



Overview

This chapter provides these topics that describe the Catalyst 2955 switch, hereafter referred to as *the switch*.

- [Features, page 1-1](#)
- [Front-Panel Description, page 1-3](#)
- [Rear-Panel Description, page 1-17](#)
- [Management Options, page 1-17](#)

Features

The Catalyst 2955 switch is a member of the Catalyst switch family. Catalyst switches are a series of Ethernet switches that you can use to connect workstations and other Ethernet-enabled devices.

The Catalyst 2955 switch is an Ethernet switch that mounts on a DIN rail in an industrial enclosure as well as in a standard 19-inch rack. Its components are designed to withstand extremes in temperature, vibration, and shock so that the switch can be deployed in an industrial environment.

Refer to the switch software configuration guide for examples that show how you might deploy the switches in your network.

Figure 1-1 through Figure 1-3 show the Catalyst 2955 switches.

These are the switch features:

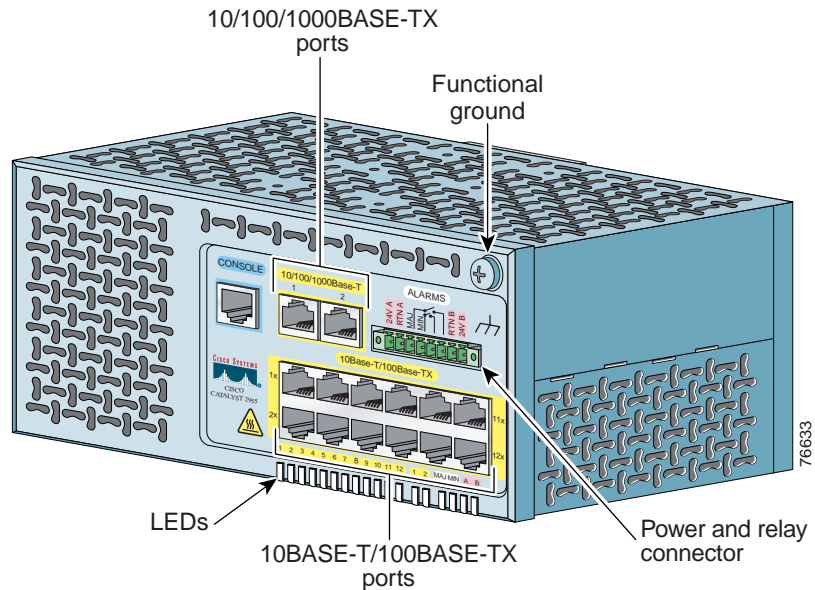
- Hardware
 - Catalyst 2955T-12 switch—12 10/100 ports and 2 10/100/1000BASE-T ports
 - Catalyst 2955C-12 switch—12 10/100 ports and 2 multimode (MM) 100BASE-FX ports
 - Catalyst 2955S-12 switch—12 10/100 ports and 2 single-mode (SM) 100BASE-LX ports
- Configuration
 - For 10/100 ports, autonegotiates the speed and duplex settings
 - For 10/100/1000 BASE-T uplink ports, autonegotiates the speed and supports full-duplex operation
 - For 100BASE-FX multimode fiber-optic MM uplink ports, supports only 100-Mbps and full-duplex settings
 - For 100BASE-LX single-mode fiber-optic SM uplink ports, supports only 100-Mbps and full-duplex settings

Front-Panel Description

The switch front panel contains the ports, the LEDs, and the power and relay cable connector.

Figure 1-1 to Figure 1-3 show the switch front panels.

Figure 1-1 Catalyst 2955T-12 Switch



Warning Labels

The laser safety warning label (as shown in [Figure 1-4](#)) appears on the Catalyst 2955C-12 and Catalyst 2955S-12 switch front panels. The MM fiber-optic ports on the Catalyst 2955C-12 are Class 1 LEDs. The SM fiber-optic uplink ports on the Catalyst 2955S-12 are Class 1 Laser products.

The laser safety warning label means that you should exercise caution when working with fiber-optic ports and cabling. See [Appendix C, “Translated Safety Warnings”](#) for more information about laser safety guidelines.

