Troubleshooting

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Introduction

Troubleshooting Overview

This section describes the troubleshooting methods used in this chapter and describes how the SCE 2000 platform is divided into subsystems for more efficient problem solving. If you are unable to easily solve the problem, contact a customer service representative for assistance and further instructions. Provide the representative with the following information:

- Date you received the router
- Chassis serial number
- Type of software and release number
- Brief description of the problem you are having
- Brief explanation of the steps you have taken to isolate and resolve the problem
- Maintenance agreement or warranty information

Table 8-1 shows the general troubleshooting strategy described in this chapter. Refer to this table, as necessary, to follow the steps to isolate problems to a specific subsystem and resolve the problem if possible.

Table 8-1   Troubleshooting Strategy for Startup Problems

	Action	Yes	No
Step 1	Turn power on. Go to Step 2		
Step 2	Power A/Power B LEDs on?	Go to Step 3	Refer to Troubleshooting the Power Subsystem, page 8-7 and go to Step 3.
Step 3	Status LED red (failure)	Refer to Troubleshooting the Firmware Package Installation, page 8-8 and go to Step 4.	Go to Step 4
Step 4	Management interface operational?	Go to Step 5	Refer to Troubleshooting the Management Subsystem, page 8-9 and go to Step 5.
Step 5	Link interfaces operational?	Go to Step 6	Refer to Troubleshooting the Link Interface Subsystem, page 8-11 and go to Step 6.
Step 6	System startup successful (all interfaces operating normally).	-	-

- Information About Troubleshooting Tools, page 8-3
- Problem Solving Using a Subsystems Approach, page 8-6

Information About Troubleshooting Tools

There are three tools that will help you to successfully troubleshoot your SCE 2000 installation:

- CLI Commands for Troubleshooting, page 8-3
- Checking the LEDs, page 8-4

CLI Commands for Troubleshooting

Use the following commands to provide information to help you troubleshoot installation of your SCE 2000 platform. Refer to the *Cisco SCE 2000 and SCE 1000 Software Configuration Guide* or the *Cisco SCE 2000 and SCE 1000 CLI Command Reference* for more information.

> **Note** Remember that if the management interface is not operational, you should connect the SCE 2000 platform to a local console so that you can enter CLI commands for troubleshooting.

- **Troubleshooting firmware package installation:**
    - **boot system <filename>**— Specifies and verifies the package file to be installed. Error messages or other output identify problems with the package file.

Following is a sample output from the **boot system** command.

```
SCE 2000(config)#boot system ftp://user1:1234@10.10.10.10/downloads/SENum.pkg.pkg
Verifying package file SENum.pkg.pkg…
Package file verified OK.
```

- **Troubleshooting the management subsystem:**
    - **show interface Mng**— Displays IP address and auto-negotiation information for the management interfaces.

Following is a sample output from the **show interface Mng command**.

```
ip address: 10.1.6.145
subnet mask: 255.255.0.0
Configured speed: auto, configured duplex: auto
AutoNegotiation is On, link is Up, actual speed: 100, actual duplex: half
```

    - **show ip default-gateway**   — Displays the IP address of the configured default gateway.

Following is a sample output from the show ip default-gateway command.

```
Default gateway: 10.1.1.1
```

    - **show ip route**— Displays the entire routing table and the destination of last resort (default-gateway).

Following is a sample output from the show ip route command.

```
gateway of last resort is 10.1.1.1
```

    - **show access-lists**— Shows all access-lists or a specific access list.

Following is a sample output from the show access-lists command.

```
Standard IP access list 1
Permit 10.1.1.0, wildcard bits 0.0.0.255
deny any
```

- **show telnet**— Displays the status of the telnet server daemon (**status**) or any active Telnet sessions (**sessions**).

Following is a sample output from the show telnet command.

```
show telnet sessions
There is 1 active telnet session:
Index | Source
================
0    | 10.1.1.201
show telnet status
Telnet deamon is enabled.
```

- **show line vty timeout**— Shows the timeout configured for Telnet sessions.

Following is a sample output from the show line vty timeout command.

```
Timeout is 30 minutes
```

- **Troubleshooting the link interface subsystem:**

  - **show interface GigabitEthernet 0/#**— Displays information for a specific GBE Interface.

