APPENDIX A

Troubleshooting

Note The information in this chapter applies to all Catalyst 6500 series switches unless otherwise noted.

This chapter describes how to troubleshoot the Catalyst 6500 series switch hardware installation and contains these sections:

If your system has problems, use the information in this chapter to help isolate the cause. Problems with the initial startup are often caused by a switching module that has become dislodged from the backplane or a power supply that has been disconnected from the power cord connector. Although temperature conditions above the maximum acceptable level rarely occur at initial startup, you might encounter these conditions during extended operation. Long-term monitoring functions also include independent reporting of DC-output voltage problems.

Note This chapter covers only the chassis component hardware aspects of troubleshooting. For module-specific information, refer to the *Catalyst 6500 Series Switch Module Installation Guide*.

Getting Started

When the initial system startup is complete, verify the following:

- Power supplies are supplying power to the system.
- The system fan assembly is operating.

- System software boots successfully.
- The supervisor engine and all switching modules are installed properly in their slots, and each was initialized without problems.

If one or more of the above conditions are not met, use the procedures in this chapter to isolate and, if possible, resolve the problem. If all of the above conditions are met, and the hardware installation is complete, refer to these publications to troubleshoot the software: *Catalyst 6500 Series Switch Software Configuration Guide,* the *Catalyst 6500 Series Switch Cisco IOS Software Configuration Guide,* the *Catalyst 6500 Series Switch Command Reference,* or the *Catalyst 6500 Series Switch Cisco IOS Command Reference*. Also, refer to your software release notes for hardware support information and software caveats.

Solving Problems at the System Component Level

The key to success when troubleshooting the system is to isolate the problem to a specific system component. The first step is to compare what the system *is doing* to what it *should be doing*. Because a startup problem can usually be attributed to a single component, it is more efficient to isolate the problem to a subsystem rather than troubleshoot each separate component in the system.

The switch consists of these subsystems:

- Power supply—Includes the power supplies and power supply fans.
- Fan assembly—The chassis fan assembly should operate whenever system power is on. You should see the FAN LED turn green and hear the fan assembly operating. A red FAN LED indicates that one or more fans in the fan assembly is not operating. You should immediately contact a customer service representative if the fan assembly is not functioning properly. (See the "Contacting Customer Service" section on page A-7.) There are no installation adjustments that you can make if the fan assembly does not function properly at initial startup.
- Supervisor engine—The supervisor engine contains the system operating software, so check your supervisor engine if you have trouble with the system software. Status LEDs on the supervisor engine indicate whether or not the supervisor engine is able to initialize the switching module.

  If you have a redundant supervisor engine, refer to the *Catalyst 6500 Series Switch Software Configuration Guide* or the *Catalyst 6500 Series Switch Cisco IOS Software Configuration Guide* publications for descriptions of how the redundant supervisor engine comes online and how the software images are handled.
- Switching modules—Status LEDs on each switching module indicate if the module has been initialized by the supervisor engine. A switching module that is partially installed in the backplane can cause the system to halt.

Identifying Startup Problems

LEDs indicate all system states in the startup sequence. By checking the LEDs, you can determine when and where the system failed in the startup sequence.

To identify startup problems, follow these steps:

Step 1 Turn on the power supplies. You should immediately hear the system fan assembly begin to operate.

- If you do not hear the fans operating, see the "Troubleshooting the Power Supply" section on page A-4.
- If you determine that the power supplies are functioning normally and that the fan assembly is faulty, contact a customer service representative.
- If the system fan assembly does not function properly at initial startup, there are no installation adjustments that you can make. To replace the fan assembly, see the "Removing and Installing the Fan Tray" section on page 1-82.

Step 2 Verify that the LEDs on the supervisor engine light as follows:

- The STATUS LED should flash orange once and stay orange during diagnostic boot tests. It turns green when the module is operational (online). If the system software is unable to start up, the STATUS LED stays orange.
- The SYSTEM LED should turn green, indicating that all chassis environmental monitors are reporting that the system is OK. If one or more environmental monitor reports a problem, the SYSTEM LED is orange or red.
- The ACTIVE LED should turn green, indicating that the supervisor engine is operational and active. If the supervisor engine is in standby mode, the ACTIVE LED is orange.
- Each LINK LED should flash orange once and stay orange during diagnostic boot tests, and turn green when the module is operational (online). If no signal is detected, the LINK LED turns off. The LINK LED blinks orange if the port is bad.

If any LEDs on the supervisor engine front panel are red or orange, see the "Troubleshooting Modules" section on page A-5.

If you have a redundant supervisor engine, refer to the *Catalyst 6500 Series Switch Software Configuration Guide* or the *Catalyst 6500 Series Switch Cisco IOS Software Configuration Guide* publications for descriptions of how the redundant supervisor engine comes online and how the software images are handled.

For a complete description of the supervisor engine LEDs, refer to the *Catalyst 6500 Series Switch Module Installation Guide.*

Step 3 Verify that the STATUS LEDs on the supervisor engine and on each switching module are green when the supervisor engine completes initialization.

The STATUS LED indicates that the supervisor engine or switching modules are receiving power, have been recognized by the supervisor engine, and contain a valid flash code version. This LED does not indicate the state of the individual interfaces on the switching modules. If a STATUS LED is red or orange, see the "Troubleshooting Modules" section on page A-5.

Step 4 If the startup information and system banner do not display at startup, refer to the *Catalyst 6500 Series Switch Module Installation Guide* to verify that the terminal is set correctly and that it is connected properly to the supervisor engine console port.

