

## Chapter 43

# Monitoring Redundant MCSs

You monitor and maintain redundant Miscellaneous Control Subsystems (MCSs) installed in the M40e or M160 router to ensure that there is no interruption of functions such as the following:

Router component monitoring and control for failure and alarm conditions

Component power-up and power-down control

Redundant Routing Engine, MCS, and PFE Clock Generator (PCG) mastership control

Flexible PIC Concentrator (FPC) error detection and reset control

SONET clock source generation and monitoring

SONET reference clock (from the FPC and BIT interfaces) monitoring

System clocks (from the PCG) monitoring

For more information about monitoring a single MCS, see “Monitoring the MCS” on page 359.

Table 121 provides a checklist of tasks you perform to monitor redundant MCSs.

**Table 121: Checklist for Monitoring Redundant MCSs**

Monitor Redundant MCS Tasks	Command or Action
<b>Understanding Redundant MCSs on page 569</b>	
<b>Displaying Redundant MCS Hardware Information on page 570</b>	show chassis hardware
<b>Monitoring Redundant MCS Status on page 570</b>	
1. Check the Redundant MCS Environmental Status on page 571	show chassis environment mcs
2. Check the Redundant MCS Status from the Craft Interface on page 572	show chassis craft-interface
3. Check the Redundant MCS LED Status on page 573	Check the LEDs on the MCS faceplate.

Monitor Redundant MCS Tasks	Command or Action
<b>Displaying Redundant MCS Mastership on page 573</b>	
1. Check the Redundant MCS Environmental Status on page 571	show chassis environment mcs
2. Check the Redundant MCS Status from the Craft Interface on page 572	show chassis craft-interface
3. Check the Redundant MCS LED Status on page 573	Check the LEDs on the MCS faceplate.
<b>Switching MCS Mastership on page 573</b>	Manually take the MCS offline by pressing the offline button on the component faceplate.
<b>Performing a Swap Test on a Redundant MCS on page 573</b>	<ol style="list-style-type: none"> <li>1. Take the host module offline.</li> <li>2. Take the MCS offline.</li> <li>3. Remove the MCS and replace it with one that you know works.</li> </ol>
<b>Returning an MCS on page 575</b>	See "Return the Failed Component" on page 86, or follow the procedure in the M40e or M160 router hardware guide.

## Understanding Redundant MCSs

**Purpose** Inspect redundant MCSs to ensure that functions are interrupted, such as component alarm messages; component power-up and power-down; Routing Engine, MCS, and PCG mastership control; SONET clock generation and monitoring; and system clock monitoring.

**What Are Redundant MCSs** Redundant MCSs are two MCSs installed in the M40e or M160 router.

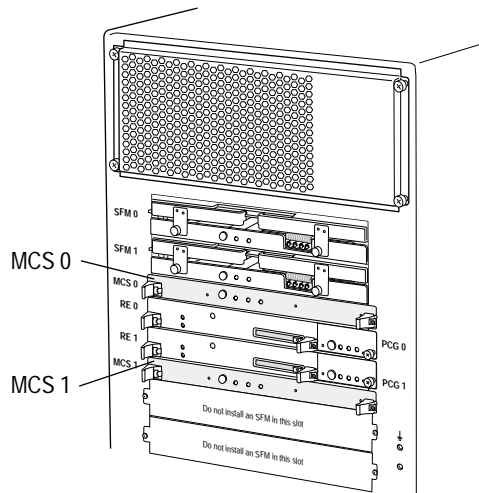
The MCS is a component of the host module. Each MCS requires a Routing Engine to be installed in an adjacent slot. MCS0 installs above slot RE0, and MCS1 installs below slot RE1. Even if an MCS is physically installed in the chassis, it does not function if there is no Routing Engine present in the adjacent slot.

If two MCSs are installed, MCS0 acts as the master MCS and MCS1 acts as a backup. If the master MCS fails or is removed, the backup restarts and becomes the master MCS.