Following is a sample output from the show interface command.

```
ip address: 10.1.6.145
subnet mask: 255.255.0.0
Configured duplex: auto
AutoNegotiation is On, link is Up, actual duplex: half
```

  - **show interface GigabitEthernet 0/# counters**— Displays the values of counters of a GBE interface.

Following is a sample output from the show interface counters command.

```
In total octets: 191520
In good unicast packets: 560
In good multicast packets: 0
In good broadcast packets: 0
In packets discarded: 0
In packets with CRC/Alignment error: 0
In undersized packets: 0
In oversized packets: 0
Out total octets: 0
Out unicast packets: 0
Out non unicast packets: 0
Out packets discarded: 0
```

Refer to Troubleshooting with the User Log, page 8-13 for an explanation of commands related to the user log.

Checking the LEDs

The front panel LEDS are the most immediate problem-detection mechanism of the platform. Refer to the following sections for information on SCE 2000 platform LEDS:

- Front Panel, page 2-2
- Information About the Power Supply, page 4-14
- SCE 2000 Operational Status, page 8-5
- SCE 2000 Operational Status, page 8-5

SCE 2000 Operational Status

Table 8-2 lists the operational states of the SCE 2000. The Status LED on the SCE 2000   Front Panel reflects the current SCE 2000   operational status. The operational status can be displayed using CLI command **show system operation-status**.

Table 8-2   SCE 2000 Operational States

SCE 2000 Operational Status	Description	Status LED State
Booting	Initial state after reset	Orange
Operational	SCE 2000 becomes operational after completing the following process: • Boot is completed • Power self-tests are completed without failure • Platform configuration is applied	Flashing green
Warning	SCE 2000 is fully operational (as above) but one of the following occurred: • Line ports (GBE ports) to the link are down • Management port link is down • Temperature raised above threshold • Voltage not in required range • Fans problem • Power supply problem • Insufficient space on the disk **Note** Warning Note: If the condition that caused the SCE 2000 to be in Warning state is resolved (for example, link is up) the SCE 2000 reverts to Operational state. Flashing orange	Flashing orange
Failure	System is in Failure state after Boot due to one of the following conditions: • Power on test failure • Three abnormal reboots in less than 20 minutes • Platform configured to enter Failure mode consequent to failure-induced reboot (this is configurable using CLI command) **Note** Depending on the cause of failure, the management interface and the platform configuration may or may not be active/available. Red	Red

Table 8-3 lists the power supply LEDs and their functions.

Table 8-3   Power Supply LEDs

LED Label	Color	State	Function
IN	Green	On	The input voltage is in the required range.
		Off	The input voltage is not in the required range.
OK	Green	On	The output voltage is in the required range (between 11.9 and 12.1 VDC).
		Off	The output voltage is not within the required range (is greater than 12.1 VDC or less than 11.9 VDC).
Power A/B (front panel)	Green	Steady	Corresponding power supply unit is present and functioning normally.
	Red	Steady	Corresponding power supply unit present, but malfunctioning.
		Off	Corresponding power supply unit is either not present or has failed.

Problem Solving Using a Subsystems Approach

- Identifying Startup Problems, page 8-6
- Troubleshooting the Power Subsystem, page 8-7
- Troubleshooting the Firmware Package Installation, page 8-8
- Troubleshooting the Management Subsystem, page 8-9
- Troubleshooting the Link Interface Subsystem, page 8-11

Identifying Startup Problems

Startup problems are commonly due to the source power or to a poor cable connection.

When you start up the SCE 2000 platform for the first time, you should observe the startup sequence described in the "Basic SCE 2000 Platform Operations" section on page 7-1. This section contains a more detailed description of the normal startup sequence and describes the steps to take if the system does not perform that sequence as expected. LEDs indicate all system states in the startup sequence. By checking the state of the LEDs, you can determine when and where the system failed in the startup sequence. Use the following descriptions to isolate the problem to a subsystem, and then proceed to the appropriate sections to try to resolve the problem.

When you start up the system by turning on the power supply switch, the following should occur:

- You should immediately hear the fans operating.
- When all LEDs come on to indicate that the system has booted successfully, the initial system banner should be displayed on the console screen. If it is not displayed, see How to Set Up the Local Console, page 5-2 to verify that the terminal is set correctly and that it is properly connected to the console port.

