:

```
user@host> show chassis sfm
```

Sample Output For M40e routers:

```
user@host> show chassis sfm
Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
0 Online 37 3 0 64 16 46
1 Online - Standby 41 3 0 64 16 46
```

For M160 routers:

```
user@host> show chassis sfm
Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
0 Online 41 2 0 64 16 46
1 Offline --- Hard FPC error ---
2 Online 43 2 0 64 16 46
3 Online 44 2 0 128 7 46
```

What it Means The command output displays the SFM slot number and the operating status of each SFM as Online, Offline, Present, or Empty.

The command output displays the temperature of air passing by the SFM, in degrees Centigrade. It displays the SFM CPU usage, including the total percentage used by the SFM processor and the percentage used for interrupts.

The command output also displays the percentage of memory usage, including the total DRAM available to the SFM processor, in megabytes (MB), and the percentage of heap space (dynamic memory) being used by the SFM processor. Heap utilization greater than 80 percent can indicate a software problem (memory leak). The output shows the percentage of buffer space being used by the SFM processor for buffering internal messages.

Alternative Action If the SFM summary command output indicates that there is a problem, you can display more detailed SFM status information with the following CLI command:

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

For M40e routers:

```
user@host> show chassis sfm detail
Slot 0 information:
State Online
SPP Temperature 37 degrees C / 98 degrees F
SPR Temperature 41 degrees C / 105 degrees F
Total CPU DRAM 64 MB
Total SSRAM 8 MB
Internet Processor II Version 1, Foundry IBM, Part number 9
Start time: 2002-09-03 19:55:51 PDT
Uptime: 3 hours, 47 minutes, 46 seconds
```

Slot 1 information:

```

State           Online - Standby
SPP Temperature 41 degrees C / 105 degrees F
SPR Temperature 40 degrees C / 104 degrees F
Total CPU DRAM  64 MB
Total SSRAM     8 MB
Internet Processor II Version 1, Foundry IBM, Part number 9

```

For M160 routers:

Slot 0 information:

```

State           Online
SPP Temperature 39 degrees C / 102 degrees F
SPR Temperature 41 degrees C / 105 degrees F
Total CPU DRAM  64 MB
Total SSRAM     4 MB
Internet Processor I Version 1, Foundry IBM, Part number 3
Start time:     2002-06-27 18:49:44 PDT
Uptime:         68 days, 4 hours, 55 minutes, 5 seconds

```

Slot 1 information:

```

State           Online

```

```

[...Output truncated...]

```

Slot 2 information:

```

State           Offline

```

```

[...Output truncated...]

```

Slot 3 information:

```

State           Online

```

```

[...Output truncated...]

```

```

Packet scheduling mode : Disabled

```

In addition to the command output displayed for the `show chassis sfm` command, the `show chassis sfm detail` command displays the temperature of air passing by the SPP and SPR cards (the two SFM serial components), in degrees Centigrade. It displays the total CPU DRAM and SRAM being used by the SFM processor. The command output displays the time that the SFM became active and how long the SFM has been up and running. A small uptime means that the SFM came online a short time ago and could indicate a possible SFM error condition.

To display the status of a particular SFM, use the following CLI command:

```

user@host> show chassis sfm sfm-slot

```

To display detailed status information about a particular SFM, use the following CLI command:

```

user@host> show chassis sfm detail sfm-slot

```

Step 2: Display the SFM LED Status at the Command Line

Action To display the SFM LED status, use the following CLI command:

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

Sample Output For M40e routers:

```
user@host> show chassis craft-interface
[...Output truncated...]
SFM LEDs:
SFM 0 1
-----
Amber . .
Green * *
Blue * .
```

For M160 routers:

```
user@host> show chassis craft-interface
[...Output truncated...]
SFM LEDs:
SFM 0 1 2 3
-----
Amber . . * .
Green * * . *
Blue * * . *
```

What it Means In the sample output for an M160 router, the SFMs in slots 0 and 1 are online and functioning normally. The status colors represent the possible SFM operating states: Amber (Fail), Green (OK), and Blue (Master). The (*) indicates the current operating state. There are no SFMs in slots 2 and 3.

Step 3: Check the SFM LED Status on the Faceplate

Action To check the SFM LED status, remove the component cover and look on the SFM faceplate at the back of the M40e or M160 router. Table 124 describes the SFM LED states.

Table 124: SFM LEDs

Color	Label	State	Description
Green	OK	On steadily	SFM is functioning normally.
		Blinking	SFM is starting up.
Amber	FAIL	On steadily	SFM has failed.

