



Overview

This chapter provides information about the following topics:

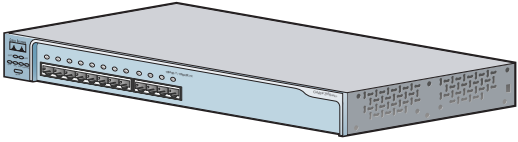
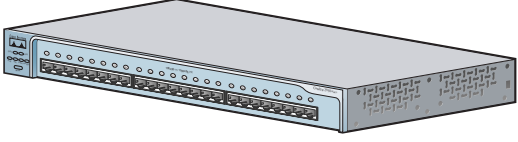
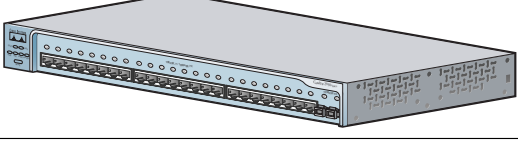
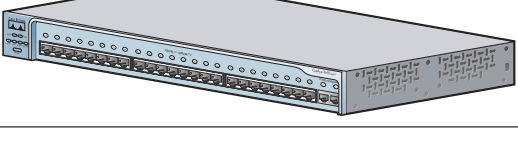
- Switch features
- Front- and rear-panel descriptions
- Management options

Features

The Catalyst 2950 series switches are stackable Ethernet switches to which you can connect workstations and other network devices, such as servers, routers, and other switches. The switches can be deployed as backbone switches, aggregating 10BASE-T, 100BASE-TX, and Gigabit Ethernet traffic from other network devices. Refer to the *Catalyst 2950 Desktop Switch Software Configuration Guide* for examples showing how you might deploy the switches in your network.

[Figure 1-1](#) shows the Catalyst 2950 series switches, and [Table 1-1](#) lists the switch features.

Figure 1-1 Catalyst 2950 Series Switches

Version Number	Description	Switch
WS-C2950-12	12 fixed autosensing 10/100 ports	
WS-C2950-24	24 fixed autosensing 10/100 ports	
WS-C2950C-24	24 fixed autosensing 10/100 ports 2 100BASE-FX ports	
WS-C2950T-24	24 fixed autosensing 10/100 ports 2 fixed autosensing 10/100/1000 ports	

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Table 1-1 Catalyst 2950 Switch Features

Feature	Description
Hardware	<ul style="list-style-type: none"> • 12 10/100 Ethernet ports • 24 10/100 Ethernet ports • 24 10/100 Ethernet ports and 2 100BASE-FX ports • 24 10/100 Ethernet ports and 2 10/100/1000 Ethernet ports
Configuration	<ul style="list-style-type: none"> • Autonegotiates the speed and duplex settings on 10/100 ports and on 10/100/1000 ports • Autonegotiates the duplex setting on 100BASE-FX ports • Supports 8192 MAC addresses • Checks for errors on a received packet, determines the destination port, stores the packet in shared memory, and then forwards the packet to the destination port
Power redundancy	<ul style="list-style-type: none"> • Connection for an optional Cisco RPS 300 Redundant Power System (RPS) that uses AC input and supplies DC output to the switch

Front-Panel Description

The switch front panels contain the ports, the LEDs, and the Mode button. The Catalyst 2950-12 switch (see [Figure 1-2](#)) and Catalyst 2950-24 switch (see [Figure 1-3](#)) have 10/100 ports. The Catalyst 2950C-24 switch has 10/100 ports and 100BASE-FX ports. (See [Figure 1-4](#).) The Catalyst 2950T-24 switch has 10/100 ports and 10/100/1000 ports. (See [Figure 1-5](#).)

