Troubleshooting Cisco 2800 Series Routers

If you encounter problems with your Cisco 2800 series integrated services router, use this information to isolate problems in the router or to eliminate the router as the source of the problem.

This document includes the following sections:

Note To troubleshoot a network module, refer to the online *Cisco Network Modules Hardware Installation Guide* ; to troubleshoot interface cards, refer to the online*Cisco Interface Cards Installation Guide*.

If you cannot locate the source of the problem, contact a customer service representative for information on how to proceed. For technical support information, refer to the Obtaining Technical Assistance section of the Cisco 2800 Series Hardware Documents: Introduction and Warnings online document. Before you call, have the following information ready:

- Chassis type and serial number
- Maintenance agreement or warranty information
- Type of software and version number
- Date you received the new chassis
- Brief description of the problem
- Brief explanation of the steps you have taken to isolate the problem

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Solving Problems

The key to solving problems is to isolate the problem to a specific subsystem by comparing what the router is doing to what it should be doing.

The LEDs on the front and rear panel of the router enable you to determine router performance and operation. LEDs are described in the following sections:

- Reading System LEDs, page 4
- Reading Port and Module LEDs, page 6

When solving problems, consider the following router subsystems:

- Power and cooling systems—External power source, power cable, router power supply and circuit breaker, and router blower and fan. Also consider inadequate ventilation or air circulation.
- Modules—LEDs on the modules help identify a failure.
- Cables—External cables that connect the router to the network.

Troubleshooting the Power and Cooling Systems

Both the system LED and the fans can help you troubleshoot a power problem. Check the following items to help isolate the problem:

Normal Indications

With the power switch on, the normal indications are:

- SYS PWR LED on green and continuous
- Fans operating
- AUX/PWR LED on green and continuous, if the IP phone power module or Cisco Redundant Power Supply (RPS) is installed

Fault Indications

Check the following symptoms to locate or eliminate faults in the power and cooling systems:

- With the power switch on, is the SYS PWR LED on?
  - If the LED is green and continuous, the router is receiving power and is functional.
  - If the LED is amber, the router is receiving power but is not functional.
  - If the LED is off, check the power source and power cable.
- With the power switch on and the SYS PWR LED on and green, do the fans operate?
  - If no, check the fans.
  - If yes, the power system is functioning.
- With the power switch on and the PWR SYS LED off, do the fans operate?
  - If yes, the router is receiving power. The fans are connected directly to the DC outputs of the power supply.
  - If no, check the power source and power cable.

- Does the router shut down after being on a short time?
  - Check for an environmentally induced shutdown. See the next section, "Environmental Reporting Features."
  - Check the environmental site requirements in the "General Site Requirements" section on page 3.
  - Ensure that all interface cards and internal modules are correctly installed.
  - Check for a power supply failure by inspecting the SYS PWR LED on the front panel. If it is green, the power supply is functional.
- Router partially boots, but LEDs do not come on.
  - Check for a power supply failure by inspecting the SYS PWR LED on the front panel of the router. If the SYS PWR LED is blinking or continuous green or continuous amber, the power supply is functional.
  - If the SYS PWR LED is not on, refer to the "Cisco 90-Day Limited Hardware Warranty Terms" section of the Cisco 2800 Series Hardware Documents: Introduction and Warnings document for warranty information, or contact customer service.
  - Check for a power supply failure by inspecting the power supply LEDs on the front panel. See the "Reading System LEDs" section on page 4 for power supply LED descriptions.

Environmental Reporting Features

If the router is operating at an abnormally high temperature, the following message is displayed on the console screen:

```
%SYS-1-OVERTEMP: System detected OVERTEMPERATURE condition. Please resolve cooling problem
immediately!
```

Some causes of abnormally high router temperature are as follows:

- Fan failure
- Air conditioner failure in the room
- Air blockage to cooling vents

Take steps to correct the problem. See also the "Site Environment" section on page 4, and the "Equipment Racks" section on page 5.

Troubleshooting Modules, Cables, and Connections

Network problems can be caused by a module; cables or cable connections; or external devices such as a modem, transceiver, hub, wall jack, WAN interface, or terminal. Check for the following symptoms to help isolate the problem:

- Module is not recognized by the router.
  - Make sure that the module is firmly seated in its slot.
  - Check the LEDs on the module. Each module has its own set of LEDs. For information on these LEDs, refer to the online *Cisco Network Modules Hardware Installation Guide*.