Troubleshooting the Power Supply

If the INPUT OK LED does not light after you turn on the power switch, follow these steps to isolate a power subsystem problem:

Step 1 Verify that the INPUT OK LED on the power supply is green.

- If the INPUT OK LED is green, the AC or DC source is good and the power supply is functional.
- If the INPUT OK LED is off, first ensure that the power supply is flush with the back of the chassis. Turn off the power switch, tighten the captive installation screw(s), and then turn on the power switch.
- If the INPUT OK LED remains off, there might be a problem with the AC source, the DC source, or the power cable.
- Turn off the power to the switch, connect the power cord to another power source if one is available, and turn on the power.
- If the INPUT OK LED is green, the problem is the first power source.
- If the INPUT OK LED fails to light after you connect the power supply to a new power source, replace the power cord, and turn on the switch.
- If the INPUT OK LED then goes on, return the first power cord for replacement.

If this unit has more than one power cord, repeat Step 1 for each power supply.

If the INPUT OK LED still fails to light when the switch is connected to a different power source with a new power cord, the power supply is probably faulty.

If a second power supply is available, install it in the second power supply bay, and contact a customer service representative for further instructions.

Step 2 If you have a second (redundant) power supply, repeat Step 1 for this power supply.

If you are unable to resolve the problem or if you determine that either a power supply or backplane connector is faulty, see the "Contacting Customer Service" section on page A-7.

Troubleshooting the Fan Assembly

To isolate a fan assembly problem, follow these steps:

Step 1 Verify that the FAN LED on the fan assembly is green.

If the FAN LED is not green, see the "Solving Problems at the System Component Level" section on page A-2 to determine whether or not the power subsystem is functioning properly.

Step 2 Check to determine if the FAN LED is red. If the FAN LED is red, the fan assembly is not seated in the backplane or has malfunctioned.

Do the following:

- To ensure that the fan assembly is seated properly, loosen the captive installation screws, remove the fan assembly, and reinstall it.
- Tighten all captive installation screws, and then restart the system.
- If the FAN LED is still red, the system detects an individual fan failure. Contact a customer service representative for instructions.

Troubleshooting Modules

To isolate a supervisor engine or switching module problem, follow these steps:

Step 1 Verify that all status LEDs are on.

Step 2 If any status LEDs on the supervisor engine or any switching modules are red or off, the module might have shifted out of its slot. Reseat the module until both ejector levers are at right angles to the rear of the chassis. Tighten the captive installation screws at the left and right of the module front panel, and restart the system.

STATUS LED Indications

The STATUS LEDs can indicate two alarm types: major and minor. Major alarms indicate a critical problem that could lead to the system being shut down. Minor alarms are for informational purposes only, giving you notice of a problem that could turn critical if corrective action is not taken.

When the system has an alarm (major or minor) that indicates an overtemperature condition, the alarm is not canceled and no action is taken (such as a module reset or a shutdown) for 5 minutes. If the temperature falls 5°C (41°F) below the alarm threshold during this period, the alarm is canceled.

Table A-1 lists the environmental indicators for the supervisor engine and switching modules.

Note Refer to the *Catalyst 6500 Series Switch Module Installation Guide* for additional information on LEDs, including the supervisor engine SYSTEM LED.

Table A-1 Environmental Monitoring for Supervisor Engine and Switching Modules

Component	Alarm Type	LED Indication	Action
Supervisor engine temperature sensor exceeds major threshold[1]	Major	STATUS[2] LED red[3]	Syslog message and SNMP trap generated. If redundancy, system switches to redundant supervisor engine and the active supervisor engine shuts down. If there is no redundancy and the overtemperature condition is not corrected, the system shuts down after 5 minutes.
Supervisor engine temperature sensor exceeds minor threshold	Minor	STATUS LED orange	Syslog message and SNMP trap generated. Monitor the condition.
Redundant supervisor engine temperature sensor exceeds major or minor threshold	Major	STATUS LED red	Syslog message and SNMP trap generated. If major alarm and the overtemperature condition is not corrected, the system shuts down after 5 minutes.
	Minor	STATUS LED orange	If minor alarm, monitor the condition.
Switching module temperature sensor exceeds major threshold	Major	STATUS LED red	Syslog message and SNMP trap generated. Power down the module.
Switching module temperature sensor exceeds minor threshold	Minor	STATUS LED orange	Syslog message and SNMP trap generated. Monitor the condition.

1. Temperature sensors monitor key supervisor engine components including daughter cards.
2. A STATUS LED is located on the supervisor engine front panel and all module front panels.
3. The STATUS LED is red on the failed supervisor engine. If there is no redundant supervisor, the SYSTEM LED is red also.

Refer to the *Catalyst 6500 Series Switch Software Configuration Guide,* the *Catalyst 6500 Series Switch Cisco IOS Software Configuration Guide*, the *Catalyst 6500 Series Switch Command Reference,* or the *Catalyst 6500 Series Switch Cisco IOS Command Reference* publications to configure or enable the interfaces. After the system reinitializes the interfaces, the status LED on the module should be green.

If you still experience trouble with the startup, see the "Contacting Customer Service" section on page A-7.

Contacting Customer Service

If you are unable to solve a startup problem after using the troubleshooting suggestions in this chapter, contact a customer service representative for assistance and additional instructions. Before you call, have the following information ready to help your service provider assist you as quickly as possible:

- Date you received the switch
- Chassis serial number (located on a label on the right of the rear panel of the chassis)
- Type of software and release number
- Maintenance agreement or warranty information
- Brief description of the problem
- Brief explanation of the steps you have already taken to isolate and resolve the problem