Front-Panel Description

Figure 1-2 Catalyst 2950-12 Switch

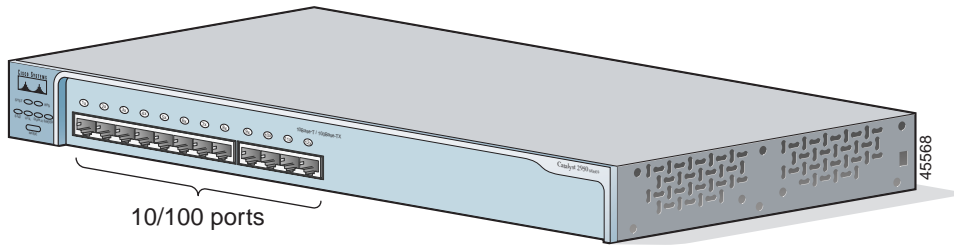


Figure 1-3 Catalyst 2950-24 Switch

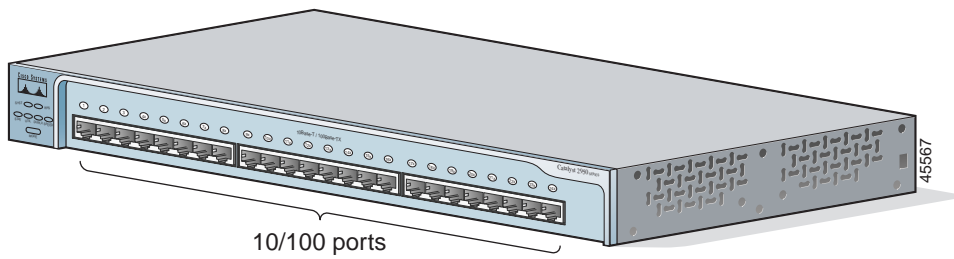


Figure 1-4 Catalyst 2950C-24 Switch

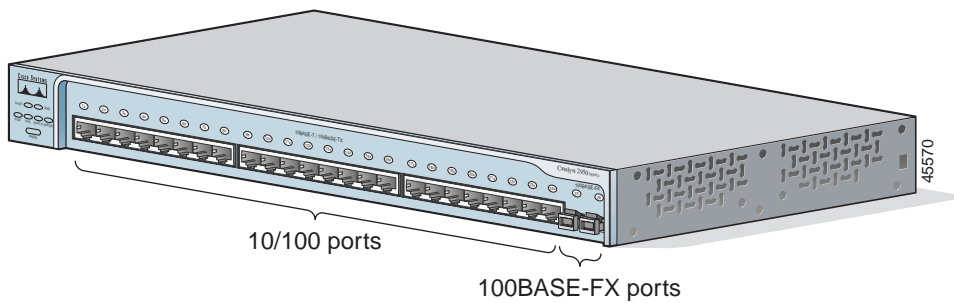
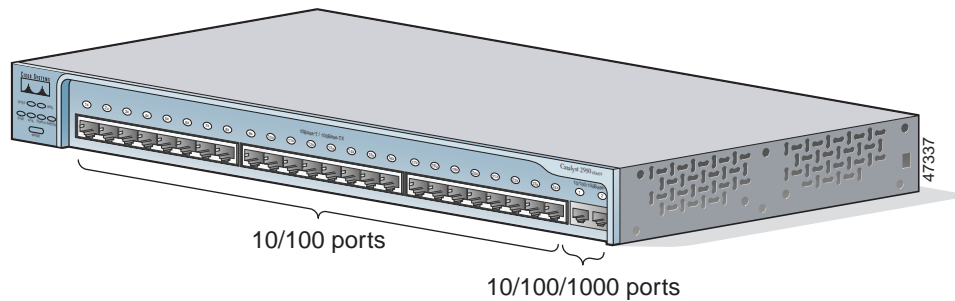


Figure 1-5 Catalyst 2950T-24 Switch



10/100 Ports

The 10/100 ports use RJ-45 connectors and Category 5 cabling. These ports can be explicitly set to operate in any combination of half duplex, full duplex, 10 Mbps, or 100 Mbps. They can also be set for speed and duplex autonegotiation, compliant with IEEE 802.3u. In all cases, the cable length from a switch to an attached device cannot exceed 328 feet (100 meters).

When set for autonegotiation, a port senses the speed and duplex settings of the attached device and advertises its own capabilities. If the attached device supports autonegotiation, the port negotiates the best connection (that is, the fastest line speed that both devices support and full-duplex transmission, if the attached device supports it) and configures itself accordingly.

100BASE-FX Ports

The 100BASE-FX ports use 50/125- or 62.5/125-micron multimode fiber-optic cabling. In full-duplex mode (the default), the cable length from a switch to an attached device cannot exceed 6562 feet (2 kilometers). In half-duplex mode, the cable length cannot exceed 1352 feet (412 meters).

You can connect a 100BASE-FX port to an SC or ST port on a target device by using one of the MT-RJ fiber-optic patch cables listed in [Table 1-2](#). Use the Cisco part numbers in [Table 1-2](#) to order the patch cables that you need.