- If the banner is displayed, but the Status LED is flashing orange, indicating a warning state, check the user log:

  At the prompt, type: **more user log**

  If any of the following warning messages appear, turn the SCE 2000 platform off and call technical support.

  - "voltage problem:"
  - "fans problem"
  - "abnormal raise in interior temperature:"

- If the following warning message appears, delete unneeded files from the disk.

  - "insufficient disk space:"

Troubleshooting the Power Subsystem

Check Table 8-4 to help isolate a problem in the power subsystem. In the normally configured SCE 2000 platform with redundant power supply units, it is unlikely that the device will not start at all. However, at startup it should be verified that both power supply units are operational, and therefore the following steps should be followed if one of the Power LEDs on the front panel remains unlit when the SCE 2000 platform is powered up.

Note If the system powers off due to an environmental shutdown, wait at least one minute before manually rebooting the system, or it will pause indefinitely.

Table 8-4   Troubleshooting the Power   Subsystem

Symptom	Possible Cause	Possible Solution
Power LED on the front panel and LEDs on the power supply unit are not lit, or do not remain lit continuously.	Power cable not fully seated at system.	Turn the power switch to the off position and reseat the power cable in the system.
	Power cable not fully seated at source.	Turn the switch to the off position and reseat the power cable at the power source.
	Power source is faulty.	Turn the switch to the off position, connect the power cable to another power source, if available, and turn the switch back on.
	Faulty power cable.	Turn the switch to the off position, remove the cable and replace it.
	Faulty power supply.	If the system still fails to come up when the power supply is connected to a different power source with a new power cable, the power supply unit is probably faulty. Contact a service representative.

Troubleshooting the Firmware Package Installation

Check Table 8-5 to help isolate a problem in the installation of the firmware package.

Problems related to the installation of the firmware package could be any of the following:

- File not found in the expected location
- Wrong file type.
- Device to which the file is to be extracted is full.

Table 8-5   Troubleshooting the Firmware Package Installation

Diagnostic Action		

Enter the CLI command:

- **configure**
- **boot system   <filename>**

Symptom	Possible Cause	Possible Solution
Returned error is: `Error-File <filename> does not exist`	The package file does not exist in the specified location.	Verify package file location and try again.
In the output of the command, the package file type is **management-image** instead of **system-image**	Package file type mismatch.	Verify that you are trying to open the correct package file.
In the output of the command, the package file platform is not the correct installation file for the SCE 2000.	Package file platform mismatch.	Verify that you have the package file appropriate to your platform type.
Returned error is: `Package file <filename> does not contain magic header`	The file is not a software installation package file.	Verify that you are trying to open the correct package file.
Returned error is: `Error—There are only X free bytes on device <device name>, but Y bytes are needed for the extraction (where X and Y are stated in bytes)`	/tffs0/ device is full.	Delete old and unnecessary files and try the package extraction again.

Troubleshooting the Management Subsystem

Check Table 8-6 to help isolate a problem in the management subsystem.

Problems in the management subsystem could be any of the following:

- Management link is down. (Mng LINK LED not lit--also Status is WARNING)
- Management link is up (Mng LINK LED lit) but does not answer ping
- Telnet connection cannot be established due to link problems (Mng LINK LED not lit)
- Management link is up (Mng LINK LED lit) but Telnet connection cannot be established
- Telnet connection established, but terminates automatically

Note   When the management link is down and/or a Telnet connection cannot be established, you must open a CLI session on a local terminal connected to the CON port. This enables you to solve the problem and then reconnect through the management port.

