

Chapter 23

Monitoring the SCGs

You monitor the SONET Clock Generators (SCGs) that provide a clock signal for the SONET/SDH interfaces on the T320 router and the T640 routing node. The SCGs select a clock signal from any Flexible PIC Concentrator (FPC). (See Table 75.)

Table 75: Checklist for Monitoring the SCG

Monitor SCG Tasks	Command or Action
Understanding the SCG on page 316	
Monitoring the SCG Status on page 317	
1. Monitor the SCG Environmental Status on page 317	show chassis environment show chassis environment scg
2. Display the SCG LED States at the Command Line on page 318	show chassis craft-interface
3. Look at the SCG LEDs on the Faceplate on page 319	
Determining SCG Mastership on page 319	
1. Display the SCG Master from the Craft Interface Output on page 319	show chassis craft-interface
2. Look at the SCG LEDs on the Faceplate on page 320	
Displaying SCG Alarms on page 320	
1. Display Current SCG Alarms on page 320	show chassis alarms
2. Display SCG Error Messages in the System Log File on page 321	show log messages
3. Display SCG Error Messages in the Chassis Daemon Log File on page 321	show log chassisd
Verifying SCG Failure on page 322	
1. Check the SCG Connection on page 322	1. Make sure the SCG is properly seated in the midplane. 2. Make sure none of the SCG pins are bent. 3. Check the thumbscrew on the right side of the SCG.
2. Perform an SCG Swap Test on page 322	1. Take the SCG offline. 2. Replace the SCG with one that you know works. 3. Bring the SCG online. 4. Check the SCG status.

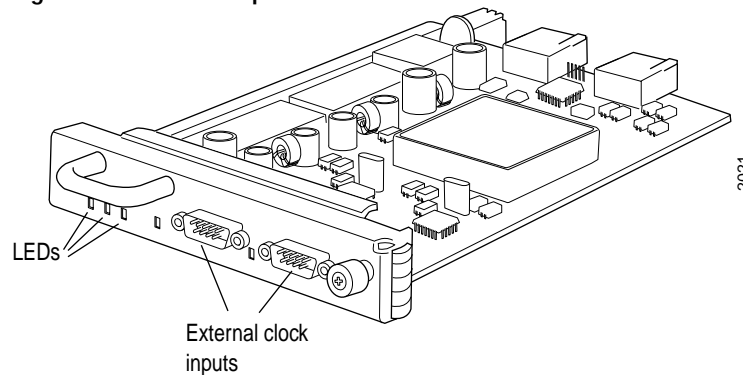
Monitor SCG Tasks	Command or Action
Getting SCG Hardware Information on page 323	
1. Display the SCG Hardware Information on page 323	show chassis hardware
2. Locate the SCG Serial Number ID Label on page 324	Look on the top of the SCG, close to the midplane connector.
Returning the SCG on page 324	See "Return the Failed Component" on page 86, or follow the procedure in the appropriate router hardware guide.

Understanding the SCG

Purpose You monitor the SCGs to ensure that they provide a clock signal for the SONET/SDH interfaces on the router and that they select a clock signal from any FPC, or from the external clock inputs.

What Is an SCG The SCGs provide a 19.44-MHz Stratum 3 clock signal for the SONET/SDH interfaces on the router. The SCGs can also select a clock signal from any FPC, or from the external clock inputs (see Figure 131).