  - Make sure that you have a version of Cisco IOS software that supports the module. Check the *Cisco 2800 Series Cards and Modules* online document for software requirements for the network module.
- Module is recognized, but interface ports do not initialize.
  - Make sure that the module is firmly seated in its slot.
  - Check external cable connections.
  - Make sure that you have a version of Cisco IOS software that supports the module. Check the software requirements for the affected module, which can be found in the configuration note that shipped with the network module.
- Router does not boot properly, or constantly or intermittently reboots.
  - Make sure that the module is firmly seated in its slot.
  - Check the router chassis or software. Refer to the Cisco 90-Day Limited Hardware Warranty Terms and the Obtaining Technical Assistance sections of the Cisco 2800 Series Hardware Documents: Introduction and Warnings online document for warranty and customer service contact information.
- Router boots, but the console screen is frozen, displays no output, or displays garbled output.
  - Check the external console connection.
  - Verify that the parameters for your terminal are set as follows:

    (a) The same data rate as configured for the router (9600 baud is the default)

    (b) 8 data bits

    (c) 1 stop bit

    (d) No parity generated or checked
- Router powers on and boots only when a particular module is removed.
  - Check the module. Refer to the Cisco 90-Day Limited Hardware Warranty Terms and the Obtaining Technical Assistance sections of the Cisco 2800 Series Hardware Documents: Introduction and Warnings online document for warranty and customer service contact information.
  - Confirm that the Cisco IOS release installed in the router supports the card. The *Cisco Interface Cards Installation Guide* lists the software requirements for each card.
- Router powers on and boots only when a particular cable is disconnected.
  - There may be a problem with the module or cable. Cisco 90-Day Limited Hardware Warranty Terms and the Obtaining Technical Assistance sections of the Cisco 2800 Series Hardware Documents: Introduction and Warnings online document. document for warranty and customer service contact information.

Reading System LEDs

The system LEDs on the front panel of the router provide information about the power, data packet activity, and flash memory activity. For an explanation of these LEDs see Table 1.

Table 1 System LEDs on Cisco 2800 Series Routers

LED Indicator	State	Meaning	Possible Causes and Corrective Actions
SYS PWR	Off	If the fan is not running— • No output from the internal power supply.	Power not switched on at the router. Power not available from source. Faulty input power wires or connections. Failed power supply in the router. To replace the internal power supply, refer to the Replacing the Power Supply section of the Installing and Upgrading Internal Modules in Cisco 2800 Series Routers online document.
		If the fan is running— • Router fault	Failure in one or more system board components. Contact Cisco technical support. Refer to the Obtaining Technical Assistance section of the Cisco 2800 Series Hardware Documents: Introduction and Warnings online document.
	Solid green	Router is receiving power, and the internal power supply is functional.	Normal indication. No action required.
	Blinking green	During bootup, router is booting up normally.	Normal indication. No action required.
		After bootup, router is operating in ROM monitor mode.	Refer to the router rebooting and ROM monitor information in the *Cisco IOS Configuration Fundamentals Configuration Guide* for your Cisco IOS software release.
AUX/PWR	Off	IP power is not installed, and RPS is not connected or not powered up.	If RPS is connected, power it up to provide backup power. Otherwise, no action is required.
	Solid green	IP power is functional, if installed. RPS is functional, if connected.	Normal indication. No action required for IP power or RPS.
	Solid amber	If RPS backup is not connected, IP power output has failed.	Replace AC power supply.Refer to the Replacing the Power Supply section of the Installing and Upgrading Internal Modules in Cisco 2800 Series Routers online document.
		If IP power is not installed, RPS has failed.	Repair or replace the RPS. Refer to the *Cisco RPS-675 Document*.
		If RPS backup is connected and IP power is installed, either one or both has failed.	Check RPS, and repair or replace if faulty. Refer to the *Cisco RPS-675 Document*. Check AC power supply, and replace if faulty. Refer to the Replacing the Power Supply section of the Installing and Upgrading Internal Modules in Cisco 2800 Series Routers online document.

Table 1 System LEDs on Cisco 2800 Series Routers (continued)

LED Indicator	State	Meaning	Possible Causes and Corrective Actions
SYS ACT	Off	No packet transfers are occurring.	Ethernet not active or not connected. Check Ethernet connections and make corrections as necessary. Router not configured properly. Check configuration and make corrections as necessary.
	Blinking	System is actively transferring packets or is monitoring internal activities.	Normal indication. No action required.
CF	Off	The flash memory is not being accessed.	Normal indication. No action required. It is okay to remove the CompactFlash memory card if the CF LED remains off.
	Solid green or blinking	The flash memory is being accessed.	Normal indication. No action required. Caution: Do not remove the CompactFlash memory card while it is being accessed.

