Cisco Catalyst 2960-L Smart Managed Series 8-Port and 16-Port Switch Hardware Installation Guide

First Published: 2018-11-30

CONTENTS

Preface

- Document Conventions , on page ix
- Related Documentation, on page x
- Obtaining Documentation and Submitting a Service Request, on page xi

Document Conventions

This document uses the following conventions:

Convention	Description
^ or Ctrl	Both the ^ symbol and Ctrl represent the Control (Ctrl) key on a keyboard. For example, the key combination **^D** or **Ctrl-D** means that you hold down the Control key while you press the D key. (Keys are indicated in capital letters but are not case sensitive.)
bold font	Commands and keywords and user-entered text appear in **bold** font.
Italic font	Document titles, new or emphasized terms, and arguments for which you supply values are in *italic* font.
`Courier` font	Terminal sessions and information the system displays appear in `courier` font.
`Bold Courier` font	**`Bold Courier`** font indicates text that the user must enter.
[x]	Elements in square brackets are optional.
...	An ellipsis (three consecutive nonbolded periods without spaces) after a syntax element indicates that the element can be repeated.
|	A vertical line, called a pipe, indicates a choice within a set of keywords or arguments.
[x | y]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
{x | y}	Required alternative keywords are grouped in braces and separated by vertical bars.

Convention	Description
[x {y | z}]	Nested set of square brackets or braces indicate optional or required choices within optional or required elements. Braces and a vertical bar within square brackets indicate a required choice within an optional element.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Reader Alert Conventions

This document may use the following conventions for reader alerts:

Note   Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

Tip   Means *the following information will help you solve a problem*.

Caution   Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Timesaver   Means *the described action saves time*. You can save time by performing the action described in the paragraph.

Warning   IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Related Documentation

• Cisco SFP modules documentation, including compatibility matrixes, located at:

http://www.cisco.com/en/US/products/hw/modules/ps5455/tsd_products_support_series_home.html

• Cisco Validated Designs documents at this URL:

http://www.cisco.com/go/designzone

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

C H A P T E R **1**

Product Overview

The Cisco Catalyst 2960-L Smart Managed Series switches are fixed-configuration, Gigabit Ethernet switches that provide entry-level enterprise-class Layer 2 access for branch offices, conventional workspace, and out-of-wiring closet applications.

Cisco Catalyst 2960-L Smart Managed Series switches provide support for the following features:

- 8 or 16 Gigabit Ethernet ports with line-rate forwarding performance
- Two Gigabit Small Form-Factor Pluggable (SFP) uplinks
- Power over Ethernet Plus (PoE+) support with up to 120W of PoE budget and Persistent PoE
- Fanless operation with operational temperature up to 45°C for deployment outside the wiring closet
- Reduced power consumption and advanced energy management
- RJ-45 and USB Mini-Type B console ports
- USB Type A port supports file system

Switch Models

Table 1: Cisco Catalyst 2960-L Smart Managed 8-Port and 16-Port Switch Models and Description

Switch Model	Software Image	Description
WS-C2960L-SM-8TS	Lan Lite	8 10/100/1000 Ethernet ports; 2 1-Gigabit small form-factor pluggable (SFP) module uplink slots.
WS-C2960L-SM-8PS	Lan Lite	8 10/100/1000 Power over Ethernet plus (PoE+) ports (PoE budget of 67W); 2 1-Gigabit small form-factor pluggable (SFP) module uplink slots.

Switch Model	Software Image	Description
WS-C2960L-SM-16TS	Lan Lite	16 10/100/1000 Ethernet ports; 2 1-Gigabit small form-factor pluggable (SFP) module uplink slots.
WS-C2960L-SM-16PS	Lan Lite	16 10/100/1000 Power over Ethernet plus (PoE+) ports (PoE budget of 120W); 2 1-Gigabit small form-factor pluggable (SFP) module uplink slots.

Front Panel

This section describes the front panel components of a 8-port and 16-port Cisco Catalyst 2960-L Smart Managed switch.

- 8 or 16 downlink Ethernet ports of one of these types:

    - 10/100/1000

    - 10/100/1000 PoE+

- 2 SFP module ports

- RJ-45 console port

- USB mini-Type B (console) port

- USB Type A port

- LEDs

Figure 1: Front Panel of an 8-Port Cisco Catalyst 2960-L Smart Managed PoE Switch
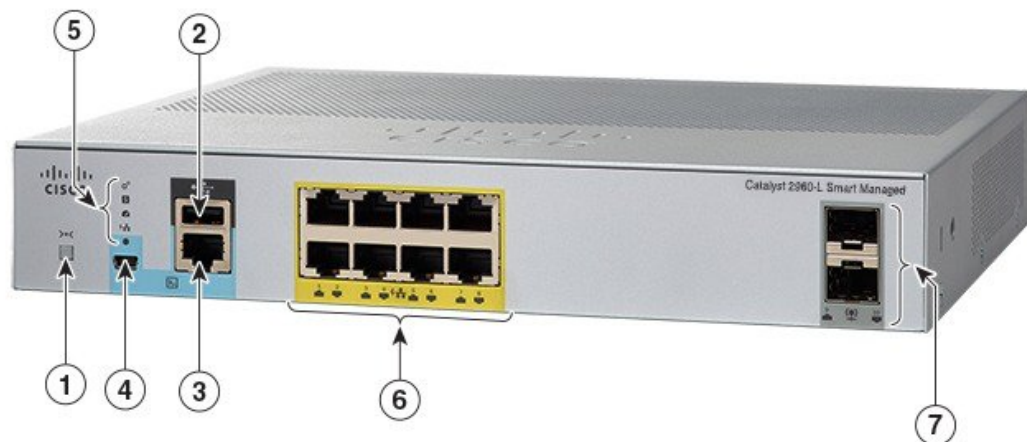
Note The yellow color marking around the ports indicates that the switch is a PoE switch.

1	Mode button	5	System LEDs
2	USB Type A port	6	8 10/100/1000 PoE+ ports
3	RJ-45 Console Port	7	SFP module slots
4	USB mini-Type B (console) port		

Figure 2: Front Panel of a 16-Port Cisco Catalyst 2960-L Smart Managed PoE Switch
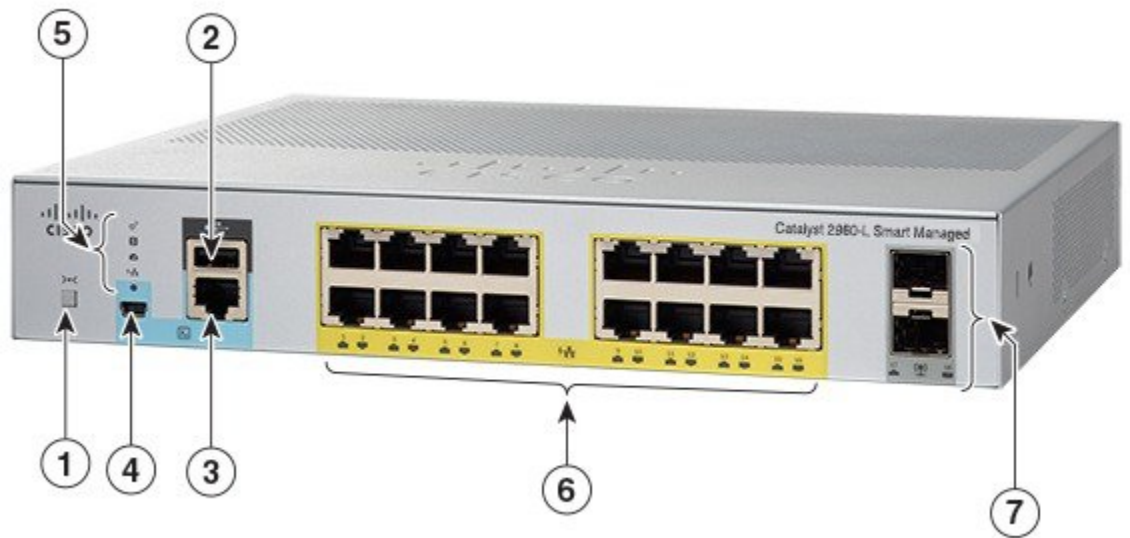
1	Mode button	5	System LEDs
2	USB Type A port	6	16 10/100/1000 PoE+ ports
3	RJ-45 Console Port	7	SFP module slots
4	USB mini-Type B (console) port		

PoE Ports

The ports provide PoE support for devices compliant with IEEE 802.3af and IEEE 802.3at and also provide PoE support for Cisco IP Phones and Cisco Aironet Access Points. The PoE switch ports are Power Source equipment (PSE) and Power Device (PD) capable and source power to PD devices connected to the downlink ports. A switch can source POE power of up to 30.8W per port.

Depending on the switch model and the number of PoE ports, the maximum switch power output varies between 91.66 W to 150.11 W. On a per-port basis, you can control whether or not a port automatically provides power when an IP phone or an access point is connected.

The PoE ports use RJ-45 connectors with Ethernet pinouts. The 10BASE-T, 100BASE-TX, 1000BASE-T traffic requires Category 5 or Category 5e twisted pair (UTP) cable. The 10BASE-T traffic can use Category 3 or Category 4 UTP cable.

10/100/1000 Ports

The 10/100/1000 ports use RJ-45 connectors with Ethernet pinouts. The maximum cable length is 328 feet (100 meters). The 10BASE-T, 100BASE-TX, 1000BASE-T traffic requires Category 5 or Category 5e twisted pair (UTP) cable. The 10BASE-T traffic can use Category 3 or Category 4 UTP cable.

Console Ports

The console ports connect the switch to a PC running Microsoft Windows or to a terminal server.

- RJ-45 console port (EIA/TIA-232). The RJ-45 console port connection uses an RJ-45-to-DB-9 female cable.

- USB mini-Type B console port (5-pin connector).

If you use the USB mini-Type B console port, the Cisco Windows USB device driver must be installed on any PC connected to the console port (for operation with Microsoft Windows). Mac OS X or Linux do not require special drivers.

The 4-pin mini-Type B connector resembles the 5-pin mini-Type B connectors. They are not compatible. Use only the 5-pin mini-Type B.

This illustration shows a 5-pin mini-Type B USB port.

Figure 3: USB Mini-Type B Port

With the Cisco Windows USB device driver, you can connect and disconnect the USB cable from the console port without affecting Windows HyperTerminal operations.

The console output always goes to both the RJ-45 and the USB console connectors, but the console input is active on only one of the console connectors at any one time. The USB console takes precedence over the RJ-45 console. When a cable is connected into the USB console port, the RJ-45 console port becomes inactive. Conversely, when the USB cable is disconnected from the USB console port, the RJ-45 port becomes active.

You can use the command-line interface (CLI) to configure an inactivity timeout which reactivates the RJ-45 console if the USB console has been activated and no input activity has occurred on the USB console for a specified time.

After the USB console deactivates due to inactivity, you cannot use the CLI to reactivate it. Disconnect and reconnect the USB cable to reactivate the USB console. For information on using the CLI to configure the USB console interface, see the software guide.

SFP Module Slots

The switch has two 1G SFP module slots. The SFP modules provide copper or fiber-optic connections to other devices. These transceiver modules are field replaceable, and provide the uplink interfaces when installed

in an SFP module slot. The SFP modules have LC connectors for fiber-optic connections or RJ-45 connectors for copper connections. The SFP slots support only SFP modules.

For Cisco SFP modules documentation, including compatibility matrixes, refer to this URL: http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html

LEDs

You can use the switch system and port LEDs to monitor switch activity and performance.

Figure 4: Switch LEDs
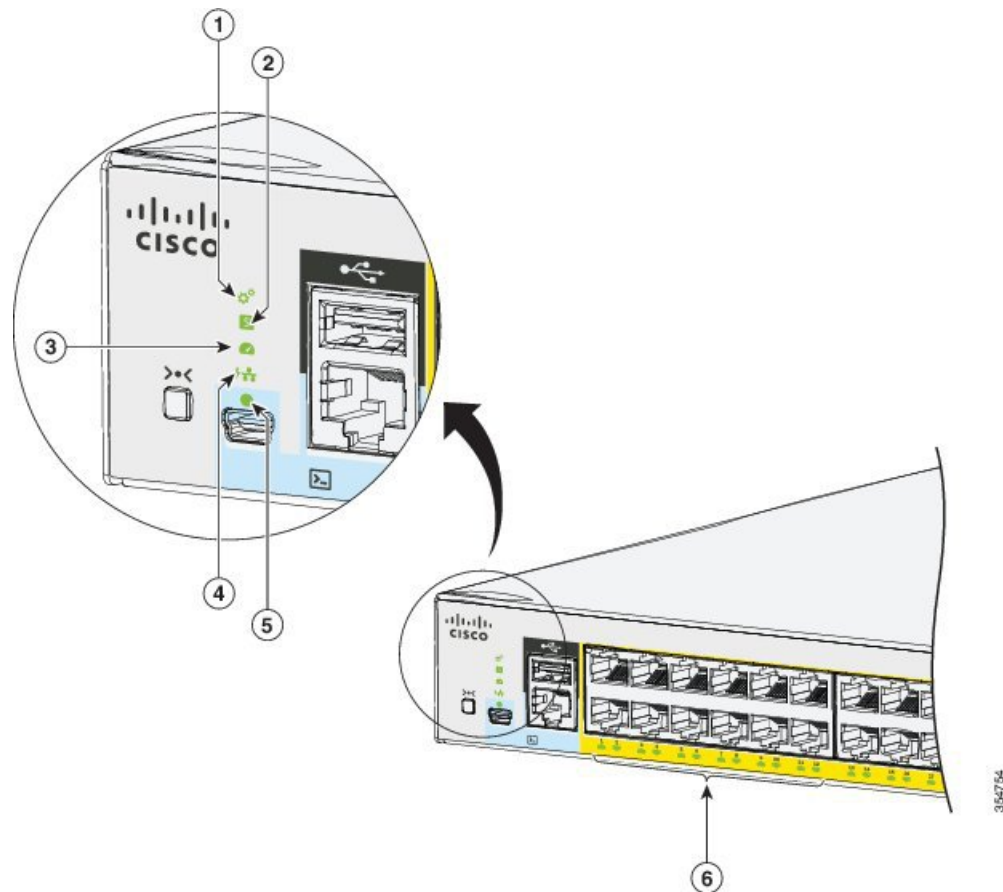
1	SYST LED (system)	4	PoE LED [1]
2	STAT LED (status)	5	Console LED
3	SPEED LED	6	Port LEDs

[1] Only on switch models that support PoE.

System LED

Color	System Status
Off	System is not powered on.
Green	System is operating normally.
Amber	System is receiving power but is not operating properly.
Blinking Green	POST is in progress.

Port LEDs and Modes

The port and module slots each has a port LED. As a group or individually, the LEDs display information about the switch and about the individual ports.

Table 2: Port Mode LEDs

LED	Port Mode	Description
STAT	Port status	The port status. This is the default mode.
SPEED	Port speed	The port operating speed: 10, 100, or 1000 Mb/s.
PoE	PoE port power	The PoE status.

To select or change a mode, press the Mode button until the desired mode is highlighted. When you change port modes, the meanings of the port LED colors also change.