Figure 131: SCG Component



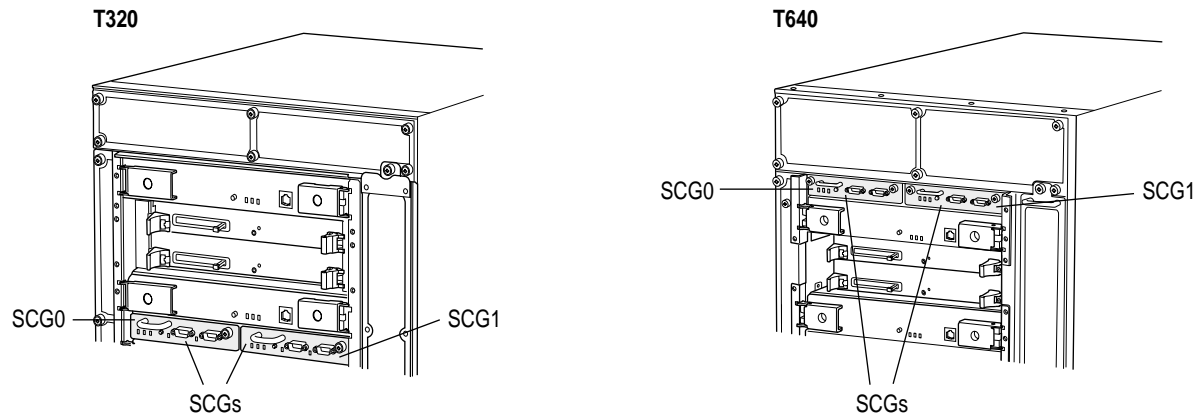
Two SCGs are installed in the T320 router and the T640 routing node. The SCGs install into the upper rear of the chassis in the slots labeled SCG0 and SCG1.

If both SCGs are installed and functioning normally, SCG0 is master and SCG1 is backup. Removing the backup SCG does not affect the functioning of the router or routing node. Taking the master SCG offline might result in a brief loss of SONET clock lock while the backup SCG becomes master.

The SCGs are hot-pluggable.

Figure 132 on page 317 shows the location of the SCGs on the T320 router and T640 routing node.

Figure 132: T320 Router and T640 Routing Node SCG Location



Monitoring the SCG Status

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

1. Monitor the SCG Environmental Status on page 317
2. Display the SCG LED States at the Command Line on page 318
3. Look at the SCG LEDs on the Faceplate on page 319

Step 1: Monitor the SCG Environmental Status

Action To monitor the SCG environment status, use the following JUNOS software command-line interface (CLI) command:

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

Sample Output

```
t320@host> show chassis environment
Class Item      Status  Measurement
Power PEM 0     Absent
   PEM 1       OK
Temp  SCG 0     OK      30 degrees C / 86 degrees F
   SCG 1     OK      29 degrees C / 84 degrees F
[...Output truncated...]
```

What It Means The command output displays the status and temperature for each SCG.

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

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

The command output is as follows:

```
t320@host> show chassis environment scg
SCG 0 status:
State           Online - Master clock
Temperature     30 degrees C / 86 degrees F
Power:
GROUND         0 mV
3.3 V          3317 mV
5.0 V          5072 mV
5.6 V          5697 mV
1.8 V bias     1794 mV
3.3 V bias     3304 mV
5.0 V bias     4991 mV
8.0 V bias     7318 mV
BUS Revision    40
SCG 1 status:
State           Online - Standby
Temperature     29 degrees C / 84 degrees F
Power:
GROUND         0 mV
3.3 V          3318 mV
5.0 V          5084 mV
5.6 V          5704 mV
1.8 V bias     1782 mV
3.3 V bias     3286 mV
5.0 V bias     5003 mV
8.0 V bias     7323 mV
BUS Revision    40
```

The command output displays the status for each SCG slot 0 and 1. The operating status can be Present, Online, Offline, or Empty. If Online, it can be the clock source (Master clock) or backup (Standby). The command output displays the temperature of the air flowing past the SCG. The command output also displays information about the SCG power supplies and the SCG circuitry revision level.

Step 2: Display the SCG LED States at the Command Line

Action To display the SCG LED states, use the following CLI command:

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

Sample Output

```
t320@host> show chassis craft-interface
[...Output truncated...]
SCG LEDs:
SCG 0 1
-----
Amber . .
Green * *
Blue * .
[...Output truncated...]
```

What It Means The command output displays the SCG LED status. The router has two SCGs installed. Asterisks (*) indicate the operation status. The color represents the possible SCG operating states: Amber (Fail), Green (OK), and Blue (Master). Both SCGs are functioning properly (Green). The SCG in slot 0 is operating as master; the SCG in slot 1 is the backup.

Step 3: Look at the SCG LEDs on the Faceplate

Action To view the SCG LEDs, remove the rear component cover and look on the SCG faceplate at the rear of the router chassis (see Figure 131 on page 316 and Figure 132, “T320 Router and T640 Routing Node SCG Location” on page 317). Table 76 describes the functions of these LEDs.