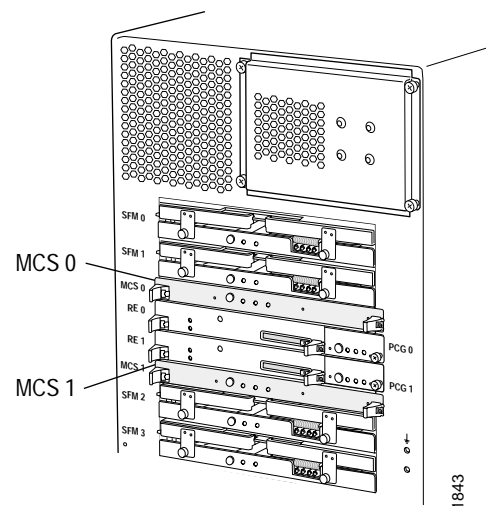
The MCSs install into the midplane from the back of the chassis (see Figure 228).

**Figure 228: M40e and M160 Router Redundant MCSs**

**M40e router rear**



**M160 router rear**



**See Also** Monitoring the Host Module on page 341

Monitoring the MCS on page 359

Monitoring Redundant Routing Engines on page 491

## Displaying Redundant MCS Hardware Information

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**Action** To display whether there are redundant MCSs installed in a router and to get hardware information, use the following command-line interface (CLI) command:

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

**Sample Output**

```
user@host> show chassis hardware
Hardware inventory:
Item      Version  Part number  Serial number  Description
Chassis           51029      M160
Midplane    REV 05  710-001245  AW3223
FPM CMB      REV 03  710-001642  AH5190
FPM Display  REV 03  710-001647  AW2021
CIP          REV 04  710-002649  AG5779
PEM 0        Rev 03  740-001243  LK16612      Power Entry Module
PEM 1        Rev 03  740-001243  LK16604      Power Entry Module
PCG 0        REV 07  710-001568  HF1164
PCG 1        REV 07  710-001568  HF1159
Routing Engine 0 REV 01  740-003239  AARCHOO      RE-2.0
Routing Engine 1 REV 01  740-003239  AARCHOO      RE-2.0
MCS 0        REV 11  710-001226  AV4425
MCS 1        REV 11  710-001226  HD2842
[...Output truncated...]
```

**What It Means** The command output displays the MCS slot number, revision level, part number, and serial number. Give this information to the Juniper Networks Technical Assistance Center (JTAC) if an MCS fails.

## Monitoring Redundant MCS Status

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**Steps To Take** To monitor redundant MCSs, do one of the following:

1. Check the Redundant MCS Environmental Status on page 571
2. Check the Redundant MCS Status from the Craft Interface on page 572
3. Check the Redundant MCS LED Status on page 573

## Step 1: Check the Redundant MCS Environmental Status

**Action** To check the redundant MCS status, use the following CLI command:

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

**Sample Output**

```
user@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
```

**What It Means** The show chassis environment mcs CLI command is available on the M40e and M160 routers only. The command output displays environmental information about both MCSs installed in the router or about an individual MCS. The MCS status can be Present, Online, Offline, or Empty. The command also indicates that the MCS is the master MCS. The command output also displays the temperature of the air flowing past the MCS, information about MCS power supplies, field-programmable gate array (FPGA) revision information, and the revision level of the chassis management bus (CMB) slave.

**Alternative Action** To display the environmental status of a particular MCS, use the following JUNOS CLI operational mode command:

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

**Step 2: Check the Redundant MCS Status from the Craft Interface**

**Action** To display redundant MCS status from the craft interface, use the following CLI command:

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

**Sample Output**

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

```
FPM Display contents:
```

```
+-----+
|myrouter |
|3 Alarms active |
|R: Hard errors |
|R: PEM 1 Input Fail |
+-----|
```

```
Front Panel System LEDs:
```

```
Routing Engine 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 LEDs:
```

```
MCS 0 1
```

```
-----
Amber . .
Green * *
Blue * .
```

```
[...Output truncated...]
```

**What It Means** The MCS LEDs section of the command output indicates the status of the redundant MCSs. An asterisk (\*) indicates the current operating state: Amber (offline), Green (online), and Blue (Master).

