Cisco Catalyst 9200 Series Switches Hardware Installation Guide

First Published: 2018-11-19

Last Modified: 2020-11-17

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

CHAPTER 1

Product Overview

Switch Models

The Cisco Catalyst 9200 Series switches have four modular (C9200) and eight fixed (C9200L) switch models. The following tables describe all the available Cisco Catalyst 9200 Series switches and the features supported.

Table 1: C9200L Switch Models and Descriptions

Switch Model	Description
C9200L-24P-4G	Stackable 24x1G PoE+ ports; 4x1G SFP fixed uplink ports; 2 power supply slots; 2 fixed fans; supports StackWise-80.
C9200L-24P-4X	Stackable 24x1G PoE+ ports; 4x10G SFP+ fixed uplink ports; 2 power supply slots; 2 fixed fans; supports StackWise-80.
C9200L-24T-4G	Stackable 24x1G ports; 4x1G SFP fixed uplink ports; 2 power supply slots; 2 fixed fans; supports StackWise-80.
C9200L-24T-4X	Stackable 24x1G ports; 4x10G SFP+ fixed uplink ports; 2 power supply slots; 2 fixed fans; supports StackWise-80.
C9200L-48P-4G	Stackable 48x1G PoE+ ports; 4x1G SFP fixed uplink ports; 2 power supply slots; 2 fixed fans; supports StackWise-80.
C9200L-48P-4X	Stackable 48x1G PoE+ ports; 4x10G SFP+ fixed uplink ports; 2 power supply slots; 2 fixed fans; supports StackWise-80.
C9200L-48T-4G	Stackable 48x1G ports; 4x1G SFP fixed uplink ports; 2 power supply slots; 2 fixed fans; supports StackWise-80.
C9200L-48T-4X	Stackable 48x1G ports; 4x10G SFP+ fixed uplink ports; 2 power supply slots; 2 fixed fans; supports StackWise-80.

Switch Model	Description
C9200L-24PXG-4X	Stackable 8xMultigigabit Ethernet PoE+ ports and 16x1G PoE+ ports; 4x10G SFP+ fixed uplink ports; 2 power supply slots; 2 fixed fans; supports StackWise-80.
C9200L-24PXG-2Y	Stackable 8xMultigigabit Ethernet PoE+ ports and 16x1G PoE+ ports; 2x25G SFP28 fixed uplink ports; 2 power supply slots; 2 fixed fans; supports StackWise-80.
C9200L-48PXG-4X	Stackable 12xMultigigabit Ethernet PoE+ ports and 36x1G PoE+ ports; 4x10G SFP+ fixed uplink ports; 2 power supply slots; 2 fixed fans; supports StackWise-80.
C9200L-48PXG-2Y	Stackable 8xMultigigabit Ethernet PoE+ ports and 40x1G PoE+ ports; 2x25G SFP28 fixed uplink ports; 2 power supply slots; 2 fixed fans; supports StackWise-80.
C9200L-48PL-4G	Stackable 48x1G PoE+ ports with partial PoE support; 4x1G SFP fixed uplink ports; 2 power supply slots; 2 fixed fans; supports StackWise-80.
C9200L-48PL-4X	Stackable 48x1G PoE+ ports with partial PoE support; 4x10G SFP fixed uplink ports; 2 power supply slots; 2 fixed fans; supports StackWise-80.

Table 2: C9200 Switch Models and Descriptions

Switch Model	Description
C9200-24P	Stackable 24x1G PoE+ ports; 4x1G and 4x10G network modules for uplink ports; 2 power supply slots; 2 field-replaceable fans; supports StackWise-160.
C9200-24PB	Stackable 24x1G PoE+ ports; 4x1G and 4x10G network modules for uplink ports; 2 power supply slots; 2 field-replaceable fans; supports StackWise-160.
C9200-24T	Stackable 24x1G ports; 4x1G and 4x10G network modules for uplink ports; 2 power supply slots; 2 field-replaceable fans; supports StackWise-160.
C9200-48P	Stackable 48x1G PoE+ ports; 4x1G and 4x10G network modules for uplink ports; 2 power supply slots; 2 field-replaceable fans; supports StackWise-160.
C9200-48PB	Stackable 48x1G PoE+ ports; 4x1G and 4x10G network modules for uplink ports; 2 power supply slots; 2 field-replaceable fans; supports StackWise-160.
C9200-48T	Stackable 48x1G ports; 4x1G and 4x10G network modules for uplink ports; 2 power supply slots; 2 field-replaceable fans; supports StackWise-160.

