Product Overview

This chapter provides an overview of the features and components of the Catalyst 2948G, 2948G-GE-TX, and 2980G switches. It contains these sections:

Note Throughout this guide, *Catalyst 2980G switch* refers to both the Catalyst 2980G switch and the Catalyst 2980G-A switch, unless otherwise noted.

Switch Description

The Catalyst 2948G, 2948G-GE-TX, and 2980G switches are designed for high-performance, high-density wiring-closet applications. Figure 1-1 through Figure 1-3 show the switches.

Figure 1-1 Catalyst 2948G Switch

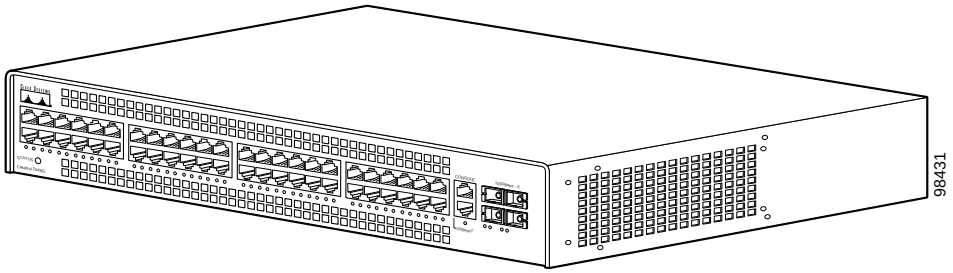


Figure 1-2 Catalyst 2948G-GE-TX Switch

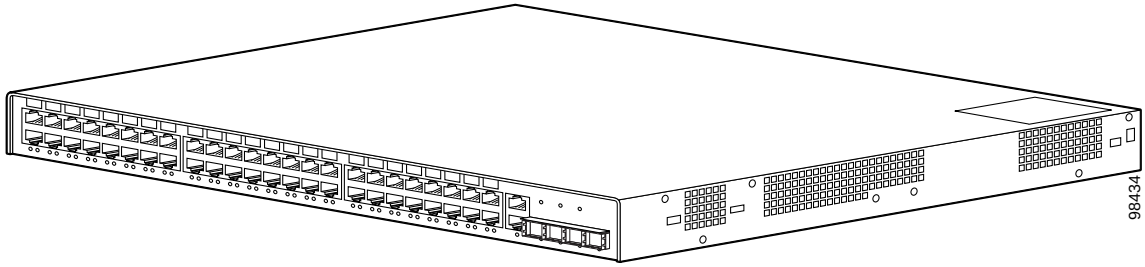
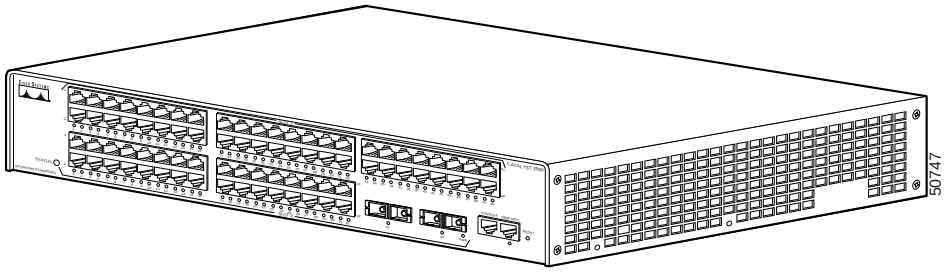


Figure 1-3 Catalyst 2980G Switch



The Catalyst 2948G, 2948G-GE-TX, and 2980G switches interface with networking equipment using Ethernet (10BASE-T), Fast Ethernet (100BASE-T), and Gigabit Ethernet (1000BASE-T) interfaces. Depending on the model, the switches also support Gigabit Interface Converters (GBICs) or small form-factor pluggable (SFP) modules.

The Catalyst 2948G switch has 48 autosensing and autoconfiguring 10/100BASE-T Fast Ethernet fixed ports. The Catalyst 2948G-GE-TX switch has 48 autosensing and autoconfiguring 10/100/1000BASE-T ports. The Catalyst 2980G switch has 80 autosensing and autoconfiguring 10/100BASE-T Fast Ethernet fixed ports.