Step 4: Display the SFM Environmental Status

Action To display the SFM environmental information, use the following CLI command:

```
user@host> show chassis environment
```

Sample Output For M40e routers:

```
user@host> show chassis environment
Class Item      Status  Measurement
Power PEM 0      OK
  PEM 1      Check
Temp PCG 0      OK      37 degrees C / 98 degrees F
  PCG 1      OK      37 degrees C / 98 degrees F
  Routing Engine 0 OK      29 degrees C / 84 degrees F
  MCS 0      OK      40 degrees C / 104 degrees F
  SFM 0 SPP    OK      37 degrees C / 98 degrees F
  SFM 0 SPR    OK      41 degrees C / 105 degrees F
  SFM 1 SPP    OK      41 degrees C / 105 degrees F
  SFM 1 SPR    OK      40 degrees C / 104 degrees F
[...Output truncated...]
```

For M160 routers:

```
user@host> show chassis environment
Class Item      Status  Measurement
Power PEM 0      OK
  PEM 1      OK
Temp [...Output truncated...]
  SPP 0      OK      37 degrees C / 98 degrees F
  SPR 0      OK      46 degrees C / 114 degrees F
  SPP 1      OK      38 degrees C / 100 degrees F
  SPR 1      OK      48 degrees C / 118 degrees F
  SPP 2      OK      39 degrees C / 102 degrees F
  SPR 2      OK      54 degrees C / 129 degrees F
  SFM 3      Offline
[...Output truncated...]
```

What it Means The command output displays the status and temperature for the SFM and its two serialized components: the SPP and SPR cards.

Alternative Actions If there is a problem with the SFM status, you can display more detailed environmental information with the following CLI command:

```
user@host> show chassis environment sfm
```

For M40e routers:

```
SFM 0 status:
State      Online
SPP temperature  37 degrees C / 98 degrees F
SPR temperature  41 degrees C / 105 degrees F
SPP Power:
1.5 V      1501 mV
2.5 V      2495 mV
3.3 V      3293 mV
5.0 V      5042 mV
5.0 V bias  4998 mV
```

```

SPR Power:
  1.5 V      1504 mV
  2.5 V      2499 mV
  3.3 V      3297 mV
  5.0 V      5050 mV
  5.0 V bias  5008 mV
  8.0 V bias  8288 mV
CMB Revision      12
SFM 1 status:
State             Online - Standby
SPP temperature    41 degrees C / 105 degrees F
SPR temperature    40 degrees C / 104 degrees F
SPP Power:
  1.5 V      1498 mV
  2.5 V      2468 mV
  3.3 V      3296 mV
  5.0 V      5042 mV
  5.0 V bias  4993 mV
SPR Power:
  1.5 V      1496 mV
  2.5 V      2471 mV
  3.3 V      3299 mV
  5.0 V      5037 mV
  5.0 V bias  4996 mV
  8.0 V bias  8266 mV
CMB Revision      12

```

For M160 routers:

```

SFM 0 status:
State             Online
SPP temperature    36 degrees C / 96 degrees F
SPR temperature    45 degrees C / 113 degrees F
SPP Power:
  1.5 V      1501 mV
  2.5 V      2485 mV
  3.3 V      3291 mV
  5.0 V      5020 mV
  5.0 V bias  4974 mV
SPR Power:
  1.5 V      1501 mV
  2.5 V      2492 mV
  3.3 V      3301 mV
  5.0 V      5028 mV
  5.0 V bias  4986 mV
  8.0 V bias  8305 mV
CMB Revision      12
SFM 1 status:
[...Output truncated...]
SFM 2 status:
[...Output truncated...]
SFM 3 status:
State             Offline
- Hard FPC error
[...Output truncated...]

```

The command output displays the SFM slot, status, and the temperature of the air flowing past the SPP and SPR cards. It also displays information about the SFM power supplies. The chassis management bus (CMB) slave revision level is also displayed.

You can display the environmental status of a particular SFM with the following CLI command:

```
user@host> show chassis environment sfm slot
```

Displaying Redundant SFM Mastership

Steps To Take (For M40e routers only) To display which SFM is master, follow these steps:

1. Display SFM Mastership at the Command Line on page 587
2. Display SFM Mastership Information from the Craft Interface on page 588

Step 1: Display SFM Mastership at the Command Line

Action To display the SFM summary status at the command line, use the following CLI command:

```
user@host> show chassis sfm
```

Sample Output For M40e routers:

```
user@host> show chassis sfm
Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
0 Online 37 3 0 64 16 46
1 Online - Standby 41 3 0 64 16 46
```

For M160 routers:

```
user@host> show chassis sfm
Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
0 Online 41 2 0 64 16 46
1 Offline --- Hard FPC error ---
2 Online 43 2 0 64 16 46
3 Online 44 2 0 128 7 46
```

What It Means The command output displays the SFM slot number and the operating status of each SFM as Online, Offline, Present, or Empty.