Switch Model	Description
C9200-24PXG	Stackable 8 Multigigabit Ethernet and 16x1G PoE+ ports; supports 4x10G, 2x25G and 2x40G network modules for uplink ports; 2 power supply slots; 2 field-replaceable fans; supports StackWise-160.
C9200-48PXG	Stackable 8 Multigigabit Ethernet and 40x1G PoE+ ports; supports 4x10G, 2x25G and 2x40G network modules for uplink ports; 2 power supply slots; 2 field-replaceable fans; supports StackWise-160.
C9200-48PL	Stackable 48x1G PoE+ ports with partial PoE support; 4x1G and 4x10G network modules for uplink ports; 2 power supply slots; 2 field-replaceable fans; supports StackWise-160.

Front Panel Components

This section describes the front panel components of Cisco Catalyst 9200 Series switches :

- 24 or 48 downlink ports of one of the following types:

    - 10/100/1000

    - 10/100/1000 PoE+

- 1G/10G Uplink ports

- USB Type A storage ports

- USB mini-Type B console port

- LEDs

- Blue Beacon

All the switch models have similar components. See the following illustration for example.

Note The Cisco Catalyst 9200 Series switches might have slight cosmetic differences on the bezels.

Figure 1: Front Panel of a C9200L Switch
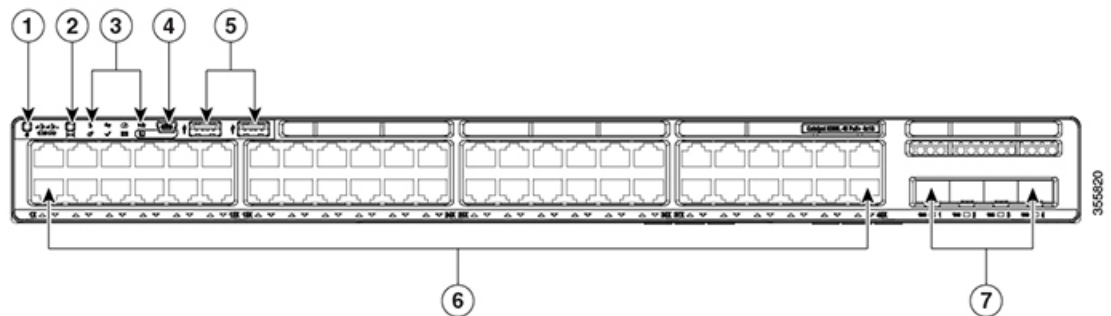
1	Blue Beacon (UID button)	5	USB Type A storage ports
2	Mode button	6	10/100/1000 PoE+ ports
3	Status LEDs	7	Fixed uplink ports
4	USB mini-Type B (console) port		

Figure 2: Front Panel of a C9200 Switch
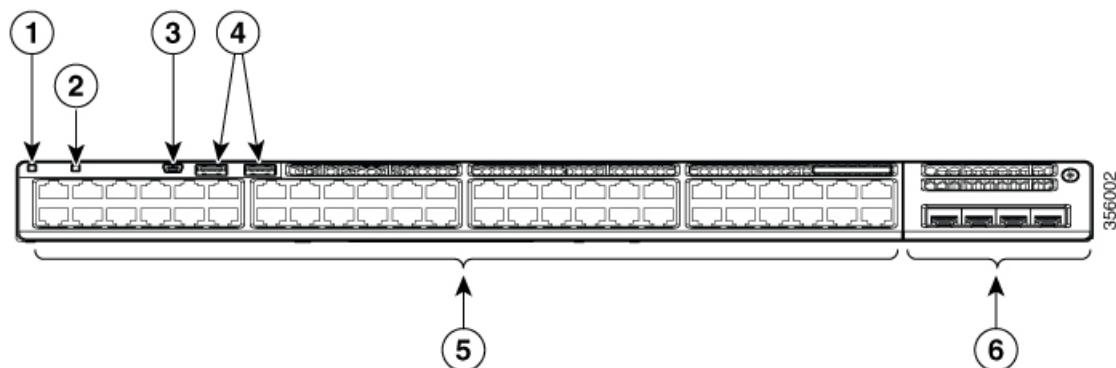
1	Blue Beacon (UID button)	4	USB Type A storage ports
2	Mode button	5	10/100/1000 PoE+ ports
3	USB mini-Type B (console) port	6	Network Module with uplink ports

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 100BASE-TX and 1000BASE-T traffic requires twisted pair (UTP) cable of Category 5 or higher. The 10BASE-T traffic can use Category 3 cable or higher.

