



Cisco Catalyst 1000 Series 8-Port and 16-Port Switch Hardware Installation Guide

First Published: 2019-12-25

Last Modified: 2021-07-29

Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883



CONTENTS

PREFACE

Preface	vii
Document Conventions	vii
Related Documentation	ix
Obtaining Documentation and Submitting a Service Request	ix

CHAPTER 1

Product Overview	1
Switch Models	1
Front Panel	2
PoE Ports	4
10/100/1000 Ports	4
Console Ports	5
SFP Module Slots	5
LEDs	6
System LED	7
Port LEDs	8
Rear Panel	8
Internal Power Supply	10
Security Slot	10
Network Configurations	11

CHAPTER 2

Switch Installation	13
Safety Warnings	13
Box Contents	17
Tools and Equipment	20
Installation Guidelines	20

Verifying Switch Operation	21
Mounting the Switch	21
Mounting on a Desk or Shelf Without Mounting Screws	21
On a Desk, Shelf, or Wall (with Mounting Screws)	22
Desk- or Shelf-Mounting	22
Wall-Mounting	23
In A Rack	25
On a DIN Rail	27
Attaching the DIN-Mount Tray to the Switch	27
Mounting the Switch on a DIN Rail	29
Removing the Switch from a DIN Rail	30
Installing the Power Cord Retainer (Optional)	31
Installing the Cable Guard (Optional)	34
Installing SFP Modules	37
Installing an SFP Module	38
Removing an SFP Module	39
10/100/1000 PoE and PoE+Port Connections	39
10/100/1000 Ethernet Port Connections	41
Auto-MDIX Connections	41

CHAPTER 3

Troubleshooting 43

Diagnosing Problems	43
Switch POST Results	43
System LEDs	43
Switch Connections	43
Bad or Damaged Cable	43
Ethernet and Fiber-Optic Cables	44
Link Status	44
10/100/1000 Port Connections	44
10/100/1000 PoE+ Port Connections	44
SFP Module	45
Interface Settings	45
Ping End Device	45
Spanning Tree Loops	45

Switch Performance	46
Speed, Duplex, and Autonegotiation	46
Autonegotiation and Network Interface Cards	46
Cabling Distance	46
Finding the Switch Serial Number	46

APPENDIX A

Technical Specifications	49
Physical Specifications	49
Environmental Specifications	50
Power Requirements	51
PoE Power Consumption	51

APPENDIX B

Connector and Cable Specifications	53
Connector Specifications	53
10/100/1000 Ports (Including PoE)	53
SFP Module Connectors	53
Cables and Adapters	54
SFP Module Cables	54
Cable Pinouts	55
Console Port Adapter Pinouts	56

APPENDIX C

Configuring the Switch	59
Configuring the Switch Using the Configuration Setup Wizard	59
Quick Setup: Accessing the Configuration Setup Wizard	59
Completing the Configuration Setup Wizard	61
Configuring the Switch Using the CLI	61
Accessing the CLI Through the Console Port	61
Connecting the RJ-45 Console Port	62
Connecting the USB Console Port	62
Installing the Cisco Microsoft Windows USB Device Driver	63
Installing the Cisco Microsoft Windows XP USB Driver	63
Installing the Cisco Microsoft Windows 2000 USB Driver	63
Installing the Cisco Microsoft Windows 7 USB Driver	64
Uninstalling the Cisco Microsoft Windows USB Driver	64

Uninstalling the Cisco Microsoft Windows XP and 2000 USB Driver	64
Uninstalling the Cisco Microsoft Windows 7 USB Driver	65



Preface

This preface describes the conventions of this document and information on how to obtain other documentation. It also provides information on what's new in Cisco product documentation.



Note

The documentation set for this product strives to use bias-free language. For purposes of this documentation set, bias-free is defined as language that does not imply discrimination based on age, disability, gender, racial identity, ethnic identity, sexual orientation, socioeconomic status, and intersectionality. Exceptions may be present in the documentation due to language that is hardcoded in the user interfaces of the product software, language used based on RFP documentation, or language that is used by a referenced third-party product.

- [Document Conventions](#) , on page vii
- [Related Documentation](#), on page ix
- [Obtaining Documentation and Submitting a Service Request](#), on page ix

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.
<i>Italic</i> font	Document titles, new or emphasized terms, and arguments for which you supply values are in <i>italic</i> font.
Courier font	Terminal sessions and information the system displays appear in <code>courier</code> font.
Bold Courier font	Bold Courier font indicates text that the user must enter.
[x]	Elements in square brackets are optional.

Convention	Description
...	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.
[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.



CHAPTER 1

Product Overview

The Cisco Catalyst 1000 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 1000 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 240W of PoE budget and Perpetual PoE.
- Fanless operation with operational temperature up to 50°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, on page 1](#)
- [Front Panel, on page 2](#)
- [Rear Panel, on page 8](#)
- [Network Configurations, on page 11](#)

Switch Models

Table 1: Cisco Catalyst 1000 8-Port and 16-Port Switch Models and Description

Switch Model	Description
C1000-8T-2G-L	8 10/100/1000 Ethernet ports; 2 1-Gigabit small form-factor pluggable (SFP) module uplink slots or 2 RJ-45 slots.
C1000-8T-E-2G-L	Externally powered; 8 10/100/1000 Ethernet ports; 2 1-Gigabit SFP module uplink slots or 2 RJ-45 slots.
C1000-8P-2G-L	8 10/100/1000 Power over Ethernet plus (PoE+) ports (PoE budget of 67W); 2 1-Gigabit SFP module uplink slots or 2 RJ-45 slots.

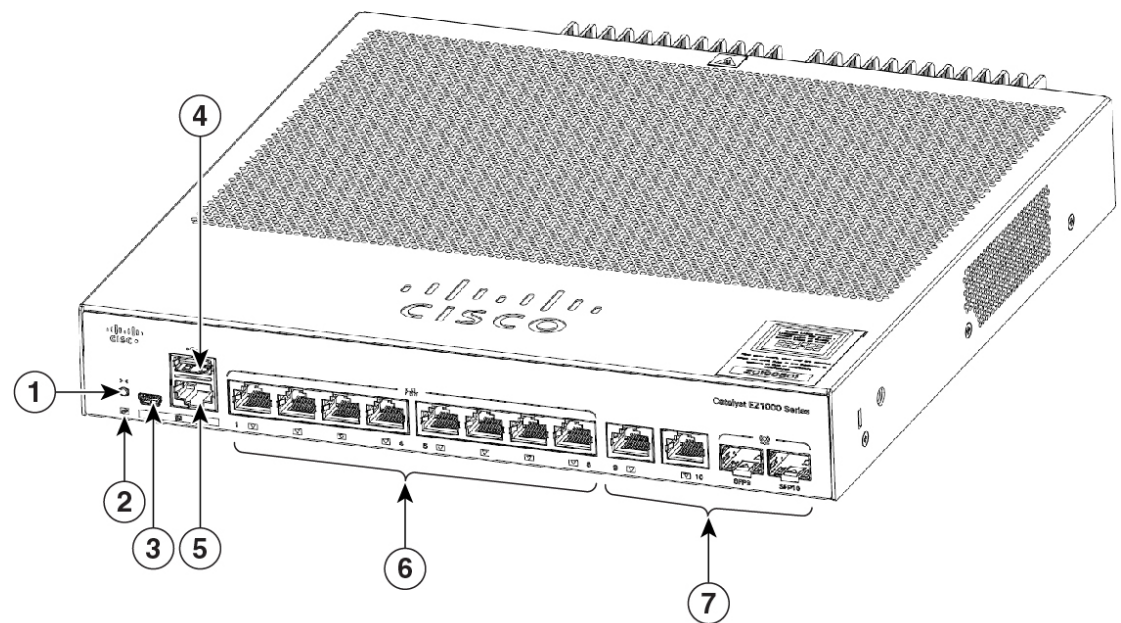
Switch Model	Description
C1000-8P-E-2G-L	Externally powered; 8 10/100/1000 PoE+ ports (PoE budget of 67W); 2 1-Gigabit SFP module uplink slots or 2 RJ-45 slots.
C1000-8FP-2G-L	8 10/100/1000 PoE+ ports (PoE budget of 120W); 2 1-Gigabit SFP module uplink slots or 2 RJ-45 slots.
C1000-8FP-E-2G-L	Externally powered; 8 10/100/1000 PoE+ ports (PoE budget of 120W); 2 1-Gigabit SFP module uplink slots or 2 RJ-45 slots.
C1000-16T-2G-L	16 10/100/1000 Ethernet ports; 2 1-Gigabit small form-factor pluggable (SFP) module uplink slots.
C1000-16T-E-2G-L	Externally powered; 16 10/100/1000 Ethernet ports; 2 1-Gigabit SFP module uplink slots.
C1000-16P-2G-L	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.
C1000-16P-E-2G-L	Externally powered; 16 10/100/1000 PoE+ ports (PoE budget of 120W); 2 1-Gigabit SFP module uplink slots.
C1000-16FP-2G-L	16 10/100/1000 PoE+ ports (PoE budget of 240W); 2 1-Gigabit SFP module uplink slots.

Front Panel

This section describes the front panel components of an 8-port and 16-port Cisco Catalyst 1000 switch.

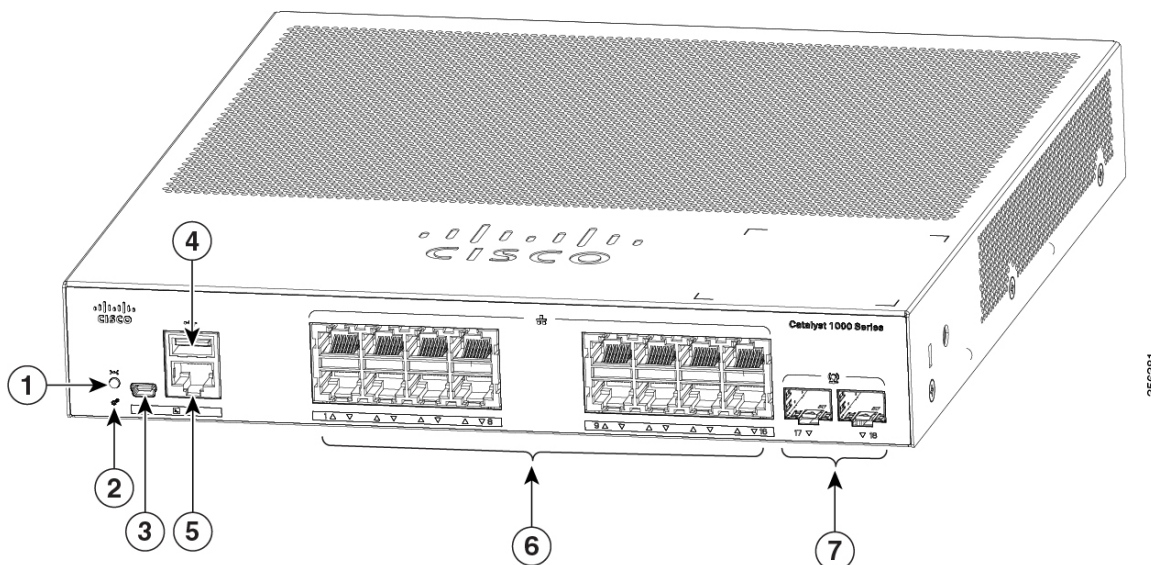
- 8 or 16 downlink Ethernet ports of one of these types:
 - 10/100/1000
 - 10/100/1000 PoE+
- 2 SFP module ports
- RJ-45 console port
- USB mini-Type B (console) port
- USB Type A port
- LEDs
- Reset button

Figure 1: Front Panel of an 8-Port Cisco Catalyst C1000 PoE Switch



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

Figure 2: Front Panel of a 16-Port Cisco Catalyst 1000 PoE Switch



1	Reset button	5	RJ-45 Console Port
2	System LEDs	6	16 10/100/1000 PoE+ ports
3	USB mini-Type B (console) port	7	SFP module slots
4	USB Type A 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) 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 67 W to 740 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).

**Note**

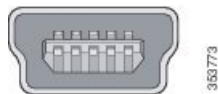
The Cisco Catalyst 1000 Series Fast Ethernet Switches do not support the USB mini-Type B console port.