Table 1-2 MT-RJ Patch Cables

Type	Cisco Part Number
1-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-1M
3-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-3M
5-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-5M
1-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-1M
3-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-3M
5-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-5M

10/100/1000 Ports

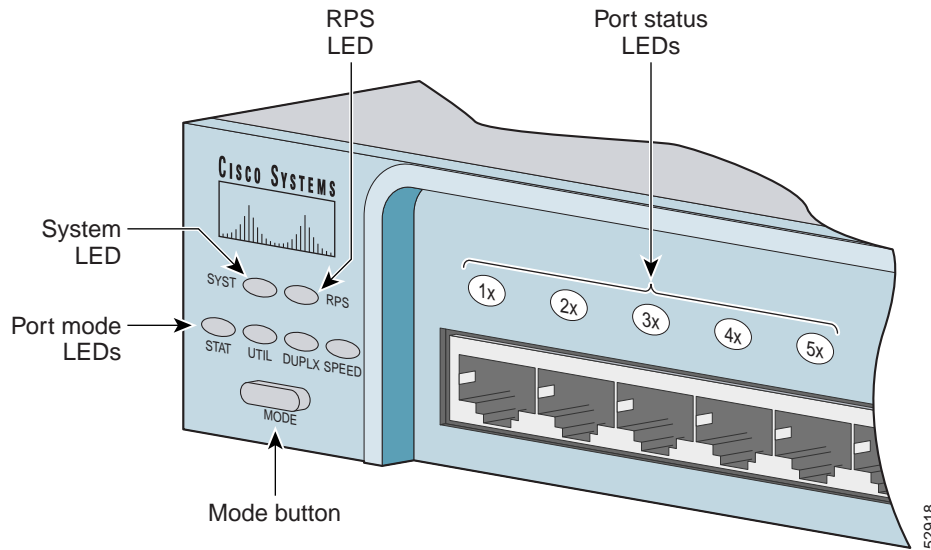
The 10/100/1000 ports use RJ-45 connectors and Category 5 UTP cabling. These ports can be explicitly set to operate at 10 or 100 Mbps in half- or full-duplex mode or at 1000 Mbps in full-duplex mode. The default duplex setting is full duplex. They can also be set for speed and duplex autonegotiation, compliant with IEEE 802.3ab. In all cases, the cable length from a switch to an attached device cannot exceed 328 feet (100 meters).

LEDs

You can use the LEDs to monitor switch activity and performance. [Figure 1-6](#) shows the location of the LEDs and the Mode button that you use to select the port mode. Changing the port mode changes the information provided by each port status LED.

All of the LEDs described in this section except the utilization meter (UTIL) are visible in the Cluster Management Suite (CMS). The *Catalyst 2950 Desktop Switch Software Configuration Guide* describes how to use CMS to manage individual switches and switch clusters.

Figure 1-6 LEDs



System LED

The system LED shows whether the system is receiving power and functioning properly. [Table 1-3](#) lists the LED colors and meanings.

Table 1-3 System LED

Color	System Status
Off	System is not powered up.
Green	System is operating normally.
Amber	System is receiving power but is not functioning properly.

For information about the system LED colors during the power-on self-test (POST), see the [“Powering On the Switch and Running POST”](#) section on [page 2-15](#).

RPS LED

The RPS LED shows the RPS status. [Table 1-4](#) lists the LED colors and meanings.

Table 1-4 RPS LED

Color	RPS Status
Off	RPS is off or is not installed.
Solid green	RPS is connected and operational.
Blinking green	RPS is backing up another switch in the stack.
Solid amber	RPS is connected but not functioning properly. <ul style="list-style-type: none"> • RPS could be in standby mode. Pressing the Standby/Active button on the RPS puts it in Active mode, and the LED should turn green. If the LED does not turn green, check the RPS power supplies or fan. • One of the RPS power supplies could be down. • The RPS fan could have failed.
Blinking amber	Internal power supply in this switch is down, and redundancy is lost. The switch is operating on the RPS.

For more information about the Cisco RPS 300, refer to the *Cisco RPS 300 Redundant Power System Hardware Installation Guide*.

