Troubleshooting

Read this chapter to learn about the switch diagnostic tools and troubleshooting features designed to help you solve network-related problems. The tasks in this chapter are independent, unless otherwise noted, and are listed in no particular order.

Before You Begin

Familiarize yourself with the monitoring features (see Chapter 4, "Monitoring") from which you can find out the specific problems on the switch and from which you can prevent problems by addressing problematic trends.

Chapter Topics

Run a Diagnostic Test

When the switch detects a problem, the Alert LED turns amber, and the Status field lists the detected problem. From the Diagnostics window (Figure 5-1), you can run switch and link diagnostic tests to solve the problems that the switch finds.

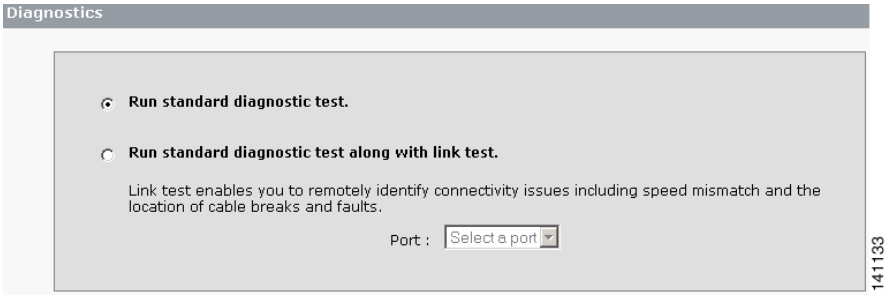
- The switch diagnostic test detects system and port problems on the switch. For example:
  - Power-on self-test (POST) error
  - Port-to-Smartports configuration mismatch
  - Duplex mode mismatch
- The link diagnostic test on a specific port detects speed mismatch and cable-related issues on the port or the circuit. For example:
  - Unconnected cable
  - Cable too short or too long
  - Faulty cable

Note The link test is run on a port that is not in a link-up state because it can interrupt traffic between the switch port and its connected device. Run the link test only on a port that has a suspected problem. Before running the link test, use the Front Panel view, the Port Status, and the Port Statistics windows to determine the details of the problem.

Tip Use the diagnostics report with the Alert Log. The log includes the last time at which the problems were detected by the switch. Solving the problems does not turn off the Alert LED. You must also click the **Clear Log** button in the Alert Log.

To display the Diagnostics window (Figure 5-1), choose **Diagnostics** from the device manager menu. You can also display the Diagnostics window by clicking the **Get Details** button in the Status field, which is displayed under the Front Panel view.

Figure 5-1 Diagnostics Window

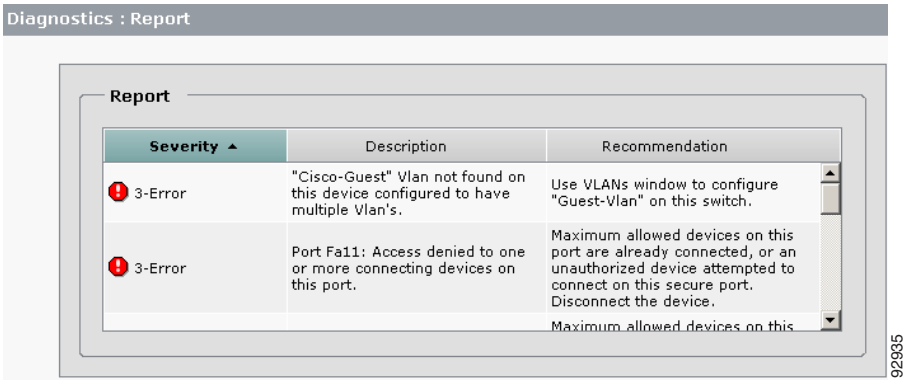


After running either or both tests, the window displays a report (Figure 5-2) of problems detected by the switch. The report also includes severity levels and recommended actions to help you solve the problems.

The diagnostics report includes this information:

Severity Level	A single-digit code (0 to 5) that reflects the severity of the problem. The lower the number, the more serious the condition and the need to take action. Emergency (0)—The switch is unusable. Alert (1)—The switch requires immediate action. Critical (2)—The switch has a critical condition. Error (3)—The switch has an error condition. Warning (4)—The switch has a warning condition. Notifications (5)—The switch is operating normally but has a significant condition.
Description	The description of the problem, including the ports on which the problem was detected.
Recommendation	The recommended actions to solve the problem.