Table 3: Meanings of LED Colors in Different Modes

LED	Port Mode	Color	Description
STAT	Port status	Off	No link or port is administratively shut down.
		Green	Link is present.
		Blinking green	Activity. Port is sending or receiving data.
		Alternating green amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment errors are monitored for link faults.
		Amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. After a port is reconfigured, the port LED is amber for up to 30 seconds as STP searches for loops.
		Blinking amber	Port is blocked by STP and is not sending data.

LED	Port Mode	Color	Description
SPEED	Port speed	Off	Port is operating at 10 Mb/s.
		Green	Port is operating at 100 Mb/s.[2]
		Blinking green	Port is operating at 1000 Mb/s.
PoE	PoE port power	Off	PoE is off. If the powered device is receiving power from an AC power source, the PoE port LED is off even if the powered device is connected to the switch port.
		Green	PoE is on. The port LED is green only when the switch port is providing power.
		Alternating green amber	PoE is denied because providing power to the powered device will exceed the switch power capacity.
		Amber	PoE for the port is disabled. By default, PoE is enabled.
		Blinking Amber	PoE is off due to a fault.

[2] Applies only to RJ-45 ports.

PoE LED

Even if the PoE mode is not selected, the LED shows PoE problems when they are detected. The PoE LED is only on the switches that support PoE.

Color	Description
Off	PoE mode is not selected.
Green	PoE mode is selected. Ports are functioning correctly.
Blinking amber	• PoE mode is not selected • At least one of the 10/100 or 10/100/100 PoE ports has been denied power • At least one of the ports has a PoE fault

Console LEDs

The console LEDs show which console port is in use.

If you connect a cable to a console port, the switch automatically uses that port for console communication. If you connect two console cables, the USB-mini console port has priority.

LED	Color	Description
USB-mini console port	Green	USB-mini console port is active.
	Off	Port is not active. RJ-45 console port is active.

Port LEDs

RJ-45 ports and SFP-module slots have port LEDs. These LEDs, as a group or individually, provide information about the switch and about the individual ports.

LED Color	Description
Off	No link or port was administratively shut down.
Green	Link present but is not sending or receiving data.
Blinking green	Activity. Port is sending or receiving data. **Note** Currently this is not supported for SFP ports.
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 link faults. **Note** Currently this is not supported for SFP ports.
Amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. After a port is reconfigured, the port LED is amber for up to 30 seconds as STP searches for loops. **Note** Currently this is not supported for SFP ports.

Rear Panel

- A security slot
- An AC power connector
- A loop (for the optional power cord retainer)
- Heat sink fins (PoE models only)

Figure 5: Rear Panel of a Non-PoE Switch
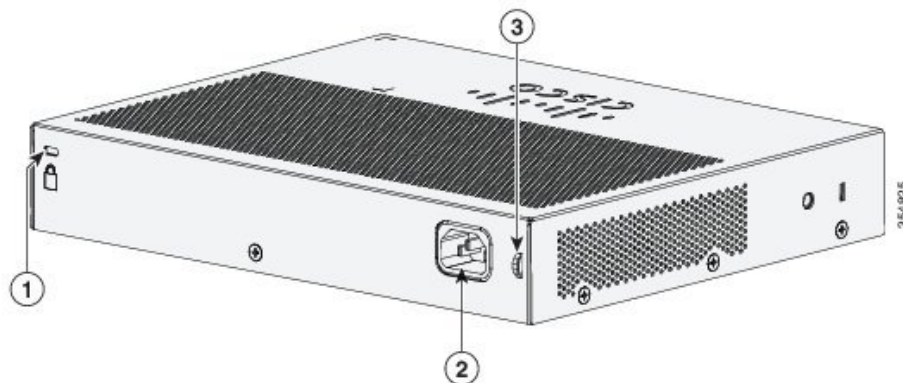
1	Security Slot	3	A loop (for the optional power cord retainer)
2	An AC power connector		

Figure 6: Rear Panel of a PoE Switch
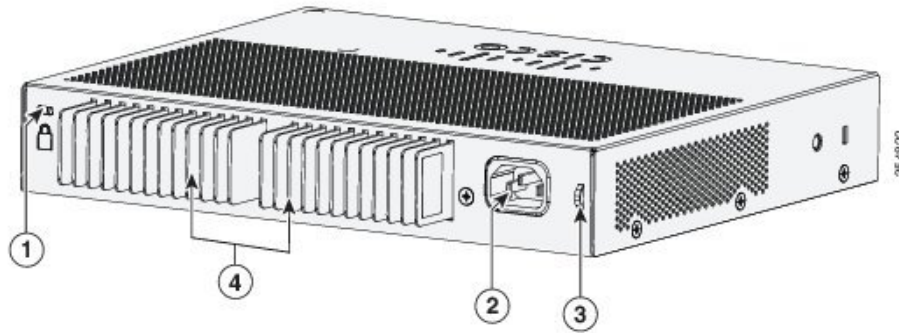
1	Security Slot	3	A loop (for the optional power cord retainer)
2	An AC power connector	4	Heat sink fins

Internal Power Supply

All the switches are powered through their internal power supplies. The internal power supply is an autoranging unit that supports input voltages between 100 and 240 VAC (max of 90V to 264V). The AC frequency range of the power supply is 50Hz~60Hz. Plug the AC power cord into the AC power connector and into an AC power outlet.

Security Slot

The switches have security slots on the rear panel. You can install an optional cable lock, such as the type that is used to secure a laptop computer, to secure the switch.

Figure 7: Switch Rear Panel
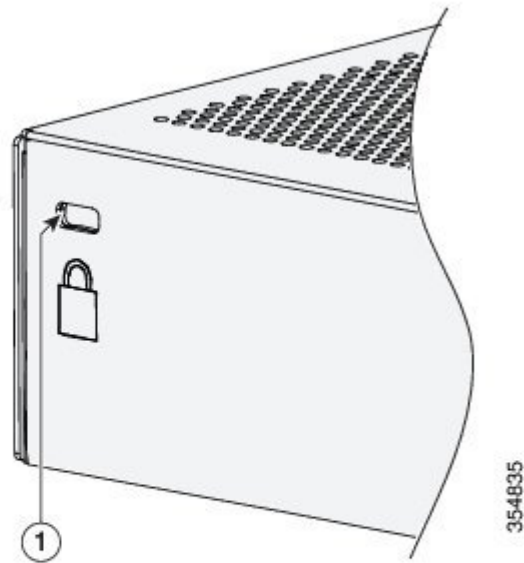
Network Configurations

See the switch software configuration guide for network configuration concepts and examples of using the switch to create dedicated network segments and interconnecting the segments through Fast Ethernet and Gigabit Ethernet connections.

Switch Installation

This chapter contains these topics:

Safety Warnings

This section includes the warning statements relating to basic installation. Read this section before you start the installation procedure.

Warning Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals. **Statement 43**

Warning Do not stack the chassis on any other equipment. If the chassis falls, it can cause severe bodily injury and equipment damage. **Statement 48**

Warning Read the wall-mounting instructions carefully before beginning installation. Failure to use the correct hardware or to follow the correct procedures could result in a hazardous situation to people and damage to the system. **Statement 378**

Warning   Do not work on the system or connect or disconnect cables during periods of lightning activity. **Statement 1001**

Warning   Read the installation instructions before connecting the system to the power source. **Statement 1004**

Warning   To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Statement 1006

Warning   Class 1 laser product. **Statement 1008**

Warning   This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. **Statement 1017**

Warning   The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device. **Statement 1019**

Warning   This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. **Statement 1024**

Warning   Only trained and qualified personnel should be allowed to install, replace, or service this equipment. **Statement 1030**

⚠

Warning   Ultimate disposal of this product should be handled according to all national laws and regulations. **Statement 1040**

⚠

Warning   When installing or replacing the unit, the ground connection must always be made first and disconnected last. **Statement 1046**

⚠

Warning   To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of: <113°F (45°C). **Statement 1047**

✎

Note   The maximum operating temperature is 40°C for Catalyst WS-C2960L-SM-16PS switches and 45°C for all the other switch models.

⚠

Warning   Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. **Statement 1051**

⚠

Warning   This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. **Statement 1071**

⚠

Warning   Voltages that present a shock hazard may exist on Power over Ethernet (PoE) circuits if interconnections are made using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods, unless the exposed metal parts are located within a restricted access location and users and service people who are authorized within the restricted access location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key or other means of security. **Statement 1072**

⚠

Warning   No user-serviceable parts inside. Do not open. **Statement 1073**

⚠

Warning   Installation of the equipment must comply with local and national electrical codes. **Statement 1074**

⚠

Warning   To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 inches (7.6 cm). **Statement 1076**

⚠

Warning   Hot surface. **Statement 1079**

Box Contents

This section lists the contents of the shipping box for an 8-port and 16-port Cisco Catalyst 2960-L Smart Managed switch.

Figure 8: Box Contents of an 8-Port and 16-Port Cisco Catalyst 2960-L Smart Managed Switch
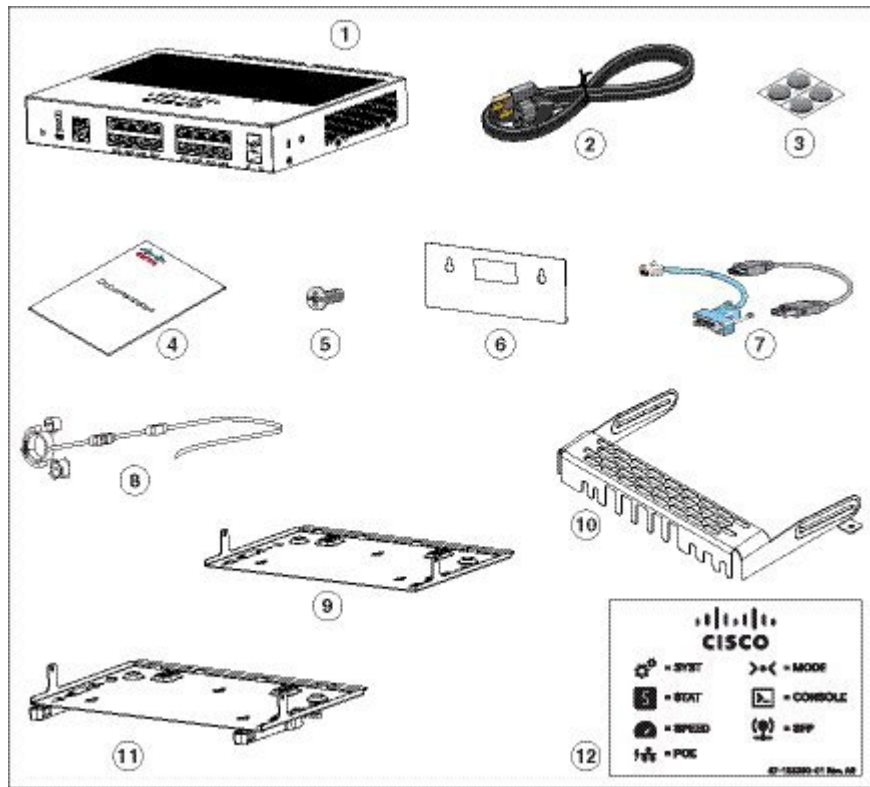
1	8-port or 16-port Cisco Catalyst 2960-L Smart Managed switch	7	(Optional) Console cable or USB cable
2	AC power cord	8	(Optional) Power cord retainer
3	Four rubber mounting feet (51-0089)	9	(Optional) Magnet tray combo
4	Compliance documentation (78-100866-01)	10	(Optional) Cable guard

5	Three number-8 screws (48-1689-01)	11	(Optional) DIN rail mount
6	Screw template (47-100996-02)	12	Icon legend label (47-103380-01)

Tools and Equipment

Obtain these necessary tools:

- A Number-2 Phillips screwdriver to rack-mount the switch
- Drill with #27 drill bit (0.144-inch [3.7 mm]) for mounting an 8-port and 16-port switch

Installation Guidelines

When determining where to install the switch, verify that these guidelines are met:

- Clearance to the switch front and rear panel meets these conditions:
  - Front-panel LEDs can be easily read.
  - Access to ports is sufficient for unrestricted cabling.
  - AC power cord can reach from the AC power outlet to the connector on the switch rear panel.

- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures. Make sure that the cabling is safely away from other devices that might damage the cables.
- Airflow around the switch and through the vents is unrestricted.
- Temperature around the unit does not exceed 113°F (45°C). If the switch is installed in a closed or multirack assembly, the temperature around it might be greater than normal room temperature.

Note The Catalyst 2960L-SM-16PS switch has a maximum operating temperature of 40°C. All the other switches have a maximum operating temperature of 45°C.

When using these products with the GLC-T SFP module, the thermal limitations are as follows:

- Up to 5000 feet altitude, operating temperature should not exceed 40°C(Catalyst 2960L-SM-16PS 35°C).
- Up to 10000 feet altitude, operating temperature should not exceed 35°C(Catalyst 2960L-SM-16PS 30°C).

- Humidity around the switch does not exceed 90 percent.
- Altitude at the installation site is not greater than 10,000 feet.
- For 10/100/1000 fixed ports, the cable length from a switch to a connected device cannot exceed 328 feet (100 meters).

Verifying Switch Operation

Before you install the switch in a rack, on a wall, or on a table or shelf, power on the switch and verify that it passes POST.

To power on the switch, plug one end of the AC power cord into the switch AC power connector, and plug the other end into an AC power outlet.

As the switch powers on, it begins the POST, a series of tests that runs automatically to ensure that the switch functions properly. LEDs can blink during the test. The SYST LED blinks green, and the other LEDs remain solid green.

When the switch completes POST successfully, the SYST LED remains green. The other LEDs turn off and then reflect the switch operating status. If a switch fails POST, the SYST LED turns amber.

POST failures are usually fatal. Call Cisco technical support representative if your switch fails POST.

After a successful POST, unplug the power cord from the switch and install the switch in a rack, on a wall, on a table, or on a shelf.

Mounting the Switch

Mounting on a Desk or Shelf Without Mounting Screws

Step 1   Locate the adhesive strip with the rubber feet in the accessory kit.

Step 2   Remove the four rubber feet from the adhesive strip, and attach them to the recessed areas at the bottom of the unit. This prevents the switch from sliding on the desk or shelf.

        Note   We strongly recommend that you attach the rubber feet. Doing so also helps prevent airflow restriction and overheating.

Step 3   Place the switch on the desk or shelf.

On a Desk, Shelf, or Wall (with Mounting Screws)

Desk- or Shelf-Mounting

Step 1   Use the screw template to align the mounting screw holes and also as a guide to make sure that you install the screws into the desk or shelf with proper clearance.

Step 2   Position the screw template on top of the desk or shelf so that the edge that is marked as CABLE SIDE ENTRY faces the front of the desk or shelf. This ensures that the power cord faces the rear of the desk or shelf after the switch is installed.

        Note   Wait before you attach the screw template to the desk or shelf.

Step 3   Peel the adhesive strip off the bottom of the screw template, and attach it to the top of the desk or shelf.

Step 4   Use a 0.144-inch (3.7 mm) or a #27 drill bit to drill a 1/2-inch (12.7 mm) hole in the two screw template slots.