Figure 1-4 Laser Safety Warning Label



The hot surface warning label (as shown in [Figure 1-5](#)) appears on the Catalyst 2955C-12, Catalyst 2955S-12 and Catalyst 2955T-12 switch front panels. This label means that the surface of the switch is a hot surface. See [Appendix C, “Translated Safety Warnings”](#) for more information about proper handling guidelines for hot surfaces.

Figure 1-5 Hot Surface Warning Label



10/100 Ports

The 10/100 ports use RJ-45 connectors and twisted-pair cabling. The ports can connect to these devices:

- 10BASE-T devices, such as workstations and hubs, through standard RJ-45 connectors and two twisted-pair cabling. You can use Category 3, 4, or 5 cabling.
- 100BASE-TX devices, such as high-speed workstations, servers, hubs, routers, and other switches, through standard RJ-45 connectors and two or four twisted-pair, Category 5 cabling.



Note

When connecting the switch to workstations, servers, and routers, be sure that the cable is a twisted-pair straight-through cable. When connecting the switch to hubs or other switches, use a twisted-pair crossover cable. Pinouts for the cables are described in [Appendix B, “Connectors and Cables.”](#)

The 10/100 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.

10/100/1000 Ports

The 10/100/1000 uplink ports on the Catalyst 2955T-12 switch use RJ-45 connectors and twisted-pair cabling. The ports can connect to these devices:

- 10BASE-T devices, such as workstations and hubs, through standard RJ-45 connectors and two or four twisted-pair, Category 3, 4, or 5 cabling.
- 100BASE-TX devices, such as high-speed workstations, servers, hubs, routers, and other switches, through standard RJ-45 connectors and two or four twisted-pair, Category 5 cabling.

- 1000BASE-T devices, such as high-speed workstations, servers, hubs, routers, and other switches, through standard RJ-45 connectors and four twisted-pair, Category 5 cabling.

**Note**

When connecting the switch to a 1000BASE-T device, be sure to use a four twisted-pair, Category 5 cable.

**Note**

When connecting the switch to workstations, servers, and routers, be sure to use a twisted-pair straight-through cable. When connecting the switch to hubs or other switches, use a twisted-pair crossover cable. Pinouts for the cables are described in [Appendix B, “Connectors and Cables.”](#)

The 10/100/1000 ports on the Catalyst 2955T-12 switch can be explicitly set to operate at 10, 100, or 1000 Mbps but only in full-duplex mode. They can also be set for speed 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).

100BASE-FX Ports

The 100BASE-FX ports on the Catalyst 2955C-12 use 50/125- or 62.5/125-micron MM fiber-optic cabling. In full-duplex mode, the MM fiber-optic cable length from a switch to an attached device cannot exceed 6562 feet (2 kilometers).

For MM connections, you can connect a 100BASE-FX port to a port on a target device by using one of the MT-RJ fiber-optic patch cables listed in [Table B-1 on page B-5](#). Use the Cisco part numbers in [Table B-1](#) to order the patch cables that you need.

100BASE-LX Ports

The 100BASE-LX ports on the Catalyst 2955S-12 use 9/125-micron SM fiber-optic cabling. The cable length from a switch to an attached device cannot exceed 9.375 miles (15 kilometers).

For SM connections, use one of the different connectors listed in [Table B-2 on page B-6](#). Use the Cisco part numbers in [Table B-2](#) to order the connectors that you need.

Power and Relay Connector

The power and relay connector gives DC power and configurable alarm contacts to the switch. The power and relay connector is on the right of the uplink ports on the faceplate, as shown in [Figure 1-6](#).

The connector is a pluggable screw terminal block connector that gives power and return connections for both the primary and secondary power supplies. The positive DC power input for power supply A is labeled 24V A, and the return for power supply A is labeled RTN A. For power supply B (the redundant power supply), the positive DC power input is labeled 24V B, and the return is labeled RTN B. The Catalyst 2955 switch can operate with a single power supply or with dual power supplies. In dual-power mode, the switch draws power from the power supply with higher voltage. In case the primary power supply fails in dual power mode, the alternate power supply gives power to the switch.



Warning

When you connect or disconnect the power and relay connector with power applied, an electrical arc can occur. This could cause an explosion in hazardous area installations. Be sure that power is removed from the switch and alarm circuit. Be sure that power cannot be accidentally turned on or verify that the area is nonhazardous before proceeding.