Figure 5-2 Sample Diagnostics Report



Restart or Reset the Switch

If you cannot solve a problem through the diagnostic report or by reconfiguring a feature, either restarting or resetting the switch might help to solve the problem or help you to eliminate probable causes. For example, if the problem exists after you reset the switch to its default settings, it is unlikely that the switch is causing the problem.

Use the Restart / Reset window to restart or reset the switch. To display this window, choose **Configure** > **Restart / Reset** from the device manager menu. See the device manager online help for additional guidelines and procedures.

From the Restart / Reset window, you can:

- Restart the switch without turning off power. The switch retains its saved configuration settings during the restart process. However, the device manager is unavailable during the process. When the process completes, the switch redisplays the device manager.

Note Restarting the switch interrupts connectivity of your devices to the network. You can reset the switch to its factory default settings and then restart the switch.

- Reset the switch to delete the current configuration settings, and then restart the switch.

Note Resetting the switch to its factory defaults deletes all customized switch settings, including the IP address. The same software image is retained. You will need to reconfigure the basic switch settings (as described in the *Getting Started Guide for the Catalyst Express 500 Switches*) and use the new IP address to display the device manager.

Resetting the switch interrupts connectivity of your devices to the network.

You can only reset the switch through the device manager.

Restore Switch Settings

You can restore your configuration settings by using Network Assistant to save the switch configuration file. After saving the configuration file, you must use the device manager Restart / Reset window to reset the switch. After resetting the switch, use the Express Setup window to assign a switch IP address and to assign the same host name that was used before the switch was reset. Then you can load the configuration file to the switch and restore the previous configuration settings. For information about saving configuration files, see the Network Assistant documentation.

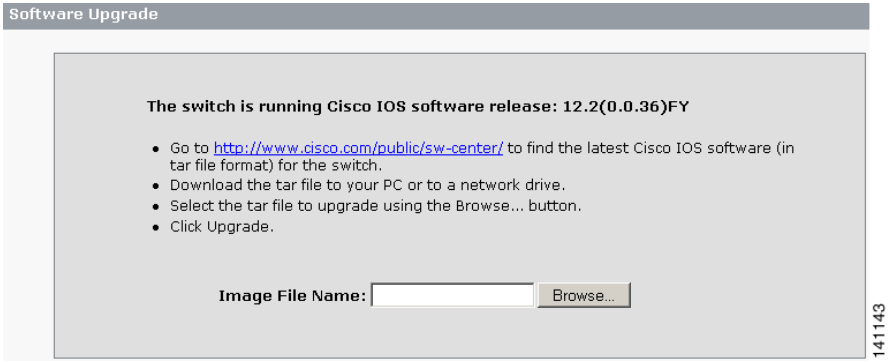
Upgrade the Switch Software

Prerequisite

You must have access to the Internet to download switch software from Cisco.com to your PC or network drive.

Use the Software Upgrade window (Figure 5-3) to update the switch with the latest software changes (such as software patches) and features. To display this window, choose **Software Upgrade** from the device manager menu.

Figure 5-3 Software Upgrade Window



Note Wait for the upgrade process to complete. Do not use or close the browser session with the device manager, and do not access the device manager from another browser session.

When the upgrade process completes, a success message appears, and the switch automatically restarts. It might take a few minutes for the switch to restart with the new software.

Check that the latest software version on the switch appears in the Software field in the Switch Information area of the Dashboard.

See the device manager online help for additional guidelines and procedures.

From the device manager, you can upgrade your switches one at a time. To upgrade multiple switches with the same configuration file, use Network Assistant.

Troubleshoot a Failed Software Upgrade

If the upgrade process does not complete or if the switch fails to restart after the upgrade process completes, follow these steps:

1. Make sure that you downloaded the correct tar file from Cisco.com.
2. If you downloaded the correct tar file, refresh your device manager browser session to make sure that there is connectivity between the switch and your PC or network drive.
3. Try to upgrade the switch again by following the procedures in the "Upgrade the Switch Software" section on page 5-5.

If the upgrade process fails again, follow these steps:

1. Select the **Reset the switch to factory defaults** option on the Restart / Reset window, and then click **Submit**.

   Resetting the switch to its factory defaults deletes all customized switch settings, including the IP address.
2. Reconfigure the switch settings, including assigning an IP address to the switch, as described in the *Getting Started Guide for the Catalyst Express 500 Switches*.
3. Use the new switch IP address to display the device manager.
4. Try to upgrade the switch again by following the procedures in the "Upgrade the Switch Software" section on page 5-5.

