



# Monitoring

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Read this chapter to understand the switch monitoring features that are used to evaluate the status and the performance of the switch. The tasks in this chapter are independent, unless otherwise noted, and are listed in no particular order.

## **Before You Begin:**

The monitoring features described in this chapter are available if the switch has an IP address. Make sure that the switch has been set up as described in the *Getting Started Guide for the Catalyst Express 500 Switches*.

## **Chapter Topics:**

- [Why Monitor the Switch, page 4-2](#)
- [Check the Front Panel LEDs, page 4-2](#)
- [Check the Status Field, page 4-7](#)
- [Check the Dashboard, page 4-8](#)
- [Check the Trends Graphs, page 4-14](#)
- [Check the Port Status, page 4-17](#)
- [Check the Port Statistics, page 4-18](#)
- [Check the Alert Log, page 4-23](#)
- [When You Are Done, page 4-24](#)

# Why Monitor the Switch

Any problem in your switch can affect a large proportion of your users. Implementing a preventive approach to switch monitoring helps you to detect problems early and to avoid potential problems.

With switch monitoring, you can gain visibility into the status and availability of switch ports. You can actively monitor switch ports and quickly notify users if a switch port or the switch fails.

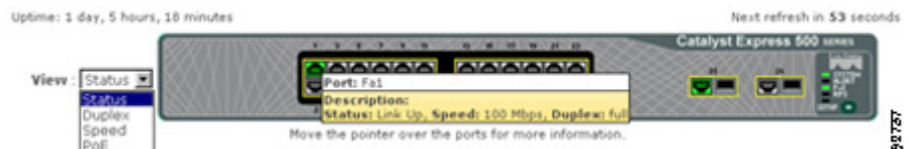
When you access the device manager Dashboard and monitoring windows, you can:

- Check the overall switch status and the switch vital signs.
- Verify connectivity for new users or devices.
- Check daily traffic patterns.
- Check for suspected problems by using the monitoring windows as a starting point for further troubleshooting.
- Check for specific ports that could be causing problems.
- Get an overview of switch bandwidth usage and port statistics.
- View a history of switch activity.

## Check the Front Panel LEDs

You can get a quick view of the overall condition of the switch by checking the device manager Front Panel view ([Figure 4-1](#)).

**Figure 4-1** Front Panel View



The Front Panel view is a graphical display of the switch front panel. The system LEDs (Table 4-1) and port LEDs (Table 4-2) on the Front Panel view and on the physical switch match. You can use the device manager **View** list to change the type of information displayed by the port LEDs.

The Front Panel view shows all the switch components color-coded according to their status, and it is always visible during the device manager session. The colors help you to quickly see if a fault or an error condition exists. A Legend describes the meanings of the colors (see the “[Legend of LED Colors](#)” section on page 4-4).

Move the pointer over a port to display the port number, description, status, speed, duplex mode, and Power over Ethernet (PoE) status. The port speed and duplex mode for a port only appear in the pop-up window when a device is connected to the port. The PoE status is available only if the port is a PoE port.

The Uptime field shows how long the switch has been operating since it was last powered on or was restarted. Status is automatically refreshed every 60 seconds or when you click **Refresh** on the toolbar. The refresh counter shows the number of seconds left before the next refresh cycle starts.

## System LEDs

For the meanings of the system LED colors, see [Table 4-4](#).

**Table 4-1**      **System LEDs**

<b>SYSTEM</b>	The status of the switch (system).
<b>ALERT</b>	The presence of a switch problem.  When the switch detects a problem on one or more ports, the Alert LED turns amber. Move the pointer over the Alert LED to display a description of the most recent problem detected, the port on which the problem exists, and the time that it was detected. The Alert LED stays amber until the Alert Log is cleared. The link to the Alert Log provides more details about the problem. For more information about the Alert Log, see the “ <a href="#">Check the Alert Log</a> ” section on page 4-23.
<b>PoE</b>	The status of PoE being provided to the ports.
<b>RPS</b>	The status of the redundant power supply (RPS) if one is connected to the switch.
<b>SETUP</b>	The configuration mode in which the switch is operating.  The <b>SETUP</b> button on the Front Panel view is not active.

## Port LEDs

Choose an LED mode from the **View** list to change the type of information displayed through the port LEDs. Note that changing the modes of the LEDs is available only through the device manager.

For the meanings of the port LED colors, see [Table 4-3](#).

**Table 4-2**      **Port LEDs**


























<b>STATUS</b>	The port status. This is the default mode.
<b>DUPLEX</b>	The port duplex mode (full duplex or half duplex). <b>Note</b> The 10/100/1000 ports operate only in full-duplex mode.
<b>SPEED</b>	The port operating speed (10, 100, or 1000 Mbps).
<b>PoE</b>	The power status on the PoE ports.