GBIC Module Support

The Catalyst 2948G and 2980G switches each have two Gigabit Ethernet uplink ports with modular Gigabit Interface Converters (GBICs).

A GBIC is a hot-swappable input/output device that plugs into a Gigabit Ethernet port module and links the port module with a fiber-optic network. For a detailed description of Gigabit Ethernet ports, see the "GBIC Features" section on page 4-2.

For a complete list of supported GBIC modules, see Table 4-1 on page 4-3.

Note The Catalyst 2948G-GE-TX switch does not support GBIC modules.

The Gigabit Ethernet ports can be configured with any combination of GBIC types.

The Gigabit Ethernet ports on these modules are used primarily for backbone interconnection of other high-performance switches and routers.

SFP Module Support

The Catalyst 2948G-GE-TX switch has four small form-factor pluggable (SFP) module slots. The switch uses SFP modules to establish Gigabit connections. The SFP module slots are located on the front of the switch.

An SFP module is a hot-swappable input/output device that plugs into an SFP module slot, linking the port module with a fiber-optic network.

For a list of SFP modules supported by the Catalyst 2948G-GE-TX switch, see Table 1 in the *Release Notes for Catalyst 4500 Series Software Release 8.xGLX*, located at this URL:

http://www.cisco.com/univercd/cc/td/doc/product/lan/cat4000/relnotes/ol_4502.htm#wp272673

Note The Catalyst 2948G-GE-TX switch only supports 1000 Mbps and full-duplex modes on SFP modules.

Except for the 1000BASE-T SFP module, all of the SFP modules are used to establish fiber-optic connections. You use fiber-optic cables with Lucent (LC) connectors to connect to an SFP module. The SFP modules support 850 to 1550 nanometer nominal wave lengths. These field-replaceable modules provide the uplink optical interfaces, laser send (TX) and laser receive (RX). For a detailed description of Gigabit Ethernet ports see the "Connecting To an SFP Module" section on page 4-12.

Switch Features

Table 1-1 describes the Catalyst 2948G, 2948G-GE-TX, and 2980G switch features.

Table 1-1 Catalyst 2948G, 2948G-GE-TX, and 2980G Switch Features

Feature	Description
Ethernet speeds	• Ethernet (10BASE-T) interface to workstations and repeaters • Fast Ethernet (100BASE-T) interface to workstations, servers, switches, and routers **Note** Autonegotiation of link speed on each 10/100 and 10/100/1000 port allows migration to 100BASE-T or 1000BASE-T from a 10BASE-T or 100BASE-T installed base. • Gigabit Ethernet (1000BASE-T) copper and Gigabit Ethernet (1000BASE-X) fiber-optic interface for backbone interconnection of high-performance switches and routers
Standard management and support	• Layer 2 forwarding with an aggregate forwarding rate of greater than 17.8 million packets per second • 16,000 MAC addresses per system

Table 1-1 Catalyst 2948G, 2948G-GE-TX, and 2980G Switch Features (continued)

Feature	Description
Standard management and support (continued)	• Up to 1,024 VLANs with IEEE 802.1Q VLAN tagging on all ports and support for VTP[1] • Port aggregation using PAgP[2] for 100-Mbps and 1-Gbps EtherChannel
Software management	• CLI[3] and SNMP interfaces consistent with the Catalyst 4500 series and 6500 family switches • Development of new features compatible with the Catalyst 6500 family switches • Out-of-band management through the RJ-45 10BASE-T console serial port • 10BASE-T out-of-band management and in-band management through any switch port with SNMP, Telnet client, and TFTP **Note** The Catalyst 2948G-GE-TX and 2980G-A switches have a 10/100BASE-T management port. • RMON[4] with RMON 1 • Standard Layer 2 elements: – 802.1D Spanning Tree – CDP[5] – VTP[6] version 2 with pruning extensions – CGMP[7] client

Table 1-1 Catalyst 2948G, 2948G-GE-TX, and 2980G Switch Features (continued)