PoE and PoE+ Ports

The PoE and PoE+ ports provide the following functionality:

- PoE/PoE+ ports: Support for IEEE 802.3af-compliant powered devices (up to 15.4W PoE per port) and support for IEEE 802.3at-compliant powered devices (up to 30W PoE+ per port).

- Support for pre-standard Cisco powered devices.

- Configurable support for Cisco intelligent power management, including enhanced power negotiation, power reservation, and per-port power policing.

See the Power Supply Modules, on page 9 for the power supply matrix that defines the available PoE and PoE+ power per port. The output of the PoE+ circuit has been evaluated as a Limited Power Source (LPS) per IEC 60950-1.

Multigigabit Ethernet Ports

The Multigigabit (mGig) Ethernet ports can be configured to auto-negotiate multiple speeds on switch ports, and support 100 Mbps, 1 Gbps, 2.5 Gbps, and 5 Gbps speeds on Category 5e (Cat5e) cables, and up to 10 Gbps over Category 6 (Cat6) and Category 6A (Cat6A) cables.

Note   Multigigabit ports do not support half duplex mode. Use full duplex mode.

The Multigigabit Ethernet ports support PoE and PoE+ for all the supported speeds and cable types. The following table lists the cable types and speed.

Cable Type	100Mbps	1G	2.5G	5G	10G
Cat5E	Yes	Yes	Yes	Yes	N/A
Cat6	Yes	Yes	Yes	Yes	Yes (55meters)
Cat6A	Yes	Yes	Yes	Yes	Yes

Management Ports

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

- Ethernet management port. See Ethernet Management Port, on page 12.

- RJ-45 console port (EIA/TIA-232). See RJ-45 Console Port, on page 12.

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

The 10/100/1000 Ethernet management port connection uses a standard RJ-45 crossover or straight-through cable. The RJ-45 console port connection uses the supplied RJ-45-to-DB-9 female cable. The USB console port connection uses a USB Type A to 5-pin mini-Type B cable. The USB console interface speeds are the same as the RJ-45 console interface speeds.

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.

Figure 3: USB Mini-Type B Port

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

USB Type A Port

The USB Type A port provides access to external USB flash devices (also known as thumb drives or USB keys).

The port supports Cisco USB flash drives with capacities from 128 MB to 8 GB. USB devices with port densities of 128 MB, 256 MB, 1 GB, 4 GB, and 8 GB are supported. When combined with stacking, you can upgrade other switches in the stack from an USB key inserted in any switch within the stack. Cisco IOS software provides standard file system access to the flash device: read, write, erase, and copy, as well as the ability to format the flash device with a FAT file system.

It provides you with the ability to automatically upgrade the internal flash with the USB drive's configuration and image for emergency switch recovery using USB auto-upgrade. This feature checks the internal flash for a bootable image and configuration and if either image or the configuration is not available, then the USB drive is checked for boot images and configuration. If the boot image and configuration are available, these are copied to flash for the reboot.

Uplink Ports

The Cisco Catalyst 9200 Series switches support both fixed uplinks and modular uplinks. The C9200 switch models support modular uplinks with one hot-swappable network module that provides uplink ports to connect to other devices.

The fixed uplink ports on C9200L switch models support the following types of transceiver modules.

- 4x1G ports that support 1G SFP modules.

- 4x10G ports that support either 1G SFP or 10G SFP+ modules.

- 2x25G ports that support SFP28 modules.