## Legend of LED Colors

From the device manager, you can use the Legend ([Figure 4-2](#), [Table 4-3](#), and [Table 4-4](#)) to display a color-coded explanation of the icons and colors used on the device manager windows.

To display the Legend, click **Legend** from the device manager tool bar. You can also click **Legend** from the device manager online help menu.


Figure 4-2 LED Legend

Legend																
Port States																
<b>STATUS</b>		No link.		Link is up.		During initial configuration or recovery, port is the selected management port to which to connect the management station.		Port is administratively disabled.		Port is error-disabled.		Link is faulty.		Port has a Smartports configuration mismatch.		Port is faulty or is disabled due to an error condition.
<b>SPEED</b>		No link.		10 Mbps.		100 Mbps.		1000 Mbps.								
<b>DUPLEX</b>		No link.		Port is in half-duplex mode.		Port is in full-duplex mode.										
<b>PoE</b>		No power allocated.		Power is allocated.		Power is denied to the port because providing power to the attached device will exceed the switch power capacity.		Port is disabled due to a fault condition.		Port is administratively disabled.						
System LEDs																
<b>SYSTEM</b>		Switch is healthy.		Switch is running POST.		Switch is faulty, is rebooting, or is in recovery.										
<b>ALERT</b>		No switch problem is		A switch problem is												

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Table 4-3 Port LED Colors in Legend

Port Mode	Color	Description
<b>Status</b>	Off (dark)	No link.
	Solid green	Link is up.
	Blinking green	During initial configuration or recovery, the port is the selected management port to which to connect the management station.
	Solid brown	Port is administratively disabled.
	Solid yellow	Port is error disabled.
	Blinking green and amber	Link is faulty.
	Blinking amber	Port has a Smartports configuration mismatch.
	Solid amber	Port is faulty or is disabled due to an error condition.

 Check the Front Panel LEDs
**Table 4-3** *Port LED Colors in Legend (continued)*

Port Mode	Color	Description
<b>Speed</b>	Off (dark)	No link.
	Solid light blue	10 Mbps.
	Solid green	100 Mbps.
	Blinking green	1000 Mbps.
<b>Duplex</b>	Off (dark)	No link.
	Solid light blue	Port is in half-duplex mode.
	Solid green	Port is in full-duplex mode.
<b>PoE</b>	Off (dark)	No power is allocated.
	Solid green	Power is allocated.
	Blinking green and amber	Power is denied to the port because providing power to the attached device will exceed the switch power capacity.
	Blinking amber	Port is disabled due to a fault condition.

**Table 4-4** *System LED Colors in Legend*

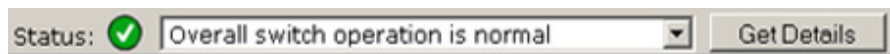
LED	Color	Description
<b>SYSTEM</b>	Solid green	Switch is healthy.
	Blinking green	Switch is running POST.
	Solid amber	Switch is faulty, is rebooting, or is in recovery.
<b>ALERT</b>	Off (dark)	No switch problem is detected.
	Solid amber	A switch problem is detected.
<b>PoE</b>	Off (dark)	PoE to the ports is off.
	Solid green	One or more ports is receiving PoE power.
	Blinking amber	One or more ports is not receiving PoE power because of a fault.

**Table 4-4** System LED Colors in Legend (continued)

LED	Color	Description
<b>RPS</b>	Off (dark)	No redundant power supply (RPS) is connected.
	Solid green	RPS is available to provide back-up power.
	Blinking green	RPS is providing back-up power to another device.
	Blinking amber	RPS is providing power to the switch.
	Solid amber	RPS is in standby mode, or RPS is faulty.
<b>SETUP</b>	Off (dark)	Switch is configured as a managed switch, or switch is operating as an unmanaged switch.
	Solid green	Switch is in initial setup.
	Blinking green	Switch is in initial setup or in recovery, or initial setup is incomplete.
	Solid amber	Switch failed to start initial setup or recovery because there is no available switch port to which to connect the management station. Disconnect a device from a switch port, and then press the <b>SETUP</b> button.

## Check the Status Field

The Status field (Figure 4-3) displays the severity and number of problems (hardware issues and misconfigurations) on the switch. If no problems exist, the field shows that the overall switch operation is normal. This field is always visible during the device manager session. It is below the Front Panel view.