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

**Note**

The Cisco Catalyst 1000 Series Fast Ethernet Switches do not support 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

Table 2: Port mapping for Cisco Catalyst 1000 8-Port Switch models

1-GigabitEthernet ports
GigabitEthernet1/0/9
GigabitEthernet1/0/10

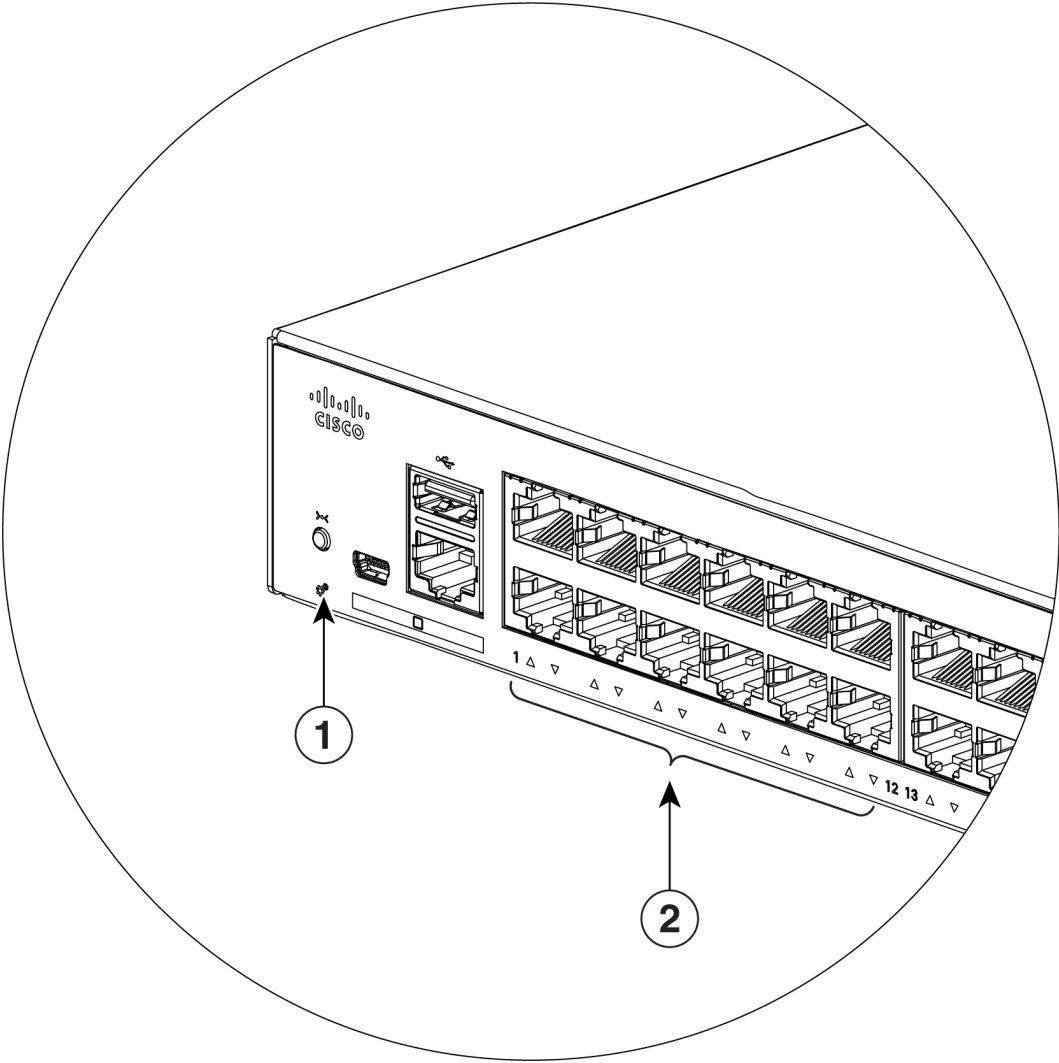
Table 3: Port mapping for Cisco Catalyst 1000 16-Port Switch models

1-GigabitEthernet ports
GigabitEthernet1/0/17
GigabitEthernet1/0/18

LEDs

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

Figure 4: System LED for a Cisco Catalyst 1000 Series Switch



356418

1	SYST LED (system)	2	Port LEDs
---	-------------------	---	-----------

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



Note Physically, there is no amber LED on the device. For all LED-related information of the device, run the **show hardware led** command in privileged EXEC mode.

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.

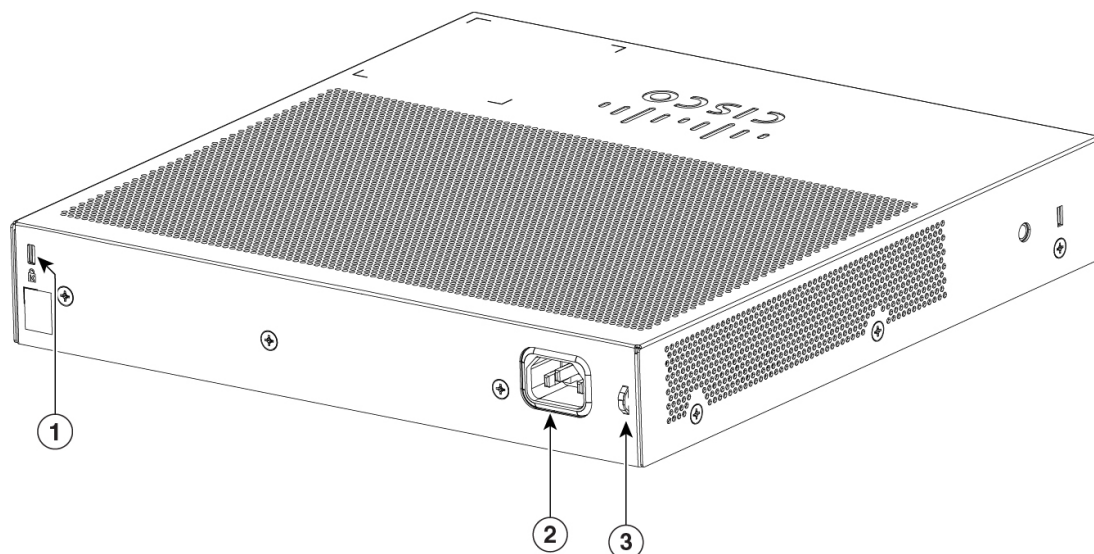
LED Color	Description
Off	No link or port was administratively shut down or port was STP blocked.
Green	Link present.
Blinking Green	Activity. Port is sending or receiving data.

Rear Panel

This section describes the rear panel components of Cisco Catalyst 1000 8-port and 16-port switches.

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

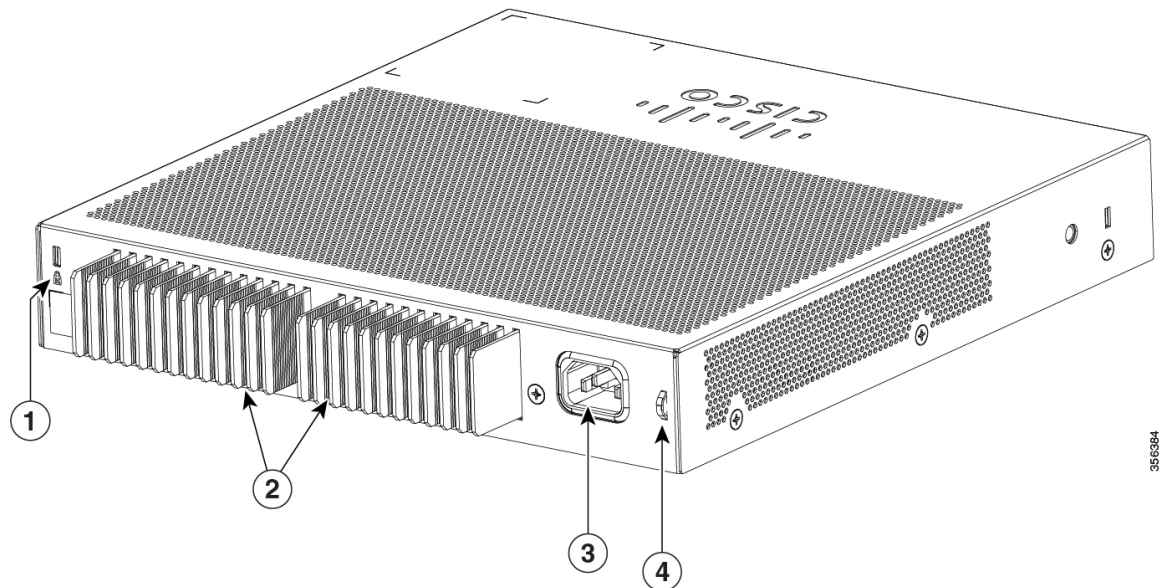
Figure 5: Rear Panel of a Non-PoE Switch



356383

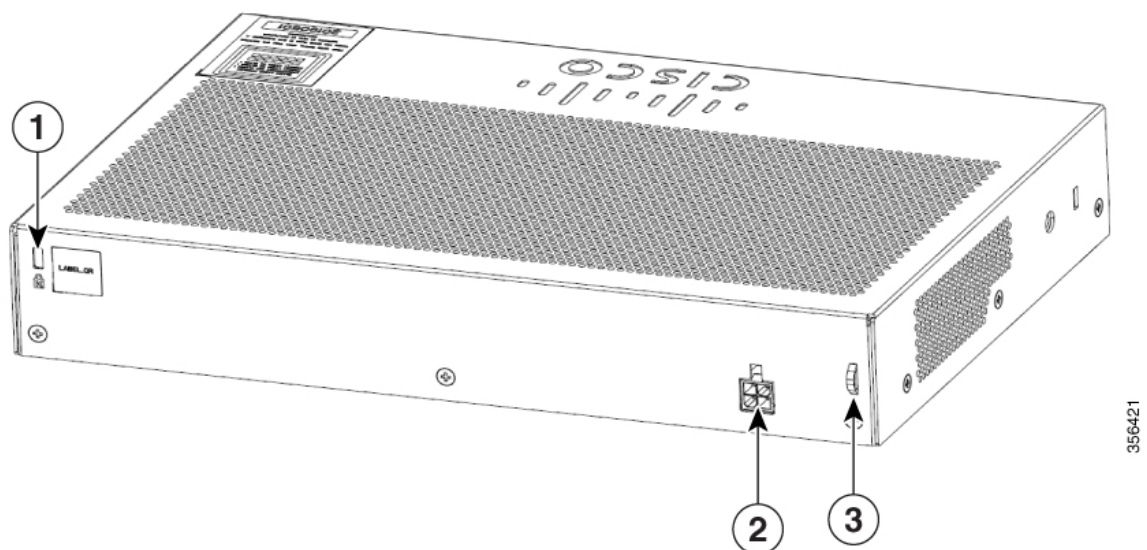
1	Security Slot	3	A loop (for the optional power cord retainer)
2	An AC power connector		

Figure 6: Rear Panel of a PoE Switch



1	Security Slot	3	An AC power connector
2	Heat sink fins	4	A loop (for the optional power cord retainer)

Figure 7: Rear Panel of an Externally Powered Switch



1	Security Slot	3	A loop (for the optional power cord retainer)
2	A DC power connector		

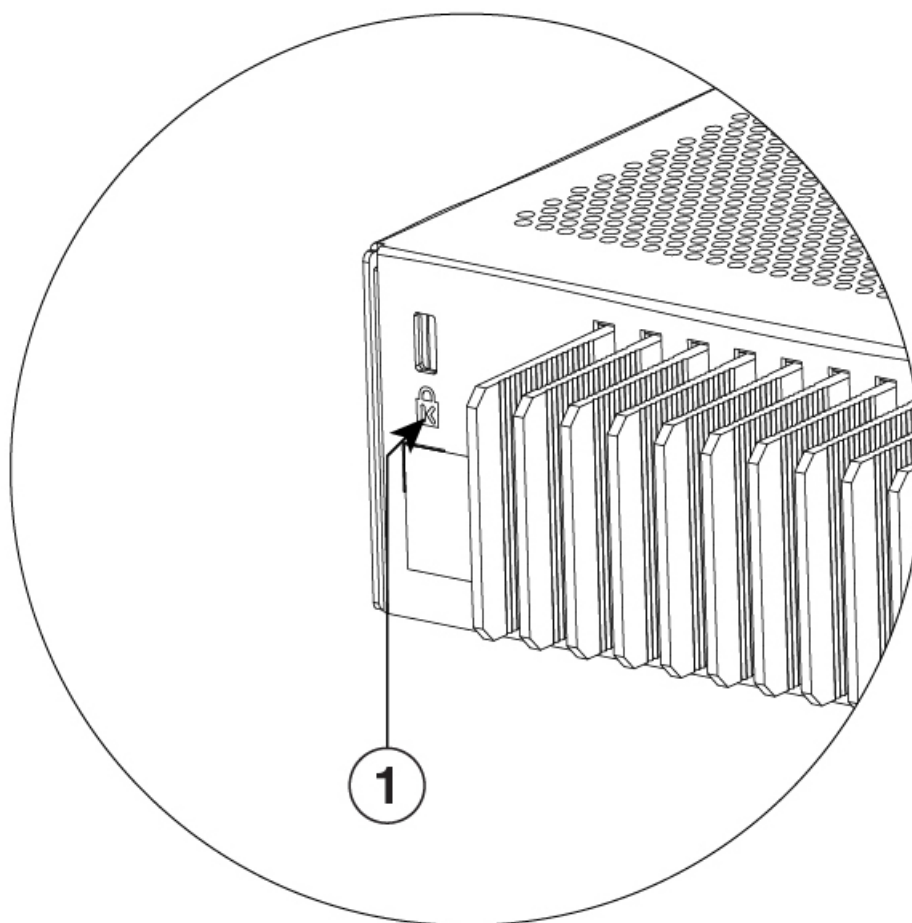
Internal Power Supply

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 8: Switch Rear Panel



356385

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.