The command output displays the temperature of air passing by the SFM, in degrees Centigrade. It displays the SFM CPU usage, including the total percentage used by the SFM processor and the percentage used for interrupts.

The command output also displays the percentage of memory usage, including the total DRAM available to the SFM processor, in MB, and the percentage of heap space (dynamic memory) being used by the SFM processor. Heap utilization greater than 80 percent can indicate a software problem (memory leak). The output shows the percentage of buffer space being used by the SFM processor for buffering internal messages.

Step 2: Display SFM Mastership Information from the Craft Interface

Action To display SFM mastership information from the craft interface, use the following CLI command:

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

Sample Output

```
user@host> show chassis craft-interface
SFM LEDs:
  SFM 0 1
-----
Amber . .
Green * *
Blue  * .
```

What It Means The command output shows that the SFM in slot 0 is online and functioning as the master. The status colors represent the possible SFM operating states: Amber (Fail), Green (OK), and Blue (Master). The (*) indicates the current operating state.

Displaying Redundant SFM Alarms

Steps To Take To display SFM alarms and error messages, follow these steps:

1. Display the Current Redundant SFM Alarms on page 588
2. Display SFM Error Messages in the System Log File on page 589
3. Display SFM Error Messages in the Chassis Daemon Log File on page 589

Step 1: Display the Current Redundant SFM Alarms

Action To display the current SFM alarms, use the following CLI command:

```
user@host> show chassis alarms
```

Sample Output

```
user@host> show chassis alarms
4 alarms currently active
Alarm time      Class Description
2002-05-14 09:23:58 PDT Major SFM Failure
2002-05-14 09:23:55 PDT Major SFM Failure
2002-05-14 09:23:53 PDT Major SFM Failure
2002-05-14 09:20:51 PDT Major No SFM Online, the box is not forwarding
```

What It Means The command output displays the alarm date, time, severity level, and description.

Step 2: Display SFM Error Messages in the System Log File

Action To display the SFM error messages in the system log file, use the following CLI command:

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

Sample Output

```
user@host> show log messages
Jun 11 20:31:11 hissy-re0 craftd[556]: Major alarm set, No SFM Online, the box is not forwarding
Jun 11 20:31:11 hissy-re0 alarmd[555]: Alarm set: SFM color=RED, class=CHASSIS, reason=No SFM Online, the box
is not forwarding
```

What It Means The messages system log file records the time the failure or event occurred, the severity level, a code, and a message description. You can also use the `show log messages | match sfm` command to see error messages that are generated when an SFM fails or is offline. Use this information to diagnose a power supply problem and to let the Juniper Networks Technical Assistance Center (JTAC) know what error messages were generated and the router events that occurred before and after the problem. For more information about system log messages, see the *JUNOS System Log Messages Reference*.

Step 3: Display SFM Error Messages in the Chassis Daemon Log File

The chassis daemon (chassisd) log file keeps track of the state of each chassis component.

Action To display the SFM error messages logged in the chassis daemon log file, use the following CLI command:

```
user@host> show log chassis | match sfm
```