**Figure 4-3** Status Field

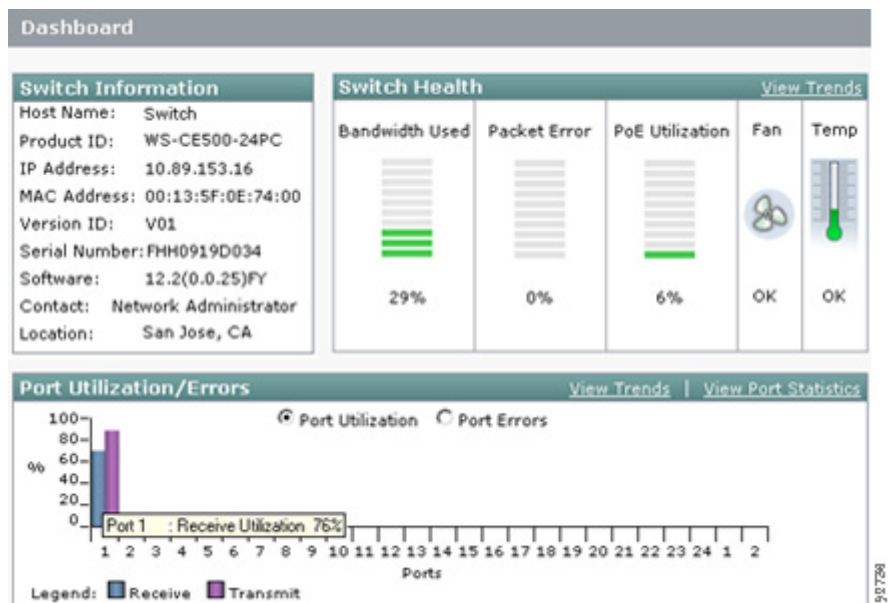
Choose a problem in the list, and then click **Get Details**. This displays a complete troubleshooting report, including the problem highlighted and recommended actions to resolve the problem. For information about diagnostics, see the [“Run a Diagnostic Test”](#) section on page 5-2.

View the Alert Log for the details of the problems and the most recent time at which the switch detected the problems. For information about the log, see the [“Check the Alert Log”](#) section on page 4-23.

## Check the Dashboard

The Dashboard ([Figure 4-4](#)) is the main window for monitoring the switch status and performance. It is the default window and appears each time you display the device manager. To display the Dashboard, choose **Dashboard** from the device manager menu.

**Figure 4-4** Switch Dashboard



The Dashboard displays:

- [“Switch Information”](#) section on page 4-9
- [“Bandwidth Used Gauge”](#) section on page 4-10
- [“Packet Error Gauge”](#) section on page 4-11

- [“PoE Gauge” section on page 4-12](#)
- [“Fan Status” section on page 4-12](#)
- [“Temperature Status” section on page 4-13](#)
- [“Port Utilization and Port Errors Graphs” section on page 4-13](#)

**Tip**

The gauges and graphs on the Dashboard correlate with the graphs on the Trends window. The Dashboard displays instantaneous status, while the Trends graphs displays historical status. Used together, you can gather the detailed conditions (vital signs) of the switch and its ports. For information about the Trends graphs, see the [“Check the Trends Graphs” section on page 4-14](#).

## Switch Information

The Switch Information area on the Dashboard displays this information about the switch:

<b>Name</b>	The name of this switch configured during initial setup or through Network Assistant. If no name was provided, this field displays the default name, <i>Switch</i> .
<b>Product ID</b>	The model of this switch. This information cannot be modified.
<b>IP Address</b>	The IP address of this switch configured during initial setup or through Network Assistant.
<b>MAC Address</b>	The MAC address of this switch. This information cannot be changed.
<b>Version ID</b>	The version ID of the switch. This information cannot be changed.
<b>Serial Number</b>	The serial number of this switch. This information cannot be changed.
<b>Software</b>	The Cisco IOS software version that this switch is running. This information is updated when you upgrade the switch software.
<b>Contact</b>	The name of the person who is the administrative contact for this switch. This information is entered on the SNMP window or through Network Assistant.
<b>Location</b>	The location of this switch. This information is configured from the SNMP window or through Network Assistant.

## Bandwidth Used Gauge

The Bandwidth Used gauge shows the total percentage of the switch bandwidth being used. Each bar in the gauge represents 10 percent and does not show increments that are less than 10 percent. The gauge does not show total bandwidth under 5 percent.

Data is collected at each 60-second system refresh. For a graph that shows bandwidth utilization patterns over incremental instances in time (by 60 seconds, 60 minutes, 24 hours, or 14 days), see the [“Bandwidth Utilization Graph” section on page 4-15](#).

The Bandwidth Used gauge changes as the switch experiences the network activity from devices sending data through the network. As network activity increases, so does contention between devices to send data through the network. As you monitor utilization on the switch, note whether the percentage of usage is what you expect during that given time of network activity. If utilization is high when you expect it to be low, perhaps a problem exists.