Failure to securely tighten the power and relay connector captive screws can result in an electrical arc if the connector is accidentally removed.

The power and relay connector gives the Catalyst 2955 switch the interfaces to two independent alarm relays. The relays can be triggered by alarms for environmental, power supply, and port status conditions. The relays can be

configured to send a fault signal to an external alarm device, such as a bell or a light. You can use the CLI to associate any alarm condition with either alarm relay or both relays.

The alarm relays on the Catalyst 2955 switch are normally open (NO). To connect an external alarm device to the relays, you must connect two relay contact wires to complete an electrical circuit. Because each external alarm device requires two connections to a relay, the Catalyst 2955 switch supports a maximum of two external alarm devices.

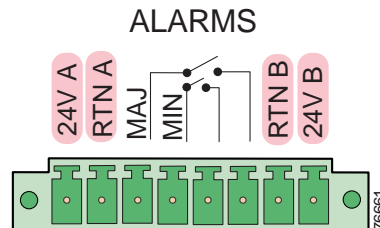


Note

Refer to the switch configuration guide for instructions on how to configure the alarm relays.

For more information about the power and relay connector, see [Appendix B, “Connectors and Cables.”](#)

Figure 1-6 Power and Relay Connector



Console Port

You can connect a switch to a PC through the console port and the supplied RJ-45-to-DB-9 adapter cable. 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-7.](#)

**Warning**

If you connect or disconnect the console cable with power applied to the switch or any device on the network, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

To verify switch operation, perform POST on the switch in a nonhazardous location before installation.

LEDs

You can use the LEDs to monitor switch activity and performance. The LEDs on all Catalyst 2955 switches are on the bottom edge of the front panel. The LEDs are visible in both face-up and parallel mounting configurations, as shown in [Figure 1-7](#) and [Figure 1-8](#).

**Note**

The 10/100 port status LEDs show port status only.

All of the LEDs described in this section are visible in the Cluster Management Suite (CMS). The switch software configuration guide describes how to use CMS to configure and to monitor individual switches and switch clusters.

Figure 1-7 LEDs on the Catalyst 2955T-12 Switch

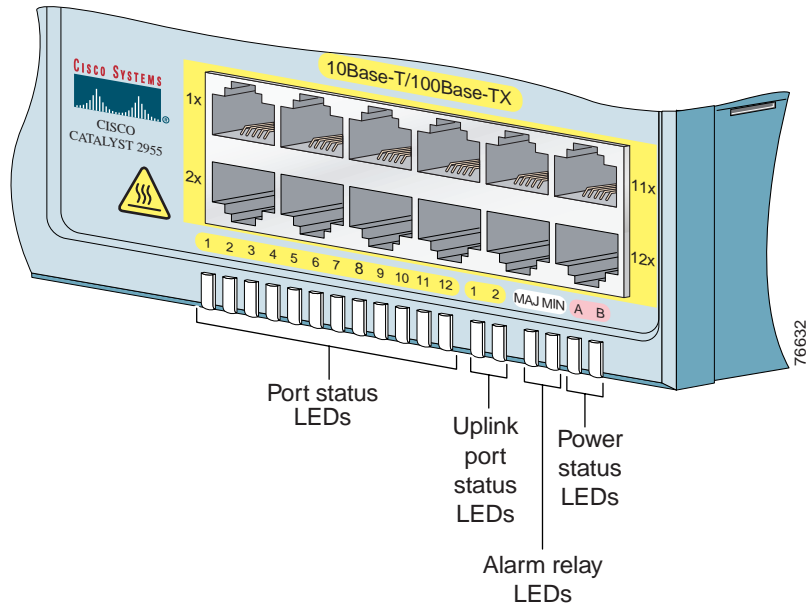
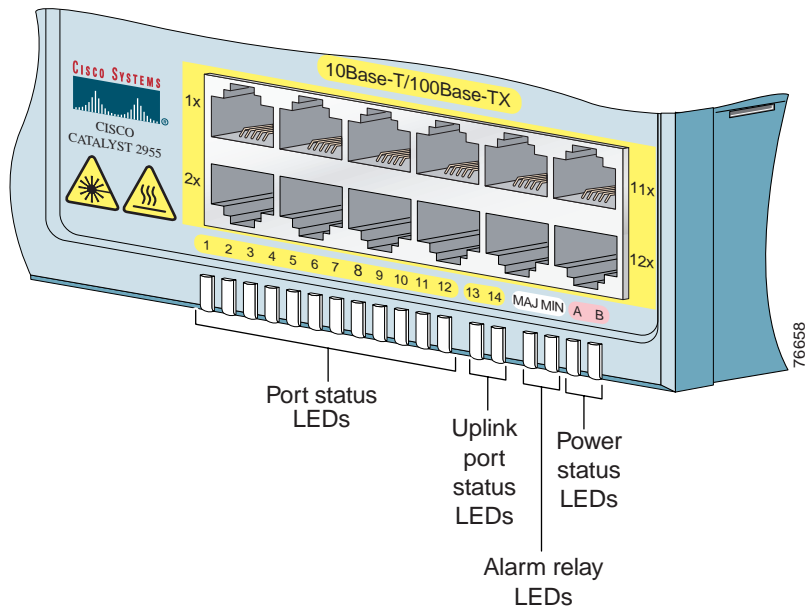