Table 76: SCG LEDs

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

Determining SCG Mastership

If both SCGs are installed and functioning normally, SCG0 is master and SCG1 is backup. Removing the backup SCG does not affect the functioning of the routing node. Taking the master SCG offline might result in a brief loss of SONET clock lock while the backup SCG becomes master.

Steps To Take To determine which SCG is operating as the master, follow these steps:

1. Display the SCG Master from the Craft Interface Output on page 319
2. Look at the SCG LEDs on the Faceplate on page 320

Step 1: Display the SCG Master from the Craft Interface Output

Action To determine the SCG master from the craft interface status information, use the following CLI command:

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

Sample Output user@host> show chassis craft-interface

```
[...Output truncated...]
SCG LEDs:
  SCG 0 1
  -----
  Amber . .
  Green * *
  Blue  * .
[...Output truncated...]
```

What It Means The command output displays which SCG is operating as master. Asterisks (*) indicate the operation status. The color represents the possible SCG operating states: Amber (Fail), Green (OK), and Blue (Master). The SCG in slot 0 is operating as master; the SCG in slot 1 is the backup.

Step 2: Look at the SCG LEDs on the Faceplate

Action Check the blue MASTER LED on the SCG faceplate. If this LED is on steadily, the SCG is functioning as master. Table 76 describes the functions of these LEDs.

Displaying SCG Alarms

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

1. Display Current SCG Alarms on page 320
2. Display SCG Error Messages in the System Log File on page 321
3. Display SCG Error Messages in the Chassis Daemon Log File on page 321

Step 1: Display Current SCG Alarms

Table 77 describes the SCG alarms that display on the router craft interface LCD display at the CLI command line.

Table 77: SCG Alarm Messages

Component	LCD Short Version	CLI Long Version
SCG	SCG <i>SCG-number</i> Failure	RED ALARM—SCG <i>SCG-number</i> Failure
	SCG <i>SCG-number</i> Removed	RED ALARM—SCG <i>SCG-number</i> Failure
	SCG <i>SCG-number</i> Not Online	YELLOW ALARM—SCG <i>SCG-number</i> Not Online

For the conditions that trigger SCG alarms, see “T320 Router Chassis Component Alarm Conditions” on page 77 and “T640 Routing Node Chassis Component Alarm Conditions” on page 80.

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

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

Sample Output

```
t320@host> show chassis alarms
1 alarm currently active
Alarm time      Class Description
2004-01-28 14:53:10 PST Minor SCG 0 Not Online
```

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

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

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

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

Sample Output

```
t320@host> show log messages | match scg
Jan 28 14:53:10 utah chassisd[2384]: CHASSISD_FRU_OFFLINE_NOTICE: Taking SCG 0 offline - Offlined by cli
command
Jan 28 14:53:10 utah craftd[2386]: Minor alarm set, SCG 0 Not Online
Jan 28 14:53:10 utah alarmd[2385]: Alarm set: SCG color=YELLOW, class=CHASSIS, reason=SCG 0 Not Online
```

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 scgs` command to see error messages that are generated when an SCG fails or is offline. Use this information to diagnose a 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 SCG Error Messages in the Chassis Daemon Log File

Action To display the SCG error messages in the chassis daemon (chassisd) log file, use the following CLI command:

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

Sample Output

```
t320@host> show log chassisd
Dec 17 11:11:12 SCG 1 removed
Dec 17 11:11:12 CHASSISD_FRU_OFFLINE_NOTICE: Taking SCG 1 offline - Removal
Dec 17 11:11:12 CHASSISD_SNMP_TRAP7: SNMP trap: FRU removal: jnxFruContentsIndex 11, jnxFruL1Index 2,
jnxFruL2Index 0, jnxFruL3Index 0, jnxFruName SCG 1, jnxFruType 2, jnxFruSlot 2
```

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 SCG Failure

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

1. Check the SCG Connection on page 322
2. Perform an SCG Swap Test on page 322

Step 1: Check the SCG Connection

Action To check the SCG connection, make sure the SCG is properly seated in the midplane. Make sure none of the SCG pins are bent. Check the thumbscrew on the right side of the SCG.