CHAPTER 2

Switch Installation

This chapter contains these topics:

- [Safety Warnings, on page 13](#)
- [Box Contents, on page 17](#)
- [Tools and Equipment, on page 20](#)
- [Installation Guidelines, on page 20](#)
- [Verifying Switch Operation, on page 21](#)
- [Mounting the Switch, on page 21](#)
- [Installing the Power Cord Retainer \(Optional\), on page 31](#)
- [Installing the Cable Guard \(Optional\), on page 34](#)
- [Installing SFP Modules, on page 37](#)
- [10/100/1000 PoE and PoE+Port Connections, on page 39](#)
- [10/100/1000 Ethernet Port Connections, on page 41](#)

Safety Warnings



Warning

To reduce the risk of electric shock, disconnect all power cords before servicing.



Warning

The switch is to be connected only to PoE networks without routing to the outside plant.

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**

Connect USB Device to a Certified USB Port. **Statement 388**

**Warning**

To avoid or reduce the risk of personal injury, do not use the product if the product has been exposed to irregular environmental conditions, if the product has been misused or if parts of the product have been damaged. Consult qualified service personnel. Never try to service the product yourself. **Statement 0416**

**Warning**

To reduce the risk of electric shock, fire or personal injury, do not place power cables in areas where they may be walked on or damaged by items placed upon or against it. **Statement 0417**

**Warning**

This product is intended for use in a normal environment based on the standard IEC60950-1 and IEC62368-1. Do not use the product in vehicles, on board ships, in aircrafts or in medical applications with physical connection to the patient, nor in environments with exposure to moisture, dust, vibration or ingress of water. **Statement 0418**

**Warning**

Equipment is intended for installation in Information Technology Equipment Rooms. Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75. **Statement 0444**

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



Warning There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions. **Statement 1015**



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 Take care when connecting units to the supply circuit so that wiring is not overloaded. **Statement 1018**



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 Class 1 LED product. **Statement 1027**



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: <122°F (50°C). **Statement 1047**

**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**

Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard.

Fiber type and Core diameter (μm)	Wavelength (nm)	Max. Power (mW)	E
SM 11	1200 - 1400	39 - 50	
MM 62.5	1200 - 1400	150	
MM 50	1200 - 1400	135	
SM 11	1400 - 1600	112 - 145	

Statement 1056**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**

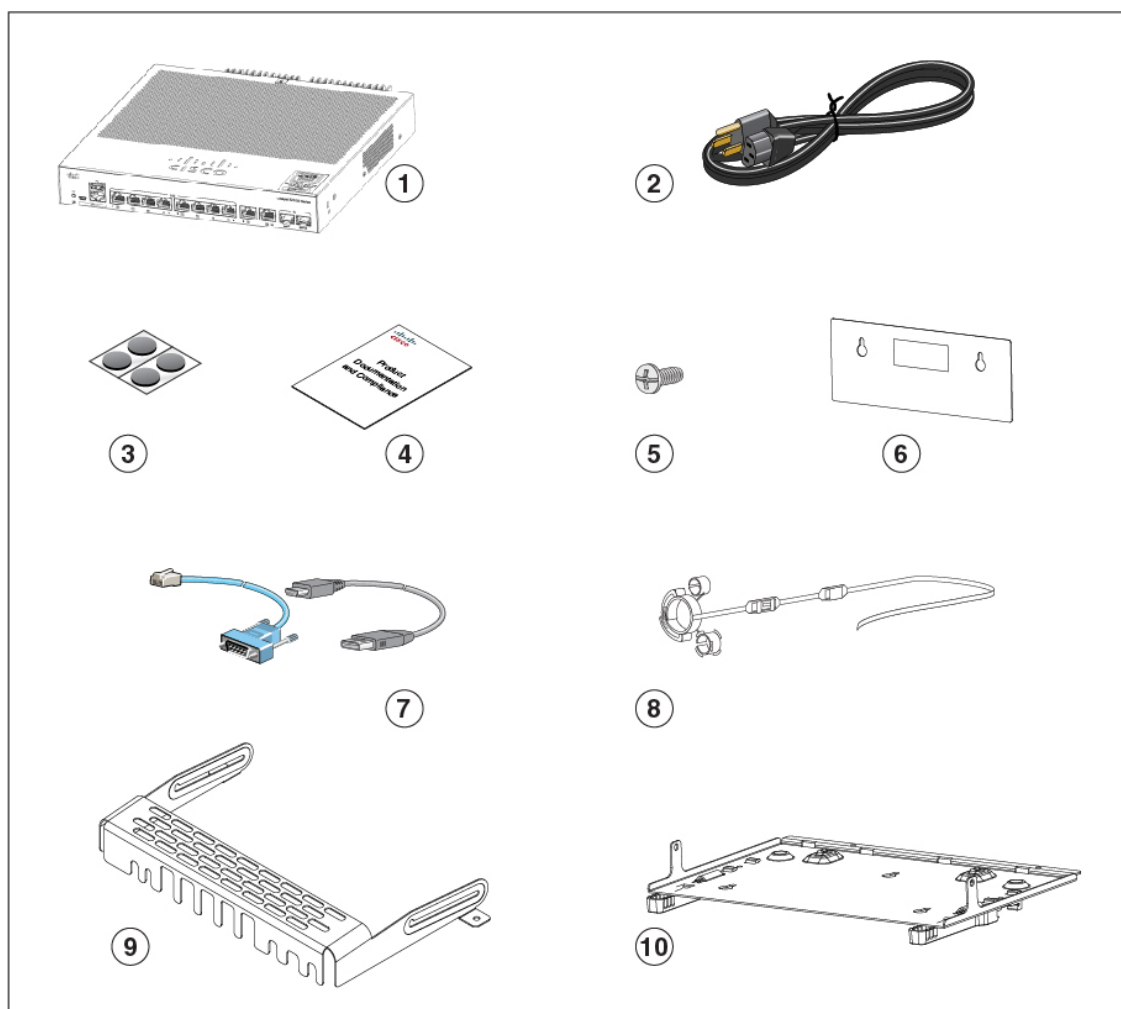


Warning Hot surface. **Statement 1079**

Box Contents

This section lists the contents of the shipping box for an 8-port and 16-port Cisco Catalyst 1000 switch.

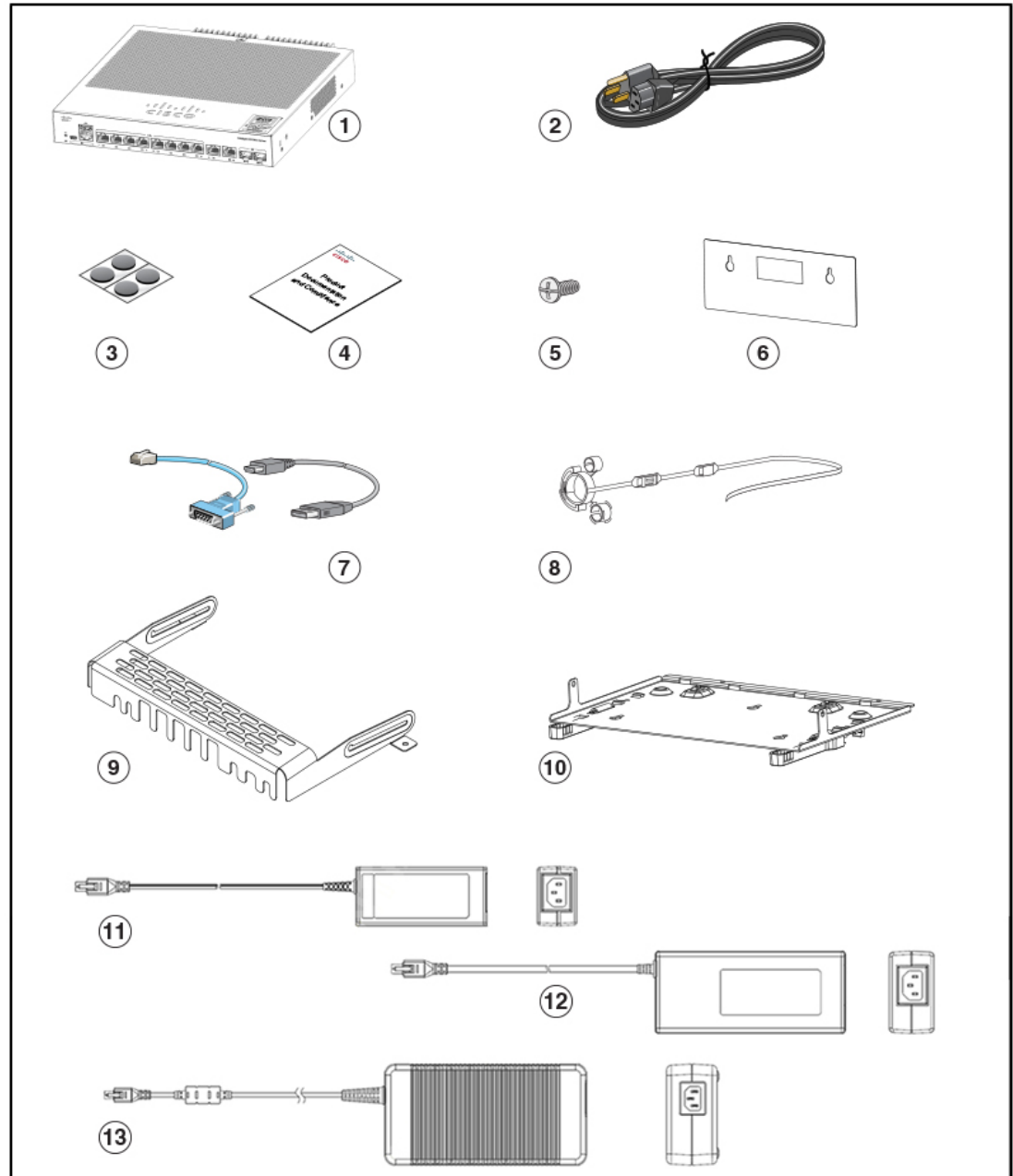
Figure 9: Box Contents of an 8-Port and 16-Port Cisco Catalyst 1000 Switch



1	8-port or 16-port Cisco Catalyst 1000 switch	6	Screw template (47-100996-02)
2	AC power cord	7	(Optional) Console cable or USB cable
3	Four rubber mounting feet (51-0089)	8	(Optional) Power cord retainer
4	Compliance documentation (78-101287-01)	9	(Optional) Cable guard
5	Three number-8 screws (48-1689-01)	10	(Optional) DIN rail mount (only with Cisco Catalyst 1000 16-port switch models)

This section lists the contents of the shipping box for an externally powered 8-port and 16-port Cisco Catalyst 1000 switch.

Figure 10: Box Contents of an Externally Powered 8-Port and 16-Port Cisco Catalyst 1000 Switch



356442

1	Externally powered 8-port or 16-port Cisco Catalyst 1000 switch	8	(Optional) Power cord retainer
2	AC power cord	9	(Optional) Cable guard

3	Four rubber mounting feet (51-0089)	10	(Optional) DIN rail mount (only with Cisco Catalyst 1000 16-port switch models)
4	Compliance documentation (78-101287-01)	11	Power Adaptor - PWR-ADPT-18W ¹
5	Three number-8 screws (48-1689-01)	12	Power Adaptor - PWR-ADPT-85W ²
6	Screw template (47-100996-02)	13	Power Adaptor - PWR-ADPT-150W ³
7	(Optional) Console cable or USB cable		

¹ for C1000-8T-E-2G-L and C1000-16T-E-2G-L switch models

² for C1000-8P-E-2G-L switch models

³ for C1000-8FP-E-2G-L and C1000-16P-E-2G-L switch models

Tools and Equipment

Obtain these necessary tools:

- A Number-2 Phillips screwdriver.
- 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's front and rear panel should meet 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's 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. To avoid any flow blockage, we strongly recommend these guidelines:
 - Allow at least 3 in. (7.6 cm) of clearance from the left and the right sides, and the front and rear of the switch.
 - Allow at least 1.75 in. (4 cm) of clearance from the top cover, if you are installing the switch in upright position.
 - Allow at least 3 in. (7.6 cm) of clearance from the top cover, if you are installing the switch.

- Temperature around the unit does not exceed 122°F (50°C). If the switch is installed in a closed or multirack assembly, the temperature around it might be greater than normal room temperature.
- Humidity around the switch does not exceed 95 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).
- Cooling mechanisms, such as fans and blowers in the switch, can draw dust and other particles causing contaminant build-up inside the chassis, which can result in system malfunction. You must install this equipment in an environment as free from dust and foreign conductive material (such as metal flakes from construction activities) as is possible.
- None of the switch models can be deployed outside of the wiring closet. These switches can only be deployed indoors.

