

Chapter 9

Verify Juniper Networks Routers

This chapter describes how to check the hardware components of Juniper Networks routers on your network. (See Table 23.)

Table 23: Checklist for Verifying Juniper Networks Routers

Verify Juniper Networks Routers Tasks	Command or Action
Check Router Components on page 92	
1. Check the Router Component Status on page 93	
a. Check the Router Craft Interface on page 93	<code>show chassis craft-interface</code>
b. Check the Component LEDs on page 94	<code>show chassis craft-interface</code>
c. Display Detailed Component Environmental Information on page 95	<code>show chassis environment <i>component-name</i></code>
d. Display Detailed Operational Information About Components on page 96	<code>show chassis <i>component-name</i></code>
2. Gather Component Alarm Information on page 97	
a. Display the Current Router Alarms on page 97	<code>show chassis alarms</code>
b. Display Error Messages in the Messages Log File on page 97	<code>show log messages</code>
c. Display Error Messages in the Chassis Process Log File on page 98	<code>show log chassisd</code>
3. Verify the Component Problem on page 98	Make sure that the component is well seated in its slot and connected to the router midplane. Perform a swap test on the component with a problem.
4. Fix the Problem on page 99	Take action and correct the problem. For example, replace a dirty air filter, clean a fiber-optic cable, connect the component securely to the midplane, or reset the component. Otherwise, escalate the alarm condition and contact JTAC. Do not straighten bent pins.
5. Contact JTAC on page 99	<code>request support information</code> <code>request support information save <i>filename</i></code>
6. Return the Failed Component on page 100	<code>show chassis hardware</code> Obtain a Return Material Authorization (RMA) number from JTAC. You can send e-mail to support@juniper.net or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).

Check Router Components

Purpose When you monitor router components, you are making sure that there are no hardware problems with the router. In the event of a minor problem, you can try to fix it. For more difficult situations, you can call for assistance from the Juniper Networks Technical Assistance Center (JTAC).

Steps To Take To monitor M-series and T-series router components, follow these steps:

1. Check the Router Component Status on page 93
2. Gather Component Alarm Information on page 97
3. Verify the Component Problem on page 98
4. Fix the Problem on page 99
5. Contact JTAC on page 99
6. Return the Failed Component on page 100

Check the Router Component Status

Purpose When you check the router craft interface, the component LEDs, and the environmental and operational information, you are either physically inspecting the components or obtaining output about their status from commands you issue from the command-line interface (CLI).

Steps To Take To check the router component status, follow these steps:

1. Check the Router Craft Interface on page 93
2. Check the Component LEDs on page 94
3. Display Detailed Component Environmental Information on page 95
4. Display Detailed Operational Information About Components on page 96

Step 1: Check the Router Craft Interface

Action To check the craft interface information for router status, do one of the following:

- Use the following CLI command:

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

The command output displays the router alarm indicator status, the LCD display information (router name, router uptime, and status message that rotate at 2-second intervals), and the major component LED status.

- Physically look at the router craft interface. Table 24 shows the component characteristics of the craft interface for each M-series router and T-series platform.

Table 24: Craft Interface Components for the M-series Routers and T-series Platforms

Component	M5 and M10	M20	M40	M40e	M160	T320	T640
Alarm LEDs	X	X	X	X	X	X	X
Lamp test button	X					X	X
Alarm cutoff button		X		X	X	X	
Alarm relay contacts		X	X				
Link and activity status lights	X	X					
LCD display and navigation buttons			X	X	X	X	X
Routing Engine ports	X	X	X				
Routing Engine LEDs		X	X			X	
Host module LEDs				X			
Host subsystem LEDs						X	X
Physical Interface Card (PIC) online and offline buttons	X						

Component	M5 and M10	M20	M40	M40e	M160	T320	T640
Flexible PIC Concentrator (FPC) LEDs		X	X	X	X	X	X
FPC offline buttons		X		X		X	X
FPC online buttons						X	X
Switch Interface Board (SIB) LEDs						X	X

Step 2: Check the Component LEDs

Action To check the component LED status, do one of the following:

- Use the following CLI command:

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

The output shows the messages that are currently displayed on the craft interface (for routers that have a display on the craft interface).

For examples of sample output, see the *JUNOS System Basics and Services Command Reference*.

- Physically look at the craft interface. You see the following component LEDs: Routing Engine, FPCs, PICs, host module (for M40e and M160 routers), and host subsystem and SIB (for T-series platforms).
- Look at the LEDs on the component faceplate. Figure 25 describes where the LEDs are located on the router or platform.