Step 5   Insert two screws in the slots on the screw template, and tighten them until they touch the top of the screw template.

Figure 9: Installing the Mounting Screws on Top of a Desk or a Shelf
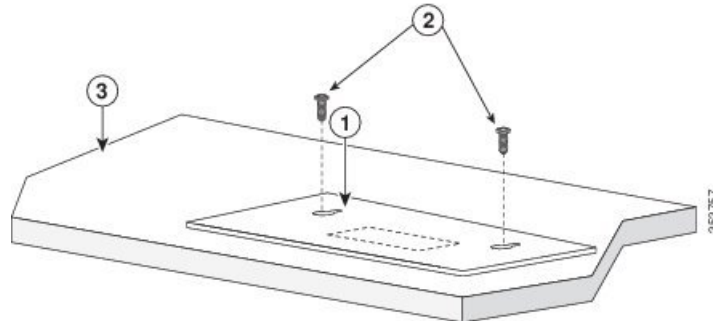
Step 6   Remove the screw template from the desk or shelf.

Step 7   Place the switch onto the mounting screws, and slide it forward until it locks in place.

Figure 10: Mounting the Switch on Top of a Desk or Shelf
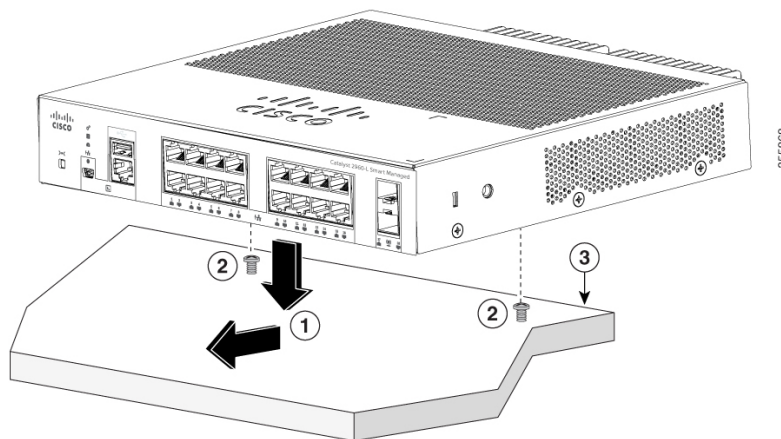
> **Warning**   To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 in. (7.6 cm) Statement 1076

Under a Desk- or Shelf-Mounting

Step 1   Use the screw template to align the mounting screw holes and also as a guide to make sure that you install the screws under the desk or shelf with proper clearance.

Step 2   Position the screw template on top of the desk or shelf so that the edge that is marked as CABLE SIDE ENTRY faces the front of the desk or shelf. This ensures that the power cord faces the rear of the desk or shelf after the switch is installed.

> **Note**   Wait before you attach the screw template to the desk or shelf.

Step 3   Peel the adhesive strip off the bottom of the screw template, and attach it to the top of the desk or shelf.

Step 4   Use a 0.144-inch (3.7 mm) or a #27 drill bit to drill a 1/2-inch (12.7 mm) hole in the two screw template slots.

Step 5   Insert two screws in the slots on the screw template, and tighten them until they touch the top of the screw template.

Figure 11: Installing the Mounting Screws Under a Desk or Shelf
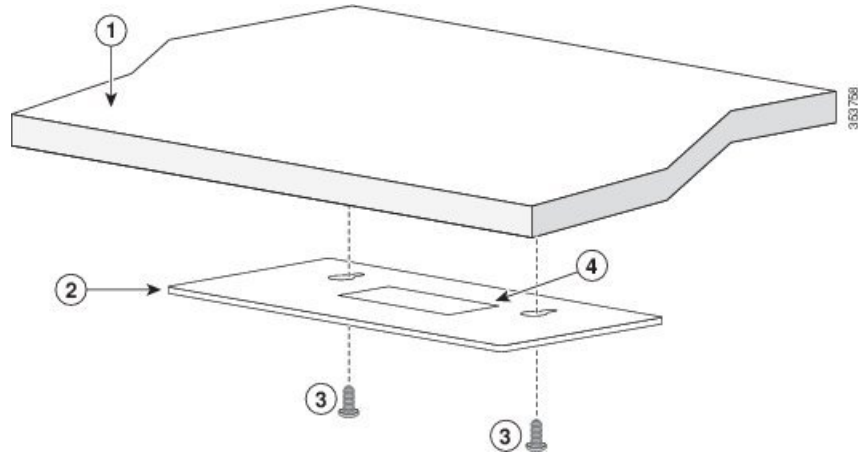
Step 6   Remove the screw template from underneath the desk or shelf.

Step 7   Place the switch upside down onto the mounting screws, and slide it forward until it locks in place.

> **Warning**   To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 in. (7.6 cm) Statement 1076

Figure 12: Mounting the Switch Under a Desk or Shelf
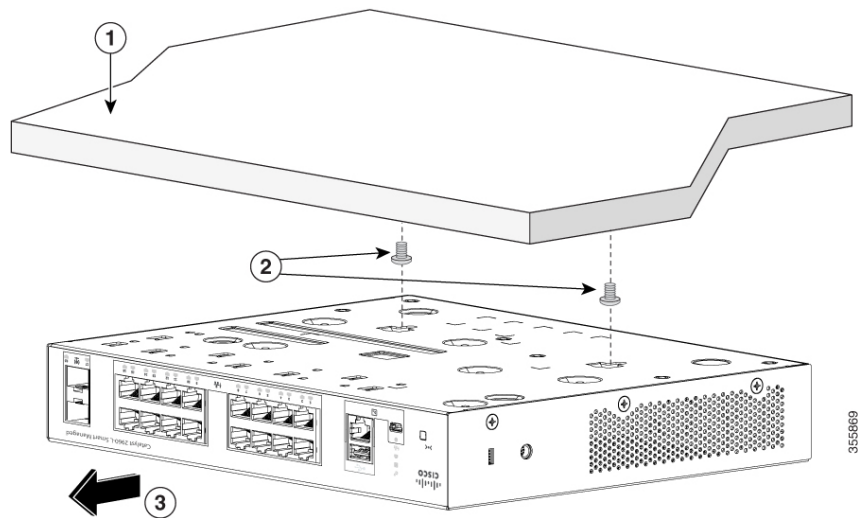
Wall-Mounting

⚠

Warning   Read the wall-mounting instructions carefully before beginning installation. Failure to use the correct hardware or to follow the correct procedures could result in a hazardous situation to people and damage to the system. Statement 378

⚠

Caution   Do not wall-mount the switch with its front panel facing up. Following safety regulations, wall-mount the switch with its front panel facing down or to the side to prevent airflow restriction and to provide easier access to the cables

Step 1   Locate the screw template. The template is used to align the mounting screw holes.

Step 2   Position the screw template so that the edge that is marked as CABLE SIDE ENTRY faces toward the floor.

> **Note**   For the best support of the switch and cables, make sure that you attach the switch securely to a wall stud or to a firmly attached plywood mounting backboard

Step 3   Peel the adhesive strip off the bottom of the screw template.

**Step 4**   Attach the screw template to the wall.

Step 5   Use a 0.144-inch (3.7 mm) or a #27 drill bit to drill a 1/2-inch (12.7 mm) hole in the two screw template slots.

Step 6   Insert two screws in the slots on the screw template, and tighten them until they touch the top of the screw template.

Figure 13: Installing the Mounting Screws on the Wall
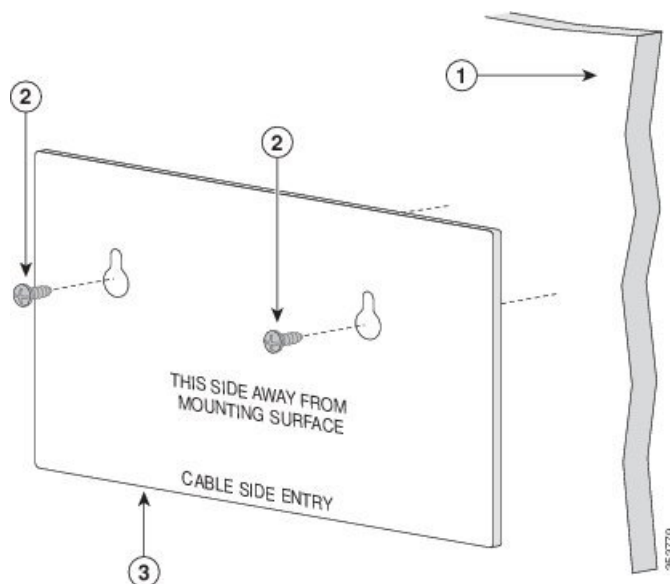
Step 7   Remove the screw template from the wall.

Step 8   Place the switch onto the mounting screws, and slide it down until it locks in place.

Figure 14: Installing the Switch on a Wall
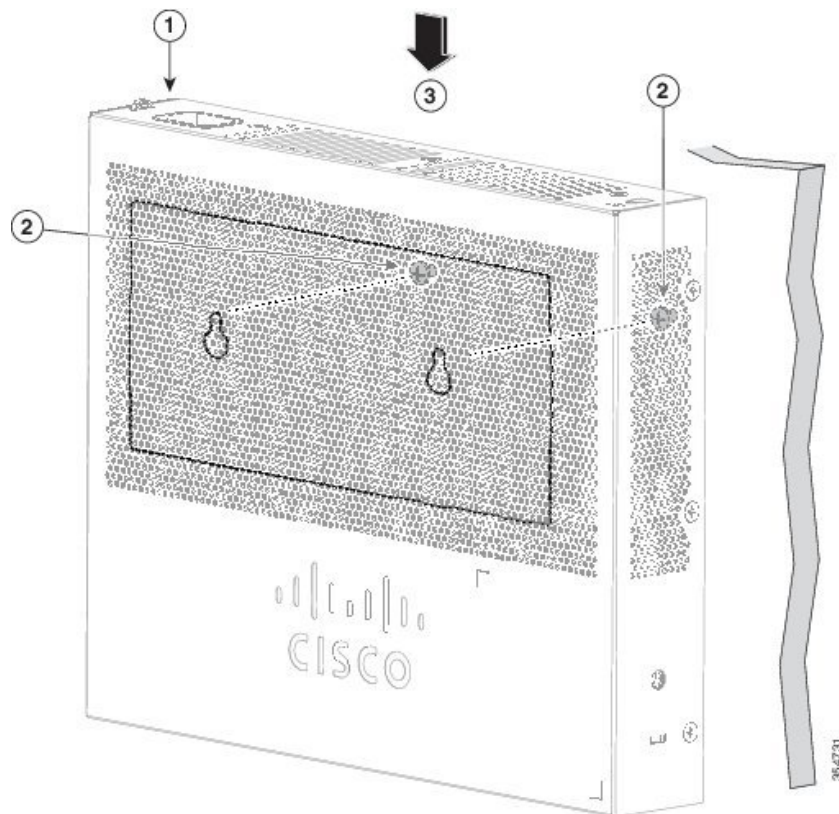
With a Mounting Tray

The mounting kit (part number CMPCT-MGNT-TRAY=) is optional. You can order it when you order your switch, or you can order it later from your Cisco representative.

The mounting kit ships contents:

- Two number-10 Phillips pan-head screws
- Three number-8 Phillips pan-head screws
- Mounting tray
- Magnet

You can use the mounting tray by itself with mounting screws, or with a magnet.

Mounting Tray with Screws

You can use the mounting tray to secure the switch:

- On a desk or shelf
- Under a desk or shelf

• On a wall

⚠

Caution Do not wall-mount the switch with its front panel facing up. Following safety regulations, wall-mount the switch with its front panel facing down or to the side, to allow sufficient airflow and to provide easier access to the cables.

This example shows you how to mount the switch on a desk or shelf. You can use a similar procedure to mount the switch under a desk or on a wall.

Step 1 Place the mounting tray on the desk.

Step 2 Use a 0.144-in. (3.7 mm) or a #27 drill bit to drill three 1/2-in. (12.7 mm) holes in the desk.

Step 3 Insert the three number-8 Phillips pan-head screws in the slots on the mounting tray, and tighten them.

Figure 15: Attaching the Tray to the Desk or Shelf

Step 4 Place the switch onto the mounting screws, and slide the switch until it locks into place.

Figure 16: Installing the Switch on the Mounting Tray
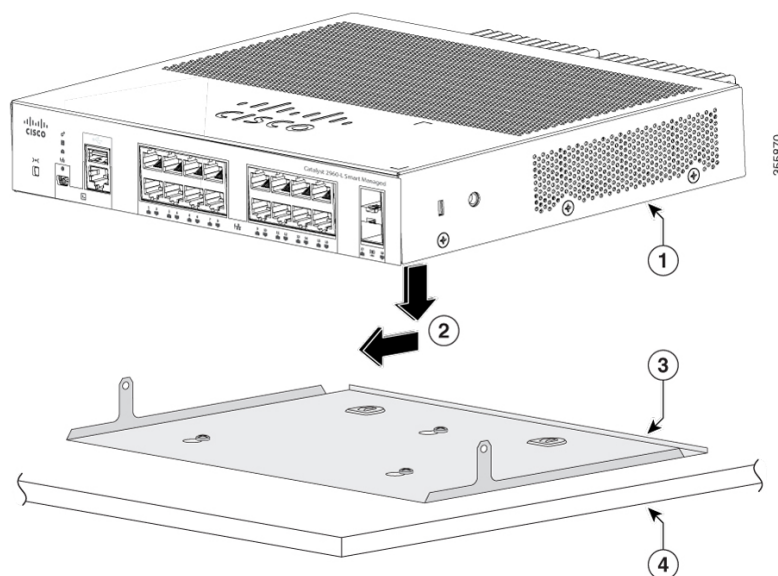
Step 5 Use the two number-10 Phillips pan-head screws to secure the switch to the mounting tray.

Figure 17: Securing the Switch to the Mounting Tray
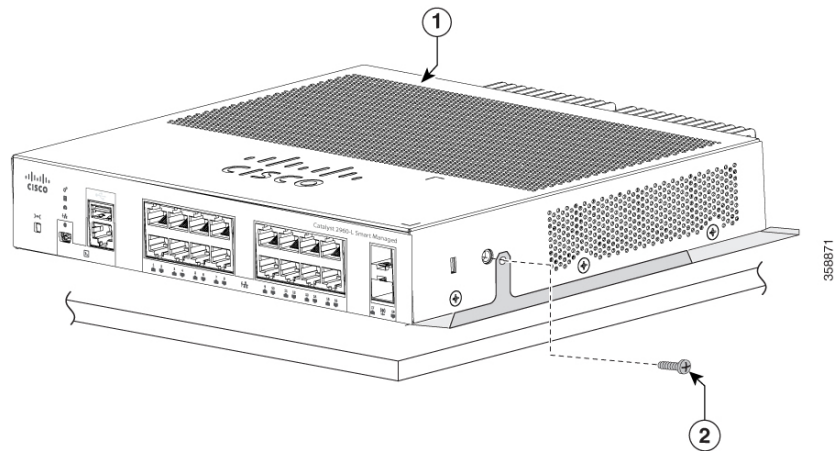
Warning To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 in. (7.6 cm) Statement 1076

Mounting Tray with a Magnet

You can use a magnet with the mounting tray to mount the switch on a metal surface.