As you monitor the switch, note if the bandwidth utilization is consistently high. This can mean there is congestion in the network. If the switch reaches its maximum bandwidth (above 90 percent utilization) and its buffers become full, it begins to discard the data packets that it receives. Some packet loss in the network is not considered unusual, and the switch is configured to help recover lost packets (such as by signaling to other devices to resend data). However, excessive packet loss can create packet errors, which can degrade overall network performance.

To reduce congestion, consider segmenting the network into subnetworks that are connected by other switches or routers. Look for other causes, such as faulty devices or connections, that can also increase bandwidth utilization on the switch.

## Packet Error Gauge

The Packet Error gauge shows the total packet error percentage for the switch. Each bar in the gauge represents 10 percent and does not show increments that are less than 10 percent. The gauge does not show total packet errors under 5 percent.

Data is collected at each 60-second system refresh. To see a graph that shows packet error percentages over incremental instances in time (by 60 seconds, 60 minutes, 24 hours, or 14 days), see the [“Packet Error Graph” section on page 4-16](#).

The packet error percentage is calculated by comparing two values:

- The total number of packets that are sent and received
- The total number of packets with errors that are sent and received

If the packet-error percentage is high (that is, above 10 percent), the switch bandwidth utilization might also be too high (a sign that the network is congested). Other causes for packet errors are faulty cabling and port misconfigurations, such as a duplex mode mismatch. These problems can cause network users to experience intermittent connectivity or loss of connectivity to network resources (such as servers and printers) or to the Internet. Excessive collisions can cause transmission delays. For example, users might experience excessive delays in sending or receiving information through the network.

The Port Statistics window displays some of the types of packet errors ([Table 4-5](#)) collected by the switch. The type of packet error can help you to identify a more precise cause for some network problems. For more information about port statistics, see the [“Check the Port Statistics” section on page 4-18](#).

These are some types of packet errors.

**Table 4-5** *Types of Packet Errors*

<b>Runt packets</b>	Packets that are smaller than the allowed minimum size (less than 64 bytes).
<b>Giant packets</b>	Packets that are larger than the allowed maximum size (more than 1518 bytes).
<b>Cyclic redundancy checksum (CRC) errors</b>	Errors generated by the originating LAN station or far-end device do not match the checksum calculated from the data received. On a LAN, this usually means noise or transmission problems on the LAN interface or the LAN bus itself. A high number of CRCs is usually the result of collisions or of a station sending bad data.
<b>Overrun packets</b>	Packets that the receiving device was unable to receive.

**Table 4-5**      **Types of Packet Errors (continued)**

<b>Frame packets</b>	Packets received because of a CRC error and a noninteger number of octets. On a LAN, this is usually the result of collisions or a malfunctioning Ethernet device.
<b>Ignored packets</b>	Packets that the interface ignores because the interface hardware is low on internal buffers. These buffers are different than the system buffers. Broadcast storms and bursts of noise can cause the ignored count to increase.

## PoE Gauge

The PoE Utilization gauge is only for switches with PoE ports.

The power gauge shows the total percentage of power that is allocated to connected devices that are receiving power from the switch. Move the pointer over the gauge to display the actual percentage of power (in watts) that is used and is remaining. Each bar in the gauge represents 10 percent and does not show increments that are less than 10 percent. The gauge does not show total PoE utilization under 5 percent.

Data is collected at each 60-second system refresh. For a graph that shows power utilization patterns over incremental instances in time (up to ten 60-second refresh cycles), see the [“PoE Utilization Graph”](#) section on page 4-16.

The switch automatically maintains a power budget, monitors and tracks requests for power, and grants power only when it is available. If the switch is powering attached PoE devices, you should expect to see activity on this gauge.

## Fan Status

The animated fan shows whether the fan (or blower) on the switch is rotating and thus is functioning normally. If the fan is not rotating, check the physical switch. A malfunctioning fan can affect the internal temperature of the switch. Check the thermometer graphic to see if the switch has reached an unacceptably high temperature.

## Temperature Status

Use the thermometer with the animated fan to monitor the switch internal temperature environment. The thermometer graphic displays:

<b>OK</b>	Green	Switch internal temperature is within the acceptable temperature range.
<b>Faulty</b>	Red	Switch internal temperature is above the upper temperature threshold.

For information about the switch temperature range and the operating environment guidelines, see the [“Installation Guidelines” section on page 2-9](#) and the [“Technical Specifications” section on page A-1](#).