Table 25: Component LED Location on the Router or Platform

Component	LED Location on the Router	Router or Platform
CB	On the Control Board (CB) faceplate.	T320 router and T640 routing node
FPC	On the FPC faceplate at the front of the router.	M20, M40, M40e, and M160 routers
Host module	On the craft interface. Remove the component cover.	M40e and M160 routers
MCS	On the Miscellaneous Control System (MCS) faceplate at the rear of the router. Remove the component cover.	M40e and M160 routers
PIC	On the craft interface. On the PIC faceplate at the front of the router.	M5 and M10 routers All other routers
PCG	On the PFE clock generator (PCG) faceplate at the rear of the router. Remove the component cover.	M40e and M160 routers
Power supply	On the power supply faceplate at the bottom rear of the router.	All routers
Routing Engine	On the rear Routing Engine panel. On the craft interface.	M20 router M20, M40, M40e, and M160 routers
SCB	On the System Control Board (SCB) faceplate at the front of the router, vertical in the middle of the FPC card cage.	M40 router
SCG	On the SONET Clock Generator (SCG) faceplate.	T320 router and T640 routing node

Component	LED Location on the Router	Router or Platform
SFM	On the Switching and Forwarding Module (SFM) faceplate at the rear of the router. Remove the component cover.	M40e and M160 routers
SIB	On the SIB faceplate.	T320 router and T640 routing node
SSB	On the System and Switch Board (SSB) faceplate at the top front of the router.	M20 router

Step 3: Display Detailed Component Environmental Information

Action To display detailed environmental status information about a component, use the following CLI command:

```
user@host> show chassis environment component-name
```

Sample Output The command output displays the temperature of the air passing by the component, in degrees Centigrade. It also displays the total percentage of CPU, interrupt, heap space, and buffer space being used by the component processor, including the total DRAM available to the component processor. The command output displays the time when the component started running and how long the component has been running. A short uptime can indicate a problem with the component.

For examples of sample output, see the *JUNOS System Basics and Services Command Reference*.

Figure 26 lists the operational mode CLI commands that display more detailed information for each router and platform component.

Table 26: CLI Commands for Detailed Component Environment Status

Component	Operational Mode CLI Command	Router or Platform
CB	show chassis environment cb	T320 and T640 platforms
Forwarding Engine Board (FEB)	show chassis feb	M5 and M10 routers
FPC	show chassis environment fpc	M40e and M160 routers, and T-series platforms
Front panel module (FPM) or craft interface	show chassis environment fpm	M40e and M160 routers, and T-series platforms
MCS	show chassis environment mcs	M40e and M160 routers
PCG	show chassis environment pcg	M40e and M160 routers
Power Entry Module (PEM) or power supply	show chassis environment pem	M40e and M160 routers, and T-series platforms
Routing Engine	show chassis environment routing-engine	M40e and M160 routers, and T-series platforms
SONET Clock Generator (SCG)	show chassis environment scg	T320 and T640 platforms
SFM	show chassis environment sfm	M40e and M160 routers
SIG	show chassis environment sib	T320 and T640 platforms

Step 4: Display Detailed Operational Information About Components

Action To display detailed operational information about a component, use the following CLI command:

```
user@host> show chassis component-name
```

The command output displays the temperature of the air passing by the component, in degrees Centigrade and Fahrenheit. It displays the total percentage of CPU, interrupt, heap space, and buffer space being used by the component processor, including the total DRAM available to the component processor. The command output displays the time when the component started running and how long the component has been running. A short uptime can indicate a problem with the component.

For examples of sample output, see the *JUNOS System Basics and Services Command Reference*.

Figure 27 lists the components for which you can display more detailed operational status information.

Table 27: CLI Commands for Detailed Operational Status of Components

Component	Operational Mode CLI Command	
FEB	show chassis feb	M5 and M10 routers
FPC	show chassis fpc	M40e and M160 routers, and T-series platforms
Routing Engine	show chassis routing-engine	M40e and M160 routers, and T-series platforms
SCB	show chassis scb	M40 routers
SFM	show chassis sfm	M40e and M160 routers
SSB	show chassis ssb	M20 routers
Switch Processor Mezzanine Board (SPMB)	show chassis spmb	T320 and T640 platforms

Gather Component Alarm Information

Purpose When you obtain information about component alarms and error messages, you determine when a problem with a component first appeared and the details of the situation.

Steps To Take To gather component alarm information, follow these steps:

1. Display the Current Router Alarms on page 97
2. Display Error Messages in the Messages Log File on page 97
3. Display Error Messages in the Chassis Process Log File on page 98

Step 1: Display the Current Router Alarms

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

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

The command output displays the number of alarms currently active, the time when the alarm began, the severity level, and an alarm description. Note the date and time of an alarm so that you can correlate it with error messages in the `messages` system log file.

For examples of sample output, see the *JUNOS System Basics and Services Command Reference*.

Step 2: Display Error Messages in the Messages Log File

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

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

The `messages` system log file records the time the failure or event occurred, the severity level, a code, and a message description. Error messages in the `messages` system log file are logged at least 5 minutes before and after the alarm event.