⚠️

Caution Do not use the magnet without a mounting tray

This example shows you how to mount the switch on a metal wall. You can use a similar procedure to mount the switch on, or under, a metal desk.

Step 1 Place the switch on the mounting tray.

Figure 18: Placing the Switch on the Mounting Tray
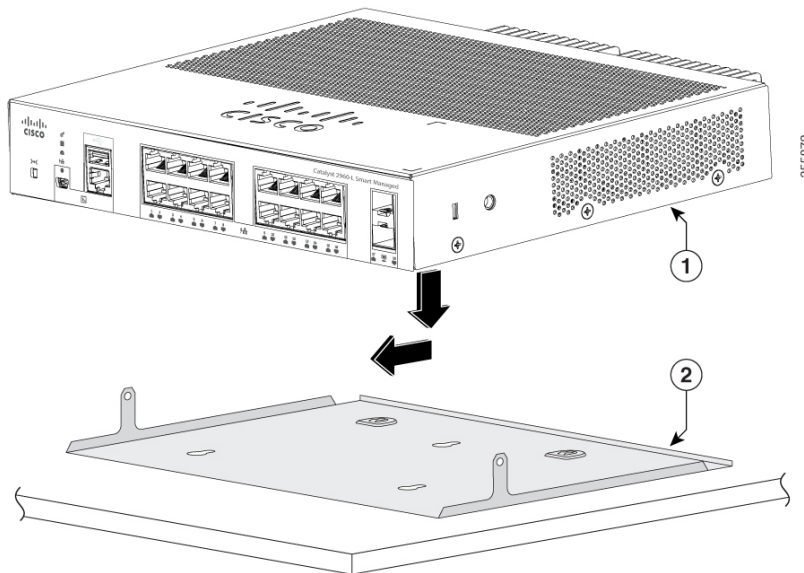
Step 2   Use the two number-10 Phillips pan-head screws to secure the mounting tray to the switch.

Figure 19: Securing the Mounting Tray to the Switch
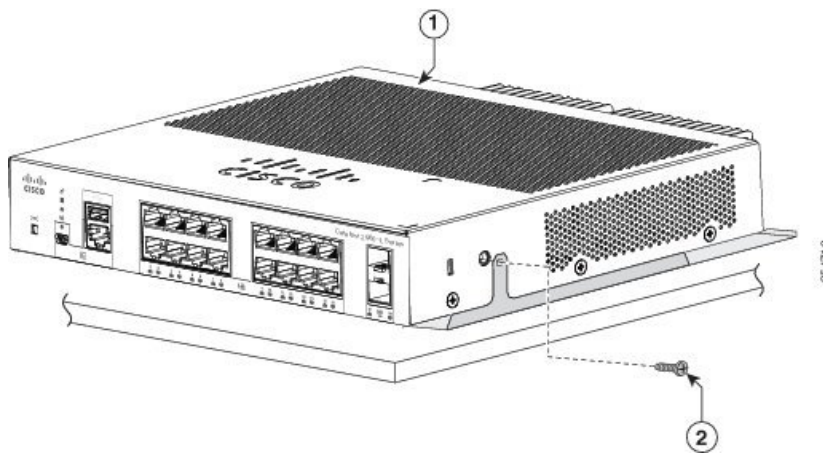
**Step 3**   Place one side of the magnet against the bottom of the mounting tray. Mount the magnet and switch on a metal wall.

> **Warning**   Read the wall-mounting instructions carefully before beginning installation. Failure to use the correct hardware or to follow the correct procedures could result in a hazardous situation to people and damage to the system. Statement 378

> **Caution**   Do not wall-mount the switch with its front panel facing up. Following safety regulations, wall-mount the switch with its front panel facing down or to the side, to allow sufficient airflow and to provide easier access to the cables.
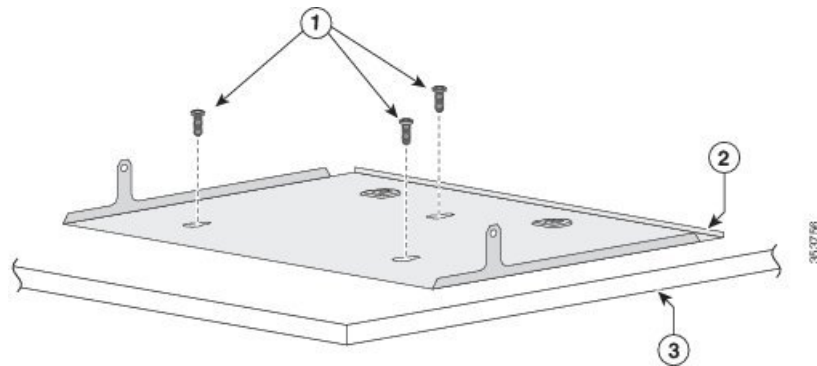
Figure 20: Wall-Mounting with a Magnet
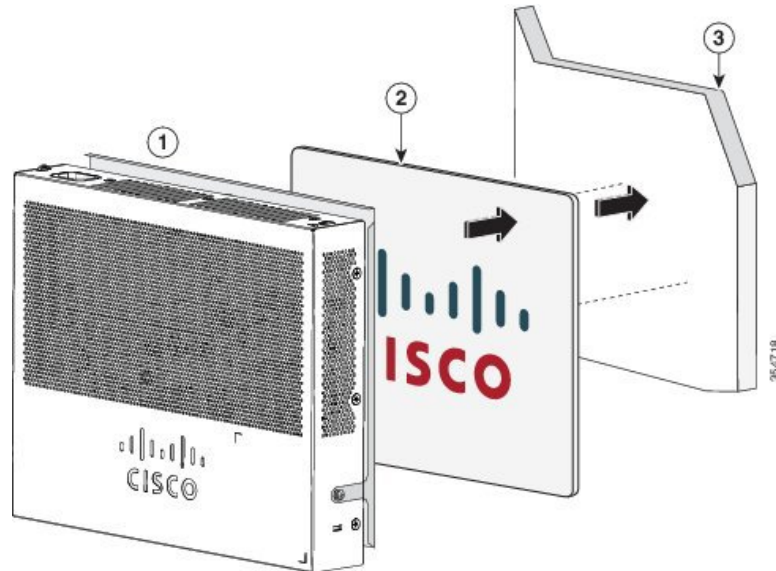
Warning To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 in. (7.6 cm) Statement 1076

In a Rack

Installing the switch in a rack requires an optional bracket kit that is not included with the switch. You can order these kits from your Cisco representative:

- 19-inch rack-mounting brackets (RCKMNT-19-CMPCT=)

- 23- and 24-inch rack-mounting brackets (RCKMNT-23-CMPCT=)

⚠

Warning To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Statement 1006

Attach a bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side. The following figure show how to attach the 19-inch rack-mounting bracket and the 23-inch rack-mounting bracket.

Figure 21: Attaching the 19-inch and 23-inch Brackets for Rack-Mounting
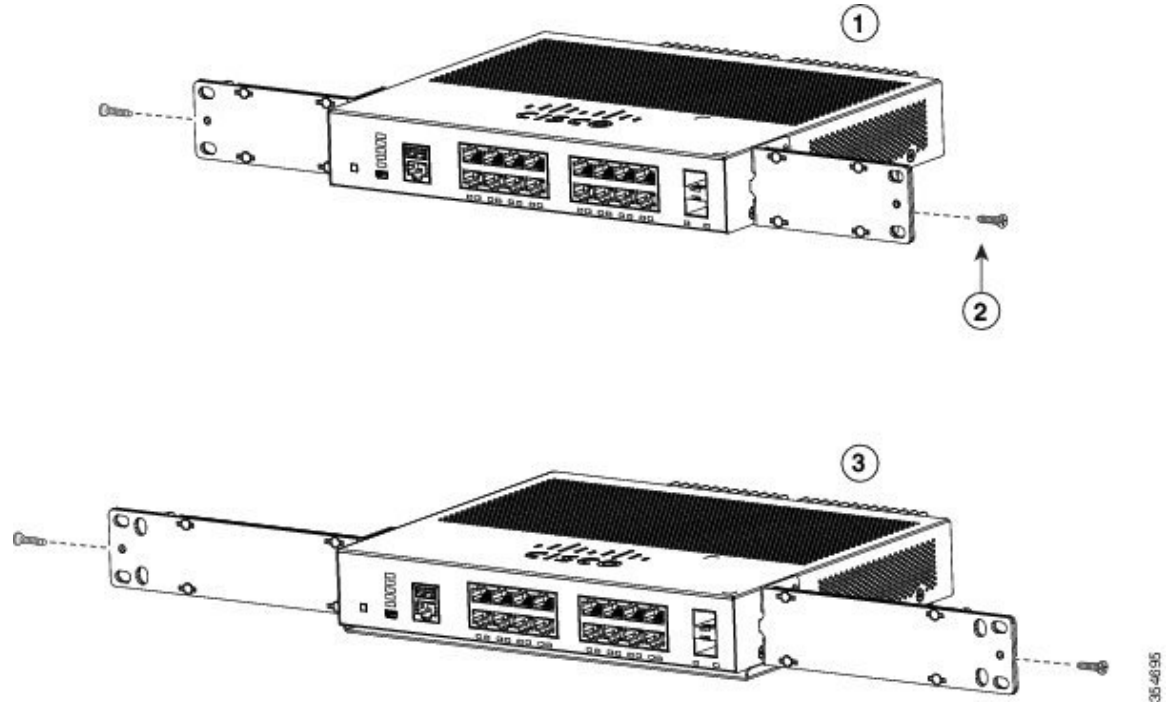
Insert the switch into the rack and align the bracket in the rack. Use either the number-12 or number-10 Phillips machine screws to secure the switch in the rack.

⚠ **Warning**   To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 in. (7.6 cm) Statement 1076

Figure 22: Mounting the Switch in a Rack
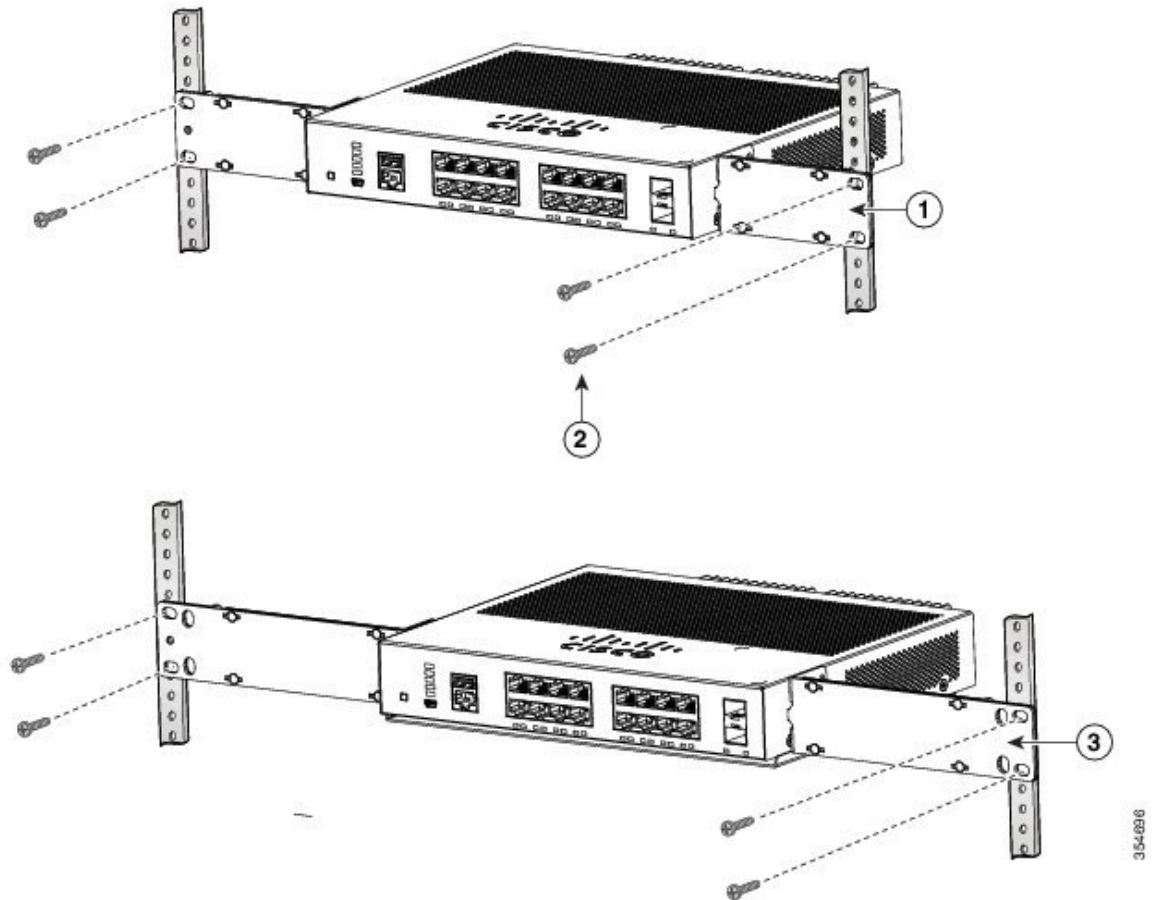
On a DIN Rail

The DIN-mount kit (part number CMPCT-DIN-MNT=) is optional. You can order it when you order your switch, or you can order it later from your Cisco representative.

The DIN-mount kit contains:

- Two number-10 Phillips pan-head screws

- DIN rail mount

To install the switch on a DIN rail, follow the instructions described in these sections:

Attaching the DIN-Mount Tray to the Switch

Step 1 Place the switch on the DIN rail mount.

Figure 23: Placing the Switch on the DIN-Mount Tray
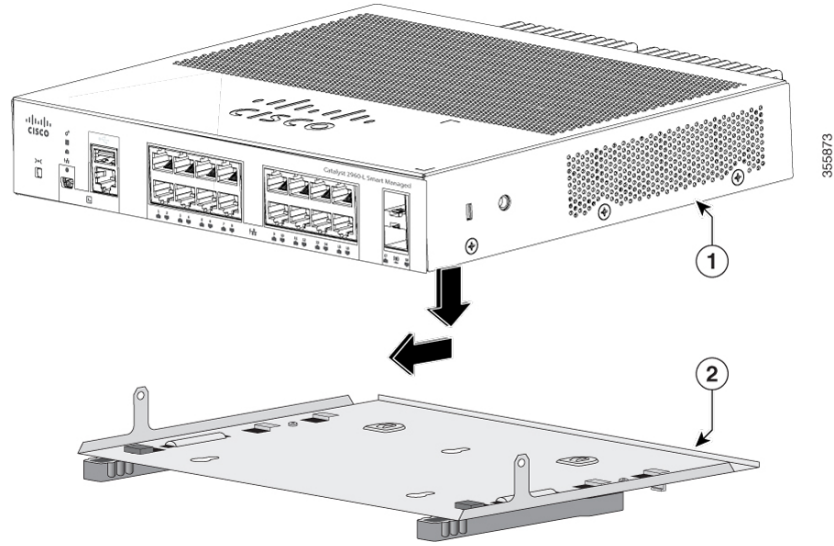
1	Switch	2	DIN rail mount

Step 2   Use the two number-10 Phillips pan-head screws to secure the DIN rail mount to the switch.