Reading Port and Module LEDs

The port and module LEDs, located on the front panel of the router on the Cisco 2801 router and on the rear panel of the router on the Cisco 2811, Cisco 2821, and Cisco 2851 routers, enable you to determine router performance and operation. For an explanation of these LEDs see Table 2.

Table 2 LED Indicators on Cisco 2800 Series Routers

LED Indicator	State	Meaning	Corrective Action
A = ACT	Off	Ethernet interface next to the LED is not receiving packets.	Ethernet not active or not connected. Check Ethernet connections and make corrections as necessary. Router not configured properly. Check configuration and make corrections as necessary.
	Solid or blinking green	Ethernet interface next to the LED is receiving packets.	Normal indication. No action required.
F = FDX	Off	Ethernet port next to the LED is operating in half-duplex mode.	Indication is for information only.
	Solid green	Ethernet port next to the LED is operating in full-duplex mode.	Indication is for information only.

Table 2 LED Indicators on Cisco 2800 Series Routers (continued)

LED Indicator	State	Meaning	Corrective Action
S = Speed	1 blink + pause (Off (Cisco 2801 router))	Ethernet port next to the LED is operating at 10 Mbps.	Indication is for information only.
	2 blinks + pause (On (Cisco 2801 router))	Ethernet port next to the LED is operating at 100 Mbps.	Indication is for information only.
	3 blinks + pause[1]	Ethernet port next to the LED is operating at 1000 Mbps.	Indication is for information only.
L = Link	Off	Ethernet link is not established.	Ethernet not active or not connected. Check Ethernet connections Router not configured properly. Check configuration and make corrections as necessary.
	Green	Ethernet link is established.	Normal indication. No action required.
PVDM0 PVDM1 PVDM2[2] (Packet voice data modules)	Off	No PVDM installed in slot (0, 1, 2).	Indication is for information only.
	Green	PVDM in slot (0, 1, 2) is initialized.	Normal indication. No action required.
	Amber	During bootup—PVDM in slot (0, 1, 2) is detected. After bootup—PVDM in slot (0, 1, 2) failed to initialize.	If PVDM fails to initialize, replace the PVDM. To replace the PVDM, refer to the Installing and Removing PVDMs section of the Installing and Upgrading Internal Modules in Cisco 2800 Series Routers online document.
AIM0 AIM1 (Advanced integration modules)	Off	No AIM installed in slot (0, 1).	Indication is for information only.
	Green	AIM in slot (0, 1) is initialized.	Normal indication. No action required.
	Amber	AIM in slot (0, 1) failed to initialize.	Replace the AIM. To replace the AIM, refer to the Installing and Removing AIMs section of the Installing and Upgrading Internal Modules in Cisco 2800 Series Routers online document.

1. The 3 blinks+pause state is applicable to the Cisco 2821 and Cisco 2851 routers only. The Cisco 2801 and Cisco 2811 do not have 1000 Mbps ethernet ports.
2. The PVDM2 LED is applicable only to the Cisco 2821 and Cisco 2851 routers.

System Messages

This section describes system error and recovery messages that may appear when a Cisco 2800 series router is operated. Cisco IOS software displays system error and recovery messages on an external device console terminal screen. (For more information, see the "Connecting to a Console Terminal or Modem" section on page 11.)

The terminal should display one of the following prompts:

`Router>` (indicates the user EXEC command mode)

or

`Router#` (indicates the privileged EXEC command mode)

The Cisco IOS software checks the system condition once every 30 seconds. If the condition still exists, the error message appears again; if the error condition has cleared, a recovery message appears.

Table 3 describes system error and recovery messages and LED conditions that might accompany them.

Note Table 3 does not provide a complete list of system LED conditions. (For all LED conditions that can occur in your router, see the "Reading System LEDs" section on page 4 and the "Reading Port and Module LEDs" section on page 6.)