### Step 3: Check the Redundant MCS LED Status

**Action** To check redundant MCS LED status, look on the faceplate of the MCS at the rear of the router. Table 122 describes the LED states.

**Table 122: MCS LEDs**

Color	Label	State	Description
Blue	MASTER	On steadily	MCS is master.
Green	OK	On steadily	MCS is operating normally.
		Blinking	MCS is starting up.
Amber	FAIL	On steadily	MCS has failed.

When the MCS is functioning normally, the green OK LED remains on steadily.

### Displaying Redundant MCS Mastership

**Steps To Take** To display which MCS is master and which is backup, do one of the following:

1. Check the Redundant MCS Environmental Status on page 571
2. Check the Redundant MCS Status from the Craft Interface on page 572
3. Check the Redundant MCS LED Status on page 573

Each step displays the master and backup MCS.

### Switching MCS Mastership

**Action** To switch the MCS master to backup or the MCS backup to master, take the MCS offline by pressing the MCS offline button on the component faceplate. The backup MCS will automatically start up. To remove the MCS, see “Performing a Swap Test on a Redundant MCS” on page 573.

### Performing a Swap Test on a Redundant MCS

The MCS can fail and not start, or it can cause a connectivity problem between the Routing Engine and the Packet Forwarding Engine components, such as the FPC and Switching and Forwarding Module (SFM). You can perform a swap test on the MCS to try to pinpoint the problem.



**CAUTION:** Before performing a swap test, always check for bent pins in the midplane and check the MCS 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 the MCS, remove it and replace it with one that you know works.

Normally, if two host modules are installed in the router, HOST0 functions as the master and HOST1 as the backup. You can remove the backup host module (or either of its components) without interrupting the functioning of the router. If you take the master host module offline, the router reboots and the backup host module becomes the master. If the router has only one host module, taking it offline causes the router to shut down.

The host module is taken offline and brought back online as a unit. Before you replace the Routing Engine or an MCS, you must take the host module offline. The host module is hot-pluggable.

To remove an MCS, follow these steps:

1. Lay an electrostatic bag or antistatic mat on a flat, stable surface to receive the Routing Engine.
2. Attach an electrostatic discharge (ESD) strap to your bare wrist and connect the strap to one of the ESD points on the chassis.
3. Remove the rear component cover by loosening the screws at the corners of the cover and pulling it straight off of the chassis.
4. If two host modules are installed, check whether the MCS you are removing belongs to the master host module with the following CLI command:

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

Or you can check the MCS LEDs. If the MCS belongs to the master host module, switch mastership to the standby host module by including the `routing-engine` statement at the `[edit chassis redundancy]` hierarchy level in the configuration, as described in the *JUNOS System Basics Configuration Guide*.

5. On the console or other management device connected to the Routing Engine that is paired with the MCS you are removing, enter CLI operational mode and issue the following command:

```
user@host> request system halt
```

The command shuts down the Routing Engine cleanly, so its state information is preserved.

Wait to continue until all software processes have shut down.

6. Flip the ends of the extractor clips outward.
7. Grasp the extractor clips and slide the unit about halfway out of the chassis.
8. Place one hand under the MCS to support it, slide it completely out of the chassis, and place it on the antistatic mat or in the electrostatic bag.
9. Align the rear of the MCS with the guides inside the chassis and slide it in completely.



10. Press the extractor clips on the left and right sides of the MCS inward.
11. Verify that the green LED labeled OK on the MCS faceplate is lit. Also check the host module LEDs on the craft interface to verify that the green LED labeled ONLINE is lit for the host module to which the MCS belongs.
12. Verify correct MCS functioning by using the `show chassis environment mcs` command.

If the replacement MCS works, you can be certain that the replaced MCS failed. To return the MCS, see “Returning an MCS” on page 575.

## Returning an MCS

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**Action** To return an MCS, see “Return the Failed Component” on page 86, or the procedure to return a field-replaceable unit in the M40e or M160 router hardware guide.