Feature	Description
Embedded management	• Full SNMP implementation, including entity-MIB, all relevant standard MIBs, and all relevant Cisco MIBs • The first four RMON groups (Ethernet statistics, Alarms, Events, and History) supported on a per port basis without an optional RMON processing module • Redirection of traffic from any port to a "sniff" port. (Any switching port can be designated as a "sniff" port.) • Performance management information
Power supplies	• 120 W AC internal power supply on the Catalyst 2948G switch • 156 W AC internal power supply on the Catalyst 2948G-GE-TX switch • 175 W AC internal power supply on the Catalyst 2980G switch

1. VTP = VLAN Trunking Protocol
2. PAgP = Port Aggregation Protocol
3. CLI = command-line interface
4. RMON = Remote Monitoring
5. CDP = Cisco Discovery Protocol
6. VTP = Virtual Terminal Protocol
7. CGMP = Cisco Group Management Protocol

Port Locations

This section describes the port locations and numbering on the switches.

10/100 and 10/100/1000 Ports

The 10/100 and 10/100/1000 ports are configured in vertical pairs. Each vertical pair has two Link Status LEDs below it. The LED on the left is for the top port; the LED on the right is for the bottom port. For example, LED 1 is for the upper port (port 1) and LED 2 is for the bottom port (port 2).

Catalyst 2948G and 2980G Switch Ports

The Catalyst 2948G switch 10/100BASE-T ports are configured in two rows. The top row contains odd-numbered ports (1 through 47), and the bottom row contains even-numbered ports (2 through 48).

The Catalyst 2980G switch 10/100BASE-T ports are configured in four rows. The top two rows are numbered 1 through 48, with the first row odd-numbered (1 through 47) and the second row even-numbered (2 through 48). The bottom two rows are numbered 1 through 32, with the first row odd-numbered (1 through 31) and the second row even-numbered (2 through 32).

Two GBIC ports are at the right of the front panel on the Catalyst 2948G and Catalyst 2980G switches:

- On the Catalyst 2948G switches, these ports are located at the far right of the front panel. The upper Gigabit Ethernet port is port 49; the lower is port 50. The Link Status LEDs for these ports are below port 50.
- On the Catalyst 2980G switches, the GBIC Ethernet ports are located immediately to the right of ports 31 and 32. The port on the left is port 33; the port on the right is port 34. The Link Status LEDs for the Gigabit Ethernet ports are located below each port.

Catalyst 2948G-GE-TX Switch Ports

The Catalyst 2948G-GE-TX 10/100/1000BASE-T Gigabit Ethernet ports are configured in two rows. The top row contains odd-numbered ports (1 through 47), and the bottom row contains even-numbered ports (2 through 48).

The SFP module slots are numbered left to right 49 through 52.

Switch Components

This section describes the following Catalyst 2948G and 2980G switch components:

- Management Ports, page 9
- Front Panel LEDs, page 9

- Airflow, page 10
- Power Supplies, page 12

Management Ports

The Catalyst 2948G, 2948G-GE-TX, and 2980G switches have two kinds of management ports: console serial and Ethernet. The Catalyst 2948G switches have a 10BASE-T management port. The Catalyst 2948G-GE-TX and 2980G-A switches have a 10/100BASE-T management port.

Table 1-2 on page 1-10 lists the management options for the switches.

Console Serial Port

An RJ-45 console serial port allows you to perform switch-management functions using a terminal. See Table A-1 on page A-1 for the console connector pinouts.

10BASE-T and 10/100BASE-T Ports

An RJ-45 10BASE-T port allows you to perform TCP/IP switch-management functions (Telnet, SNMP, FTP), configure IP addresses with BOOTP, and download software images.

Note The Catalyst 2948G-GE-TX and 2980G-A switches have a 10/100BASE-T management port.

This port is for network management only; it is not for switching. Connectivity is not available between this port and the 10/100BASE-T switching ports.

Front Panel LEDs

The LEDs on the front panels of the Catalyst 2948G, 2948G-GE-TX, and 2980G switches perform the following functions:

- STATUS LEDs indicate the operating state of the switches.
- Link Status LEDs provide management and indicate switching port status.