## Port Utilization and Port Errors Graphs

At a glance, you can see the following information on port performance:

- **Port Utilization Graph**—This graph displays the received utilization (blue) and sent utilization (purple) on each port. As you monitor utilization on the ports, note whether the percentage of usage is what you expect during that given time of network activity. If utilization is high when you expect it to be low, a problem might exist.

Bandwidth allocation can also be based on whether the connection is operating in half-duplex or full-duplex mode.

- **Port Errors Graph**—This graph displays the total percentage of errors on each port.

These are some of the reasons for errors received on and sent from the switch ports:

- Bad cable connection
- Defective ports
- Software problems
- Driver problems

Data is collected at each 60-second system refresh. For a graph that shows per-port patterns over incremental instances in time (by 60 seconds, 60 minutes, 24 hours, or 14 days), see the [“Per-Port Utilization and Per-Port Errors Graphs” section on page 4-16](#). For details on the specific port errors detected on each port, see the [“Check the Port Statistics” section on page 4-18](#).

## Check the Trends Graphs

Use the Trends window ([Figure 4-5](#)) to display the historical trends graphs. Use these graphs to display the switch bandwidth, the port usage, and the percentage of packet errors detected by the switch. You can display the data in increments of seconds, minutes, hours, and days. The granularity of these graphs can help you to analyze traffic patterns and to identify problems with the switch and individual ports.



### Tip

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If you are using the trends graphs to monitor the switch status over time, do not end your device manager session. Redisplaying the device manager clears the data from the PoE graph.

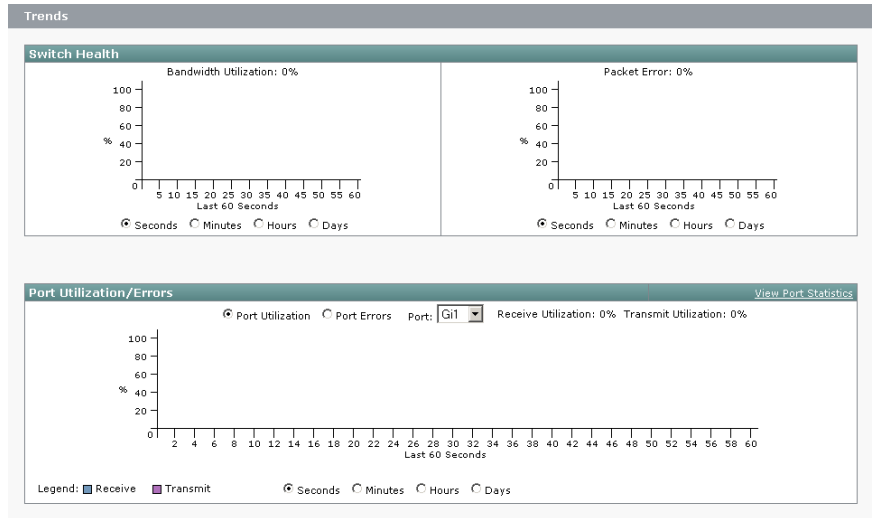
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To display the Trends window, choose **Monitor > Trends**. You also can click the **View Trends** link from Dashboard.

The Trends window displays these graphs:

- [Bandwidth Utilization Graph, page 4-15](#)
- [Bandwidth Utilization Graph, page 4-15](#)
- [Packet Error Graph, page 4-16](#)
- [PoE Utilization Graph, page 4-16](#)
- [Per-Port Utilization and Per-Port Errors Graphs, page 4-16](#)

Figure 4-5 Trends Window



## Bandwidth Utilization Graph

The Bandwidth Utilization graph shows the same information as the Bandwidth Used gauge on the Dashboard, except that the graph can show bandwidth usage patterns over incremental instances in time (by 60 seconds, 60 minutes, 24 hours, or 14 days). This graph also marks the highest peak reached. The default is 60 seconds.

If you see sharp increases in switch usage, use this graph to determine when unusual peaks in network usage occur. For more information about bandwidth usage, see the [“Bandwidth Used Gauge”](#) section on page 4-10.

## Packet Error Graph

The Packet Error graph shows the same information as the Packet Error gauge on the Dashboard, except that the graph can show the percentage of packet errors collected over incremental instances in time (by 60 seconds, 60 minutes, 24 hours, or 14 days). The default is 60 seconds.

Use this graph to audit the effects that connected devices have on the switch performance or the network. For example, if you suspect that a connected device is sending error packets, you can check if the data on the graph changes when you disconnect and reconnect the suspected device. For more information about packet errors, see the [“Packet Error Gauge” section on page 4-11](#).