Figure 24: Securing the DIN-Mount Tray to the Switch
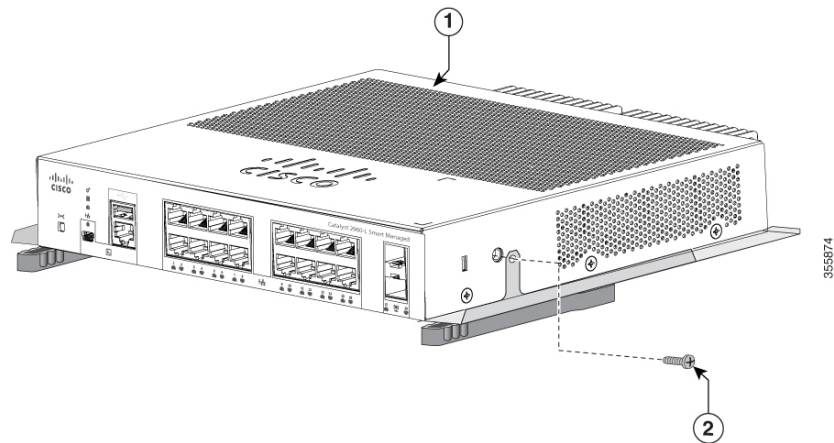
1	Switch	2	Number-10 Phillips pan-head screws

Mounting the Switch on a DIN Rail

⚠

Caution   Do not install the switch with its front panel facing up. Following safety regulations, install the switch with its front panel facing down, to allow sufficient airflow and to provide easier access to the cables.

⚠️

Warning   To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 in. (7.6 cm) Statement 1076

Step 1   Position the switch directly in front of the DIN rail, making sure that the top of the DIN rail mount clip hooks over the top of the DIN rail.

Figure 25: Mounting the Switch on a DIN Rail
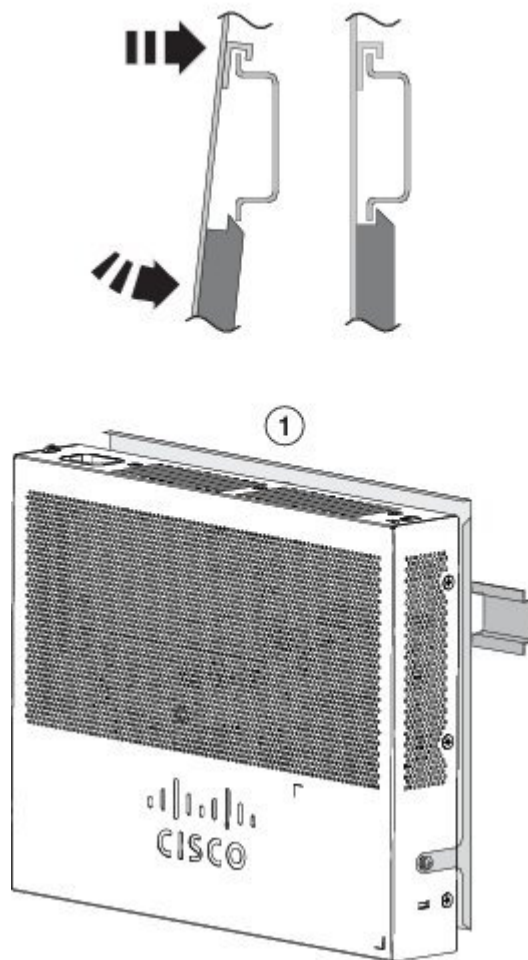
Step 2   Rotate the switch down toward the DIN rail until the release tabs on the DIN rail mount clicks.
Step 3   Lift lightly on the bottom of the switch to ensure that it is firmly locked in place.

Removing the Switch from a DIN Rail

Step 1   Ensure that power is removed from the switch, and disconnect all cables and connectors from the front panel of the switch.

Step 2   Pull down on the DIN rail mount release tabs. As the clips release, lift the bottom of the switch.

Figure 26: Switch Removal
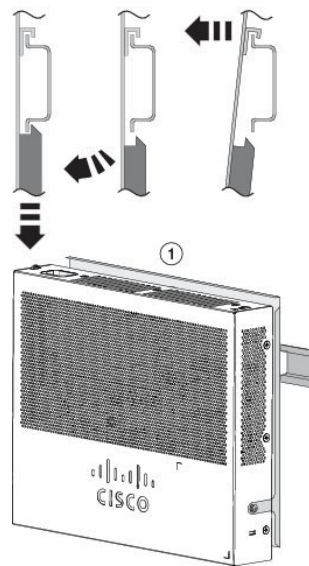
Installing the Power Cord Retainer (Optional)

Note   This section applies to switches with an AC power connector.

The power cord retainer (PWR-CLP=) is optional. You can order it when you order your switch, or you can order it later from your Cisco representative.

Step 1   Choose the sleeve size of the power cord retainer based on the thickness of the cord. The smaller sleeve can be snapped off and used for thin cords.

Step 2   Slide the retainer around the AC power cord, and pass it around the loop on the switch.

Figure 27: Inserting the Retainer through the Lanced Loop
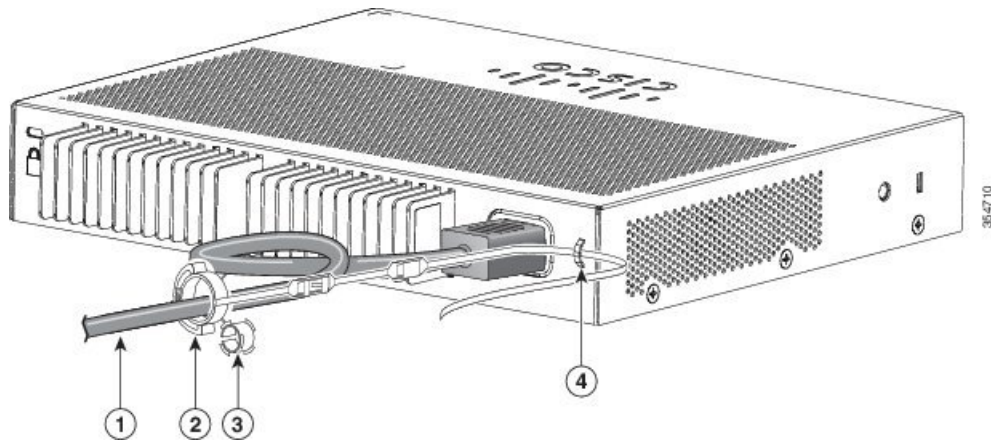
1	AC power cord	3	Sleeve for thinner power cords
2	Power cord retainer	4	Loop

Step 3   Slide the retainer through the first latch.

Figure 28: Sliding the Retainer Through the Latch
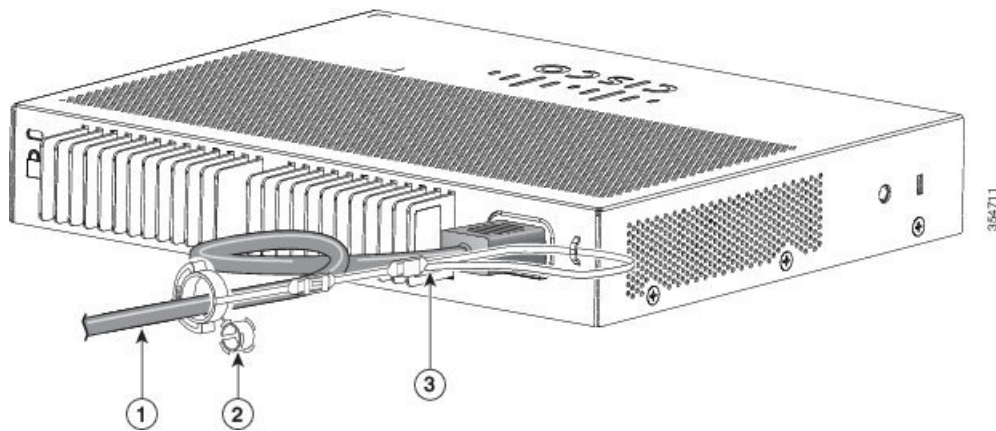
1	AC power cord	3	Latch
2	Smaller sleeve for thin power cords		

Step 4   Slide the retainer through the other latches to lock it.

Figure 29: Locking the Retainer
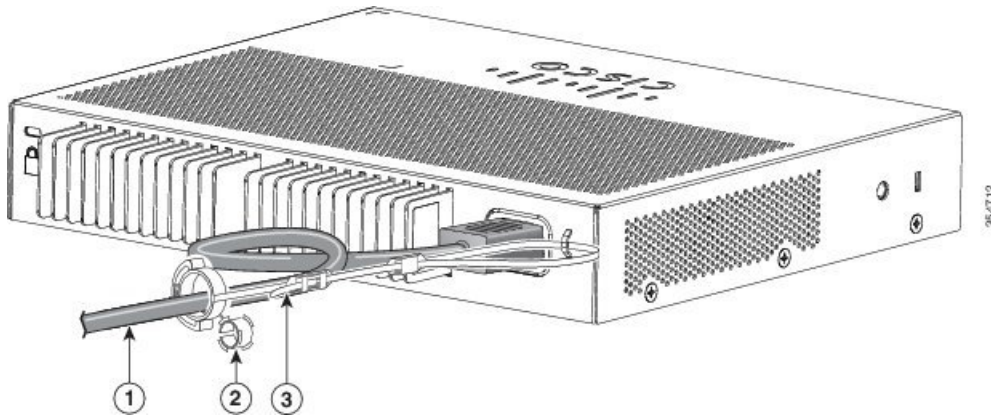
1	AC power cord	3	Latches
2	Smaller sleeve for thin power cords		

Step 5   (Optional) Use the small sleeve for thin power cords. Use the small sleeve to provide greater stability for thin cords. Detach the sleeve, and slide it over the power cord.

Figure 30: Sleeve Around the Power Cord
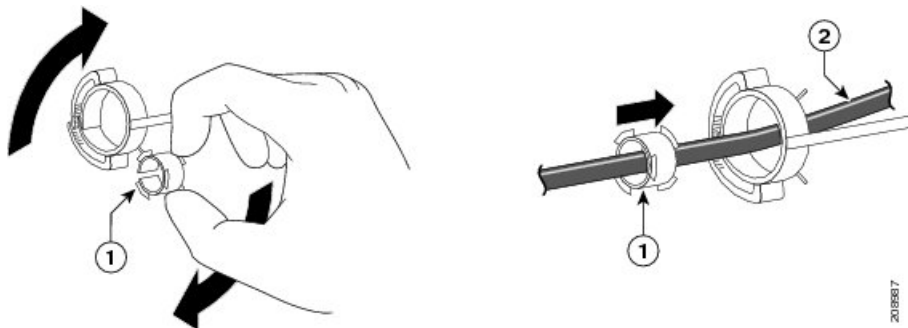
1	Smaller sleeve for thin power cords	2	AC power cord

Step 6   Secure the AC power cord by pressing on the retainer.

Figure 31: Securing the Power Cord in the Retainer
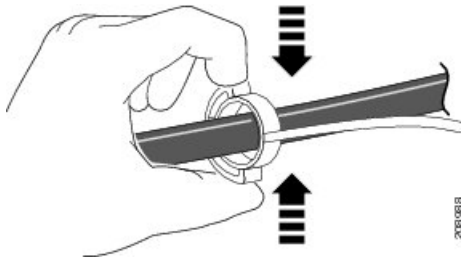
Installing the Cable Guard (Optional)

The cable guard prevents tampering with the cables after the cables are installed. The cable guard (CMPCT-CBLE-GRD=) is not included with the switch, but you can order it from your Cisco representative.

Note You can use the cable guard when the switch is mounted on a desk, under a desk, or on a wall.

The cable guard is shipped with these items:

- Two 0.5 in. (12.7 mm) number-8 Phillips wood screws

- Two number-10 Phillips pan-head screws

- Two washers

Step 1 (Optional) Attach the supplied washers before you install the cable guard.

Note This is only required if you are not installing the wall-mount brackets.

Figure 32: Using the Washer
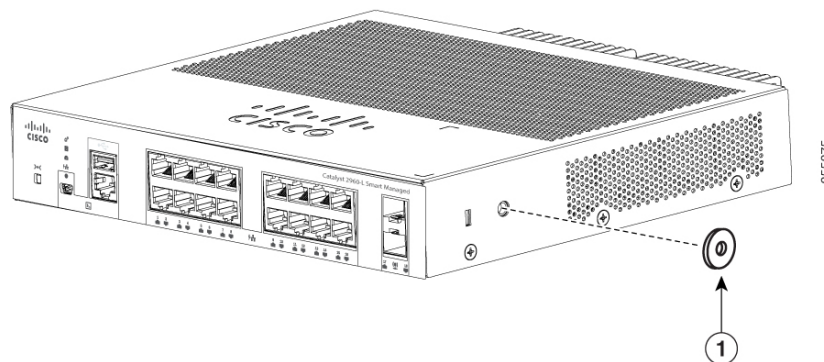
1	Washer

Step 2 Use the supplied number-10 pan-head screws to attach the cable guard to the switch.

Figure 33: Attaching the Cable Guard to the Switch
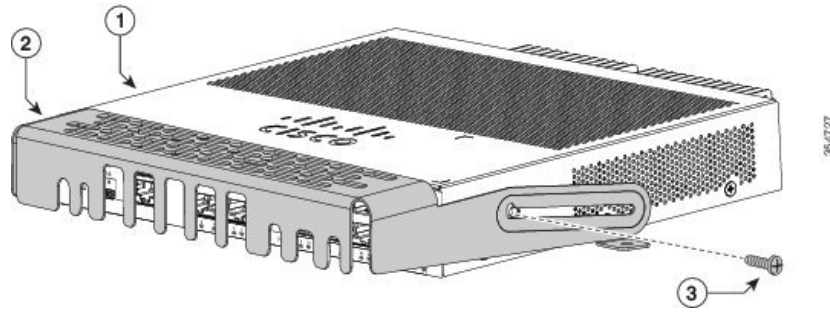
1	Switch	3	Two number-10 Phillips pan-head screws
2	Cable Guard		

Step 3 Loosen the number-10 Phillips pan-head screws, slide the cable guide out, and pivot it upwards so that you can install the cables.

Figure 34: Pivoting the Cable Guard Upwards
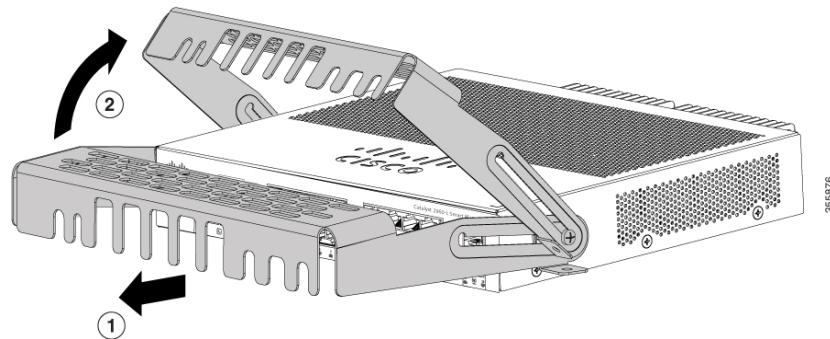
1	Cable guard	2	Pivot direction for cable guard pivots

Step 4 Attach the cables to the switch.