Verifying Switch Operation

Before you install the switch 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.

When the switch completes POST successfully, the SYST LED remains green. 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 on a wall, on a table, or on a shelf.

**Warning**

Attach only the following Cisco external power system to the switch: Cisco XPS 2200 Statement 387

Mounting the Switch

Mounting on a Desk or Shelf Without Mounting Screws

Procedure

- 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.
-

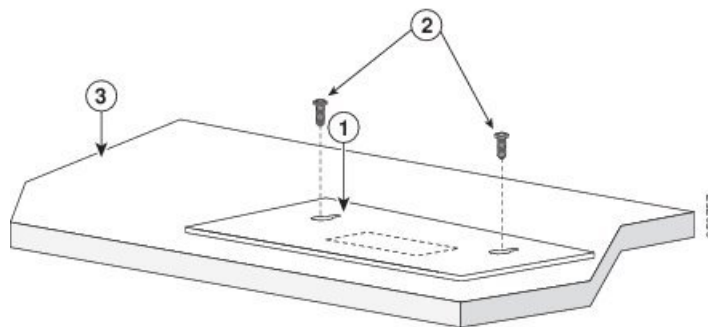
On a Desk, Shelf, or Wall (with Mounting Screws)

Desk- or Shelf-Mounting

Procedure

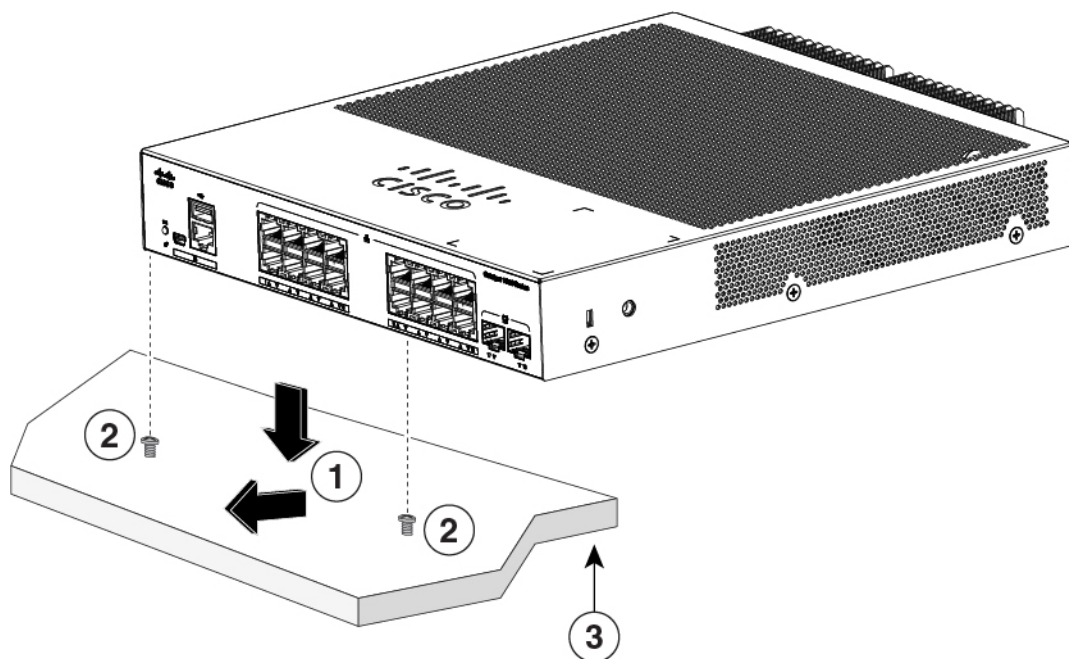
- Step 1** Use the screw template to align the mounting screw holes and also as a guide to make sure that you install the screws into the desk or shelf with proper clearance.
- Step 2** Position the screw template on top of the desk or shelf so that the edge that is marked as CABLE SIDE ENTRY faces the 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 11: 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 12: 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

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



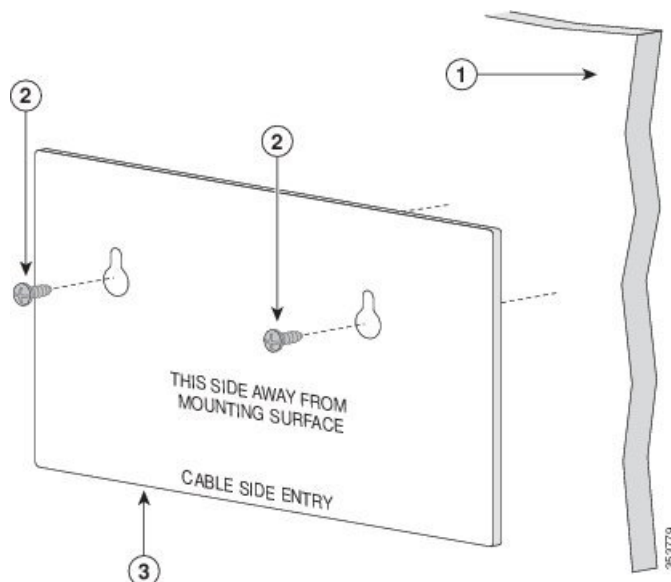
Caution Do not wall-mount the switch with its front panel facing up. Following safety regulations, wall-mount the switch with its front panel facing down or to the side to prevent airflow restriction and to provide easier access to the cables

Procedure

- 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

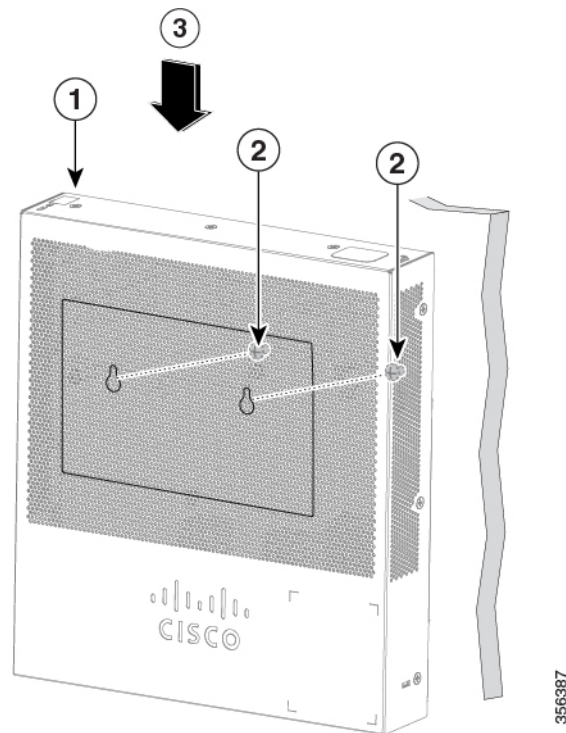
- Step 3** Peel the adhesive strip off the bottom of the screw template.
- Step 4** Attach the screw template to the wall.
- Step 5** Use a 0.144-inch (3.7 mm) or a #27 drill bit to drill a 1/2-inch (12.7 mm) hole in the two screw template slots.
- Step 6** Insert two screws in the slots on the screw 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



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

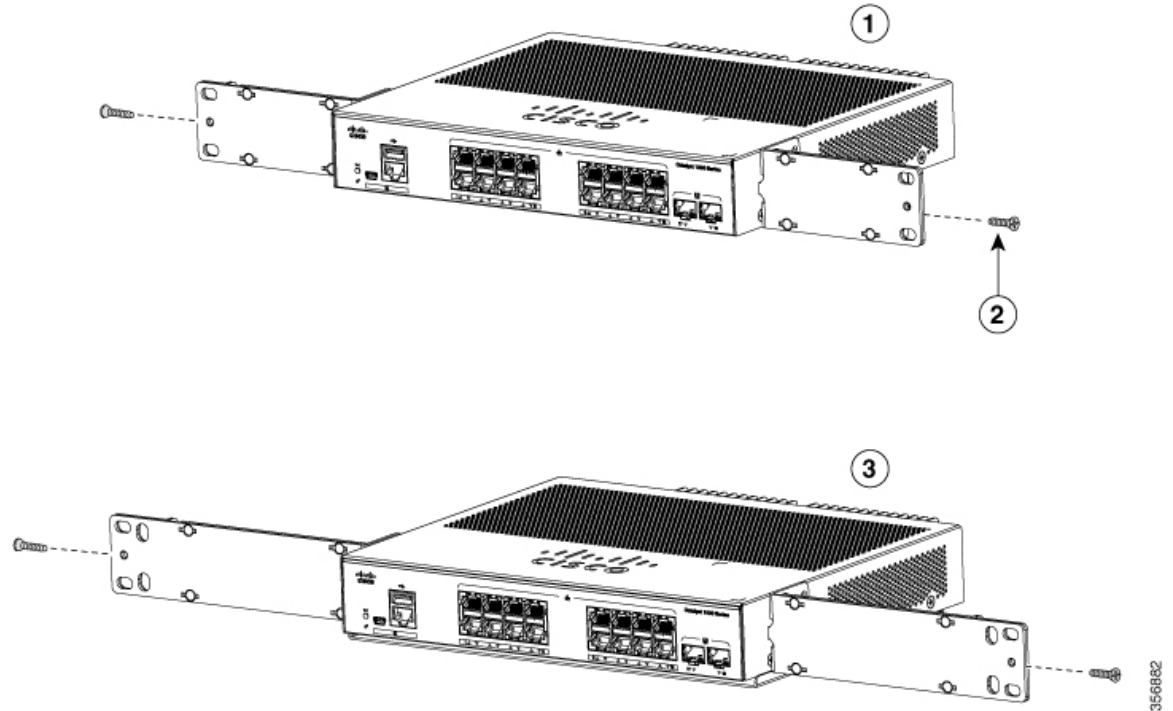
To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- 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 15: Attaching the 19-inch and 23-inch Brackets for Rack-Mounting



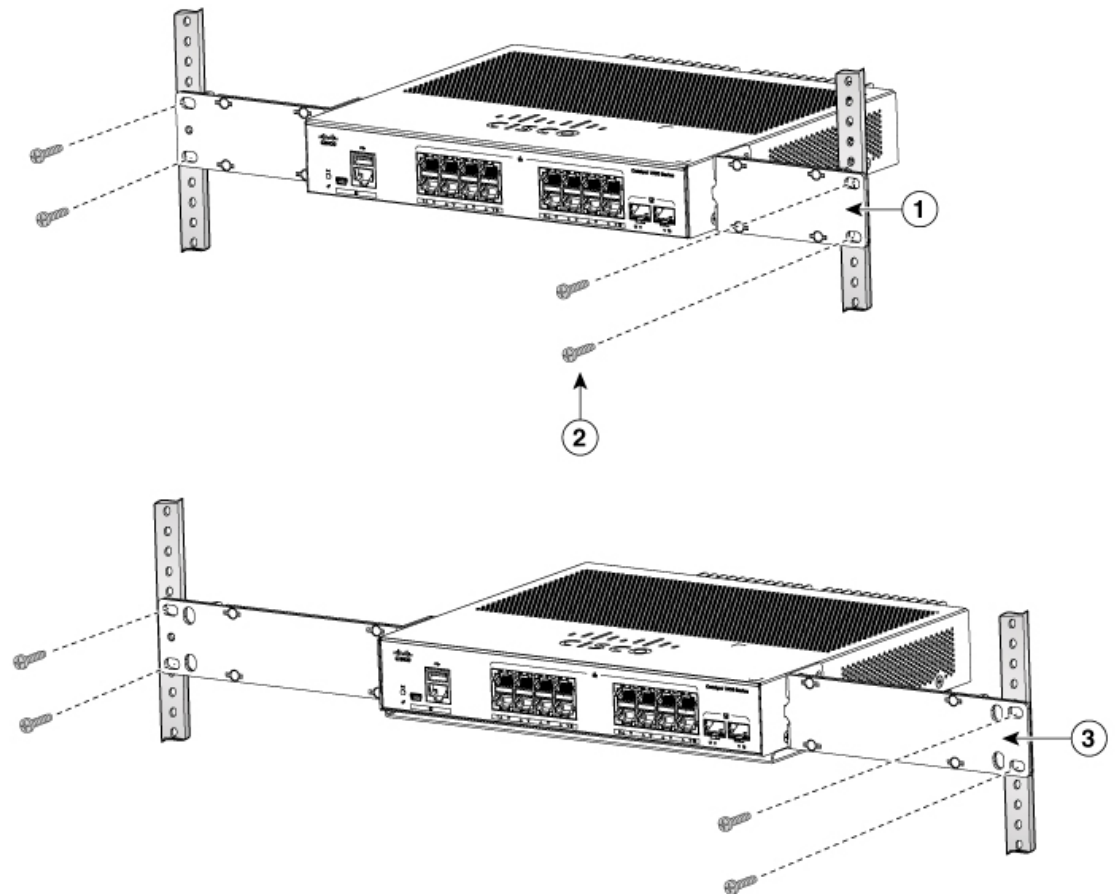
Insert the switch into the rack and align the bracket in the rack. Use either the number-12 or number-10 Phillips machine screws to secure the switch in the rack.