Table 8-6   Troubleshooting the Management Subsystem

Symptom	Diagnostic Action	Possible Cause	Possible Solution
Management link down: - Mng LINK LED not lit - Status is WARNING (Status LED is flashing orange)	- CLI command **show interface Mng** - ping to management interface fails	RJ 45 connector is not connected to the platform or to the network.	Reconnect the cable to the Mng port and to network.
		Cable not connected to configured Mng port.	Reconnect the cable to the appropriate port or reconfigure active port. **Interface Mng {0/1 | 0/2} active-port**
		Cable is broken.	Check / Replace the cable.
Management link up: - Mng LINK LED is lit - **ping to** management interface fails	CLI commands - **show ip route** - **show ip default-gateway**	One of the following configurations may be wrong: - IP address / subnet mask - IP default gateway	See Connecting the Management Interfaces and Performing Initial System Configuration, page 5-1 Refer to the Setting the "IP Address and Subnet Mask of the Management Interface" section in the *Cisco SCE 2000 and SCE 1000 Software Configuration Guide*.
	CLI command show access-lists	An ACL may be assigned that denies entry.	See Connecting the Management Interfaces and Performing Initial System Configuration, page 5-1 Refer to "Configuring Access Control Lists (ACLs) **" section** in the *Cisco SCE 2000 and SCE 1000 Software Configuration Guide*.

Table 8-6   ***Troubleshooting the Management Subsystem (continued)***

Symptom	Diagnostic Action	Possible Cause	Possible Solution
• Telnet connection cannot be established • Mng LINK LED is not lit (link is down)	• CLI command **show interface mng**	Management interface IP address or subnet mask is incorrect.	Check / reconfigure management port IP address and subnet mask
• Telnet connection cannot be established • Mng LINK LED is lit (link is up)	CLI command: **show telnet status**	Telnet server is disabled.	Enable Telnet server: `service telnetd`
	CLI command: show telnet sessions	Too many Telnet connections (up to 5 concurrent sessions are supported).	Close one or more of the open Telnet sessions.
	CLI command: `show ip default-gateway`	Default gateway is incorrect (when the host used as client is not in the same network as the SCE Platform).	Check / reconfigure default gateway. See Connecting the Management Interfaces and Performing Initial System Configuration, page 5-1 Refer to the Setting the "IP Address and Subnet Mask of the Management Interface" section in the *Cisco SCE 2000 and SCE 1000 Software Configuration Guide*.
	CLI command: **show ip route <host-ip-address>**	Routing tables are incorrectly configured (when the host used as client is not in the same network as the SCE Platform, and there is more than one gateway on the SCE Platform network).	Check / reconfigure routing tables. See Connecting the Management Interfaces and Performing Initial System Configuration, page 5-1 Refer to the Setting the "IP Address and Subnet Mask of the Management Interface" section in the *Cisco SCE 2000 and SCE 1000 Software Configuration Guide*.
	CLI commands: • **show access-lists** • **show line vty access-class** • **show ip access-class**	Host is not a member of a valid access-list.	See Connecting the Management Interfaces and Performing Initial System Configuration, page 5-1 Refer to "Configuring Access Control Lists (ACLs) **" section** in the *Cisco SCE 2000 and SCE 1000 Software Configuration Guide*.
Telnet connection terminates automatically	CLI commands: • **show line** • **show line vty timeout**	Telnet connection may be timing out.	Reconfigure line timeout. `timeout <time in seconds>`

Troubleshooting the Link Interface Subsystem

Check Table 8-7 to help isolate a problem in the link interface subsystem.

In general, the case where no traffic is coming out of the SCE 2000 is often caused by link problems or GBE interface configuration. Note that in some cases, the problem which seems as a transmit problem could be in the Rx (no traffic is being received by the SCE 2000 or there is actually no traffic on the line, which could be a normal situation).

Note In CLI commands of GigabitEthernet interfaces, # stands for the number of the interface. This can be 1 through 4.

Problems in the link interface subsystem could be any of the following:

- Link is down. (LINK LED not lit and system status is WARNING)
- Peer does not receive traffic from SCE 2000 (GBE link is lit and Tx LED is flashing)
- GBE link is up but not receiving from peer (GBE link is lit, but Rx LED is not flashing)

Table 8-7   Troubleshooting the Link Interface Subsystem

Symptom	Diagnostic Action	Possible Cause	Possible Solution
- Link is down. (LINK LED not lit) - Status is WARNING (Status LED is flashing orange) - Output counters not incrementing.	CLI command: - **show interface GigabitEthernet 0/# counters**	Connector is not connected to the platform or to the network.	Reconnect the cable to the GBE port and to network.
		GBE cable is broken.	Reconnect / replace the cable to the GBE port.
			If GBE counters are incrementing, this indicates LED problem. Contact customer support.
	CLI commands: **show interface GigabitEthernet 0/# counters** Check output of this command for: "In good unicast packet" and "Out unicast packet". These counters should be constantly incrementing.	Auto-negotiation may be incorrectly configured.	Check Cabling the Line Ports and Completing the Installation, page 6-1 configuration in the SCE 2000 and in peer.