- PSI LED indicates the internal power supply status on the Catalyst 2948G switch.
- PWR LED indicates the internal power supply status on the Catalyst 2980G switch.
- RPS LED provides the external redundant power supply status.

Table 1-2 describes the LEDs.

Table 1-2 Front Panel LEDs

LED	Color/Statue	Description
STATUS		Indicates the results of a series of self-test diagnostics.
	Green	All tests pass.
	Red	A test other than an individual port test fails.
	Amber	System boot or diagnostic tests in progress.
	Off	Switch is disabled.
Link Status		Indicates the link status of a port.
	Green	Port is operational.
	Amber	Port is disabled by user.
	Flashing	Power-on self-test indicates faulty port.
	Off	No signal detected, or link configuration failure.
PSI, PWR, and RPS		Indicates power supply operation or failure.
	Green	Power supply is operational.
	Amber	Power supply has failed or is in Standby mode.

Airflow

Note For environmental specifications, see Chapter 2, "Site Planning."

On the Catalyst 2948G and 2980G switches, the system fan assembly provides cooling air for the internal chassis components. The fans exhaust warm air from one end and draw in cool air at the other end.

If an individual fan fails, the other fans continue to run. Sensors monitor the internal air temperatures. If the air temperature exceeds a tolerable threshold, the environmental monitor displays warning messages.

On the Catalyst 2948G-GE-TX, a blower system draws cool air in from the front and sides of the switch and exhausts air out the back.

Figure 1-4 shows the direction of airflow through the Catalyst 2948G switch.

Figure 1-5 shows the direction of airflow through the Catalyst 2948G-GE-TX switch.

Figure 1-6 shows the direction of airflow through the Catalyst 2980G switch.

Figure 1-4 Catalyst 2948G Airflow

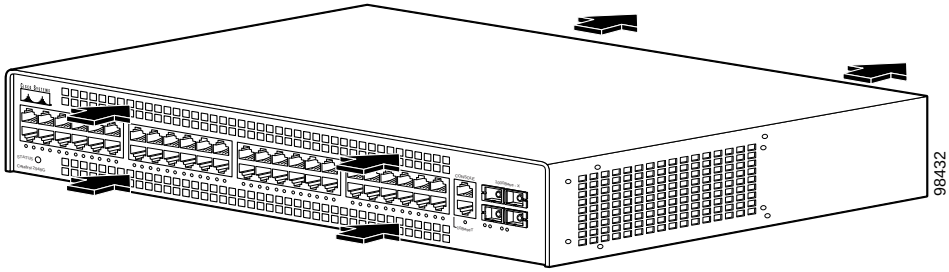


Figure 1-5 Catalyst 2948G-GE-TX Airflow

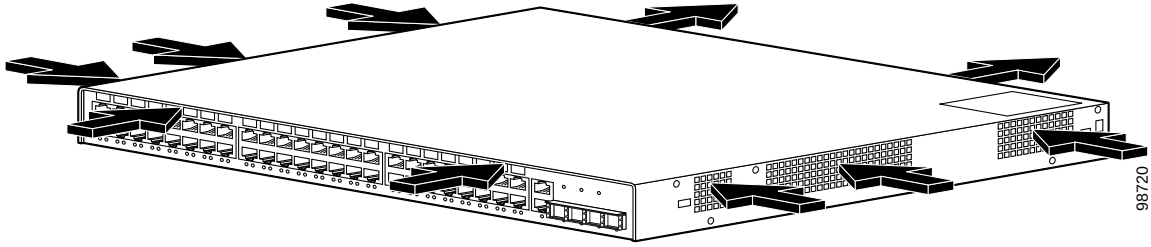
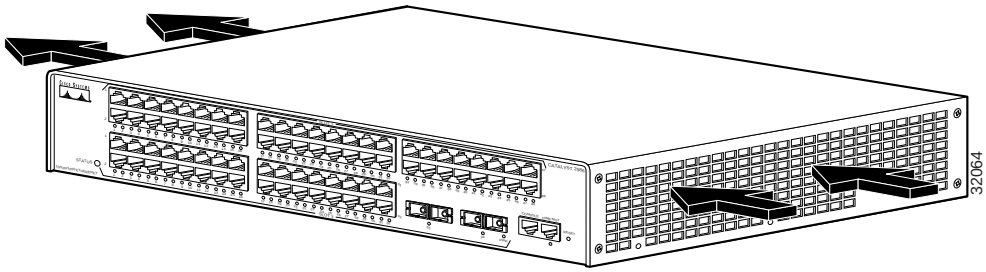