Warning

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

Figure 16: Mounting the Switch in a Rack



On a DIN Rail

The DIN-mount kit (part number CMPCT-DIN-MNT=) is optional only with Cisco Catalyst 1000 16-port switch models. You can order it when you order your switch.

The DIN-mount kit contains:

- Two number-10 Phillips pan-head screws
- DIN rail mount

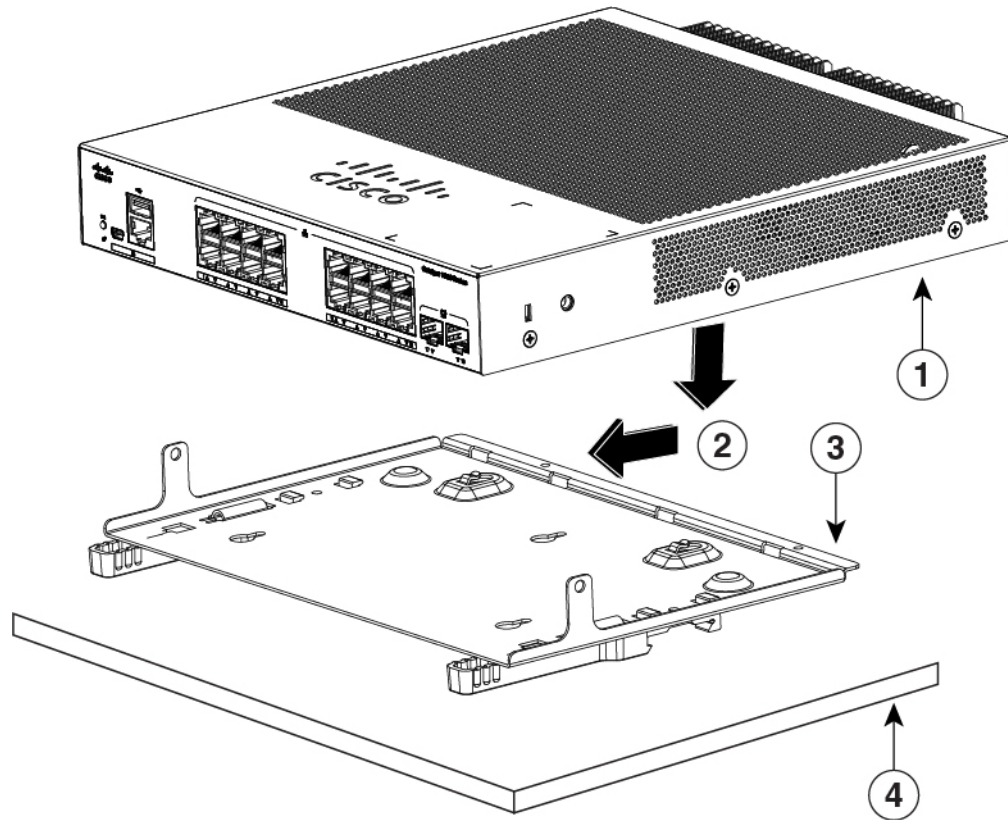
To install the switch on a DIN rail, follow the instructions described in these sections:

Attaching the DIN-Mount Tray to the Switch

Procedure

- Step 1** Place the switch on the DIN rail mount.

Figure 17: Placing the Switch on the DIN-Mount Tray

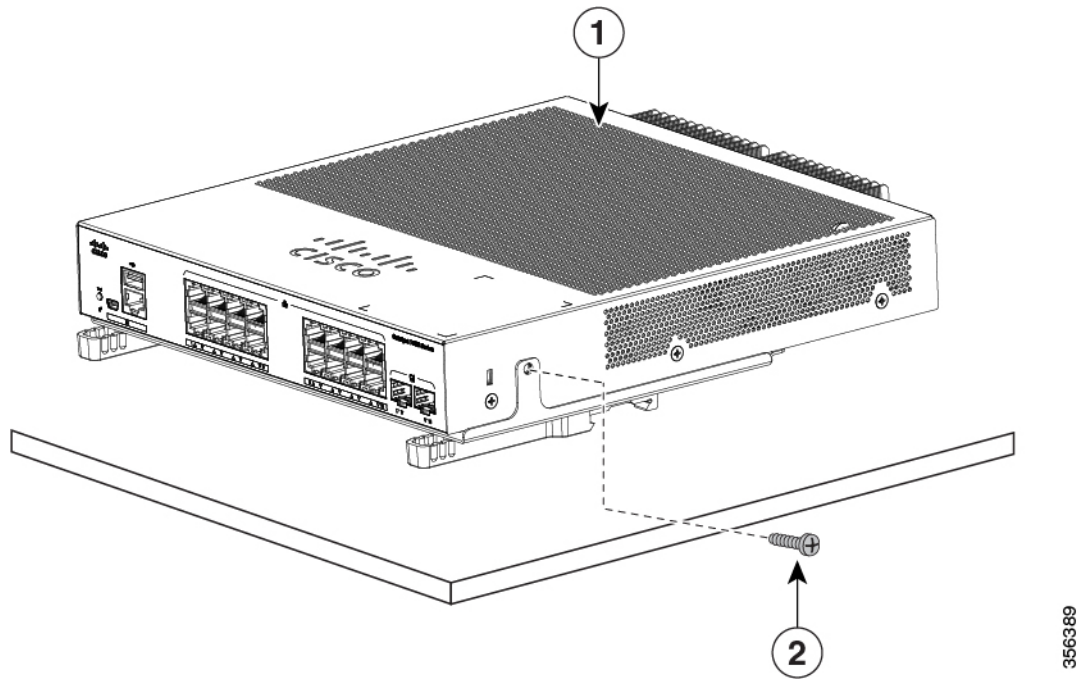


356388

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 18: 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

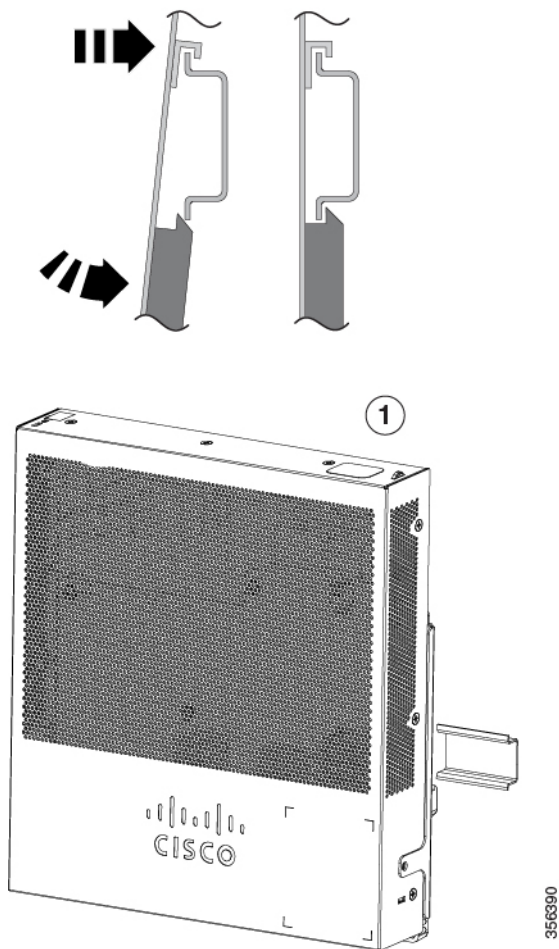
To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 in. (7.6 cm)
Statement 1076

Procedure

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 19: Mounting the Switch on a DIN Rail

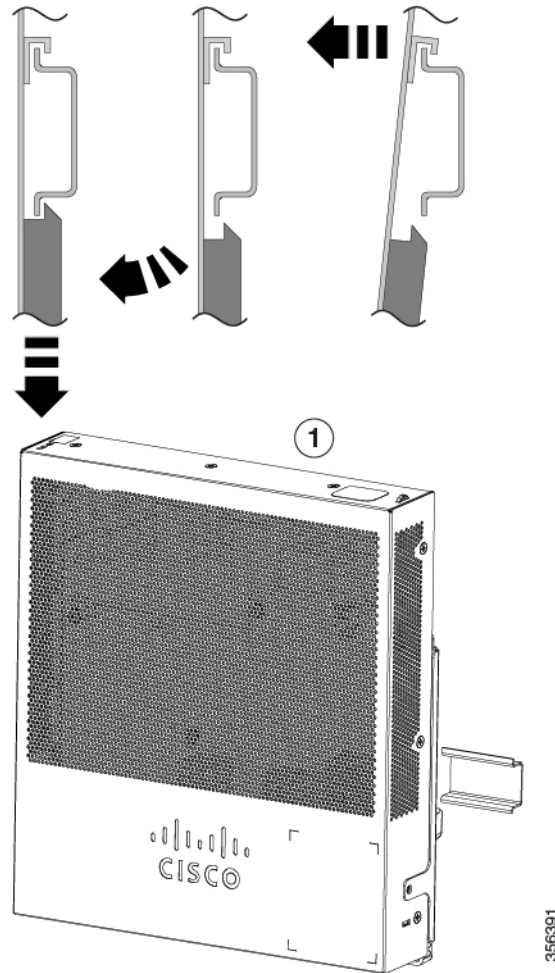


- Step 2** Rotate the switch down toward the DIN rail until the release tabs on the DIN rail mount clicks.
- Step 3** Lift lightly on the bottom of the switch to ensure that it is firmly locked in place.

Removing the Switch from a DIN Rail

Procedure

- 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 20: Switch Removal

Installing the Power Cord Retainer (Optional)

**Note**

This section applies to switches with an AC power connector.

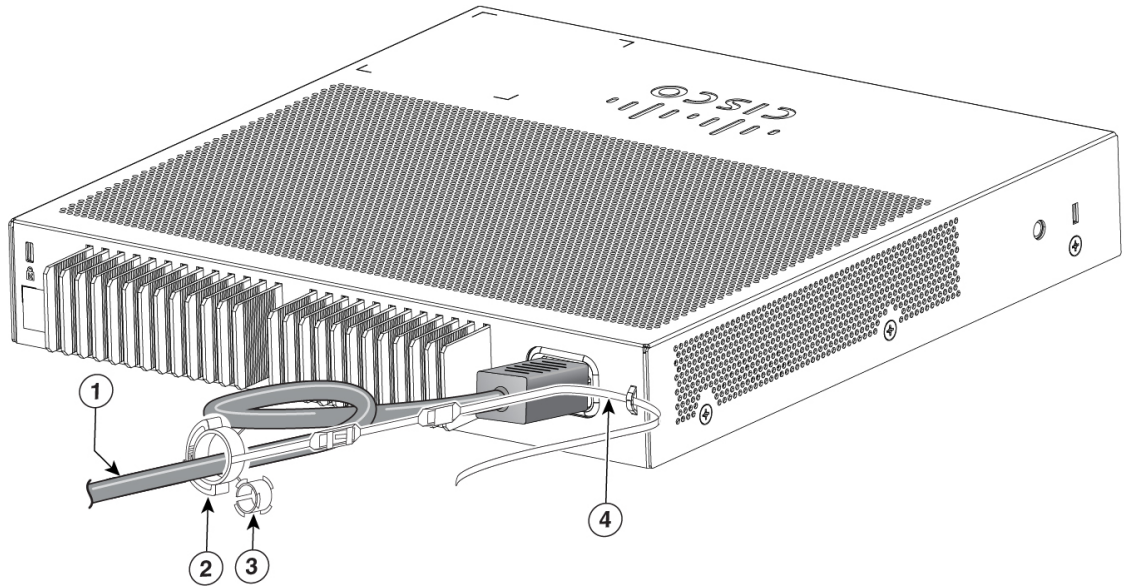
The power cord retainer (PWR-CLP=) is optional. You can order it when you order your switch.

Procedure**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.