Step 2: Perform an SCG Swap Test



CAUTION: Before performing a swap test, always check for bent pins in the midplane and check the SCG 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 a SCG, follow these steps:

1. Take the SCG offline by doing one of the following:

Use the following CLI command:

```
user@host> request chassis scg offline slot number
```

Attach an electrostatic discharge (ESD) wrist strap to your bare wrist, and connect the wrist strap to one of the ESD points on the chassis. Press the online/offline button on the SCG faceplate and hold it down until the LED goes out (about 5 seconds).

2. Loosen the captive screws on the edges of the SCG faceplate.
3. Grasp the SCG by the handle on the faceplate and slide it out of the chassis.
4. Place the SCG on the antistatic mat.
5. Remove the replacement SCG from its electrostatic bag.
6. Carefully align the sides of the SCG with the guides in the SCG slot.
7. Grasp the SCG by its handle and slide it straight into the chassis until it contacts the midplane.
8. Tighten the captive screws on the corners of the SCG faceplate.

- Bring the SCG online by doing one of the following:

Use the following CLI command:

```
user@host> request chassis scg online slot number
```

Press the online/offline button until the green ONLINE LED lights.

- Verify that the SCG is online by using the following CLI command:

```
user@host> request chassis scg online slot number
```

If the replaced SCG is online, the removed SCG has failed. Return the SCG as described in “Return the Failed Component” on page 86.

Getting SCG Hardware Information

Steps To Take To get the SCG hardware information, follow these steps:

- Display the SCG Hardware Information on page 323
- Locate the SCG Serial Number ID Label on page 324

Step 1: Display the SCG Hardware Information

Action To display the SCG hardware information, use the following CLI command:

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

Sample Output

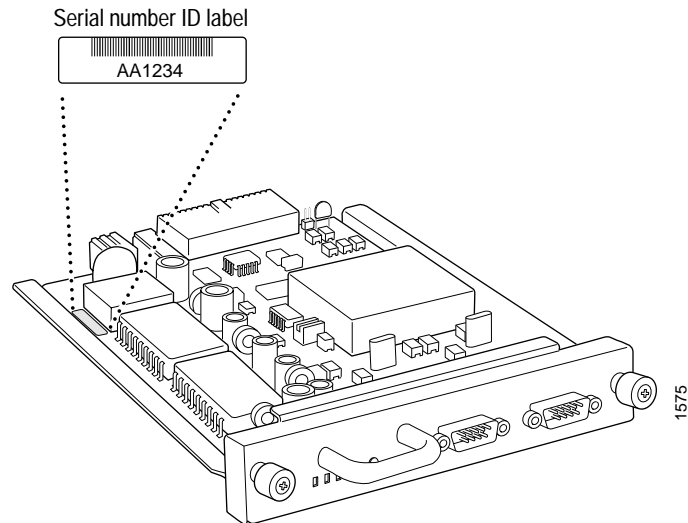
```
user@host> show chassis hardware
Hardware inventory:
Item      Version Part number Serial number Description
Chassis                abcdef      T320
Midplane    REV 01  710-004339 AY4529
FPM GBUS     REV 02  710-004461 AY4511
FPM Display  REV 02  710-002897 HF6094
CIP         REV 05  710-002895 HC0468
PEM 1       Rev 01  740-004359 2708013 Power Entry Module
SCG 0       REV 06  710-004455 AY4526
SCG 1       REV 06  710-004455 AY4523
```

What It Means The command output displays the SCG slot number, revision level, part number, and serial number.

Step 2: Locate the SCG Serial Number ID Label

Action The serial number is located on the top of the SCG, close to the midplane connector (see Figure 133).

Figure 133: Serial Number Label on the SCG



Returning the SCG

The SCGs are hot-pluggable. If both SCGs are installed and functioning normally, SCG0 is master and SCG1 is backup. Removing the backup SCG does not affect the functioning of the routing node. Taking the master SCG offline might result in a brief loss of SONET clock lock while the backup SCG becomes master.

Action To return an SCG, see the appropriate router hardware guide.