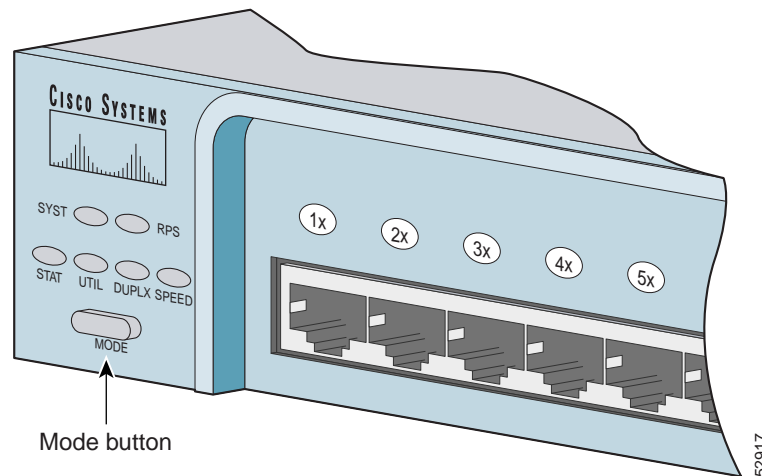
Port Mode and Port Status LEDs

Each port has a port status LED, also called a port LED. These LEDs, as a group or individually, display information about the switch and the individual ports. The port modes (see [Table 1-5](#)) determine the type of information displayed.

Table 1-5 Port Mode LEDs

Mode LED	Port Mode	Description
STAT	Port status	The port status. This mode is the default mode.
UTIL	Switch utilization	The current bandwidth in use by the switch.
DUPLX	Port duplex mode	The port duplex mode: half duplex or full duplex.
SPEED	Port speed	The port operating speed: 10 or 100 Mbps for 10/100 ports and 10, 100, or 1000 Mbps for 10/100/1000 ports.

To select or change the port mode, press the Mode button (see [Figure 1-7](#)) to highlight the mode you want. Release the button to enable the highlighted mode.

Figure 1-7 Changing the Port Mode

When you change the port mode, the meaning of the port LED colors changes. [Table 1-6](#) explains how to interpret the port LED colors.

Table 1-6 *Meaning of Port LED Colors in Different Modes*

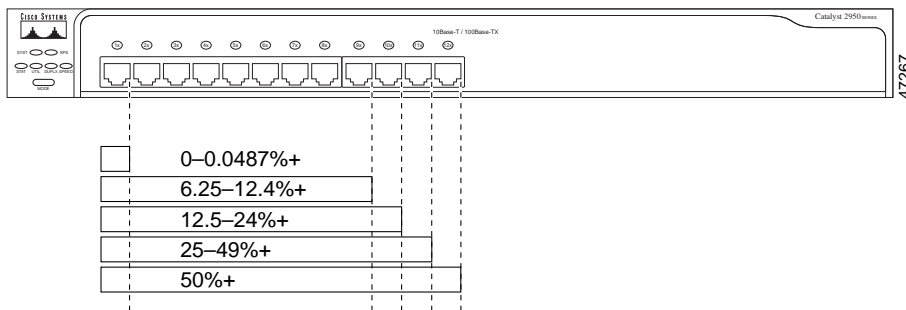
Port Mode	Color	Meaning
STAT (port status)	Off	No link.
	Solid green	Link present.
	Flashing green	Activity. Port is transmitting or receiving data.
	Alternating green-amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for a link-fault indication.
	Solid amber	Port is not forwarding. Port was disabled by management or an address violation, or it was blocked by Spanning Tree Protocol (STP). Note After a port is reconfigured, the port LED can remain amber for up to 30 seconds while STP checks the switch for possible loops.
UTIL (utilization)	Green	The current backplane utilization that is displayed over the amber LED background on a logarithmic scale.
	Amber	The maximum backplane utilization since the switch was powered on.
	Green and amber	If all LEDs are green (no amber showing), the switch is using 50% or more of the total bandwidth. If the right-most LED is off, the switch is using more than 25% but less than 50% of the total bandwidth, and so on. If only the left-most LED is green, the switch is using less than 0.0488% of the total bandwidth. See Figure 1-8 for details. Note If the current utilization exceeds the maximum utilization, the maximum utilization is automatically updated.
DUPLX (half or full duplex)	Off	Port is operating in half duplex.
	Green	Port is operating in full duplex.