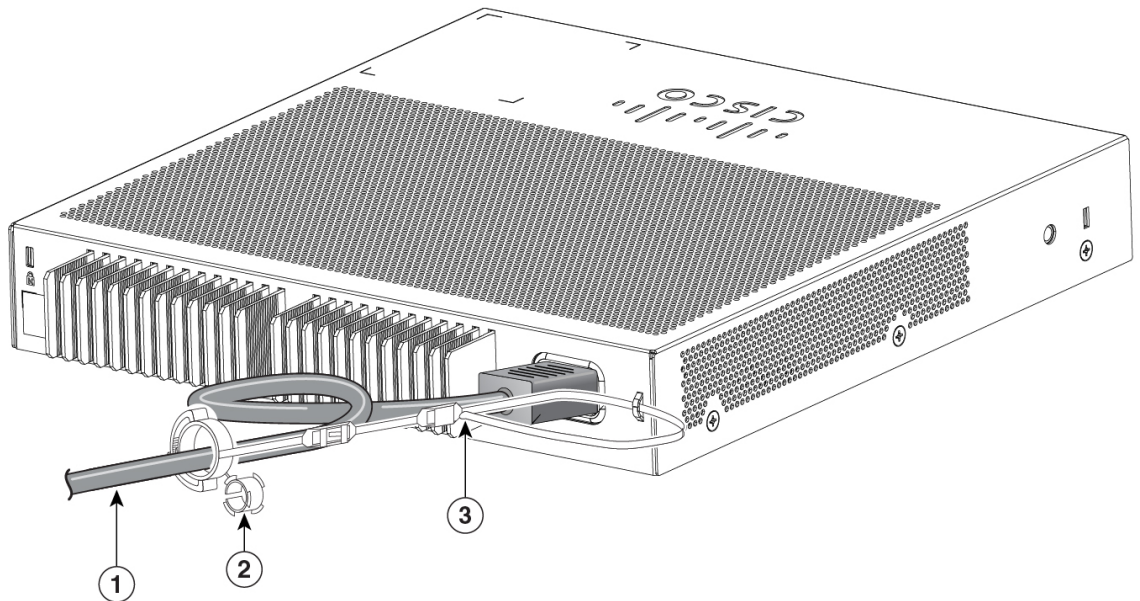
Figure 21: Inserting the Retainer through the Lanced Loop



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 22: Sliding the Retainer Through the Latch

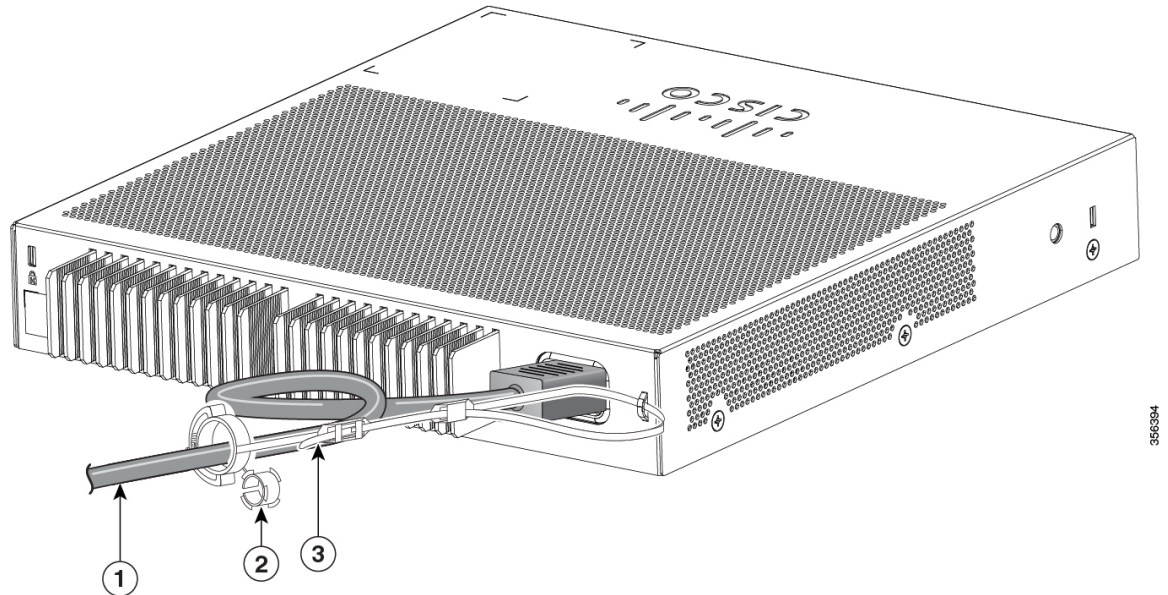


1	AC power cord	3	Latch
---	---------------	---	-------

2	Smaller sleeve for thin power cords		
---	-------------------------------------	--	--

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

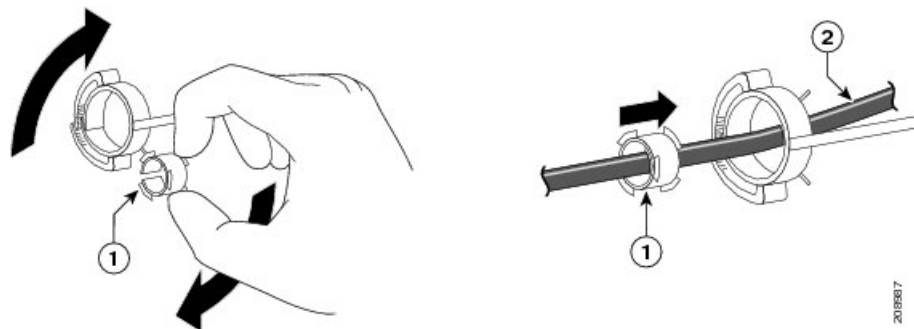
Figure 23: Locking the Retainer



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.

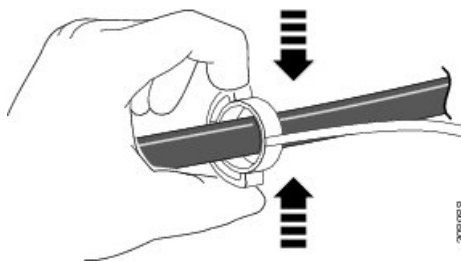
Figure 24: Sleeve Around the Power Cord



1	Smaller sleeve for thin power cords	2	AC power cord
---	-------------------------------------	---	---------------

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

Figure 25: 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 optional. You can order it when you order your switch.



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:

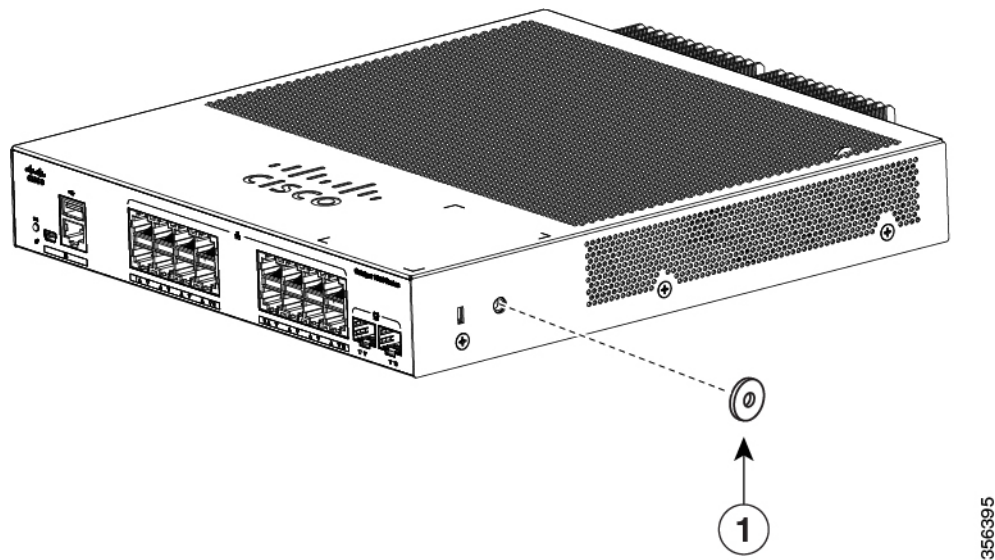
- Two 0.5 in. (12.7 mm) number-8 Phillips wood screws
- Two number-10 Phillips pan-head screws
- Two washers

Procedure

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.

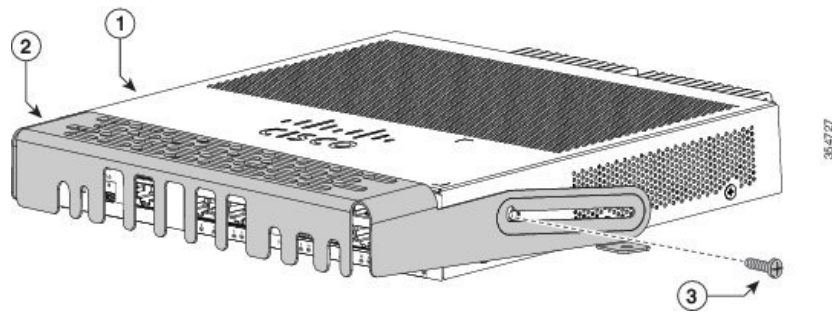
Figure 26: Using the Washer



1	Washer
---	--------

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

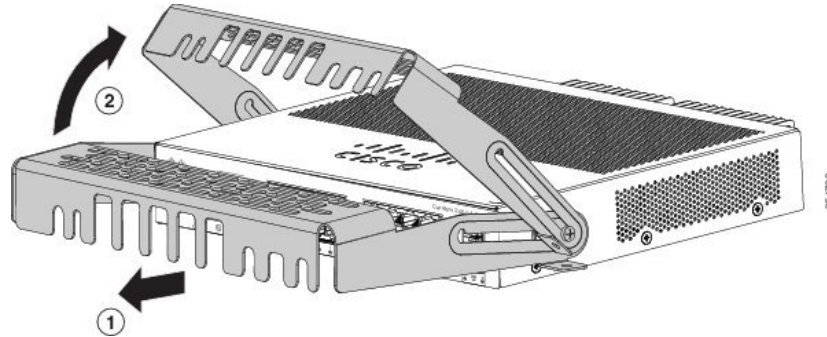
Figure 27: Attaching the Cable Guard to the Switch



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.

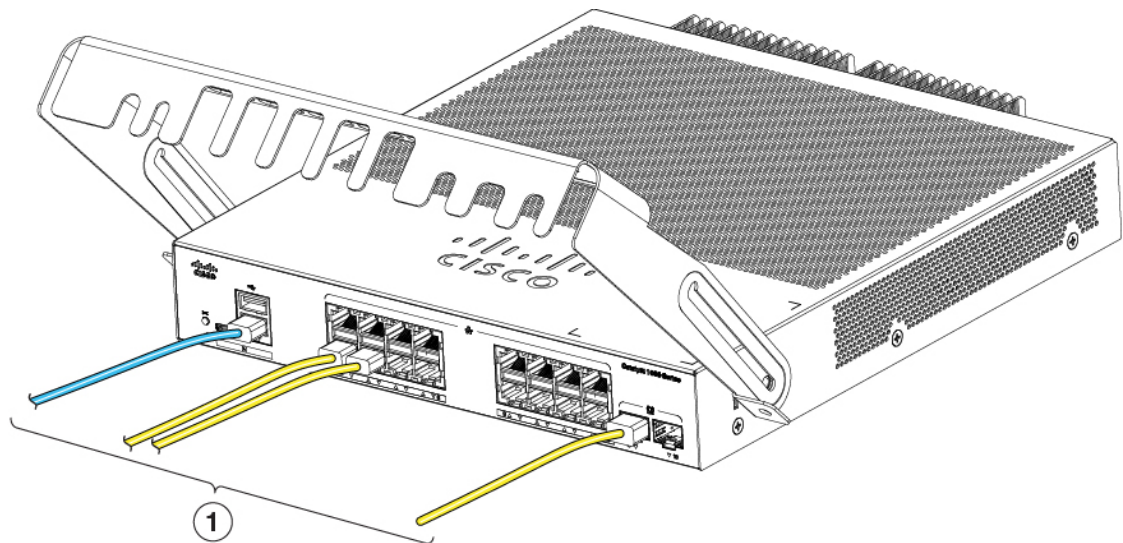
Figure 28: Pivoting the Cable Guard Upwards



1	Cable guard	2	Pivot direction for cable guard pivots
---	-------------	---	--

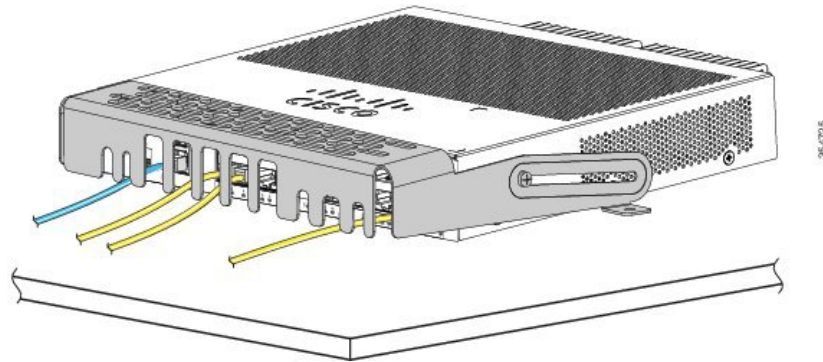
Step 4 Attach the cables to the switch.