## PoE Utilization Graph

The PoE Utilization graph is only available if the switch is a PoE switch. This graph shows the same information as the PoE Utilization gauge on the Dashboard. The percentage of power allocated is shown over ten 60-second system refresh cycles. For more information about power allocation, see the [“PoE Gauge” section on page 4-12](#).

## Per-Port Utilization and Per-Port Errors Graphs

The Port Utilization and Port Errors graphs on the Trends window show the same information as the Port Utilization and Port Errors graphs on the Dashboard, except that the graphs on the Trends window can show the usage patterns of a specific port over incremental instances in time (by 60 seconds, 60 minutes, 24 hours, or 14 days). The default is 60 seconds.

To display the trends for a specific port, choose a port from the **Port** list.

Use these graphs to observe the performance of a specific port. For example, if a network user is having intermittent network connectivity, use the Port Utilization graph to observe the traffic patterns on the port to which the user's PC is connected, and use the Port Errors graph to see if the port is receiving or sending error packets.

For more information about port usage and port errors, see the [“Port Utilization and Port Errors Graphs” section on page 4-13](#).

# Check the Port Status

If the switch has link issues, such as traffic not being received on a switch port, use the Port Status window (Figure 4-6) to check the basic port status, to make sure that the speed and duplex mode of the switch port and the connected device match, and to check that the port is in the correct VLAN.

If the switch has link issues, such as traffic is not being received on a switch port, use this window to verify that the port settings are correct. You can check switch ports before connecting devices to the port to confirm that the settings of both devices match.

**Figure 4-6** Port Status Window

Port ^	Description	Status	VLAN	Speed	Duplex	Auto-MDIX
Gi1		●	trunk	100	half	Off
Gi2		●	1			On
Gi3		●	1			Off
Gi4		●	1			Off
Gi5		●	1			On

The Port Status window displays this information

<b>Port</b>	The number of the port, including the port type (such as Fa for Fast Ethernet and Gi for Gigabit Ethernet) and the port number.
<b>Description</b>	The description of the port. This is configured from <b>Configure &gt; Port Settings</b> .
<b>Status</b>	The state of the port. The state of a port can be up, down, or administratively (manually) enabled or disabled. For explanations of the colors used in this column, click <b>Legend</b> on the toolbar. You can administratively enable or disable the port from <b>Configure &gt; Port Settings</b> .
<b>VLAN</b>	The VLAN ID to which the port belongs (also known as its VLAN membership). The default is 1. This is configured from <b>Configure &gt; Smartports &gt; Customize</b> or through Network Assistant.  If the port belongs to more than one VLAN, <i>trunk</i> appears in this column.  <b>Note</b> To assign the port to multiple VLANs, use Network Assistant.

<b>Speed</b>	The operating speed of the port. The speed can be 10, 100, or 1000 Mbps. This is configured from <b>Configure &gt; Port Settings</b> .
<b>Duplex</b>	The duplex state of the port. The duplex mode can be full or half duplex. This is configured from <b>Configure &gt; Port Settings</b> .
<b>Auto-MDIX</b>	The state of the automatic medium-dependent interface crossover (auto-MDIX) feature. The feature can be enabled or disabled. This is configured from <b>Configure &gt; Port Settings</b> .
<b>PoE</b>	<p>The PoE state of the port:</p> <ul style="list-style-type: none"> <li>• <b>Off</b>—A PoE device is not connected to the port.</li> <li>• <b>Admin Off</b>—The port is set to never provide power to a connected PoE device.</li> <li>• <b>Error-Disabled</b>—The port is disabled due to a misconfiguration or violation on the switch.</li> <li>• <b>On</b>—A PoE device is connected to the port, and this port can provide it with power.</li> <li>• <b>Power Deny</b>—The power budget is allocated to other ports, and this port cannot provide power to a connected PoE device.</li> </ul> <p>If the port is supplying power to a device, the state includes the number of watts that is allocated to the port.</p> <p><b>Note</b> This status is available only on PoE ports.</p>

## Check the Port Statistics

Use the Port Statistics window to display the statistics for data sent from and received by the switch ports since the switch was last powered on, was restarted, or since the statistics were last cleared.

The types of port statistics collected and displayed are grouped under these tabs on the Port Statistics window:

- [Overview Tab, page 4-19](#)
- [Transmit Detail Tab, page 4-20](#)
- [Receive Detail Tab, page 4-21](#)

To display the Port Statistics window, choose **Monitor > Port Statistics** from the device manager menu. You also can click the **View Port Statistics** link from Dashboard.

To clear the data from the statistics tables, click **Clear Counters** from the window.

**Note**

Clearing the statistics on one tab clears the statistics on the other tabs.

