

# Hardware Troubleshooting

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This appendix contains procedures that help you troubleshoot physical problems with a Catalyst 3900 Token Ring Switch and its connections to other devices.



**Caution** There are no operator-serviceable parts in the Catalyst 3900. Refer servicing to qualified personnel.

## Obtaining Service

There are no serviceable parts inside the Catalyst 3900. Do not remove the cover for any reason. The Catalyst 3900 and each feature card are individually replaceable.

## Summary of the Hardware Troubleshooting Process

If one or more devices (such as a computer) connected to a Catalyst 3900 are unable to communicate with other devices in the network, use the following steps to start the troubleshooting process:

- Step 1** Using the network sketch, the label on the cable connected to the device, or other network records, locate the Catalyst 3900 to which the device is connected.
- Step 2** If all troubled devices connect to a single feature card, use the feature card documentation to assist in troubleshooting.
- Step 3** If you have set up a console session (described in the “Planning for Configuration and Management” chapter), it can be used to determine whether diagnostics have been completed correctly. Refer to the “Resetting the Catalyst 3900” chapter for more information.
- Step 4** Observe the LEDs on the Catalyst 3900 front panel. Review the “Understanding the LEDs” section in this appendix before proceeding with the troubleshooting process.
- Step 5** Select a troubleshooting procedure as described in the “Choosing a Troubleshooting Procedure” section in this appendix.

## Understanding the LEDs

This section describes the meanings of the various states of the LEDs that are on the Catalyst 3900 and its expansion modules.

### Switch LEDs

Table C-1 lists the Catalyst 3900 status LEDs and their meanings.

**Table C-1 Catalyst 3900 Status LEDs and Their Meanings**

LED	Position	State	Meaning
Power (green)	Left	On	Power supply current is good.
		Off	Power supply current is bad.
Mode (green)	Middle	On	Boot is in progress.
		Off	Catalyst 3900 is working correctly.
		Blinking	The FLASH update portion of a TFTP download is in progress.
Fault (Amber)	Right	On	Power-on failure has occurred.
		Off	Catalyst 3900 is working correctly.

### Port LEDs

Table C-2 lists the port LEDs and their meanings.

**Table C-2 RJ45 Port LEDs and Their Meanings**

LED	Position	State	Meaning
INS (insert)	Left	On	Port is inserted.
		Off	Port is not inserted.
ACT (activity)	Right	On	Port is transmitting or receiving.
		Off	Port is idle.

### Stack Port Module LEDs

Table C-3 lists the stack LEDs and their meanings.

**Table C-3 Stack LEDs and Their Meanings**

LED	Position	State	Meaning
TX (transmit)	Left	On	Data is being transmitted.
		Off	Data is not being transmitted.
RX (receive)	Middle	On	Data is being received.
		Off	Data is not being received.
ATTACH	Right	On	Connection to the stack is operational.
		Off	Connection to the stack is not operational.

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## Fiber and UTP/STP Module LEDs

There are status LEDs on the front of the 4-port fiber and the 4-port UTP/STP Token Ring modules that indicate the operational status of the ports and the module.

Table C-4 lists the LEDs for the module and their meanings.

**Table C-4 Fiber and UTP/STP Module LEDs**

<b>Diag</b>	<b>Fault</b>	<b>Meaning</b>
On	Off	Diagnostics are in process
On	On	Expansion module failure has occurred.

Table C-5 lists the LEDs for the ports and their meanings.

**Table C-5 Fiber and UTP/STP Port LEDs**

<b>LED</b>	<b>Location</b>	<b>State</b>	<b>Meaning</b>
Ins	Top	On	Port is inserted into the ring.
		Off	Port is not inserted into the ring.
Act	Bottom	On	Data is being transmitted by the port.
		Off	No activity on the port.

## ATM Module LEDs

Table C-6 describes the ATM module status LEDs and their meanings.

**Table C-6 ATM Expansion Module Status LEDs**

<b>Diag (green)</b>	<b>Fault (amber)</b>	<b>Meaning</b>
On	Off	Diagnostics are in process
Flashing	Flashing	LED testing is in progress.
On	On	Expansion module failure has occurred.

Table C-7 describes the ATM port status LEDs and their meanings.

**Table C-7 ATM Port Status LEDs**

<b>Rx Sync (green)</b>	<b>Fault (amber)</b>	<b>Meaning</b>
Off	On	Signal loss.
On	Off	Connection is synchronized.
Flashing	Off	Auto is disabled.
Off	Flashing	Port is disabled
Flashing	Flashing	Loopback test is in progress.

## ISL Module LEDs

There is one status LED for the ISL module. It is the DIAG LED. The DIAG LED is lit during power-up diagnostics. If one of the ports on the module fails the diagnostic tests, the DIAG LED will remain lit. Otherwise, it is off.

There are three status LEDs for each of the ports. Table C-8 lists the port LEDs and their meanings.

**Table C-8 ISL Port LEDs**

<b>LED</b>	<b>State</b>	<b>Meaning</b>
XMT	On	Port is transmitting.
RCV	On	Port is receiving.
LNK/FDX	On	Port is inserted into the network and is functioning in full-duplex mode. This LED is also on briefly at the end of the power-on sequence.