For supported Cisco pluggable transceiver modules (SFP, SFP, SFP28 and QSFP+ modules), refer to the Cisco Transceiver Modules Compatibility Information at http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html
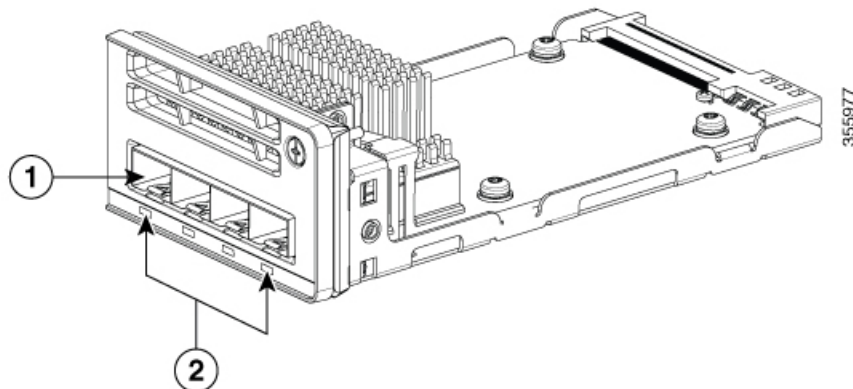
Note For information about installing an (uplink) transceiver module, see Installing a Cisco Pluggable Transceiver Module, on page 37.

Figure 4: Network Module C9200-NM-4G

1	Module slot	2	LEDs

The following table lists the optional Cisco Catalyst 9200 Series Switches uplink network modules with 4x1G, 4x10G, 2x25G, and 2x40G slots.

Table 3: Supported Network Modules

Network Module	Description
C9200-NM-4G	This module has four 1G SFP module slots. Any combination of standard SFP modules is supported. SFP+ modules are not supported. If you insert an SFP+ module in the 1G network module, the SFP+ module does not operate, and the switch logs an error message. This module is not supported on C9200 Multigigabit Ethernet switches.
C9200-NM-4X	This module has four 10G SFP module slots. Each port supports a 1G or 10G connection. Any combination of standard SFP modules is supported. This module is supported on both 1G and Multigigabit Ethernet switch models of C9200 switches.
C9200-NM-2Y	This module has two 25 Gigabit Ethernet SFP28 module slots. Any combination of SFP, SFP+, and SFP28 modules are supported. This module is supported only on C9200 Multigigabit Ethernet switches.
C9200-NM-2Q	This module has two 40G slots with a QSFP+ connector in each slot. This module is supported only on C9200 Multigigabit Ethernet switches.
C9200-NM-BLANK	Insert this blank module when the switch has no uplink ports to enable sufficient airflow.

Note For information about installing a network module, see Installing a Network Module, on page 34.

Rear Panel

The switch rear panel includes StackWise connectors, fan modules, and power supply modules.

Figure 5: Rear Panel of a C9200L Switch
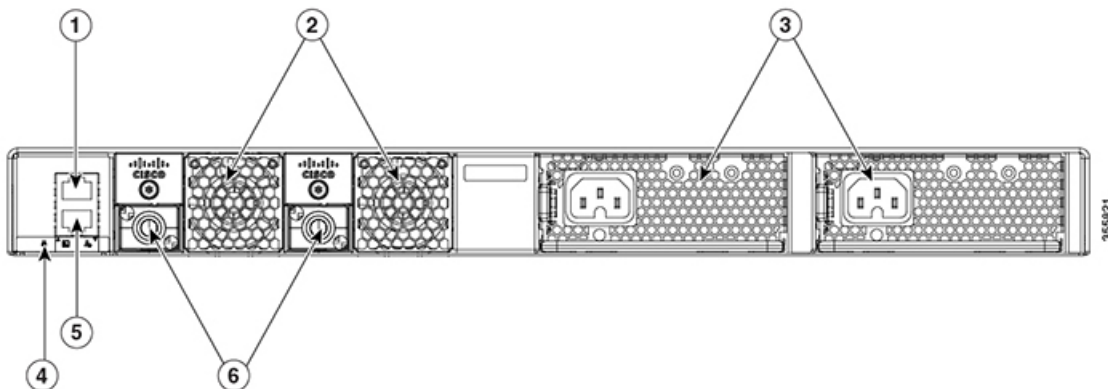
1	RJ-45 console port	4	Blue Beacon LED
2	Fixed fan modules on C9200L switches	5	MGMT (RJ-45 10/100/1000 management port)
3	Power supply module slots	6	StackWise-80 port connectors