Table 1-6 Meaning of Port LED Colors in Different Modes (continued)

Port Mode	Color	Meaning
SPEED (speed)	10/100 ports	
	Off	Port is operating at 10 Mbps.
	Green	Port is operating at 100 Mbps.
	10/100/1000 ports	
	Off	Port is operating at 10 Mbps.
	Green	Port is operating at 100 Mbps.
Flashing green	Port is operating at 1000 Mbps.	

Figure 1-8 shows the bandwidth utilization percentages displayed by the right-most LEDs.

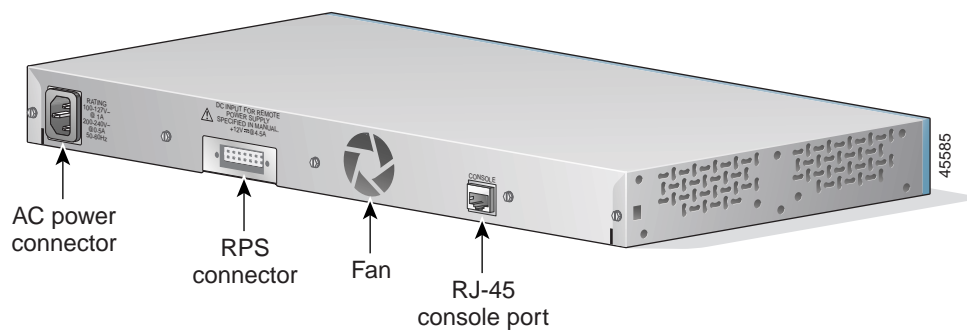
Figure 1-8 Bandwidth Utilization



Rear-Panel Description

The switch rear panel has an AC power connector, an RPS connector, and an RJ-45 console port. (See [Figure 1-9](#).)

Figure 1-9 Catalyst 2950 Switch Rear Panel



Power Connectors

You can provide power to a switch either by using the internal power supply or the Cisco RPS.

Internal Power Supply Connector

The internal power supply is an autoranging unit that supports input voltages between 100 and 240 VAC. Use the supplied AC power cord to connect the AC power connector to an AC power outlet.

Cisco RPS Connector

The RPS is a 300W redundant power system that can support six external network devices and provides 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

the failed device, preventing loss of network traffic. When the internal power supply has been brought up or replaced, the RPS automatically stops powering the device.

**Warning**

Attach only the Cisco RPS 300 (model PWR300-AC-RPS-N1) to the RPS receptacle.

For more information about the Cisco RPS 300, refer to the *Cisco RPS 300 Redundant Power System Hardware Installation Guide*.

Console Port

You can connect a switch to a PC through the console port and the supplied rollover cable and DB-9 adapter. If you want to connect a switch to a terminal, you need to provide an RJ-45-to-DB-25 female DTE adapter. You can order a kit (part number ACS-DSBUASYN=) with that adapter from Cisco. For console-port and adapter-pinout information, see the [“Cable and Adapter Specifications” section on page B-4](#).

Management Options

Catalyst 2950 series switches offer these management options:

- Cluster Management Suite (CMS)

CMS is made up of three web-based applications that you use to manage switches. You can use Cluster Builder, which includes Cluster View, and Cluster Manager to create, monitor, and configure switch clusters. You can also use Visual Switch Manager (VSM) to manage individual and standalone switches. For more information, refer to the *Catalyst 2950 Desktop Switch Software Configuration Guide* and the CMS online help.

- IOS command-line interface (CLI)

You can manage switches using traditional command-line entries. To access the CLI, connect a PC or terminal directly to the console port on the switch rear panel. If the switch is attached to your network, you can use a Telnet connection to manage the switch from a remote location. For more information, refer to the *Catalyst 2950 Desktop Switch Command Reference*.

- CiscoView application

You can use the CiscoView device-management application to set configuration parameters and to view switch status and performance information. This application, which you purchase separately, can be a standalone application or part of an Simple Network Management Protocol (SNMP) network-management platform. For more information, refer to the documentation that came with your CiscoView application.

- SNMP network management

You can manage switches by using an SNMP-compatible management station running platforms such as HP OpenView and SunNet Manager. The switch supports a comprehensive set of MIB extensions and MIB II, the IEEE 802.1D bridge MIB, and four RMON groups. For more information, refer to the documentation that came with your SNMP application.