Figure 1-6 Catalyst 2980G Airflow



Power Supplies

There is no power switch on the switches. AC power is present in the power supply when the power cord is plugged in.

The environmental monitoring and reporting functions allow you to maintain normal system operation by correcting adverse environmental conditions before loss of operation.

Each power supply monitors its own temperature and output voltages. If the power supply becomes excessively hot, it shuts down to prevent damage. The switches monitor the operating condition of the power supply and report the status using switch software.

The switches have the following power supplies:

- 120 W AC internal power supply—Catalyst 2948G switch
- 156 W AC internal power supply—Catalyst 2948G-GE-TX switch
- 175 W AC internal power supply—Catalyst 2980G switch
- 156 W AC internal power supply—Catalyst 2980G-A switch

Note For complete power specifications for the Catalyst 2948G, 2948G-GE-TX, and 2980G switches, see Appendix A, “Specifications.”

These switches also be used with an optional Cisco Redundant Power System (RPS).

- The Catalyst 2948G switch uses the Cisco RPS 600 AC power supply (PWR600-AC-RPS-CAB).

  The Cisco RPS 600 supports four external devices that use up to 150 W DC each. Use a one-to-one cable (one connector at each cable end) to connect four external devices to the four DC output power modules.

  The power source is partially redundant. There are two AC input power modules for the Cisco RPS and one DC output power module for each external device. The AC input to the Cisco RPS is fully redundant, but the DC output to the external devices is not.

Warning **Attach only the Cisco RPS (model PWR600-AC-RPS) to the RPS receptacle.** Statement 112

- The Catalyst 2948G-GE-TX switch uses the Cisco RPS 675 (model PWR675-AC-RPS-N1).

  The RPS 675 supports six external network devices and provides DC power to one failed device at a time. It automatically senses when the internal power supply of a connected device fails and provides power to that device, which prevents loss of network traffic.

Warning **Attach only the Cisco RPS (model PWR675-AC-RPS-N1=) to the RPS receptacle.** Statement 100C

- The Catalyst 2980G-A switch uses the Cisco RPS 300 (PWR300-AC-RPS-N1).

  The RPS 300 supports six external network devices and provides power to one failed device at a time. It automatically senses when the power supply of a connected device fails and provides the necessary power to the failed device to prevent loss of network traffic. When the internal power supply of the device has been brought up or replaced, the RPS automatically stops powering the device.

Warning **Attach only the Cisco RPS (model PWR300-AC-RPS-N1) to the RPS receptacle.** Statement 100B

A Cisco RPS can only power one switch at a time. If more than one switch fails at the same time, any subsequent switch is not supported by the RPS until the first switch failure is resolved. For more information, refer to the documentation that was included with your RPS.

On the Catalyst 2948G switch, you must use a Y cable to connect the switch to two RPS 600 power supplies. Each RPS 600 has status LEDs (PSI and RPS).

On the Catalyst 2980G-A switch, each RPS 300 power supply has an individual power cord and has status LEDs (PSI, PWR, and RPS).

The RPS uses redundant power supplies. If one of the power supplies in the RPS fails, the RPS will automatically switch over to the other power supply without forcing the switch to reboot.

Note On the Catalyst 2948G-GE-TX and 2948G switches, only one power source can supply power to the switch at any one time. When you are using an RPS, unplug the local power cord for the switch. If you are using the local power supply, the RPS can be connected but must not be powered on. The switches can be powered by both the internal power supply and the RPS at the same time.