Table 8-7   *Troubleshooting the Link Interface Subsystem (continued)*

Symptom	Diagnostic Action	Possible Cause	Possible Solution
• GBE link is up (GBE interface link LED is continuous green and GBE interface Tx LED is flashing) • Peer does not receive traffic from SCE 2000	CLI commands: • **show interface GigabitEthernet 0/# counters** Check output of this command for: "Out unicast packet". This counter should be constantly incrementing. **show interface GigabitEthernet 0/#**	Auto-negotiation is disabled at the SCE 2000 but enabled at peer.	Check configuration in the SCE 2000 and in peer.
• GBE link is up (GBE interface link LED is continuous green) • No traffic received (GBE interface Rx LED is not flashing)		No traffic is being transmitted to the SCE 2000 from its peers.	Check traffic connection at peer.
		Auto-negotiation is disabled at the SCE 2000 but enabled at peer.	Check configuration in the SCE 2000 and in peer.

Troubleshooting with the User Log

The user log is an ASCII file that can be viewed in any editor. It contains a record of system events, including startup, shutdown and errors. You can use the Logger to view the user log to determine whether or not the system is functioning properly, as well as for technical support purposes.

- The Logging System, page 8-13
- Generating a File for Technical Support, page 8-15

The Logging System

Events are logged to one of two log files. After a file reaches maximum capacity, the events logged in that file are then temporarily archived. New events are then automatically logged to the alternate log file. When the second log file reaches maximum capacity, the system then reverts to logging events to the first log file, thus overwriting the temporarily archived information stored in that file.

Basic operations include:

- Copying the User Log to an external source
- Viewing the User Log
- Clearing the User Log
- Viewing/clearing the User Log counters

How to Copy the User Log to an External Source

You can view the log file by copying it to an external source. This command copies both log files to any external host running a FTP server.

Step 1   From the SCE 2000# prompt, type **logger get user-log file-name** *ftp://username:password@ipaddress/path* and press **Enter**.

How to Copy the User Log to an Internal Location

You can view the log file by copying it to disk. This command copies both log files to the local SCE platform disk.

Step 1   From the SCE 2000# prompt, type **logger get user-log file-name** *target-filename* and press **Enter**.

How to View the User Log

Note   This command is not recommended when the user log is large. Copy a large log to a file to view it (see How to Copy the User Log to an External Source, page 8-13)

Step 1   From the SCE 2000# prompt, type **more user-log** and press **Enter**.

The user log appear.

How to Clear the User Log

You can clear the contents of the user log at any time. The user log contains important information regarding the functioning of the system. It is recommended that a copy be made before the log is cleared.

Step 1   From the SCE 2000# prompt, type **clear logger device user-file-log** and press **Enter**.

Step 2   The system asks `Are you sure?`

Step 3   Type **y** and press **Enter**.

The SCE 2000# prompt appears.

How to View the User Log Counters

There are two types of log counters:

- User log counters — count the number of system events logged from the SCE platform last reboot.
- Non-volatile counters — are not cleared during boot time

Step 1   From the SCE 2000# prompt, type **show logger device user-file-log counters** and press **Enter**.

The logger lines information appears, followed by the SCE 2000# prompt.

How to View the Non-volatile Logger Counters For Both the User Log File and the Debug Log File

Step 1   From the SCE 2000# prompt, type **show logger nv-counters** and press **Enter**.

The non-volatile log counter information appears, followed by the SCE 2000# prompt.

How to View the Non-volatile Counter For the User-file-log Only

Step 1   From the SCE 2000# prompt, type **show logger device user-file-log nv-counters** and press **Enter**.

The user-file-log non-volatile log counter information appears, followed by the SCE 2000# prompt.

Generating a File for Technical Support

In order for technical support to be most effective, the user should provide them with the information contained in the system logs. Use the **logger get support-file** command to generate a support file for the use of Cisco technical support staff.

Step 1   From the SCE 2000# prompt, type **logger get support-file** *filename and* press **Enter**.

The support information file is created using the specified filename, and the SCE 2000# prompt appears. This operation may take some time.