Figure 35: Attaching the Cables to the Switch
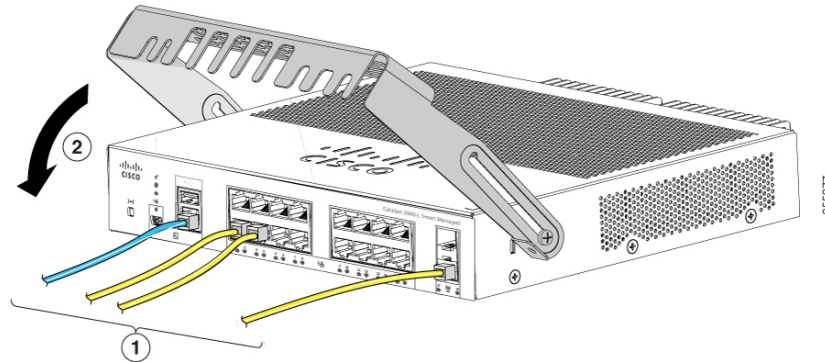
1	Cables	2	Pivot direction for cable guard pivots

Step 5 Guide the connected cables through the slots in the front of the cable guard. Slide the cable guide in as shown in the following figure. Tighten the screws.

Figure 36: Guiding the Cables through the Guard
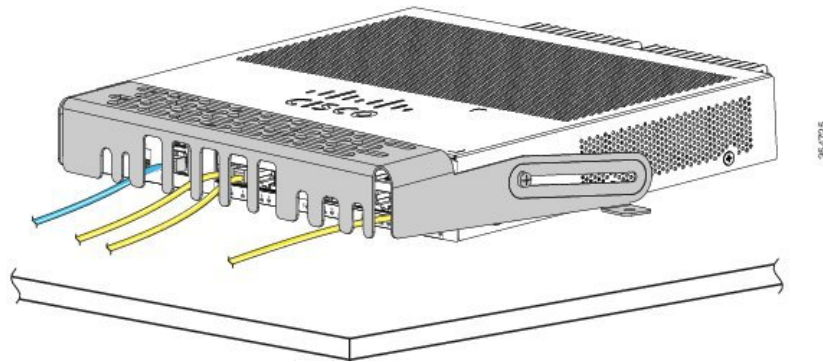
Step 6 (Optional) To attach the cable guard to the desk or wall, use a 0.144-inch (3.7 mm) or a #27 drill bit to drill 1/2-inch (12.7 mm) holes at each of the two mounting locations. Insert the supplied 0.5 in. (12.7 mm) number-8 Phillips wood screws and tighten them.

Figure 37: Securing the Cable Guard to the Desk
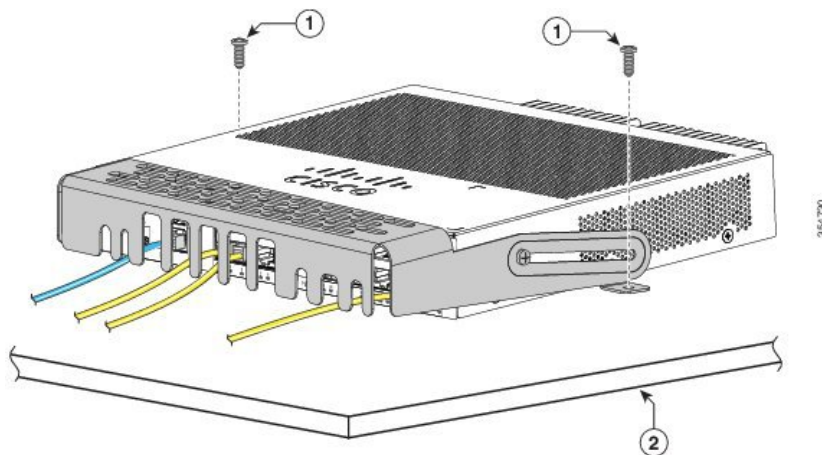
1	Number-8 Phillips wood screws	2	Desk or shelf

Installing SFP Modules

See the switch release notes on Cisco.com for the list of supported SFP modules. Use only Cisco SFP modules on the switch. Each Cisco module has an internal serial EEPROM that is encoded with security information. This encoding provides a way for Cisco to identify and validate that the module meets the requirements for the switch.

For information about installing, removing, cabling, and troubleshooting SFP modules, see the module documentation that shipped with your device.

Installing an SFP Module

Before you begin

When installing SFP modules, observe these guidelines:

- Do not remove the dust plugs from the modules or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the module ports and cables from contamination and ambient light.

- To prevent ESD damage, follow your normal board and component handling procedures when connecting cables to the switch and other devices.

⚠️

Caution Removing and installing an SFP module can shorten its useful life. Do not remove and insert any module more often than is absolutely necessary.

SUMMARY STEPS

1. Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface.
2. Find the send (TX) and receive (RX) markings on the module top.
3. If the module has a bale-clasp latch, move it to the open, unlocked position.
4. Align the module in front of the slot opening, and push until you feel the connector snap into place.
5. If the module has a bale-clasp latch, close it.
6. For fiber-optic SFP modules, remove the dust plugs and save.
7. Connect the SFP cables.

DETAILED STEPS

Step 1 Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface.

Step 2 Find the send (TX) and receive (RX) markings on the module top.

On some SFP modules, the send and receive (TX and RX) markings might be replaced by arrows that show the direction of the connection.

Step 3 If the module has a bale-clasp latch, move it to the open, unlocked position.

Step 4 Align the module in front of the slot opening, and push until you feel the connector snap into place.

Step 5 If the module has a bale-clasp latch, close it.

Step 6 For fiber-optic SFP modules, remove the dust plugs and save.

Step 7 Connect the SFP cables.

Figure 38: Installing an SFP Module
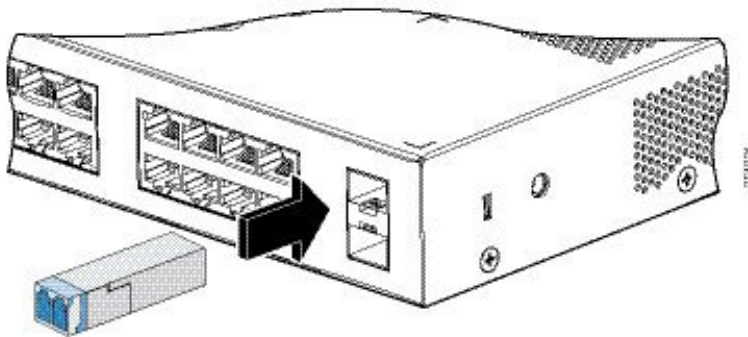
Removing an SFP Module

Step 1 Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface.

Step 2 Disconnect the cable from the SFP module. For reattachment, note which cable connector plug is send (TX) and which is receive (RX).

Step 3 Insert a dust plug into the optical ports of the SFP module to keep the optical interfaces clean.

Step 4 If the module has a bale-clasp latch, pull the bale out and down to eject the module. If the latch is obstructed and you cannot use your finger, use a small, flat-blade screwdriver or other long, narrow instrument to open the latch.

Step 5 Grasp the SFP module, and carefully remove it from the module slot.

Step 6 Place the module in an antistatic bag or other protective environment.

10/100/1000 PoE and PoE+Port Connections

The ports provide PoE support for devices compliant with IEEE 802.3af and 802.3at (PoE+), and also provide Cisco prestandard PoE support for Cisco IP Phones and Cisco Aironet Access Points.

On a per-port basis, you can control whether or not a port automatically provides power when an IP phone or an access point is connected.

To access an advanced PoE planning tool, use the Cisco Power Calculator available on Cisco.com at this URL: http://tools.cisco.com/cpc/launch.jsp

You can use this application to calculate the power supply requirements for a specific PoE configuration. The results show output current, output power, and system heat dissipation.

Warning Voltages that present a shock hazard may exist on Power over Ethernet (PoE) circuits if interconnections are made using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods, unless the exposed metal parts are located within a restricted access location and users and service people who are authorized within the restricted access location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key or other means of security. Statement 1072

Caution Category 5e and Category 6 cables can store high levels of static electricity. Always ground the cables to a suitable and safe earth ground before connecting them to the switch or other devices.

Caution Noncompliant cabling or powered devices can cause a PoE port fault. Use only standard-compliant cabling to connect Cisco prestandard IP Phones and wireless access points, IEEE 802.3af, or 802.3at (PoE+) compliant devices. You must remove any cable or device that causes a PoE fault.

SUMMARY STEPS

1. Connect one end of the cable to the switch PoE port.
2. Connect the other end of the cable to an RJ-45 connector on the other device. The port LED turns on when both devices have established link.
3. Reconfigure and reboot the connected device, if needed.
4. Repeat Steps 1 through 3 to connect each device.

DETAILED STEPS

Step 1	Connect one end of the cable to the switch PoE port.
Step 2	Connect the other end of the cable to an RJ-45 connector on the other device. The port LED turns on when both devices have established link.
	The port LED is amber while STP discovers the topology and searches for loops. This process takes about 30 seconds, and then the port LED turns green. If the LED is off, the other device might not be turned on, there might be a cable problem, or there might be a problem with the adapter in the other device.
Step 3	Reconfigure and reboot the connected device, if needed.
Step 4	Repeat Steps 1 through 3 to connect each device.
Note	Many legacy powered devices, including older Cisco IP phones and access points that do not fully support IEEE 802.3af, might not support PoE when connected to the switches by a crossover cable.

10/100/1000 Port Connections

The switch 10/100/1000 port configuration changes to operate at the speed of the attached device. If the attached ports do not support autonegotiation, you can manually set the speed and duplex parameters. Connecting devices that do not autonegotiate or that have the speed and duplex parameters manually set can reduce performance or result in no linkage.

To maximize performance, choose one of these methods for configuring the Ethernet ports:

- Let the ports autonegotiate both speed and duplex.

- Set the interface speed and duplex parameters on both ends of the connection.

Auto-MDIX Connections

The autonegotiation and the auto-MDIX features are enabled by default on the switch.

With autonegotiation, the switch port configurations change to operate at the speed of the attached device. If the attached device does not support autonegotiation, you can manually set the switch interface speed and duplex parameters.

With auto-MDIX, the switch detects the required cable type for copper Ethernet connections and configures the interface accordingly.

If auto-MDIX is disabled, use the guidelines in this table to select the correct cable.

Table 4: Recommended Ethernet Cables (When Auto-MDIX is Disabled)

Device	Crossover Cable	Straight-Through Cable
Switch to switch	Yes	No
Switch to hub	Yes	No

Device	Crossover Cable	Straight-Through Cable
Switch to computer or server	No	Yes
Switch to router	No	Yes
Switch to IP phone	No	Yes

[3] 100BASE-TX and 1000BASE-T traffic requires twisted four-pair, Category 5 or higher. 10BASE-T traffic can use Category 3 cable or higher.

Troubleshooting

This chapter contains these topics:

Diagnosing Problems

The LEDs on the front panel provide troubleshooting information about the switch. They show POST failures, port-connectivity problems, and overall switch performance. You can also get statistics from Device Manager, from the CLI, or from an SNMP workstation.

Switch POST Results

POST failures are usually fatal. Contact your Cisco technical support representative if your switch does not pass POST.

Switch LEDs

If you have physical access to the switch, look at the port LEDs for troubleshooting information about the switch. See the LED section for a description of the LED colors and their meanings.

Switch Connections

Bad or Damaged Cable

Always examine the cable for marginal damage or failure. A cable might be just good enough to connect at the physical layer, but it could corrupt packets as a result of subtle damage to the wiring or connectors. You can identify this situation because the port has many packet errors or the port constantly flaps (loses and regains link).

- Examine or exchange the copper or fiber-optic cable with a known, good cable.

- Look for broken or missing pins on cable connectors.

- Rule out any bad patch panel connections or media convertors between the source and the destination. If possible, bypass the patch panel, or eliminate faulty media convertors (fiber-optic-to-copper).

• Try the cable in another port or interface, if possible, to see if the problem follows the cable.

Ethernet and Fiber-Optic Cables

Make sure that you have the correct cable for the connection.

• For Ethernet, use Category 3 copper cable for 10 Mb/s UTP connections. Use either Category 5, Category 5e, or Category 6 UTP for 10/100/1000 Mb/s connections.

• For fiber-optic cables, verify that you have the correct cable for distance and port type. Ensure that the connected device ports match and use the same type of encoding, optical frequency, and fiber type.

• For copper connections, determine if a crossover cable was used when a straight-through was required or the reverse. Enable auto-MDIX on the switch, or replace the cable.

Link Status

Verify that both sides have link. A single broken wire or a shutdown port can cause one side to show link even though the other side does not have link.

A port LED that is on does not guarantee that the cable is fully functional. The cable might have encountered physical stress that causes it to function at a marginal level. If the port LED does not turn on:

• Connect the cable from the switch to a known good device.

• Ensure that both ends of the cable are connected to the correct ports.

• Verify that both devices have power.

• Verify that you are using the correct cable type.

• Check for loose connections. Sometimes a cable appears to be seated, but is not. Disconnect the cable and then reconnect it.

10/100/1000 Port Connections

A port appears to malfunction:

• Use the Mode button to show the status for all ports.

• Use the **show interfaces** privileged EXEC command to see if the port is error-disabled, disabled, or shutdown. Reenable the port if necessary.

10/100/1000 PoE+ Port Connections

A powered device connected to a PoE port does not receive power:

• Use the Mode button to show the PoE status for all ports.

• Use the **show interfaces** privileged EXEC command to see if the port is in error-disabled, disabled, or shutdown. Reenable the port if necessary.

• Verify that the power supply installed in the switch meets the power requirements of your connected devices.

- Verify that there is sufficient PoE power budget to provide power to the attached device. Use the **show power inline** global configuration command to check on the available PoE power budget.

- Verify the cable type. Many legacy powered devices, including older Cisco IP phones and access points that do not fully support IEEE 802.3af, might not support PoE when connected to the switch by a crossover cable. Replace the crossover cable with a straight-through cable.

> ⚠️
>
> **Caution**   Noncompliant cabling or powered devices can cause a PoE port fault. Use only standard-compliant cabling to connect Cisco prestandard IP Phones and wireless access points or IEEE 802.3af-compliant devices. You must remove any cable or device that causes a PoE fault.

SFP Module

Use only Cisco SFP modules in the switch. Each Cisco module has an internal serial EEPROM that is encoded with security information. This encoding provides a way for Cisco to identify and validate that the module meets the requirements for the switch.

- Inspect the SFP module. Exchange the suspect module with a known good module. Verify that the module is supported on this platform. (The switch release notes on Cisco.com list the SFP modules that the switch supports.)

