Troubleshooting

There are several ways to troubleshoot problems associated with an EtherSwitch 1420 or EtherSwitch 1220 installation and performance. The LEDs on the front panel are the quickest way to evaluate the operation of the switch; statistics provided by the management console or SNMP management station can provide more details about the cause of connectivity and performance problems; the power-on self-test (POST) ensures that the switch is functioning properly at installation and when subsequently powered on.

Potential problems can be grouped into the following categories:

- POST failure
- Poor performance
- No connectivity
- Unable to access out-of-band management

POST Failure

When the EtherSwitch 1420 or 1220 is first turned on and the switch begins its POST, the system and port LEDs are green. As each of the 13 tests is run, the port LEDs, starting with number 16, turn off. (Because there are only 13 tests, LEDs 15, 14, and 13 are unaffected.)

After the POST completes successfully, the port LEDs turn green, indicating that the switch is operational. If a test fails, the associated port LED stays off, and the system LED turns amber.

All POST failures except the real-time clock test (number 5) are fatal. If the real-time clock fails POST, the switch begins forwarding packets, but the system LED turns amber, and a POST-failure message appears on the console screen. Certain switch features, such as the bandwidth utilization meter, are lost if the real-time-clock test fails.

Your switch will not become operational if it fails POST. If the switch fails POST, contact Cisco Systems or your authorized reseller to return the switch.

Note   When the POST completes successfully, Spanning-Tree Protocol (if enabled) immediately turns the port LEDs amber while it discovers the network's topology. Spanning-tree discovery takes approximately 30 seconds to complete, and no packet forwarding takes place during this time.

Diagnosing Problems

Use Table 7-1 to identify your problem and resolve it. Note that those problems that refer to high-speed expansion slots and their inserted modules apply only to the EtherSwitch 1420.

Table 7-1   Common Problems and Their Solutions

Symptom	Possible Cause	Resolution
Poor Performance or Excessive Errors	Incorrect Full-Duplex Settings for 100BaseT Connections	
	The full-duplex setting for modules is indicated by the full-duplex LED on the module front panel. Fixed 100BaseTX full-duplex port status is shown with the Mode button and the FDUP LED.	
	Check the port's statistics:	
	• FCS and alignment errors on the port mean the switch port is configured for full duplex and the other device is a repeater or half-duplex device.	Configure port for half duplex.
	• Late collisions mean the port is configured for half duplex and the attached device is full duplex.	Configure the port for full duplex.
	Cabling Distance Exceeded	
	Port statistics show excessive FCS, late-collision, or alignment errors. For 100BaseTX connections:	
	• The distance between the port and the attached device exceeds 100 meters.	Reduce the cable length to within the recommended distances.
	• If attached to a repeater, the total distance between the two end stations exceeds the 100BaseT cabling guidelines.	See your 100BaseT repeater documentation for cabling guidelines.
	For 10BaseT connections: The distance between the port and the attached device exceeds 100 meters.	Reduce the cable length to within the recommended distances.
Poor Performance or Excessive Errors	Bad Adapter in Attached Device	
	Excessive errors found in port statistics.	Run adapter card diagnostic utility.

Symptom	Possible Cause	Resolution
No Connectivity	Incorrect or Bad Cable	
	The following connectivity problems could generate no-link indications at either end:	
	• A crossover cable was used when a straight-through was required, or vice-versa.	See the "Connector Pinouts" section in Appendix A for the correct pinouts and the proper application of crossover vs. straight-through cables.
	• The cable could be incorrectly wired. Replace cable with a tested good one.	
	• Bad cable	Replace with a tested good one.
	NetWare Network Numbers Misconstrued	

	If NetWare is used, the following message can appear on the server screen:
	
	`Router configuration error detected.`
	`Node xxxxxxxx claims network zzzzzzzz`
	`should be yyyyyyyy.`
	`If you're using the IP protocol, try`
	`pinging the other end.`
		All the nodes connected to ports in a single VLAN should all be assigned the same network number.

	VLANs Misconfigured	
	• Ports are assigned to different VLANs and cannot communicate.	Ensure the two nodes are connected to ports on the same VLAN. See the "VLAN Configuration" section in the "Out-of-Band Management" chapter to list ports of a VLAN. If you're using SNMP, see the "EtherSwitch 1420 and 1220 Enterprise-Specific MIB" section in the "In-Band Management" chapter for the MIB objects to use.
	• If a port belongs to two or more VLANs and the VLANs are connected in other ways besides the overlapping port, an unstable topology can be created.	If there is a router, check the router configuration. Eliminate one of the two connections between the two VLANs.
Expansion Slot A or B LEDs Off	EtherSwitch 1420 Module Not Properly Installed	See the Troubleshooting chapter of the *EtherSwitch 1420 Modules Installation Guide*.