To search for specific information in the log file, use the `| match component-name` command; for example, use `show log messages | match fpc`. If there is a space in the component name, enclose the component name in quotation marks; for example, `| match "power supply"`.

To search for multiple items in the log file, use the `| match` command followed by the multiple items, separated by the `|` (pipe), and enclosed in quotation marks; for example, `| match "fpc | srm | kernel | tnp"`.

To monitor the `messages` file in real time, use the `monitor start messages` CLI command. This command displays the new entries in the file until you stop monitoring by using the `monitor stop messages` CLI command.

For more information about system log messages, see the *JUNOS System Log Messages Reference*.

Step 3: Display Error Messages in the Chassis Process Log File

Action To display router component errors in the chassis process (chassisd) system log file, use the following CLI command:

```
user@host> show log chassisd
```

The chassis process (chassisd) log file tracks the state of each chassis component. For examples of sample output, see the *JUNOS System Basics and Services Command Reference*.

To search for specific information in the log file, use the `| match component-name` command; for example, `show log messages | match fpc`. If there is a space in the component name, enclose the component name in quotation marks; for example, `| match "power supply"`.

To search for multiple items in the log file, use the `| match` command followed by the multiple items, separated by the `|` (pipe), and enclosed in quotation marks; for example, `| match "fpc | sfm | kernel | tnp"`.

To monitor the chassisd file in real time, use the `monitor start chassisd` CLI command. This command displays the new entries in the file until you stop monitoring by using the `monitor stop chassisd` CLI command.

Verify the Component Problem

Purpose Test a component only if it is not associated with a previously reported router component failure case and if testing will not compromise the integrity of the router and other components.

Action To verify component failure, follow these steps:

1. Make sure that the component is well seated in its slot and connected to the router midplane.
2. Perform a swap test on the component that has failed or has a problem. Take the component offline if necessary, remove it, and replace it with one that you know works. If the replaced component works, it confirms that there was a problem with the component you removed.



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

Fix the Problem

Action If the router alarm condition is your responsibility, take action and correct it. For example, replace a dirty air filter, clean a fiber-optic cable, connect the component securely to the midplane, or reset the component. Otherwise, escalate the alarm condition and contact JTAC.



NOTE: Do not straighten component pins. If the pins on a component are bent, return the component with a Return Material Authorization (RMA). Straightening the pins may cause intermittent problems in the future.

Contact JTAC

Action If you cannot determine the cause of a problem or need additional assistance, contact JTAC at support@juniper.net, or at 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).

To provide JTAC with information about the system, use the following CLI command:

```
user@host> request support information
```

Include the command output in your support request.

Because the output of this command is generally quite long, you can redirect the output to a file by using the following CLI command:

```
user@host> request support information | save filename
```

The `request support information` command is a combination of the following CLI operational mode commands:

- `show version`—Displays version information for the JUNOS software packages and the software for each software process.
- `show chassis firmware`—Displays the version levels of the firmware running on the SCB, SFM, SSB, FEB, and FPCs.
- `show chassis hardware`—Displays a list of all components installed in the router chassis. The output includes the component name, version, part number, serial number, and a brief description.
- `show chassis environment`—Displays environmental information about the router chassis, including the temperature and information about the fans, power supplies, and Routing Engine.
- `show interfaces extensive`—Displays static status information about router interfaces.

- **show configuration** (excluding any **SECRET-DATA**)—Displays the configuration that currently is running on the router, which is the last committed configuration. If you have modified the configuration since you last committed it, the configuration information displayed by the **show configuration** command will be different from that displayed with the **show** command from the **[edit]** hierarchy level in JUNOS software CLI configuration mode.
- **show system virtual-memory**—Displays the usage of JUNOS kernel memory, listed first by size of allocation and then by type of usage.

Return the Failed Component

Action To return a failed component, follow these steps:

1. Determine the part number and serial number of the component. To list the numbers for all components installed in the chassis, use the following CLI command:

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

If the component does not appear in the hardware inventory listing, check the failed component for the attached serial number ID label.



NOTE: The cooling system components (fans and impellers) do not have serial numbers. Therefore, you will not see a serial number listed in the hardware inventory or a serial number ID label on the component.

2. Obtain a Return Material Authorization (RMA) number from JTAC. You can send e-mail to support@juniper.net, or call 1-888-314-JTAC (within the United States) or 1-408-745-9500 (from outside the United States).

Provide the following information in your e-mail message or during the telephone call:

- Part number, description, and serial number of the component
- Your name, organization name, telephone number, fax number, and e-mail address
- Shipping address for the replacement component, including a contact name, phone number, and e-mail address
- Description of the failure, including log messages

The support representative will validate your request and issue an RMA number for the return of the component.

3. Pack the router or component for shipment, as described in the appropriate router hardware guide. Label the package with the corresponding RMA number.