## Choosing a Troubleshooting Procedure

Use Table C-9 to determine which troubleshooting procedure you should use.

**Table C-9 Symptom, LED State, and Recommended Troubleshooting Procedure**

<b>Symptom and LED State</b>	<b>Procedure</b>
All LEDs are off.	A
Fault LED is on.	B
None of the devices connected to the Catalyst 3900 can communicate, the Fault LED is off, and the Power LED is on.	C
Single device connected to the Catalyst 3900 is having trouble communicating.	D
Feature card's Fault LED is on or device connected to a feature card is experiencing problems.	See the expansion module documentation.

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## Procedure A

Use the following procedure if all LEDs are off:

- Step 1** Verify that the power cord is connected at both ends and that the power outlet is working.
- Step 2** If the power cord is connected correctly, the outlet is working, and the problem persists, the problem is in the Catalyst 3900. Contact the Cisco TAC.

## Procedure B

Use the following procedure if the Fault LED (amber) is on:

- Step 1** Reset the Catalyst 3900 by disconnecting the power cord. Wait 10 seconds and then reconnect the cord. If the problem goes away, resume using the Catalyst 3900.
- Step 2** If you have just downloaded new software, clear NVRAM and reset the Catalyst 3900 using the instructions in the “Resetting the Catalyst 3900” chapter.

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**Note** Clearing NVRAM returns all configuration parameters to their default values.

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- Step 3** Reset the Catalyst 3900 and monitor the diagnostic messages for individual port failures. Correct any individual port problems that are detected. If the failing ports are feature card ports, use the feature card documentation to try to correct the problem.
- Step 4** If the problem persists, the problem is in the Catalyst 3900. Contact the Cisco TAC.

## Procedure C

Use the following procedure if all devices connected to the Catalyst 3900 have communication problems, the Catalyst 3900 Fault LED is off, and the Mode LED is off:

Reset the Catalyst 3900 by disconnecting power cord for 10 seconds. Reconnect the power cord.

- If the problem is corrected, resume using the Catalyst 3900.
- If the box status LEDs indicate a failure, go to Procedure B.
- If the problem persists, check all the configuration parameters.
- If the problem continues, go to Procedure D to correct problems with the individual ports.

### Procedure D

Use the following procedure if one device connected to the Catalyst 3900 is having a communication problem, the Catalyst 3900 Fault LED is off, Mode LED is off, and other attached devices can communicate through the Catalyst 3900:

**Step 1** Check the port LEDs.

- If the port Connect LED is on, the problem is probably external to the Catalyst 3900. Go to Step 2.
- If the port Connect LED is off, the port is probably disabled. Check that the port configuration matches the attached device, and then go to Step 3.
- If the port Connect LED is blinking, go to Step 4.

**Step 2** If the Connect LED on the failing port is on and the attached device still cannot communicate, do the following:

- If the attached device is directly connected, it might be set up incorrectly. Go to Step 4.
- In a shared environment, check the segment cabling and the media access unit.
- If problem persists, try another identically configured port on the Catalyst 3900. If the new port works, there is a problem with the failed port. Contact the Cisco TAC.

**Step 3** Determine whether the port has been disabled:

- If the port is disabled, enable it. A port will disable itself when the Config Loss parameter is exceeded. This can be caused by poor cables, a faulty station connected to the Catalyst 3900, or a bad port on the Catalyst 3900.
- If the port is not disabled, disconnect the port cable. If the LED does not start flashing within a few seconds, the port is bad and the Catalyst 3900 needs service. Try moving the cable to another port with a flashing Connect LED until service can be arranged. If the Catalyst 3900 can be temporarily removed from service, connect a console and reset the Catalyst 3900 with diagnostics to see whether the port passes diagnostics and initializes. If it does not, the problem is in the Catalyst 3900. Contact the Cisco TAC.

**Step 4** Restart the communications program on the failed connected device.

- If the communication program appears to start without errors, observe the Connect LED on the Catalyst 3900 port. If it is on, the problem may have been corrected. Check the Config Loss parameter in the Port Configuration Menu for possible causes of the failure.
- If problem persists, try another identically configured port on the Catalyst 3900. If the new port works, there is a problem with the failed port. Contact the Cisco TAC.

**Step 5** If the Catalyst 3900 is connected to a Token Ring concentrator, perform the following steps:

- Verify that the Catalyst 3900 duplex setting matches the attached device.
- Verify that the concentrator is operating correctly.
- Verify that only one cable interconnects the two devices. In other words, only one port on the Catalyst 3900 should be connected to a port on the concentrator.

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**Step 6** For each device that is having a communication problem, connect its segment to another Token Ring port on the Catalyst 3900. Try each of the remaining ports to determine whether the problem is in a particular port.

- If the problem is corrected by using a different port, the problem might be in the Catalyst 3900. Contact the Cisco TAC.
- If the problem persists, continue with the Step 7.

**Step 7** The problem does not appear to be in the Catalyst 3900, the cables, or the devices connected to the Catalyst 3900. The problem might be in the network applications or other software running on the devices that are having the communication problem. Refer to the software documentation for software problem determination procedures, or consult your network administrator.