Figure 29: Attaching the Cables to the Switch

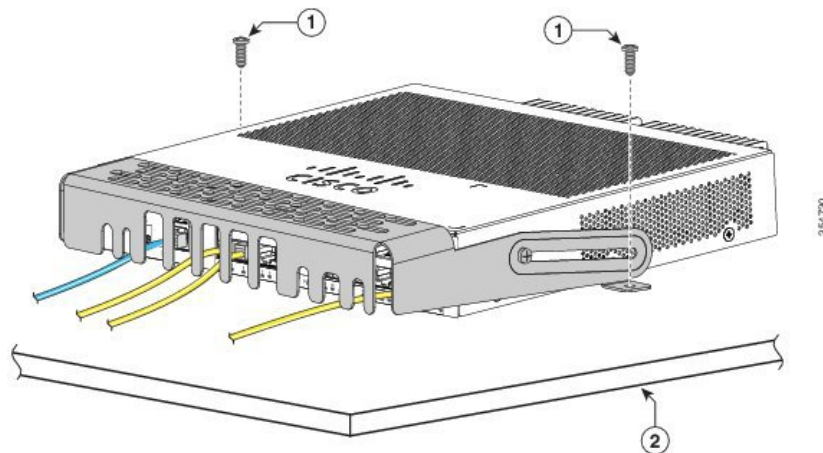


1	Cables	2	Pivot direction for cable guard pivots
---	--------	---	--

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 30: 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 31: 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.

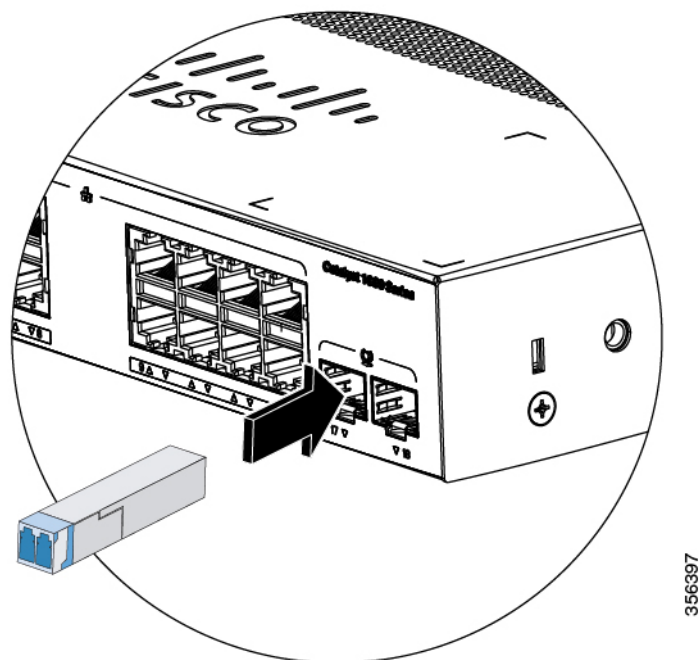
**Caution**

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

Procedure

-
- 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 32: Installing an SFP Module



Removing an SFP Module

Procedure

- 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.

Procedure

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 Ethernet Port Connections

The switch 10/100/1000 Ethernet 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
Switch to computer or server	No	Yes
Switch to router	No	Yes
Switch to IP phone	No	Yes

⁴ 100BASE-TX and 1000BASE-T traffic requires twisted four-pair, Category 5 or higher. 10BASE-T traffic can use Category 3 cable or higher.



CHAPTER 3

Troubleshooting

This chapter contains these topics:

- [Diagnosing Problems, on page 43](#)
- [Finding the Switch Serial Number, on page 46](#)

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.

System 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 converters between the source and the destination. If possible, bypass the patch panel, or eliminate faulty media converters (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 **show hardware led port status** privileged EXEC command to check 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 **show hardware led port power** privileged EXEC command 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 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 reenabling 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, reenabling 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.

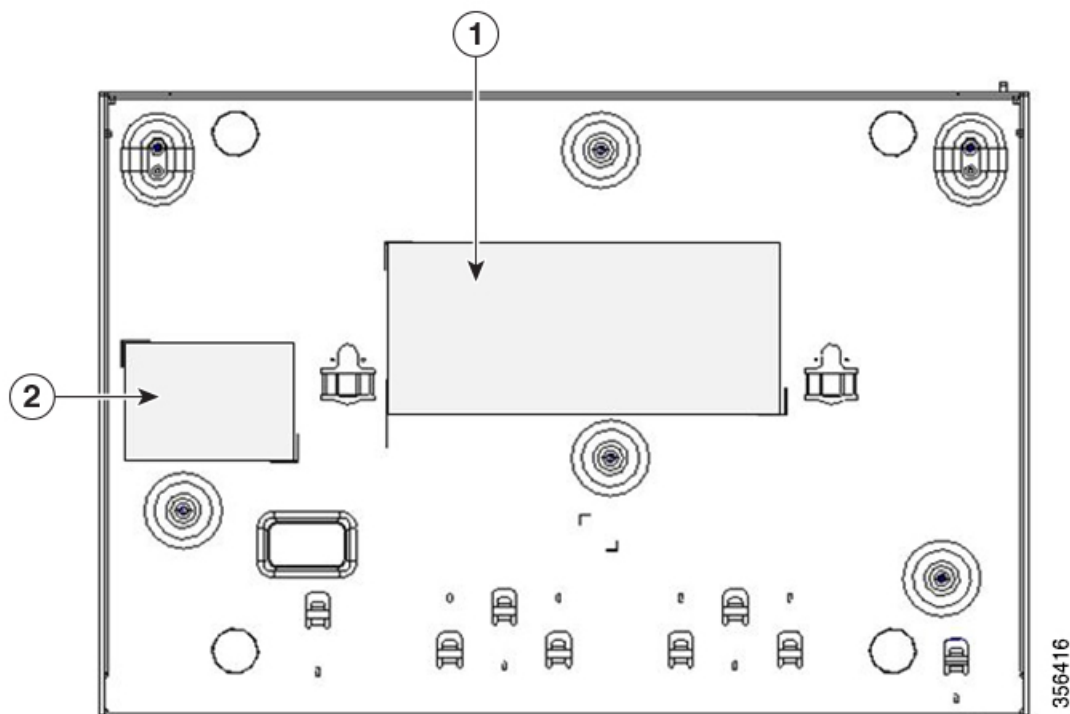
Cabling Distance

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

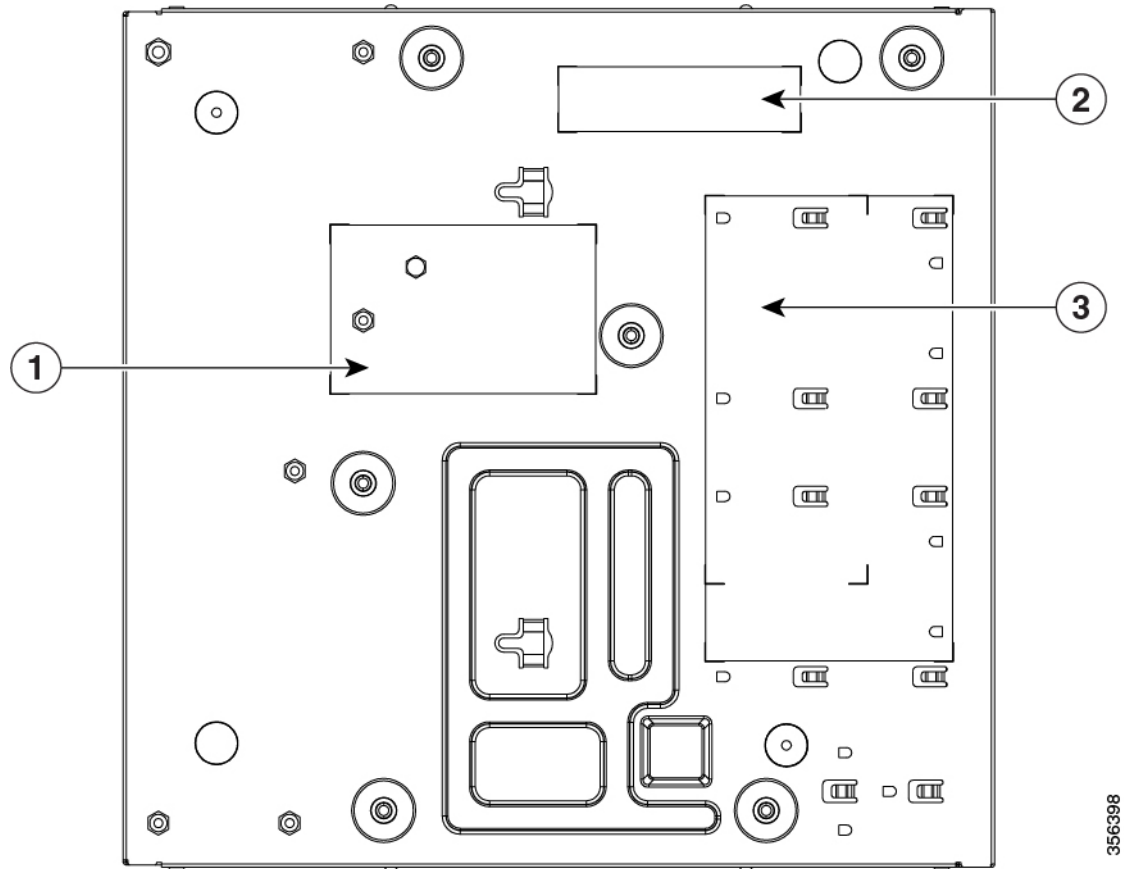
If you contact Cisco Technical Assistance, you need to know the switch serial number. You can also use the **show version** privileged EXEC command to see the switch serial number.

Figure 33: Serial Number Location on an 8-Port Cisco Catalyst 1000 Series Switch



1	Product label	2	Serial number
---	---------------	---	---------------

Figure 34: Serial Number Location on a 16-Port Cisco Catalyst 1000 Series Switch



1	NAL label	3	Product label
2	4 in 1 label (includes PID number, Serial number, MAC address, and CLEI code)		



APPENDIX **A**

Technical Specifications

This appendix contains these topics:

- [Physical Specifications, on page 49](#)
- [Environmental Specifications, on page 50](#)
- [Power Requirements, on page 51](#)
- [PoE Power Consumption, on page 51](#)

Physical Specifications

Physical Dimensions for Cisco Catalyst 1000 Series Switches	
Weight	<ul style="list-style-type: none">• 3.96 lbs (1.8 kg) (C1000-8T-2G-L)• 3.41 lbs (1.55 kg) (C1000-8T-E-2G-L)• 5.95 lbs (2.7 kg) (C1000-8P-2G-L)• 3.41 lbs (1.55 kg) (C1000-8P-E-2G-L)• 5.95 lbs (2.7 kg) (C1000-8FP-2G-L)• 3.41 lbs (1.55 kg) (C1000-8FP-E-2G-L)• 3.92 lbs (1.78 kg) (C1000-16T-2G-L)• 3.13 lbs (1.42 kg) (C1000-16T-E-2G-L)• 5.24 lbs (2.38 kg) (C1000-16P-2G-L)• 3.13 lbs (1.42 kg) (C1000-16P-E-2G-L)• 5.48 lbs (2.49 kg) (C1000-16FP-2G-L)

Dimensions (H x D x W)	<ul style="list-style-type: none"> • 10.56 x 7.28 x 1.73 in (C1000-8T-2G-L) • 10.56 x 7.28 x 1.73 in (C1000-8T-E-2G-L) • 10.56 x 12.73 x 1.73 in (C1000-8P-2G-L) • 10.56 x 7.28 x 1.73 in (C1000-8P-E-2G-L) • 10.56 x 12.73 x 1.73 in (C1000-8FP-2G-L) • 10.56 x 7.28 x 1.73 in (C1000-8FP-E-2G-L) • 10.56 x 10.69 x 1.73 in (C1000-16T-2G-L) • 10.56 x 8.26 x 1.73 in (C1000-16T-E-2G-L) • 10.56 x 11.69 x 1.73 in (C1000-16P-2G-L) • 10.56 x 8.26 x 1.73 in (C1000-16P-E-2G-L) • 10.56 x 12.14 x 1.73 in (C1000-16FP-2G-L)
------------------------	---

Environmental Specifications

Environmental Ranges	
Operating temperature 5	23 to 122°F (–5 to 50°C) up to 5,000 ft (1524 m)
Storage temperature	–13° to 158°F (–25° to 70°C) up to 15,000 ft (4572 m)
Operating relative humidity	5% to 90% (noncondensing)
Storage relative humidity	5% to 95% (noncondensing)
Storage altitude	Up to 15,000 ft (4572 m)

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



Note When using the Cisco Catalyst 1000 series 8-port and 16-port switches with GLC-BX-U or GLC-BX-D SFP module, the thermal limitations are as follows:

- Up to 5,000 ft (1524 m), the operation temperature should not exceed 113°F (45°C).
- Up to 10,000 ft (3048 m), the operation temperature should not exceed 104°F (40°C).