Table 3 System Error and Recovery Messages

LED Type	LED Color	Message, Meaning, and Recommended Action

SYS PWR	Amber	Error:
		`%SYS-1-OVERTEMP: System detected OVERTEMPERATURE condition. Please resolve cooling problem immediately!`
		
		Explanation:
		The router is operating at an abnormally high temperature, possibly caused by one or more of the following conditions:
		• Fan failure
		• Air conditioner failure in the room
		• Air blockage to cooling vents
		Recovery:
		Make sure that the room temperature is not too high and that airflow to the router is not blocked. See also the "Site Environment" section on page 4 and the "Equipment Racks" section on page 5.
		If this condition persists, the environmental monitor might shut down the system. Call your Cisco technical support representative for assistance, if necessary.
		When the error condition is resolved, the SYS PWR LED changes to green, and the following informational message appears:
		`%ENVMON-3-OVERTEMP_OK: System temperature normal`
		Note These messages are not supported on the Cisco 2801.

Table 3 System Error and Recovery Messages (continued)

LED Type	LED Color	Message, Meaning, and Recommended Action
—	—	Error: `%ENVMON-3-FAN_FAILED: Fan fan-number not rotating.` Explanation: The specified fan (1, 2, or 3) is not rotating at the desired speed. Recovery: Make sure that the fan power cable is properly attached to the mainboard fan power connector. If the problem persists, contact your technical support representative.
AUX/ PWR	Amber	Message: `%ENVMON-5-48V_STATUS: -48V supply failed` Explanation: The –48 V power supply has failed. Recommended action: Replace the power supply. Refer to the Replacing the Power Supply section of the Installing and Upgrading Internal Modules in Cisco 2800 Series Routers online document.
AUX/ PWR	Green	Message: `%ENVMON-5-48V_STATUS: -48V supply OK` Explanation: The –48 V power supply is operating normally. Recommended action: Message is informational only.
—	—	Message: `%ENVMON-5-RPS: Redundant power supply attached` Explanation: Redundant power supply was connected to the router. Recommended action: Message is informational only. **Note** The Cisco 2801 does not support RPS. This message is not applicable to the Cisco 2801.
—	—	Message: `%ENVMON-5-RPS: Redundant power supply removed` Explanation: Redundant power supply was disconnected from the router. Recommended action: Message is informational only. **Note** The Cisco 2801 does not support RPS. This message is not applicable to the Cisco 2801.

Table 3 System Error and Recovery Messages (continued)

LED Type	LED Color	Message, Meaning, and Recommended Action
AUX/ PWR	Amber	Message: `%ENVMON-5-RPS_STATUS: RPS standby/faulty` Explanation: Redundant power supply has failed or has gone into standby mode. Recommended action: Check the redundant power supply. If faulty, disconnect it from the router and contact your Cisco technical support representative. **Note** The Cisco 2801 does not support RPS. This message is not applicable to the Cisco 2801.
AUX/ PWR	Green	Message: `%ENVMON-5-RPS_STATUS: RPS not available` Explanation: Redundant power supply is connected to the router, but is not available to back up the internal power supply. Recommended action: Message is informational only. **Note** The Cisco 2801 does not support RPS. This message is not applicable to the Cisco 2801.
AUX/ PWR	Green	Message: `%ENVMON-5-RPS_STATUS: RPS in use` Explanation: The router is receiving power from the redundant power supply. Recommended action: Message is informational only. **Note** The Cisco 2801 does not support RPS. This message is not applicable to the Cisco 2801.
AUX/ PWR	Green	Message: `%ENVMON-5-RPS_STATUS: RPS ready/available` Explanation: Redundant power supply is connected to the router and is powered up, but the router is not receiving power from the redundant power supply. Recommended action: Message is informational only. **Note** The Cisco 2801 does not support RPS. This message is not applicable to the Cisco 2801.

Table 3 System Error and Recovery Messages (continued)

LED Type	LED Color	Message, Meaning, and Recommended Action
—	—	Message: `%ENVMON-1-NO_PROCESS: Failed to create environmental monitor process` Explanation: The router failed to establish the environmental monitor process. The amount of memory available in the router may not be sufficient. Recommended action: Increase the amount of memory (RAM) in the router.

Recovering a Lost Password

You can recover a lost enable password, but an enable secret password is encrypted and is not recoverable. If you lose an enable secret password that is configured on your router, you can replace it with a new enable secret password.

For password recovery and replacement procedures for the Cisco 2800 series routers, refer to the *Password Recovery Procedures* document on Cisco.com.

More Troubleshooting Help—Cisco Technical Assistance Center

For online troubleshooting help, go to the TAC Case Collection Tool and Troubleshooting Assistant.

You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

For additional troubleshooting tools and information, go to the Troubleshooting Links index.