If the upgrade process still fails (for example, an `Upgrade Failed` message appears or the System LED does not turn solid green after a few seconds), follow the procedures in the "Recover the Switch Software" section on page 5-9.

Upgrade to a Noncryptographic Software Version

You can upgrade the switch from a cryptographic version of the switch software to a noncryptographic version. However, the device manager cannot automatically redisplay after the software upgrade completes if the switch was previously running the cryptographic version and if the device manager was accessed through a secured session. Close the existing browser session with the device manager. Then open a new browser session, and enter **http://** before the switch IP address.

Recover a Password

Prerequisites

- You must have physical access to the switch.
- Make sure that at least one switch port is enabled and is not connected to a device.

If you have lost or forgotten your username and password to the switch, follow these steps to delete all existing username-and-password pairs:

1. Make sure that the SYSTEM LED is solid green.
2. Press the **SETUP** button until the Setup LED blinks green and the LED of an available port blinks green.

Note If the Setup LED is amber, there is no available switch port to which to connect your management station. Disconnect one of the switch ports, and then press the **Setup** button again until the Setup LED and the port LED blink green.

3. Connect your management station directly to the switch port with a blinking green port LED. The port LED turns solid green after the connection.
4. Press the **SETUP** button until the Setup LED blinks green, and then continue to press the **SETUP** button for approximately 5 seconds until the Setup LED turns solid green.

   All username-and-password pairs are deleted from the switch.
5. Open a web browser session, and display the device manager. The device manager appears without requiring a username and password from you.
6. Assign a username and password through the Usernames and Passwords window.

Recover the Switch Software

Prerequisites

- You must have physical access to the switch.
- Make sure that at least one switch port is enabled and is not connected to a device.

You might need to recover the switch software if the image is corrupted during an upgrade, if you installed the wrong image on the switch, or if you deleted the image. In all of these cases, the switch does not pass the power-on self-test (POST), and there is no connectivity. A symptom of corrupted software is when the switch continuously tries to restart.

To display the Software Recovery window (Figure 5-4):

1. Power off and then power on the switch by disconnecting and then reconnecting the AC power cord to the connector on the switch rear panel.

   The System LED blinks green.

2. Immediately press the **Setup** button until all the system LEDs (System, Alert, Setup, and PoE) are solid amber.

3. Stop pressing the **Setup** button.

   The switch begins the power-on self-test (POST), a series of automatic tests that confirm proper operation. POST lasts approximately 1 minute. The System and Setup LEDs blink green during this process.

   When POST completes, the System LED turns solid amber, and the Setup LED blinks green. The LED of an available port blinks green; all other port LEDs remain off (dark).

Note If the Setup LED is amber, it means that there is no available switch port to which to connect your management station. Disconnect one of the switch ports, and then press the **Setup** button again until the Setup LED and the port LED blink green.

4. Connect your management station directly to the switch port with a blinking green port LED. The port LED turns solid green after the connection.
5. Open a web browser session, and display the device manager. The device manager appears without requiring a username and password from you.

   The Software Recovery window appears (Figure 5-4).

Figure 5-4 Software Recovery Window

From the Software Recovery window, you can choose:

Erase system configuration	Use this option to delete all the configuration settings on the switch, including the IP address, usernames, and passwords, but retain the software image. If you select this option, you must set up the switch again, as described in the *Getting Started Guide for the Catalyst Express 500 Switches*.

Boot with the factory default IOS image	Use this option to use the factory-default software image. Settings for features supported on the default software image are retained, including the IP address, usernames, and passwords. Use this option if a software upgrade fails. Display the device manager, and try to upgrade the switch software again.
Erase system configuration and boot with the factory default IOS image	Use this option to delete all of the configuration settings on the switch and to change to the factory-default software image. All files on the switch Flash image are deleted and the switch returns to using the factory default image. If you select this option, you must set up the switch again, as described in the *Getting Started Guide for the Catalyst Express 500 Switches*.

When You Are Done

Use the diagnostic tools and troubleshooting features to solve network problems as they come up.

For additional resources that can help you troubleshoot problems, see Chapter , "Cisco Support Resources."