Sample Output

```
user@host> show log chassisd | match sfm
Jun 11 20:50:16 mcs_intr_handler fpm_mcsfd 10
Jun 11 20:50:16 mcs_intr mcs_ints_pending 0x7cbf20 button_status 0x0
Jun 11 20:50:16 bp_handle_button_intr button status 0x0
Jun 11 20:50:16 mcs_intr_handler fpm_mcsfd 10
Jun 11 20:50:16 mcs_intr mcs_ints_pending 0x7cbf20 button_status 0x8
Jun 11 20:50:16 bp_handle_button_intr button status 0x8
Jun 11 20:50:16 mcs_intr_handler fpm_mcsfd 10
Jun 11 20:50:16 mcs_intr mcs_ints_pending 0x7cbf20 button_status 0x8
Jun 11 20:50:16 bp_handle_button_intr button status 0x8
Jun 11 20:50:16 received second FPM key press, clearing timer!
Jun 11 20:50:18 bp_button_timer: taking sfm 1 offline
Jun 11 20:50:18 take_sfm_offline - slot 1 reason 7
Jun 11 20:50:18 cleaning up sfm 1 connection
Jun 11 20:50:18 CMB cmd to SPP 1 [0xe9], Blue LED Off [0x16]
Jun 11 20:50:18 SPP 1 - Blue LED Off
Jun 11 20:50:18 send: fpc 0, sfm 1 offline
Jun 11 20:50:18 send: fpc 1, sfm 1 offline
Jun 11 20:50:18 send: fpc 2, sfm 1 offline
Jun 11 20:50:18 send: fpc 6, sfm 1 offline
Jun 11 20:50:18 send: fpc 7, sfm 1 offline
Jun 11 20:50:18 fpc 2, sfm 1 offline ack
Jun 11 20:50:18 fpc 2, sfm 1 offline ack, online 0xc7 online-acks 0x4
Jun 11 20:50:18 fpc 1, sfm 1 offline ack
Jun 11 20:50:18 fpc 1, sfm 1 offline ack, online 0xc7 online-acks 0x6
Jun 11 20:50:18 fpc 0, sfm 1 offline ack
Jun 11 20:50:18 fpc 0, sfm 1 offline ack, online 0xc7 online-acks 0x7
Jun 11 20:50:18 fpc 7, sfm 1 offline ack
```

```

Jun 11 20:50:18 fpc 7, sfm 1 offline ack, online 0xc7 online-acks 0x87
Jun 11 20:50:18 fpc 6, sfm 1 offline ack
Jun 11 20:50:18 fpc 6, sfm 1 offline ack, online 0xc7 online-acks 0xc7
Jun 11 20:50:18 sfm_offline_now plane 1 conn 0x8152638
Jun 11 20:50:18 CMB cmd to SPP 1 [0xe9], Assert PLL Bypass [0x13]
Jun 11 20:50:18 CMB cmd to SPP 1 [0xe9], Assert Board Reset [0x2e]
Jun 11 20:50:18 CMB cmd to SPP 1 [0xe9], Assert ASIC Reset [0x28]
Jun 11 20:50:18 CMB cmd to SPP 1 [0xe9], Disable Power [0x10]
Jun 11 20:50:18 SPP 1 - Disable Power [addr 0x9 cmd 0x10]
Jun 11 20:50:18 CMB readback SPP 1 [0xe9, 0xf2] -> 0x26
Jun 11 20:50:18 power disable verified, SPP 1
Jun 11 20:50:18 CMB cmd to SPP 1 [0xe9], Blue LED Off [0x16]
Jun 11 20:50:18 SPP 1 - Blue LED Off
Jun 11 20:50:18 CMB cmd to SPP 1 [0xe9], Green LED Off [0x1a]
Jun 11 20:50:18 SPP 1 - Green LED Off

```

What It Means The chassisd database provides the date, time, and a component status message. The chassisd database is dynamic. It is initialized at router startup and is updated when components are added or removed.

Verifying SFM Failure

Steps To Take To verify SFM failure, follow these steps:

1. Check the SFM Connection on page 590
2. Restart the SFM on page 590
3. Perform an SFM Swap Test on page 591

Step 1: Check the SFM Connection

Action To check the SFM connection, make sure that it is properly seated in the midplane. Check the thumbscrews on the ejector locking tabs.

Step 2: Restart the SFM

Action To restart an SFM, use the following CLI command:

```
user@host> request chassis sfm slot slot-number restart
```

Sample Output For M40e routers:

```

user@host> request chassis sfm slot 0 restart
error: SFM 0 is transitioning to online state.

```

For M160 routers:

```

user@host> request chassis sfm slot 0 restart
Restart initiated, use "show chassis sfm" to verify

```

```

user@host> show chassis sfm
Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
0 Ready 0 0 0 0 0 0
1 Online 38 1 0 64 8 46
2 Offline --- Unresponsive ---
3 Online 39 1 0 64 8 46

```

What It Means The command output shows that the SFM restart has been initiated. On the M160 router, the command output indicates to use the `show chassis sfm` CLI command to verify that the SFM has been restarted. The SFM status information shows that the SFM is ready and that the status values are 0 for approximately 5 seconds until the SFM is active.

Step 3: Perform an SFM Swap Test



CAUTION: Before performing a swap test, always check for bent pins in the midplane and check the SFM for stuck pins in the connector. Pins stuck in the component connector can damage other good slots during a swap test.

Action To perform a swap test on an SFM, follow these steps:

1. Remove the chassis rear component cover by loosening the screws on the corners of the cover and pulling it straight out from the chassis.
2. Remove the SFM, as described in the M40e and M160 router hardware guides.
3. Take the SFM offline by using the `request chassis sfm slot slot-number offline` CLI command. You can also press and hold the offline button on the SFM faceplate at the rear of the router until the SFM OK LED turns off (about 5 seconds).
4. Replace the SFM with one that you know works.
5. Bring the SFM online. Press and hold the offline button on the SFM faceplate until the green OK LED lights (about 5 seconds). You can also use the `request chassis sfm slot slot-number online` CLI command.
6. Reinstall the rear component cover and tighten the screws to secure it to the chassis.
7. Check the SFM status. See “Display the SFM Summary Status” on page 582.