Symptom	Possible Cause	Resolution
System LED Amber; All Port LEDs Off	Corrupted Firmware	Attach a monitor to the serial port to display the diagnostic console. See the "Diagnostic Console Menu" section of this chapter for firmware upgrade instructions.
Unable to Access Management Console	• Configuration Problems	Use the diagnostic console described in the "Diagnostic Console Menu" section of this chapter to reset the switch.
	• Incorrect Baud Rate	Reset the modem parameters to their factory defaults with the diagnostic console.

Using the Diagnostic Console

The diagnostic console is for those instances when the switch firmware has been corrupted or the present switch configuration prevents the firmware from executing properly. The Diagnostic Console Logon screen shown in Figure 7-1 is displayed when the firmware has been corrupted.

Figure 7-1   Diagnostic Console Logon Menu

```
Cisco Systems Diagnostic Console
Copyright(c) Cisco Systems, Inc. 1996
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Ethernet Address: 00-C0-1D-80-19-39
-------------------------------------------------


Press enter to continue.
```
H7003

If you have defined a password for the switch, you are prompted for the password. If you have forgotten the password, you can obtain a factory-installed password by calling Cisco Systems and providing the Ethernet address displayed on the screen.

If no password has been defined, press **Return** to display the diagnostic console shown in Figure 7-2.

Displaying the Diagnostic Console

There can be times when you need the diagnostic console even though the firmware is valid. This could happen, for example, if a switch configuration prevents the firmware from executing properly and you cannot display the normal console.

Use the following procedure to override the normal firmware startup and immediately display the diagnostic console.

Step 1   Attach a monitor to the switch RS-232 port.

Step 2   Disconnect the power cord from the rear panel.

Step 3   Press the LED Mode button on the front panel and hold it in.

Step 4   While holding in the LED Mode button, reconnect the power cord.

Step 5   The Diagnostic Console Logon panel shown in Figure 7-1 appears.

Diagnostic Console Menu

Use this menu, shown in Figure 7-2, to troubleshoot firmware problems and then bring up the firmware as usual.

Figure 7-2   Diagnostic Console

```
Diagnostic Console  - Systems Engineering

      Operation firmware version:  5.10     Status: valid
      Boot firmware version:  1.06


  [C] Continue with standard system start up
  [U] Upgrade operation firmware (XMODEM)
  [S] System Debug Interface

Enter Selection:
```

H7004

Operation firmware version: Status:	Validity of the current firmware. If the current image is not valid, option C on the diagnostic console is not displayed.
Boot firmware version:	Write-protected part of the firmware that supports the diagnostic console.

[C] Continue with standard system startup. Select this option after you have resolved the firmware problems with options [U] or [S]. It brings up the firmware as usual.

[U] Upgrade Operation Firmware. Select this option to initiate a firmware upgrade. This option works only with XMODEM and only uses the default RS-232 parameters:

- 9600 baud

- Eight data bits

- One stop bit

- Parity: none

Use the following procedure to upgrade the firmware with the XMODEM.

Note   This procedure is largely dependent on the modem software you're using.

Step 1   Select option **U**.

Step 2   When the first XMODEM request appears, use the appropriate command to start the transfer.

Step 3   The diagnostic console is displayed when the upgrade is complete. Press **C** to restart the switch using the upgraded firmware.

[S] System Debug Interface. Select this option to display the System Debug Interface menu shown in Figure 7-3. You can use this menu to reset the management console RS-232 interface or the entire switch to the factory defaults.

System Debug Interface Menu

Use this menu, shown in Figure 7-3, to reset the RS-232 interface or the entire switch to the factory defaults. You can also use the management console to perform these functions.

Figure 7-3   System Debug Interface

```
Diagnostic Console  - System Debug Interface

       [G] Generic I/O
       [M] Memory (CPU) I/O
       [A] ASIC I/O
       [V] View Management Console Password
       [F] Return system to factory defaults
       [R] Reset main console RS232 interface to 9600,8,1,N

       [X] Exit to Previous Menu


 Enter Selection:
```

H7032

[G] Generic I/O. For Cisco personnel only.

[M] Memory (CPU) I/O. For Cisco personnel only.

[R] Return system to factory defaults. Use this option to return the switch to its factory settings. All static and dynamic addresses are removed, as is the IP address and all other configurations. Enter **Y** or **N** and press **Return**. The changes take effect the next time the switch is reset.

[R] Reset main console RS232 interface to 9600, 8, 1, N. Select this option if you have lost the management console connection because of an improper modem configuration. The next time the switch is reset, the default RS-232 configuration is used.