Figure 1-8 LEDs on Catalyst 2955C-12 and Catalyst 2955S-12 Switches



Power Status LEDs

The Catalyst 2955 switch can operate with a single power supply or with dual power supplies. In dual-power mode, the switch draws power from the power supply with higher voltage. In case the primary power supply fails in dual power mode, the alternate power supply gives power to the switch.

The power status LEDs show whether the individual power supplies are receiving power and functioning properly. [Table 1-1](#) lists the LED colors and meanings.

**Note**

The power status LEDs show that power is not present on the switch if the power input drops below 17 V. The power status LEDs only show that power is present if the input exceeds 18.5 V. The 1.5 V difference, or *hysteresis*, ensures that the power status LEDs do not oscillate at values near 18 V.

In dual power mode, the power status LEDs show status for both power inputs, 24 VA and 24 VB.

Table 1-1 *Power Status LEDs*

Color	System Status
Off	System is not powered up.
Green	Power present on associated contact.
Red	Power not present on associated contact.

For information about the power LED colors during the power-on self-test (POST), see the [“Powering On the Switch and Running POST”](#) section on page 2-11.

10/100 Port Status LEDs

Each 10/100 port has a port status LED, also called a port LED, as shown in [Figure 1-7](#) and [Figure 1-8](#). These LEDs display information about the switch and the individual ports, as shown in [Table 1-2](#).

Table 1-2 *10/100 Port Status LEDs*

Color	System Status
Off	No link.
Solid Green	Link present.
Flashing green	Activity. Port is transmitting or receiving data.

Table 1-2 10/100 Port Status LEDs (continued)

Color	System Status
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, an address violation, or 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.

Uplink Port Status LEDs

The Catalyst 2955 switch has two uplink port status LEDs to the right of the port status LEDs. On the Catalyst 2955C-12 and Catalyst 2955S-12 switches, the fiber-optic uplink port status LEDs are labeled 13 and 14 (see [Figure 1-8](#)). On the Catalyst 2955T-12, the 10/100/1000BASE-T uplink ports are labeled 1 and 2 (see [Figure 1-7](#)).

These LEDs display information about the switch and the individual uplink ports, as shown in [Table 1-3](#), [Table 1-4](#), and [Table 1-5](#).



Note

The uplink port status LEDs provide system and status information during POST. See the “[Powering On the Switch and Running POST](#)” section on [page 2-11](#) for more information about uplink port LED colors during POST.

Table 1-3 10/100/1000BASE-T Uplink Port Status LEDs

Color	System Status
Off	No link.
Solid Green	Link present.
Flashing green	Activity. Port is transmitting or receiving data.

Table 1-3 10/100/1000BASE-T Uplink Port Status LEDs (continued)

Color	System Status
Alternating green-amber	Link is faulty.
Solid amber	Link is disabled.

Table 1-4 100BASE-FX MM Uplink Port Status LEDs

Color	System Status
Off	No link.
Solid Green	Link present.
Flashing green	Activity. Port is transmitting or receiving data.
Alternating green-amber	Link is faulty.
Solid amber	Link is disabled.

Table 1-5 100BASE-LX SM Uplink Port Status LEDs

Color	System Status
Off	No link.
Solid Green	Link present.
Flashing green	Activity. Port is transmitting or receiving data.
Alternating green-amber	Link is faulty.
Solid amber	Link is disabled.