Controlling Redundant SFMs

Steps To Take To control the operation of an SFM, follow these steps:

1. Take an SFM Offline on page 592
2. Bring an SFM Online on page 592
3. Switch SFM Mastership on page 593

Step 1: Take an SFM Offline

Action To take an SFM offline, use the following CLI command:

```
user@host> request chassis sfm slot slot-number offline
```

Sample Output user@host> **request chassis sfm slot 0 offline**
Offline initiated, use "show chassis sfm" to verify

For M40e routers:

```
user@host> show chassis sfm
Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
0 Offline --- Offlined by cli command ---
1 Online - Standby 41 4 0 64 16 46
```

For M160 routers:

```
user@host> show chassis sfm
Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
0 Online 41 3 0 64 17 46
1 Online 44 4 0 64 17 46
2 Online 44 4 0 64 17 46
3 Offline --- Offlined by cli command ---
```

Packet scheduling mode: Disabled

What It Means The sample output confirms that the SFM offline command has been initiated and specifies to use the show chassis sfm CLI command to verify that the SFM is offline. The command output for both the M40e and M160 routers shows that the SFM is offline and that this state was generated by running the CLI command.

Step 2: Bring an SFM Online

Action To bring an SFM online, use the following CLI command:

```
user@host> request chassis sfm slot slot-number online
```

Sample Output user@host> **request chassis sfm slot 0 online**
Online initiated, use "show chassis sfm" to verify

For M40e routers:

```
user@host> show chassis sfm
Temp CPU Utilization (%) Memory Utilization (%)
Slot State (C) Total Interrupt DRAM (MB) Heap Buffer
0 Present 0 0 0 0 0 0
1 Online - Standby 41 4 0 64 16 46
```


For M160 routers:

```
user@host> show chassis sfm
```

Temp	CPU	Utilization (%)	Memory	Utilization (%)		
Slot State	(C)	Total	Interrupt	DRAM (MB)	Heap	Buffer
0 Online	41	3	0	64	17	46
1 Online	44	3	0	64	17	46
2 Online	44	3	0	64	17	46
3 Present	0	0	0	0	0	0

Packet scheduling mode: Disabled

What It Means The sample output confirms that the SFM online command has been initiated and specifies to use the show chassis sfm CLI command to verify that the SFM is online. The command output shows that the SFM is present and that the values for the SFM status are 0 for approximately 5 seconds until the SFM is active.

Step 3: Switch SFM Mastership

Purpose You can switch SFM mastership on M40e routers only. By default, the SFM in slot 0 (SFM0) is the master and the SFM in slot 1 (SFM1) is the backup.

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 System Basics Configuration Guide*.

Action To switch SFM mastership, use the following CLI command:

```
user@host> request chassis sfm master switch <no-confirm>
```

Sample Output

```
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
```

The following command output displays if you use the no-confirm option:

```
user@host> request chassis sfm master switch no-confirm
Switch initiated, use "show chassis sfm" to verify
```

Replacing an SFM

Action To replace an SFM, follow these steps:

1. Have ready an antistatic mat for the SFM.
2. Attach an electrostatic discharge (ESD) wrist strap to your bare wrist, and connect the wrist strap to one of the two ESD points on the chassis.
3. Remove the router rear component cover by loosening the screws on the corners of the cover and pulling it straight out from the chassis.
4. Press the offline button on the SFM faceplate and hold it down until the red FAIL LED lights (about 5 seconds).

5. Loosen the thumbscrews on the ejector locking tabs joining the two SFM boards.
6. Flip the ends of the ejector handles outward.
7. Grasp the handles, pull firmly on the SFM, and slide the unit about three-quarters of the way out of the chassis.
8. Move one of your hands underneath the SFM to support it, and slide it completely out of the chassis.
9. Hold the new SFM by placing one hand underneath to support it and the other hand on one of the ejector handles on the front of the unit.
10. Align the rear of the SFM with the guides inside the chassis.
11. Slide the unit completely into the chassis.
12. Press the ejector handles on the left and right sides of the SFM inward.
13. Tighten the thumbscrews on the ejector locking tabs.
14. Press the offline button on the SFM faceplate and hold it down until the green OK LED lights (about 5 seconds).
15. Reinstall the rear component cover and tighten the screws on the covers of the corner to secure it to the chassis.