

## Chapter 42

# Monitoring Redundant Control Boards

You monitor and maintain redundant Control Boards installed in the M320 router, T320 router, or T640 routing node 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 and Control Board mastership control

- Flexible PIC Concentrator (FPC) error detection and reset control

- SONET clock source generation and monitoring

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

- I<sup>2</sup>C controller monitoring

- Fan speed monitoring and control

For more information about monitoring a single Control Board, see “Monitoring the Control Board” on page 301.

Table 119 provides a checklist of tasks you perform to monitor redundant Control Boards.

**Table 119: Checklist for Monitoring Redundant Control Boards**

Monitor Redundant Control Board Tasks	Command or Action
<b>Understanding Redundant Control Boards on page 561</b>	
<b>Displaying Redundant Control Board Hardware Information on page 563</b>	show chassis hardware
<b>Displaying Redundant Control Board Mastership on page 563</b>	
1. Check the Redundant Control Board Environmental Status on page 564	show chassis environment cb
2. Check the Redundant Control Board Status from the Craft Interface on page 565	show chassis craft-interface
3. Check the Redundant Control Board LED Status on page 565	Examine the LEDs on the Control Board faceplate.

Monitor Redundant Control Board Tasks	Command or Action
<b>Switching Control Board Mastership on page 565</b>	Press the Control Board offline button on the component faceplate.
<b>Checking the Control Board Alarms on page 565</b>	See “Checking the Control Board Alarms” on page 308. For conditions that trigger Control Board alarms, see “Display the Current Router Alarms” on page 61.
<b>Replacing a Control Board on page 566</b>	<ol style="list-style-type: none"> <li>1. Determine whether the host subsystem is functioning as master or as backup by using the show chassis routing-engine command.</li> <li>2. Take the host subsystem offline if the Control Board is master by using the request chassis routing-engine master switch command.</li> <li>3. Replace the Control Board with a known working one.</li> <li>4. Check the Control Board status by examining the LEDs on the Control Board faceplate, or by using the show chassis hardware command.</li> </ol>
<b>Returning the Control Board on page 566</b>	Locate the Control Board serial number ID label. See “Return the Failed Component” on page 86 or the appropriate hardware guide.

## Understanding Redundant Control Boards

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**Purpose** Inspect redundant Control Boards to ensure that router component functions are uninterrupted. Each Control Board works with an adjacent Routing Engine to provide control and monitoring functions for the router. These include determining Routing Engine mastership; controlling power, reset, and SONET clocking for the other router components; monitoring and controlling fan speed; and monitoring system status.

**What Are Redundant Control Boards** Redundant Control Boards are two Control Boards installed in the M320 router, T320 router, or the T640 routing node.

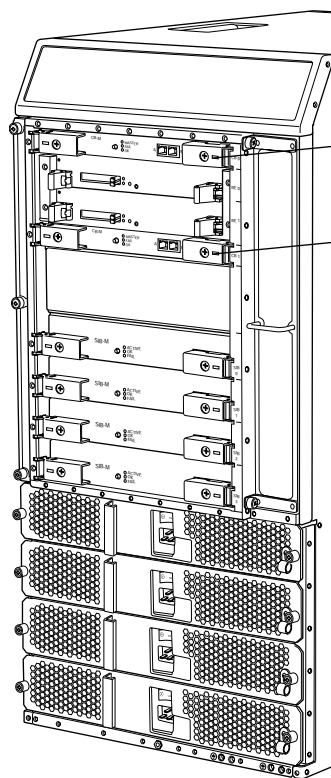
The Control Board is a component of the host module. Each Control Board requires a Routing Engine to be installed in an adjacent slot. The Control Board in slot CB0 installs above the Routing Engine in slot RE0, and the Control Board in slot CB1 installs below the Routing Engine in slot RE1. Even if a Control Board is physically installed in the chassis, it does not function if there is no Routing Engine present in the adjacent slot.

If two Control Boards are installed, by default, CB0 acts as the master Control Board and CB1 acts as a backup. If the master Control Board (CB0) fails or is removed, the backup (CB1) restarts and becomes the master Control Board.

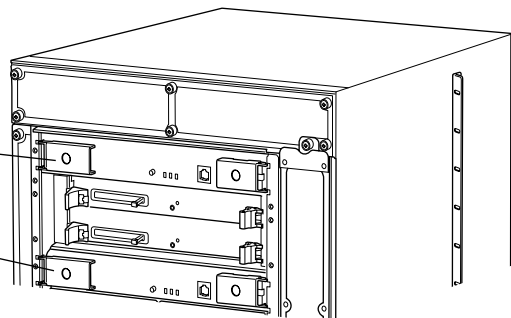
The Control Boards install into the midplane from the back of the chassis (see Figure 227 on page 562). The Control Boards are hot-pluggable.