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

**Figure 4-7** Port Statistics Window

Port Statistics							
Overview							
Transmit Detail							
Receive Detail							
<input type="checkbox"/>	Port	Transmitted (bytes)	Total Transmitted (pkts)	Received (bytes)	Total Received (pkts)	Total Transmit Errors (pkts)	Total Errors
<input type="checkbox"/>	Gi1	222764464	560354	282650767	3580749	146	
<input type="checkbox"/>	Gi2	0	0	0	0	0	0
<input type="checkbox"/>	Gi3	0	0	0	0	0	0
<input type="checkbox"/>	Gi4	0	0	0	0	0	0

## Overview Tab

The Overview tab displays:

- The total number of bytes sent and received on each port.
- The total number of packets sent and received on each port.
- The total number of error packets sent. This includes total collisions, late collisions, and excessive collisions.
- The total number of error packets received. This includes frame check sequence (FCS) and alignment errors. Equipment being powered on or off can cause FCS and alignment errors.

This tab displays the specific numbers of error packets received on and sent from the port, which is a granularity that is not available from the Dashboard and Trends graphs. The number of error packets can mean a duplex mismatch, incompatibilities with the port and its attached device, or faulty cables or attached

devices. Any of these problems can cause slow network performance, data loss, or lack of connectivity. For example, to troubleshoot problems regarding loss of connectivity, clear the statistics for the port in question, and see if the port continues to receive and send packets.

**Table 4-6 Overview Tab Descriptions**

<b>Port</b>	The number of the port, including the port type (such as Fa for Fast Ethernet and Gi for Gigabit Ethernet) and the port number.
<b>Transmitted bytes</b>	The total number of bytes sent from each port.
<b>Total transmitted packets</b>	The total number of packets sent from each port. This includes unicast, multicast, and broadcast packets.
<b>Received bytes</b>	The total number of bytes received on each port.
<b>Total received packets</b>	The total number of packets received on each port. This includes well-formed unicast, multicast, and broadcast packets.
<b>Total transmit error packets</b>	The total number of error packets sent. This includes total runts, collisions, late collisions, and excessive collisions.
<b>Total receive error packets</b>	The total number of error packets received. This includes runts, and FCS and alignment errors.

## Transmit Detail Tab

The Transmit Detail tab displays:

- Transmitted unicast, multicast, and broadcast packets on each port
- Detailed statistics of errors sent to each port

You can use the statistics on this tab to troubleshoot unusual changes in network traffic. If a port is sending an unusually high amount of traffic (such as multicast or broadcast packets), check the connected device to see if this traffic pattern is normal or could mean a problem.

**Table 4-7** *Transmit Detail Tab Descriptions*

<b>Port</b>	The number of the port, including the port type (such as Fa for Fast Ethernet and Gi for Gigabit Ethernet) and the port number.
<b>Unicast packets</b>	The total number of well-formed unicast packets sent by a port. It excludes packets sent with errors or with multicast or broadcast destination addresses.
<b>Multicast packets</b>	The total number of well-formed multicast packets sent by a port. It excludes packets sent with errors or with unicast or broadcast destination addresses.
<b>Broadcast packets</b>	The total number of well-formed broadcast packets sent by a port. It excludes packets sent with errors or with unicast or multicast destination addresses.
<b>Total collision packets</b>	The total number of packets sent without error after having 1 to 15 collisions. It includes packets of all destination address types and excludes packets discarded because of insufficient resources or late collisions.
<b>Excessive collision packets</b>	The total number of packets that were not sent after 16 collisions. It includes packets of all destination address types.
<b>Late collision packets</b>	The total number of packets discarded because of late collisions detected during transmission. It includes all sent packets that had a collision after the transmission of the packet sixty-fourth byte. The preamble and start frame delimiter (SFD) are not included in the frame byte count.

## Receive Detail Tab

The Receive Detail tab displays:

- Received unicast, multicast, and broadcast packets on each port.
- Detailed statistics of receive errors on each port.

You can use the statistics on this tab to troubleshoot unusual changes in network traffic. If a port is receiving an unusually high amount of traffic (such as multicast or broadcast packets), check the connected device to see if this traffic pattern is normal for the connected device or could mean a problem.