Alarm and Relay LEDs

Two alarm and relay LEDs labeled MAJ and MIN are to the right of the uplink port status LEDs, as shown in [Figure 1-7](#) and [Figure 1-8](#). These LEDs reflect the state of the major and minor system alarms.

You can use Cisco IOS command line interface (CLI) to configure the major and minor LEDs to drive the relay contacts, so that the connected external alarm device state mirrors the alarm state indicated by the major (MAJ) or minor (MIN) LED. You can also use the CLI to associate port and global status alarms to one or both relays. Refer to the switch software configuration guide for details.



Warning

The switch relays are rated at 1 Amp and have a voltage limit of 30 VDC and 0.3 Amp at a voltage limit of 125 VAC. It is dangerous to exceed these limitations in a hazardous environment.

An electrical arc can occur when you connect or disconnect the relay wires with field side power applied. This could cause an explosion in switch installations in a hazardous location. Before proceeding, be sure that power is removed or the area is not hazardous.

[Table 1-6](#) lists the LED colors and meanings.

Table 1-6 Alarm and Relay LEDs

LED	Color	Meaning
Major relay (MAJ)	Off	Environmental temperature is within normal range, or connected alarm is not in a state of fault.
	Red	Environmental temperature exceeds maximum threshold, or connected alarm is in a state of fault.
Minor relay (MIN)	Off	Connected alarm is not in a state of fault.
	Red	Connected alarm is in a state of fault.



Note

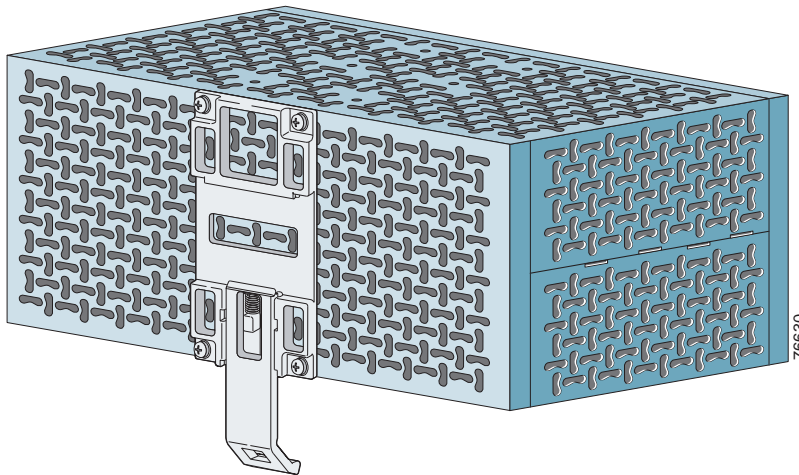
The minor LED is disabled by default.

Rear-Panel Description

The rear panel of the Catalyst 2955 switch has a DIN rail mounting clip assembly, as shown in [Figure 1-9](#).

The switch ships with the clip assembly installed on the rear panel, for a parallel mounting configuration. To mount the switch in a face-down configuration, remove the clip assembly from the rear panel, and then install it on the top of the switch.

Figure 1-9 The Catalyst 2955 Switch Rear Panel



Management Options

Catalyst 2955 switches offer these management options:

- Cluster Management Suite (CMS)

CMS is made up of three web-based applications that you can use to manage switches. You can use Cluster Builder, which includes Cluster View, and Cluster Manager to create, configure, and monitor switch clusters. You can

also use Device Manager to manage individual and standalone switches. For more information, refer to the switch software configuration guide and the CMS online help.

- **IOS CLI**

You can manage switches by using command-line entries. To access the CLI, connect a PC or terminal directly to the console port on the switch. 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 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 Remote Monitoring (RMON) groups. For more information, refer to the documentation that came with your SNMP application.

- **Cisco Intelligence Engine 2100 (IE2100)**

- **The Cisco IE200 Series Configuration Registrar is a network management device that works with embedded Cisco Networking Services (CNS) agents in the switch software. You can automate initial configurations and configuration updates by generating switch-specific configuration changes, sending them to the switch, executing the configuration change, and logging the results. For more information, refer to the switch software configuration guide and the documentation that came with your application.**