Figure 227: M320 Router, T320 Router, and T640 Routing Node Control Board Location

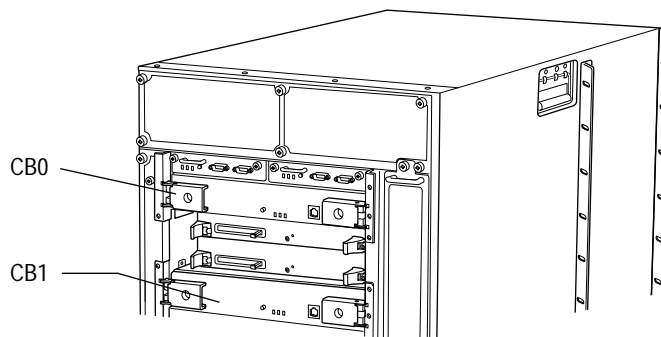
M320 Router rear



T320 Router rear



T640 Router rear



9003285

**See Also**

Monitoring the Host Subsystem on page 289

Monitoring the Routing Engine on page 125

Monitoring the Control Board on page 301

## Displaying Redundant Control Board Hardware Information

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To display whether redundant Control Boards are installed in a router and to obtain hardware information, use the following JUNOS software command-line interface (CLI) command:

user@host> **show chassis hardware**

**Sample Output** t640@host> **show chassis hardware**  
Hardware inventory:  

Item	Version	Part number	Serial number	Description
Chassis		abcdef	T320	
Midplane	REV 01	710-004339	AY4529	
FPM GBUS	REV 02	710-004461	AY4511	
FPM Display	REV 02	710-002897	HF6094	
CIP	REV 05	710-002895	HC0468	
PEM 1	Rev 01	740-004359	2708013	Power Entry Module
SCG 0	REV 06	710-004455	AY4526	
SCG 1	REV 06	710-004455	AY4523	
Routing Engine 0	REV 01	740-005022	210929000142	RE-3.0
Routing Engine 1	REV 01	740-005022	210929000143	RE-3.0
CB 0	REV 06	710-002728	HC0065	
CB 1	REV 05	710-002728	HE3623	

  
[...Output truncated...]

**What It Means** The command output displays the Control Boards installed in the router chassis, including the slot number, revision level, part number, serial number, and a brief description of the component. Give this information to the Juniper Networks Technical Assistance Center (JTAC) if a Control Board fails. The command output for this T640 routing node shows that two Control Boards are installed. By default, CB1 is the redundant Control Board.

## Displaying Redundant Control Board Mastership

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**Steps To Take** To display Control Board mastership, do one of the following:

1. Check the Redundant Control Board Environmental Status on page 564
2. Check the Redundant Control Board Status from the Craft Interface on page 565
3. Check the Redundant Control Board LED Status on page 565

## Step 1: Check the Redundant Control Board Environmental Status

**Action** To check the redundant Control Board environmental status, use the following CLI command:

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

**Sample Output**

```
t640@host> show chassis environment cb
CB 0 status:
State           Online Master
Temperature      29 degrees C / 84 degrees F
Power:
 1.8 V          1805 mV
 2.5 V          2501 mV
 3.3 V          3293 mV
 4.6 V          4725 mV
 5.0 V          5032 mV
12.0 V          11975 mV
 3.3 V bias     3286 mV
 8.0 V bias     7589 mV
GBUS Revision   40
FPGA Revision   7
CB 1 status:
State           Online Standby
Temperature      32 degrees C / 89 degrees F
Power:
 1.8 V          1802 mV
 2.5 V          2482 mV
 3.3 V          3289 mV
 4.6 V          4720 mV
 5.0 V          5001 mV
12.0 V          11946 mV
 3.3 V bias     3274 mV
 8.0 V bias     7562 mV
GBUS Revision   40
FPGA Revision   7
```

**What It Means** The command output displays which Control Board is master and standby. Additionally, the command output displays the Control Board state, redundancy status, temperature, power source, and circuitry revision level for each Control Board installed in the router chassis. CB1 is shown in standby mode, and is the redundant Control Board.

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

```
t640@host> show chassis environment cb slot
```

## Step 2: Check the Redundant Control Board Status from the Craft Interface

**Action** If you are near the router, physically look at the craft interface for the Control Board LEDs. To display redundant Control Board status from the craft interface, use the following CLI command:

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

**Sample Output** t640@host> show chassis craft-interface

FPM Display contents:

[...Output truncated...]

CB LEDs:

CB 0 1

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Amber .

Green \*

Blue \*

[...Output truncated...]

**What It Means** The CB LEDs section of the command output indicates the status of the redundant Control Board. An asterisk (\*) indicates the current operating state: Amber (offline), Green (online), and Blue (Master). In the above output, no redundant Control Board is installed—the output under CB1 is blank.

## Step 3: Check the Redundant Control Board LED Status

**Action** To check the redundant Control Board LED status, look at the three LEDs located on the Control Board faceplate. Table 120 describes the Control Board LED states.

**Table 120: Control Board LEDs**

Label	Color	State	Description
OK	Green	On steadily	Control Board is online and is functioning normally.
FAIL	Amber	On steadily	Control Board has failed.
MASTER	Blue	On steadily	Control Board is functioning as master.

## Switching Control Board Mastership

**Action** To switch the Control Board master to backup or the Control Board backup to master, take the Control Board offline by pressing the Control Board offline button on the component faceplate. The backup Control Board will automatically start up. To remove the Control Board, see “Replacing a Control Board” on page 566.

## Checking the Control Board Alarms

**Action** To check for the Control Board alarms, see “Checking the Control Board Alarms” on page 308. For conditions that trigger Control Board alarms, see “Display the Current Router Alarms” on page 61.

## Replacing a Control Board

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The Control Board can fail and not start, or it can cause a connectivity problem between the Routing Engine and the Packet Forwarding Engine components. You can perform a swap test on the Control Board to try to pinpoint the problem.

**Action** To replace a Control Board, see “Component Fuses in the M320 Router Midplane” on page 311.



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

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## Returning the Control Board

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**Action** To return the Control Board, follow these steps:

1. Locate the serial number ID label on the bottom of the left side of the Control Board (see “Locate the Control Board Serial Number ID Label” on page 314).
2. Follow the procedure “Return the Failed Component” on page 86. You can also refer to the procedure to return a field-replaceable unit in the M320 router, T320 router, or the T640 routing node hardware guides.