**Table 4-8** *Receive Detail Tab Descriptions*

<b>Port</b>	The number of the port, including the port type (such as Fa for Fast Ethernet and Gi for Gigabit Ethernet) and the port number.
<b>Unicast packets</b>	The total number of well-formed unicast packets received by a port. It excludes packets received with errors, with multicast or broadcast destination addresses, or undersize packets, discarded packets, or those without a destination.
<b>Multicast packets</b>	The total number of well-formed multicast packets received by a port. It excludes packets received with errors, with unicast or broadcast destination addresses, with oversized or undersize packets, discarded packets, or those without a destination.
<b>Broadcast packets</b>	The total number of well-formed broadcast packets received by a port. It excludes packets received with errors, with unicast or multicast destination addresses, or with oversized or undersize packets, discarded packets, or those without a destination.
<b>FCS error packets</b>	The total number of packets received with FCS errors. It excludes undersized packets with FCS errors.
<b>Alignment errors packets</b>	The total number of packets received with alignment errors. It includes all the packets received with both an FCS error and a nonintegral number of bytes.
<b>Oversize packets</b>	The total number of received packets with more than 1518 bytes that had both good and bad FCS values.
<b>Undersize packets</b>	The total number of received packets that were smaller than 64 octets long and were otherwise well-formed.
<b>Collision fragments</b>	The total number of frames smaller than 64 bytes that have an integral number of bytes and bad FCS values.

# Check the Alert Log

The Alert Log displays switch problems that happened since the log was last cleared. The problems are issues that should be or have already been solved.

To display the Alert Log, choose **Monitor > Alert Log** from the device manager menu. You can also click the **Alert Log** link in the popup when you move your pointer over the amber Alert LED.

**Tip**

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Use the Alert Log with the Alert LED on the Front Panel view. When the switch detects a problem, the Alert LED turns amber.

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

The Alert LED stays amber until the Alert Log is cleared. Click the **Clear Log** button to acknowledge that you have read the alerts and to turn off the amber Alert LED.

**Note**

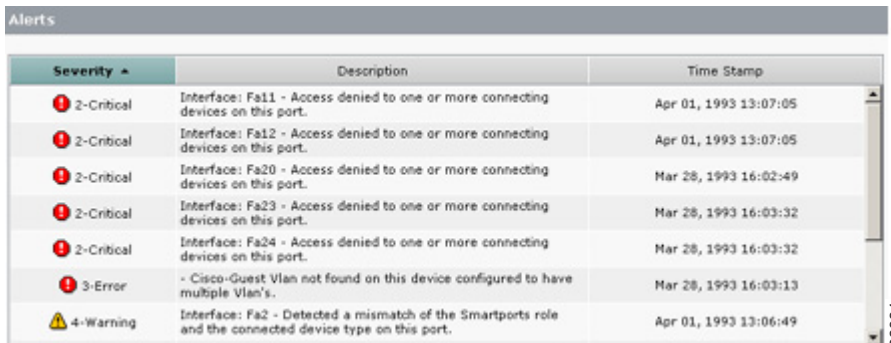
- The **Clear Log** button does not solve the problem. Use the Diagnostics window to generate a diagnostics report to solve problems detected by the switch.
  - Solving the problems does not turn off the Alert LED. You must also click the **Clear Log** button.
- 

See the device manager online help for the guidelines and procedures on how to use the Alert Log.

The Alert Log includes this information (see also [Figure 4-8](#)):

<b>Severity Level</b>	<p>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.</p> <ul style="list-style-type: none"> <li> Emergency (0)—The switch is unusable.</li> <li> Alert (1)—The switch requires immediate action.</li> <li> Critical (2)—The switch has a critical condition.</li> <li> Error (3)—The switch has an error condition.</li> <li> Warning (4)—The switch has a warning condition.</li> <li> Notifications (5)—The switch is operating normally but has a significant condition.</li> </ul>
<b>Description</b>	The description of the problem, including the ports on which the problem was detected.
<b>Time Stamp</b>	The date and time of the refresh cycle during which the problem was last detected.

**Figure 4-8** Sample Alert Log



Severity	Description	Time Stamp
2-Critical	Interface: Fa11 - Access denied to one or more connecting devices on this port.	Apr 01, 1993 13:07:05
2-Critical	Interface: Fa12 - Access denied to one or more connecting devices on this port.	Apr 01, 1993 13:07:05
2-Critical	Interface: Fa20 - Access denied to one or more connecting devices on this port.	Mar 28, 1993 16:02:49
2-Critical	Interface: Fa23 - Access denied to one or more connecting devices on this port.	Mar 28, 1993 16:03:32
2-Critical	Interface: Fa24 - Access denied to one or more connecting devices on this port.	Mar 28, 1993 16:03:32
3-Error	- Cisco-Guest Vlan not found on this device configured to have multiple Vlan's.	Mar 28, 1993 16:03:13
4-Warning	Interface: Fa2 - Detected a mismatch of the Smartports role and the connected device type on this port.	Apr 01, 1993 13:06:49

## When You Are Done

If needed, see [Chapter 3, “Customization”](#) to change or to verify feature settings, or see [Chapter 5, “Troubleshooting”](#) to identify and resolve problems.