- Use the **show interfaces** privileged EXEC command to see if the port or module is error-disabled, disabled, or shutdown. Reenable the port if needed.

- Make sure that all fiber-optic connections are properly cleaned and securely connected.

Interface Settings

Verify that the interface is not disabled or powered off. If an interface is manually shut down on either side of the link, it does not come up until you reenable the interface. Use the **show interfaces** privileged EXEC command to see if the interface is error-disabled, disabled, or shutdown on either side of the connection. If needed, reenable the interface.

Ping End Device

Ping from the directly connected switch first, and then work your way back port by port, interface by interface, trunk by trunk, until you find the source of the connectivity issue. Make sure that each switch can identify the end device MAC address in its Content-Addressable Memory (CAM) table.

Spanning Tree Loops

STP loops can cause serious performance issues that look like port or interface problems.

A unidirectional link can cause loops. It occurs when the traffic sent by the switch is received by its neighbor, but the traffic from the neighbor is not received by the switch. A broken fiber-optic cable, other cabling problems, or a port issue could cause this one-way communication.

You can enable UniDirectional Link Detection (UDLD) on the switch to help identify unidirectional link problems.

Switch Performance

Speed, Duplex, and Autonegotiation

If the port statistics show a large amount of alignment errors, frame check sequence (FCS), or late-collisions errors, this might mean a speed or duplex mismatch.

A common issue with speed and duplex occurs when duplex and speed settings are mismatched between two switches, between a switch and a router, or between the switch and a workstation or server. Mismatches can happen when manually setting the speed and duplex or from autonegotiation issues between the two devices.

To maximize switch performance and to ensure a link, follow one of these guidelines when changing the duplex or the speed settings.

- Let both ports autonegotiate both speed and duplex.

- Manually set the speed and duplex parameters for the interfaces on both ends of the connection.

- If a remote device does not autonegotiate, use the same duplex settings on the two ports. The speed parameter adjusts itself even if the connected port does not autonegotiate.

Autonegotiation and Network Interface Cards

Problems sometimes occur between the switch and third-party network interface cards (NICs). By default, the switch ports and interfaces autonegotiate. Laptops or other devices are commonly set to autonegotiate, yet sometimes autonegotiation issues occur.

To troubleshoot autonegotiation problems, try manually setting both sides of the connection. If this does not solve the problem, there could be a problem with the firmware or software on your NIC. You can resolve this by upgrading the NIC driver to the latest version.

Cabling Distance

If the port statistics show excessive FCS, late-collision, or alignment errors, verify that the cable distance from the switch to the connected device meets the recommended guidelines.

Finding the Switch Serial Number

If you contact Cisco Technical Assistance, you need to know the switch serial number. You can also use the **show version** privileged EXEC command to see the switch serial number.

Figure 39: Serial Number Location
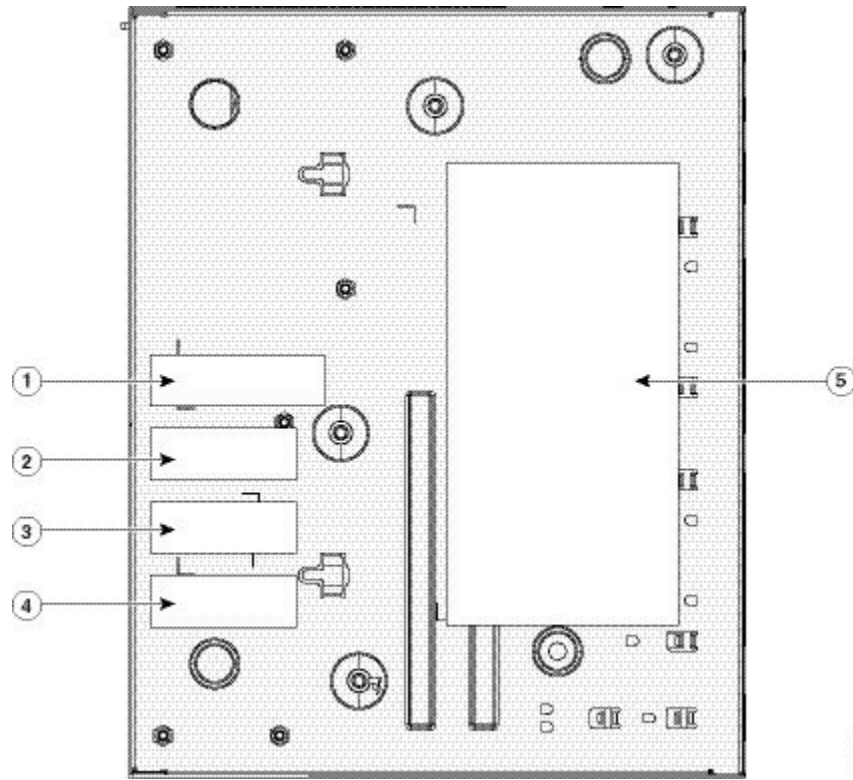
1	PID number	4	Serial number
2	MAC address	5	Product label
3	CLEI code		

Technical Specifications

This appendix contains these topics:

Physical Specifications

Physical Dimensions	
Weight	• 4.45 lbs (2.02 kg) (Cisco Catalyst 2960L-SM-8TS) • 5.64 lbs (2.56 kg) (Cisco Catalyst 2960L-SM-8PS) • 4.53 lbs (2.06 kg) (Cisco Catalyst 2960L-SM-16TS) • 5.73 lbs (2.6 kg) (Cisco Catalyst 2960L-SM-16PS)
Dimensions (H x D x W)	• 1.73 x 8.45 x 10.56 in. (4.4 x 21.5 x 26.8 cm) (Cisco Catalyst 2960L-SM-8TS) • 1.73 x 9.45 x 10.56 in. (4.4 x 24 x 26.8 cm) (Cisco Catalyst 2960L-SM-8PS) • 1.73 x 8.45 x 10.56 in. (4.4 x 21.5 x 26.8 cm) (Cisco Catalyst 2960L-SM-16TS) • 1.73 x 9.45 x 10.56 in. (4.4 x 24 x 26.8 cm) (Cisco Catalyst 2960L-SM-16PS)

Environmental Specifications

Environmental Ranges	
Operating temperature (except Catalyst WS-C2960L-SM-16PS) [4]	23 to 113°F (–5 to 45°C) up to 5,000 ft (1500 m) 23 to 104°F (–5 to 40°C) up to 10,000 ft (3000 m)
Operating temperature (Catalyst WS-C2960L-SM-16PS) [5]	23 to 104°F (–5 to 40°C) up to 5,000 ft (1500 m) 23 to 95°F (–5 to 35°C) up to 10,000 ft (3000 m)
Storage temperature	-13º to 158ºF (-25º to 70ºC) up to 15,000 ft (4500 m)
Operating relative humidity	5% to 90% (noncondensing)
Storage relative humidity	5% to 95% (noncondensing)
Storage altitude	Up to 15,000 ft (4500 m)

[4] Minimum ambient temperature for cold start is 32°F (0°C)
[5] Minimum ambient temperature for cold start is 32°F (0°C)

Power Requirements

Power Requirements	
AC input voltage	110 to 220 VAC (autoranging) • 0.16 to 0.26 A, 50 to 60 Hz (Cisco Catalyst 2960L-SM-8TS) • 0.5 to 0.86 A, 50 to 60 Hz (Cisco Catalyst 2960L-SM-8PS) • 0.2 to 0.33 A, 50 to 60 Hz (Cisco Catalyst 2960L-SM-16TS) • 0.79 to 1.45 A, 50 to 60 Hz (Cisco Catalyst 2960L-SM-16PS)
Power rating	• 0.04 KVA (Cisco Catalyst 2960L-SM-8TS) • 0.11 KVA (Cisco Catalyst 2960L-SM-8PS) • 0.05 KVA (Cisco Catalyst 2960L-SM-16TS) • 0.19 KVA (Cisco Catalyst 2960L-SM-16PS)

PoE Power Consumption

Switch	Consumption without PoE	Consumption with PoE	Available PoE	(Maximum Power Wattage for BTU/hr)
Cisco Catalyst 2960L-SM-8TS	15W	NA	NA	15.54
Cisco Catalyst 2960L-SM-8PS	21W	93W	67W	89.02
Cisco Catalyst 2960L-SM-16TS	19W	NA	NA	18.9
Cisco Catalyst 2960L-SM-16PS	26W	157W	120W	156.7

Connector and Cable Specifications

This appendix contains these topics:

Connector Specifications

10/100/1000 Ports (Including PoE)

All 10/100/1000 ports use standard RJ-45 connectors and Ethernet pinouts.

Figure 40: 10/100/1000 Port Pinouts

Pin	Label
1	TP0+
2	TP0-
3	TP1+
4	TP2+
5	TP2-
6	TP1-
7	TP3+
8	TP3-
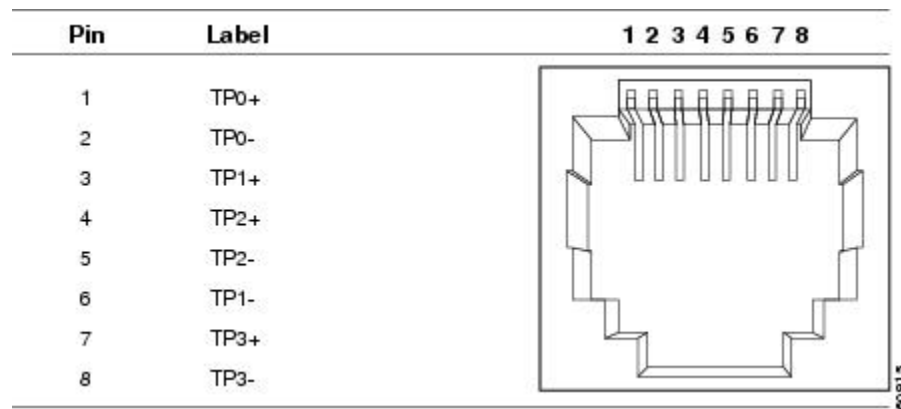
SFP Module Connectors

Figure 41: Duplex LC Cable Connector

Figure 42: Simplex LC Cable Connector
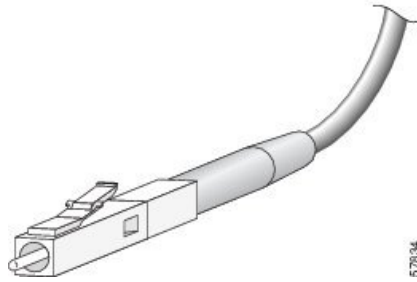
Figure 43: Copper SFP Module LC Connector

Pin	Label
1	TP0+
2	TP0-
3	TP1+
4	TP2+
5	TP2-
6	TP1-
7	TP3+
8	TP3-
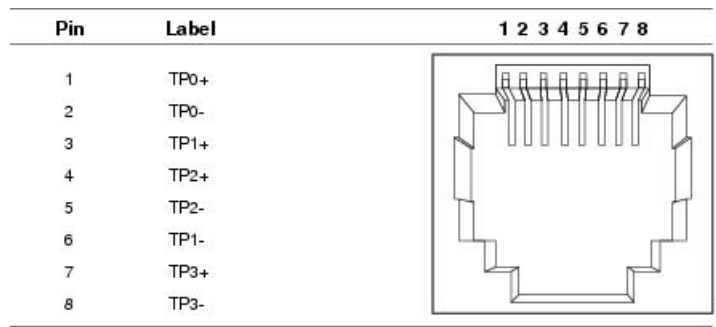
Cables and Adapters

SFP Module Cables

For cabling specifications, refer to the following notes:

Cisco SFP Transceiver Module Installation Notes

Each port must match the wave-length specifications on the other end of the cable, and the cable must not exceed the stipulated cable length. Copper 1000BASE-T SFP module transceivers use standard four twisted-pair, Category 5 cable at lengths up to 328 feet (100 meters).

Cable Pinouts

Figure 44: Four Twisted-Pair Straight-Through Cable Schematic

```
    Switch              Router or PC

1  TPO+  ◄──────►  1  TP1+
2  TPO-  ◄──────►  2  TP1-
3  TP1+  ◄──────►  3  TPO+
6  TP1-  ◄──────►  6  TPO-

4  TP2+  ◄──────►  4  TP3+
5  TP2-  ◄──────►  5  TP3-
7  TP3+  ◄──────►  7  TP2+
8  TP3-  ◄──────►  8  TP2-
```
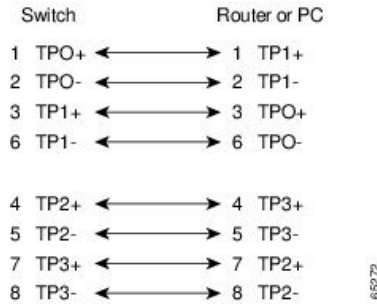
Figure 45: Four Twisted-Pair Semi-Cross Cable Schematic

```
    Switch               Switch

1  TP0+  ◄──────►  1  TP0+
2  TP0-  ◄──────►  2  TP0-
3  TP1+  ◄──────►  3  TP1+
6  TP1-  ◄──────►  6  TP1-

4  TP2+  ◄──────►  4  TP2+
5  TP2-  ◄──────►  5  TP2-
7  TP3+  ◄──────►  7  TP3+
8  TP3-  ◄──────►  8  TP3-
```
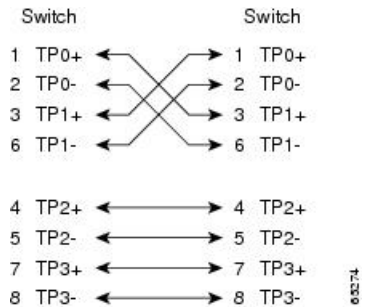
Figure 46: Two Twisted-Pair Straight-Through Cable Schematic

```
  Switch          Router or PC

3 TD+  ──────►  3 RD+
6 TD─  ──────►  6 RD─

1 RD+  ◄──────  1 TD+
2 RD─  ◄──────  2 TD─
```
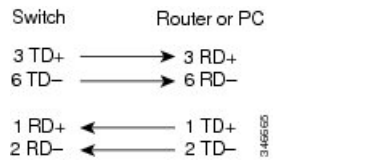
Figure 47: Two Twisted-Pair Crossover Cable Schematic

```
  Switch            Switch

3 TD+  ──────  3 TD+
6 TD─  ──────  6 TD─

1 RD+  ◄──────►  1 RD+
2 RD─  ◄──────►  2 RD─
```
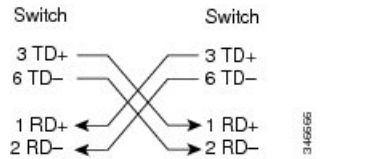
Identifying a Crossover Cable

To identify a crossover cable, compare the two modular ends of the cable. Hold the cable ends side-by-side, with the tab at the back. The wire connected to the pin on the outside of the left plug should be a different color from the wire connected to the pin on the inside of the right plug.