Power Requirements

Table 5: Power Requirements

Switch Model	Voltage (auto ranging)	Frequency	Current	Power Rating (maximum consumption)
C1000-8T-2G-L	110 to 220V AC in	50 to 60 Hz	0.15A to 0.25A	0.016 kVA
C1000-8T-E-2G-L	110 to 220V AC in	50 to 60 Hz	0.16A to 0.26A	0.017 kVA
C1000-8P-2G-L	110 to 220V AC in	50 to 60 Hz	0.23A to 0.27A	0.089 kVA
C1000-8P-E-2G-L	110 to 220V AC in	50 to 60 Hz	0.22A to 0.37A	0.087 kVA
C1000-8FP-2G-L	110 to 220V AC in	50 to 60 Hz	0.23A to 0.28A	0.015 kVA
C1000-8FP-E-2G-L	110 to 220V AC in	50 to 60 Hz	0.15A to 0.20A	0.015 kVA
C1000-16T-2G-L	110 to 220V AC in	50 to 60 Hz	0.24A to 0.38A	0.08 kVA
C1000-16T-E-2G-L	110 to 220V AC in	50 to 60 Hz	0.19A to 0.31A	0.05 kVA
C1000-16P-2G-L	110 to 220V AC in	50 to 60 Hz	0.22A to 0.27A	0.25 kVA
C1000-16P-E-2G-L	110 to 220V AC in	50 to 60 Hz	0.14A to 0.24A	0.20 kVA
C1000-16FP-2G-L	110 to 220V AC in	50 to 60 Hz	0.35A to 0.37A	0.45 kVA

PoE Power Consumption

Switch Model	Consumption without PoE (Watts)	Consumption with PoE (Watts)	Available PoE	Maximum Power Wattage for BTU/hr
C1000-8T-2G-L	14.26	-	-	16.249
C1000-8T-E-2G-L	14	-	-	16.78
C1000-8P-2G-L	12.19	80.24	67	89.71
C1000-8P-E-2G-L	15.71	67.82	67	87.78
C1000-8FP-2G-L	14.52	138.15	120	156.15
C1000-8FP-E-2G-L	15.7	141.16	120	153.35
C1000-16T-2G-L	16.68	-	-	18.89
C1000-16T-E-2G-L	16.68	-	-	18.92

Switch Model	Consumption without PoE (Watts)	Consumption with PoE (Watts)	Available PoE	Maximum Power Wattage for BTU/hr
C1000-16P-2G-L	16.92	136.92	120	40.7
C1000-16P-E-2G-L	16.32	136.32	120	36.68
C1000-16FP-2G-L	16.8	256.8	240	54.4



APPENDIX B

Connector and Cable Specifications

This appendix contains these topics:

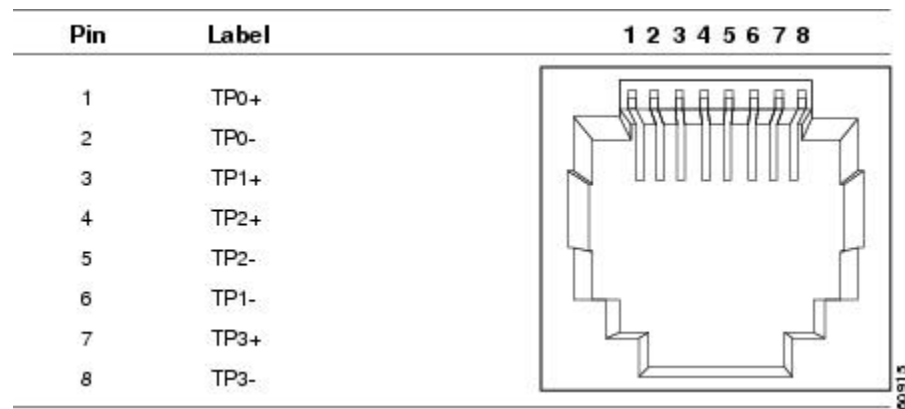
- [Connector Specifications, on page 53](#)
- [Cables and Adapters, on page 54](#)

Connector Specifications

10/100/1000 Ports (Including PoE)

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

Figure 35: 10/100/1000 Port Pinouts



SFP Module Connectors

Figure 36: Duplex LC Cable Connector

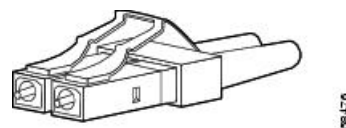
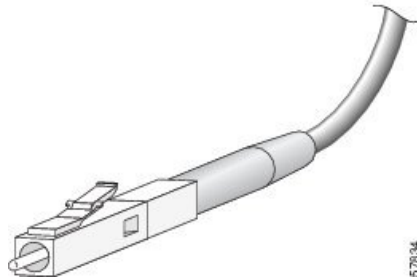


Figure 37: Simplex LC Cable Connector*Figure 38: Copper SFP Module LC Connector*

Pin	Label	1 2 3 4 5 6 7 8
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 wavelength 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 39: Four Twisted-Pair Straight-Through Cable Schematic

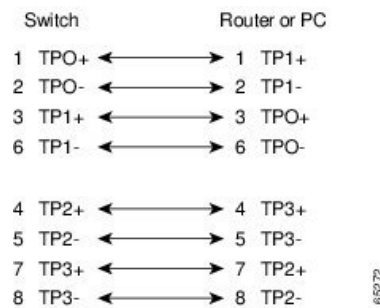


Figure 40: Four Twisted-Pair Semi-Cross Cable Schematic

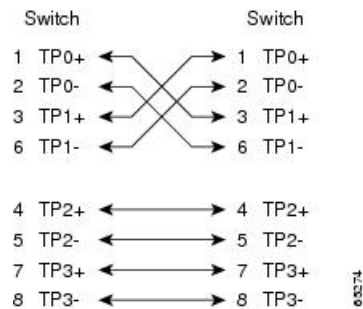


Figure 41: Two Twisted-Pair Straight-Through Cable Schematic

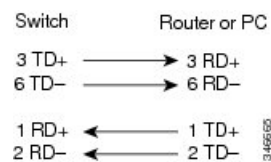
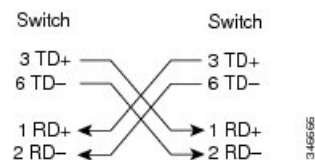
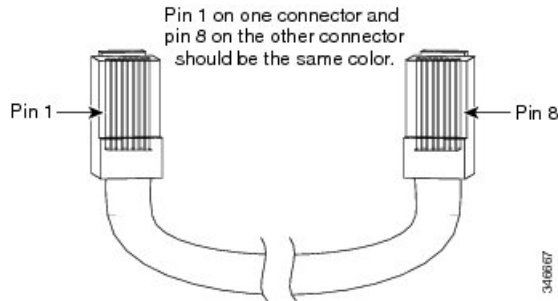


Figure 42: Two Twisted-Pair Crossover Cable Schematic



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 43: 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 6: 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 7: 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, on page 59](#)
- [Configuring the Switch Using the CLI, on page 61](#)

Configuring the Switch Using the Configuration Setup Wizard

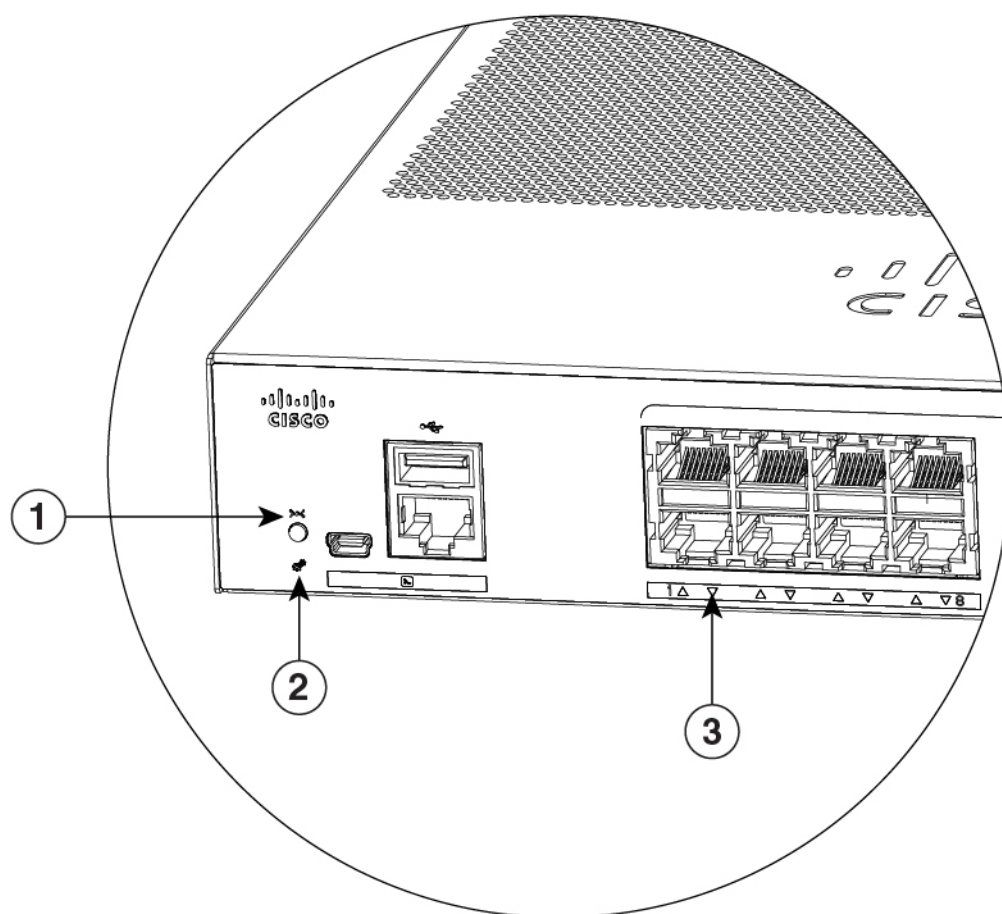
Quick Setup: Accessing the Configuration Setup Wizard

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

If your device supports Bluetooth, it loads with the initial setup tasks preconfigured. Connect your PC to the device using Bluetooth. In your Web browser, enter the IP address 172.16.0.1. Enter the following default credentials: username: cisco, password: cisco and press **Enter**.



356399

1	Reset button
2	SYST LED (system)
3	Port LEDs

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

Procedure

-
- Step 1** Verify that no devices are connected to the switch. Initially, the switch acts as a DHCP server.
- Step 2** Confirm that the STAT LED is solid green. This indicates that POST is complete. If the STAT LED turns amber, the device failed POST. Reconnect the AC power cord to the AC power connector of your device and to a grounded AC outlet. If the STAT LED still does not turn green, contact your Cisco representative or retailer.
- Step 3** Press and hold the **Reset** button for 3 to 4 seconds and release it.
- Caution:** Release the **Reset** button after 3 to 4 seconds. Continuing to hold the **Reset** button for longer exits the Setup mode.

- Step 4** Connect a straight-through Category 5 Ethernet cable to a 10/100/1000 Ethernet port on the switch front panel and to the Ethernet port on the PC.
- Step 5** Verify that the port LEDs on the PC and on your device are solid green or blinking green. This indicates a successful connection.
- Step 6** Wait 30 seconds.
- Step 7** To log on to the device using an Internet browser on your PC, type the IP address 10.0.0.1 or 10.0.0.3 in the address bar of your Internet browser and press Enter.
- Step 8** Type the following default credentials: username: cisco, password: cisco and press **Enter**. The Configuration Setup wizard is displayed. Click **Go to Wizard**.
-

Completing the Configuration Setup Wizard

Completing the Configuration Setup Wizard enables you to set up your device with the minimum configuration required to enable traffic to pass through the network. To achieve this, you must complete the following setup tasks as you proceed with the Configuration Setup Wizard.

- Basic Device Settings
- Interfaces
- Layer 3 Settings
- Advanced Device Settings

For more information on the configuration steps involved in completing the Configuration Setup Wizard, see *User Guide for Cisco Configuration Professional for Catalyst*.

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.



Note If you have stacked your switches, connect to the console port of one of the switches in the stack. You can initially configure the entire stack from any member switch.

Connecting the RJ-45 Console Port

Procedure

- 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

Procedure

- 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 63](#).
- 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

Procedure

- 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

Procedure

- 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 7 USB Driver

Procedure

- 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 7, double-click the setup.exe file in the Windows_32 folder. If using 64-bit 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.

Procedure

- 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.

Procedure

- 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 7 USB Driver

Before you begin

Disconnect the switch console terminal before uninstalling the driver.

Procedure

- 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**.
-

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The following information is for FCC compliance of Class A devices: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

The following information is for FCC compliance of Class B devices: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the equipment causes interference to radio or television reception, which can be determined by turning the equipment off and on, users are encouraged to try to correct the interference by using one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications to this product not authorized by Cisco could void the FCC approval and negate your authority to operate the product.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

All printed copies and duplicate soft copies of this document are considered uncontrolled. See the current online version for the latest version.

Cisco has more than 200 offices worldwide. Addresses and phone numbers are listed on the Cisco website at www.cisco.com/go/offices.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <https://www.cisco.com/c/en/us/about/legal/trademarks.html>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1721R)

© 2019 Cisco Systems, Inc. All rights reserved.