Figure 48: Identifying a Crossover Cable
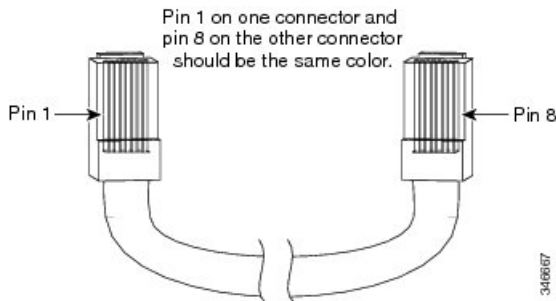
Console Port Adapter Pinouts

The RS-232 console port uses an 8-pin RJ-45 connector. Use an RJ-45-to-DB-9 adapter cable to connect the switch console port to a console PC. You need to provide a RJ-45-to-DB-25 female DTE adapter to connect the switch console port to a terminal.

Table 5: Console Port Signaling with a DB-9 Adapter

Switch Console Port (DTE)	RJ-45-to-DB-9 Terminal Adapter	Console Device
Signal	DB-9 Pin	Signal
RTS	8	CTS
DTR	6	DSR
TxD	2	RxD
GND	5	GND
GND	5	GND
RxD	3	TxD
DSR	4	DTR
CTS	7	RTS

Table 6: Console Port Signaling with a DB-25 Adapter

Switch Console Port (DTE)	RJ-45-to-DB-25 Terminal Adapter	Console Device
Signal	DB-25 Pin	Signal
RTS	5	CTS
DTR	6	DSR
TxD	3	RxD
GND	7	GND

Switch Console Port (DTE)	RJ-45-to-DB-25 Terminal Adapter	Console Device
Signal	DB-25 Pin	Signal
GND	7	GND
RxD	2	TxD
DSR	20	DTR
CTS	4	RTS

APPENDIX C

Configuring the Switch

This appendix contains these topics:

Configuring the Switch Using the Configuration Setup Wizard

Quick Setup: Accessing the Configuration Setup Wizard

When you first set up the switch, use the Configuration Setup wizard to enter the initial IP information. This enables the switch to connect to local routers and the Internet. You can then access the switch through the IP address for further configuration.

Note The switch also supports Bluetooth which can be enabled via WebUI or using the CLI command **staging config bluetooth on**. This command will enable Bluetooth and a default DHCP server pool for the Bluetooth interface. Connect your PC to the switch using Bluetooth. In your web browser, enter the IP address 172.16.0.1. The default Bluetooth pin is '9999'. Enter the following default credentials: username: smartm, password: c2960lsm and press Enter.
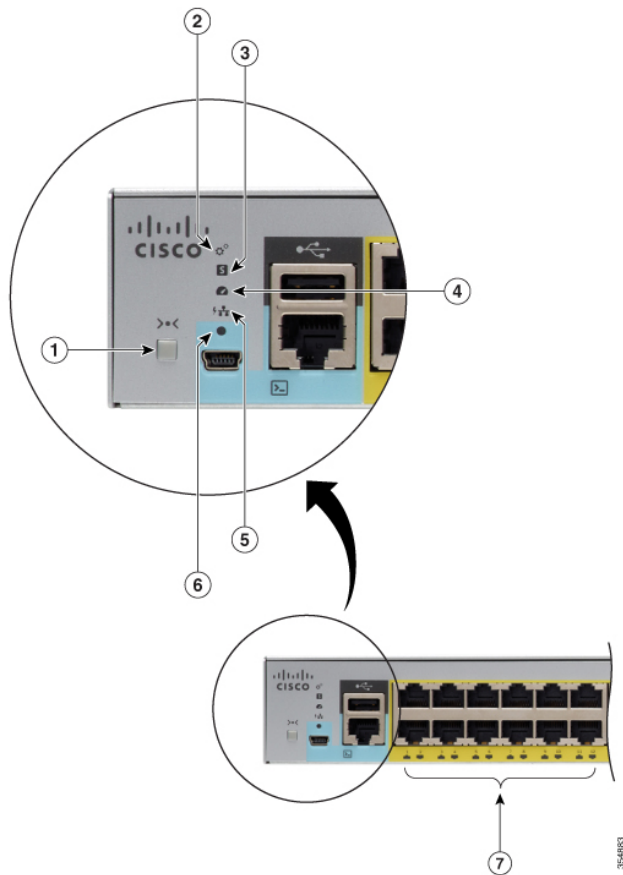
1		Mode button
2		SYST LED (system)
3		STAT LED (status)
4		SPEED LED
5		PoE LED [6]
6		Console LED
7		Port LEDs

[6] Only on switch models that support PoE.

Before you Begin: If your PC has a static IP address, change your PC settings to temporarily use DHCP.

Step 1   Verify that no devices are connected to the switch. DHCP server is enabled by default.

Step 2   Insert the power cord into an AC power source outlet and turn on the power at the source.

Step 3   Connect an Ethernet cable to a 10/100/1000 Ethernet port on the switch front panel and to the Ethernet port on the PC.

Step 4   Wait until the switch assigns an IP address to the PC.

Step 5   To log on to the device using an Internet browser on your PC, type the IP address 192.168.1.1 in the address bar of your Internet browser and press Enter.

Step 6   Type the following default credentials: username: smartm, password: c2960lsm and press **Enter**. Configure your device using the Cisco Configuration Professional.

> **Note**
> - The Cisco Catalyst 2960-L Smart Managed switches come with default configuration from the factory.
> - When you 'write erase' and then 'reload' the switch, it comes up with the default configuration.
> - When you connect a laptop to any of the downlink ports, you should be able to connect to the switch by using the default IP address in the browser.
> - It is recommended that you create a new username and password after the first login and delete the default credentials.

Configuring the Switch Using the CLI

Accessing the CLI Through the Console Port

You can access the CLI on a configured or unconfigured switch by connecting the RJ-45 console port or USB console port of the switch to your PC or workstation and accessing the switch through a terminal emulation program.

Connecting the RJ-45 Console Port

SUMMARY STEPS

1. Connect the RJ-45-to-DB-9 adapter cable to the 9-pin serial port on the PC. Connect the other end of the cable to the switch console port.
2. Start the terminal-emulation program on the PC or the terminal. The program, frequently a PC application such as HyperTerminal or ProcommPlus, makes communication between the switch and your PC or terminal possible.
3. Configure the baud rate and character format of the PC or terminal to match the console port default characteristics:
4. Power on the switch as described in the switch getting started guide.
5. The PC or terminal displays the bootloader sequence. Press **Enter** to display the setup prompt.

DETAILED STEPS

Step 1   Connect the RJ-45-to-DB-9 adapter cable to the 9-pin serial port on the PC. Connect the other end of the cable to the switch console port.

Step 2   Start the terminal-emulation program on the PC or the terminal. The program, frequently a PC application such as HyperTerminal or ProcommPlus, makes communication between the switch and your PC or terminal possible.

Step 3   Configure the baud rate and character format of the PC or terminal to match the console port default characteristics:

   • 9600 baud

   • 8 data bits

   • 1 stop bit

   • No parity

   • None (flow control)

Step 4   Power on the switch as described in the switch getting started guide.

Step 5   The PC or terminal displays the bootloader sequence. Press **Enter** to display the setup prompt.

Connecting the USB Console Port

SUMMARY STEPS

1. If you are connecting the switch USB console port to a Windows-based PC for the first time, install the USB driver. See Installing the Cisco Microsoft Windows USB Device Driver, on page 61.

2. Connect a USB cable to the PC USB port. Connect the other end of the cable to the switch mini-B (5-pin-connector) USB console port.

3. Start the terminal-emulation program on the PC or the terminal. The program, frequently a PC application such as HyperTerminal or ProcommPlus, makes communication between the switch and your PC or terminal possible.

4. Configure the baud rate and character format of the PC or terminal to match the console port default characteristics:

5. Power on the switch as described in the switch getting started guide.

6. The PC or terminal displays the bootloader sequence. Press **Enter** to display the setup prompt. Follow the steps in the Setup program.

DETAILED STEPS

Step 1   If you are connecting the switch USB console port to a Windows-based PC for the first time, install the USB driver. See Installing the Cisco Microsoft Windows USB Device Driver, on page 61.

> **Note**   USB Type A port on the switch provides file system support and is **NOT** a console port. See USB Type A Port section.

Step 2   Connect a USB cable to the PC USB port. Connect the other end of the cable to the switch mini-B (5-pin-connector) USB console port.

Step 3 Start the terminal-emulation program on the PC or the terminal. The program, frequently a PC application such as HyperTerminal or ProcommPlus, makes communication between the switch and your PC or terminal possible.

Step 4 Configure the baud rate and character format of the PC or terminal to match the console port default characteristics:

- 9600 baud

- 8 data bits

- 1 stop bit

- No parity

- None (flow control)

Step 5 Power on the switch as described in the switch getting started guide.

Step 6 The PC or terminal displays the bootloader sequence. Press **Enter** to display the setup prompt. Follow the steps in the Setup program.

Installing the Cisco Microsoft Windows USB Device Driver

A USB device driver must be installed the first time a Microsoft Windows-based PC is connected to the USB console port on the switch.

- Installing the Cisco Microsoft Windows XP USB Driver

- Installing the Cisco Microsoft Windows 2000 USB Driver

- Installing the Cisco Microsoft Windows Vista and Windows 7 USB Driver

Installing the Cisco Microsoft Windows XP USB Driver

SUMMARY STEPS

1. Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.
2. If using 32-bit Windows XP, double-click the setup.exe file in the Windows_32 folder. If using 64-bit Windows XP, double-click the setup(x64).exe file in the Windows_64 folder.
3. The Cisco Virtual Com InstallShield Wizard begins.
4. The Ready to Install the Program window appears. Click **Install**.
5. The InstallShield Wizard Completed window appears. Click **Finish**.
6. Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

DETAILED STEPS

Step 1 Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.

Note You can download the driver file from the Cisco.com site for downloading the switch software.

Step 2   If using 32-bit Windows XP, double-click the setup.exe file in the Windows_32 folder. If using 64-bit Windows XP, double-click the setup(x64).exe file in the Windows_64 folder.

Step 3   The Cisco Virtual Com InstallShield Wizard begins.

Step 4   The Ready to Install the Program window appears. Click **Install**.

Step 5   The InstallShield Wizard Completed window appears. Click **Finish**.

Step 6   Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

Installing the Cisco Microsoft Windows 2000 USB Driver

SUMMARY STEPS

1. Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.
2. Double-click the setup.exe file.
3. The Cisco Virtual Com InstallShield Wizard begins. Click **Next.**
4. The Ready to Install the Program window appears. Click **Install.**
5. The InstallShield Wizard Completed window appears. Click **Finish.**
6. Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

DETAILED STEPS

Step 1   Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.

> **Note**   You can download the driver file from the Cisco.com site for downloading the switch software.

Step 2   Double-click the setup.exe file.

Step 3   The Cisco Virtual Com InstallShield Wizard begins. Click **Next.**

Step 4   The Ready to Install the Program window appears. Click **Install.**

Step 5   The InstallShield Wizard Completed window appears. Click **Finish.**

Step 6   Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

Installing the Cisco Microsoft Windows Vista and Windows 7 USB Driver

SUMMARY STEPS

1. Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.
2. If using 32-bit Windows Vista or Windows 7, double-click the setup.exe file in the Windows_32 folder. If using 64-bit Windows Vista or Windows 7, double-click the setup(x64).exe file in the Windows_64 folder.
3. The Cisco Virtual Com InstallShield Wizard begins. Click **Next**.
4. The Ready to Install the Program window appears. Click **Install**.
5. The InstallShield Wizard Completed window appears. Click **Finish**.

6. Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

DETAILED STEPS

Step 1 Obtain the Cisco USB console driver file from the Cisco.com web site and unzip it.

Note You can download the driver file from the Cisco.com site for downloading the switch software.

Step 2 If using 32-bit Windows Vista or Windows 7, double-click the setup.exe file in the Windows_32 folder. If using 64-bit Windows Vista or Windows 7, double-click the setup(x64).exe file in the Windows_64 folder.

Step 3 The Cisco Virtual Com InstallShield Wizard begins. Click **Next**.

Step 4 The Ready to Install the Program window appears. Click **Install**.

Note If a User Account Control warning appears, click **Allow - I trust this program** to proceed.

Step 5 The InstallShield Wizard Completed window appears. Click **Finish**.

Step 6 Connect the USB cable to the PC and the switch console port. The USB console port LED turns green, and the Found New Hardware Wizard appears. Follow the instructions to complete the driver installation.

Uninstalling the Cisco Microsoft Windows USB Driver

Uninstalling the Cisco Microsoft Windows XP and 2000 USB Driver

Use the Windows Add or Remove Programs utility or the setup.exe file.

Using the Setup.exe Program

Before you begin

Disconnect the switch console terminal before uninstalling the driver.

SUMMARY STEPS

1. Run setup.exe for Windows 32-bit or setup(x64).exe for Windows-64bit. Click **Next.**
2. The InstallShield Wizard for Cisco Virtual Com appears. Click **Next.**
3. When the Program Maintenance window appears, select the Remove radio button. Click **Next.**
4. When the Remove the Program window appears, click **Remove.**
5. When the InstallShield Wizard Completed window appears, click **Finish.**

DETAILED STEPS

Step 1 Run setup.exe for Windows 32-bit or setup(x64).exe for Windows-64bit. Click **Next.**

Step 2 The InstallShield Wizard for Cisco Virtual Com appears. Click **Next.**

Step 3 When the Program Maintenance window appears, select the Remove radio button. Click **Next.**

Step 4   When the Remove the Program window appears, click **Remove.**

Step 5   When the InstallShield Wizard Completed window appears, click **Finish.**

Using the Add or Remove Programs Utility

Before you begin

Disconnect the switch console terminal before uninstalling the driver.

SUMMARY STEPS

1. Click **Start** > **Control Panel** > **Add or Remove Programs.**
2. Scroll to Cisco Virtual Com and click **Remove.**
3. When the Program Maintenance window appears, select the **Remove** radio button. Click **Next.**

DETAILED STEPS

Step 1   Click **Start** > **Control Panel** > **Add or Remove Programs.**

Step 2   Scroll to Cisco Virtual Com and click **Remove.**

Step 3   When the Program Maintenance window appears, select the **Remove** radio button. Click **Next.**

Uninstalling the Cisco Microsoft Windows Vista and Windows 7 USB Driver

Before you begin

Disconnect the switch console terminal before uninstalling the driver.

SUMMARY STEPS

1. Run setup.exe for Windows 32-bit or setup(x64).exe for Windows-64bit. Click **Next.**
2. The InstallShield Wizard for Cisco Virtual Com appears. Click **Next.**
3. When the Program Maintenance window appears, select the Remove radio button. Click **Next.**
4. When the Remove the Program window appears, click **Remove.**
5. When the InstallShield Wizard Completed window appears, click **Finish.**

DETAILED STEPS

Step 1   Run setup.exe for Windows 32-bit or setup(x64).exe for Windows-64bit. Click **Next.**

Step 2   The InstallShield Wizard for Cisco Virtual Com appears. Click **Next.**

Step 3   When the Program Maintenance window appears, select the Remove radio button. Click **Next.**

Step 4   When the Remove the Program window appears, click **Remove.**

Note   If a User Account Control warning appears, click **Allow - I trust this program to proceed**.

Step 5   When the InstallShield Wizard Completed window appears, click **Finish.**