Figure 6: Rear Panel of a C9200 Switch
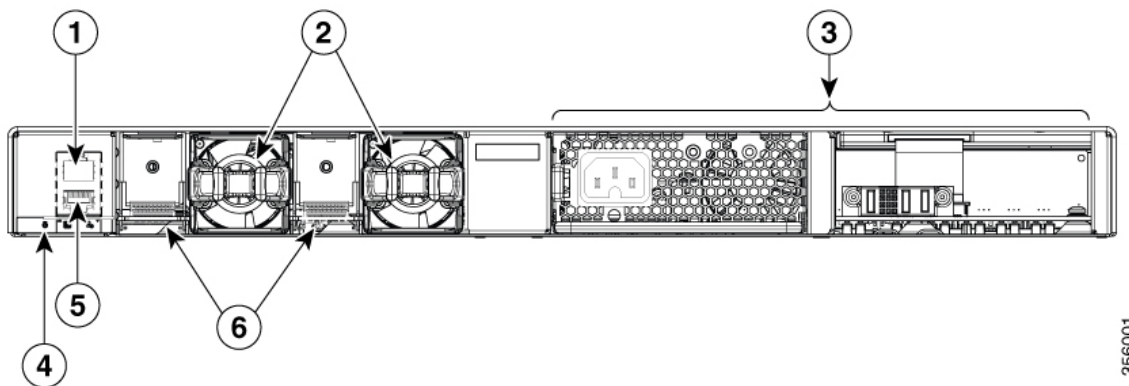
1	RJ-45 console port	4	Blue Beacon LED
2	Modular fan modules on C9200 switches	5	MGMT (RJ-45 10/100/1000 management port)

3	Power supply module slots	6	StackWise-160 port connector slots with stack blanks installed

RFID Tag

The switch has a built-in, front-facing, passive RFID tag that uses UHF RFID technology and requires an RFID reader with compatible software. It provides auto-identification capabilities for asset management and tracking. The RFID tags are compatible with the Generation 2 GS1 EPC Global Standard and are ISO 18000-6C compliant. They operate in the 860- to 960-MHz UHF band. For more information, see Radio Frequency Identification (RFID) on Cisco Catalyst 9000 Family Switches White Paper.

StackWise Ports

StackWise ports are used to connect switches in StackWise stacking configurations. The switch ships with a 0.5-meter StackWise cable that you can use to connect the StackWise ports. For more information on StackWise cables, see Connecting to the StackWise Ports, on page 28.

⚠️

Caution Use only approved cables, and connect only to similar Cisco equipment. Equipment might be damaged if connected to nonapproved Cisco cables or equipment.

Power Supply Modules

The switch has a field replaceable main AC power supply module and a redundant hot-swappable field replaceable AC power supply module. The switch is powered through one or two internal power supply modules. In switches with PoE capability, the redundant power supply can also be used for extra PoE power.

Following are the power supply modules supported on Cisco Catalyst 9200 Series Switches:

- PWR-C5-125WAC

- PWR-C5-600WAC

- PWR-C5-1KWAC

- PWR-C6-125WAC

- PWR-C6-600WAC

- PWR-C6-1KWAC

The switch has two internal power supply module slots. You can use two AC power supply modules or one power supply module and a blank module (PWR-C5-BLANK).

The switch can operate with either one or two active power supply modules.

Switch Models, on page 1 shows the default power supply modules that ship with each switch model. All power supply modules (except the blank modules) have internal fans. All switches ship with a blank power supply module in the second power supply slot. Each AC power supply module has a power cord (CAB-TA-XXX) for connection to an AC power outlet.

⚠️

Caution   Do not operate the switch with one power supply module slot empty. For proper chassis cooling, both power supply module slots must be populated with either a power supply or a blank module.

The power supply modules are autoranging units that support input voltages between 100 and 240 VAC. The output voltage range is 12 to 12.5 V for 125W power supply and 54 to 56 V for 600W and 1000W power supplies.

All the PoE-enabled switches when installed with both the power supplies support full PoE+; 1440W on a 48-port switch and 740W on a 24-port switch.

The partial PoE-enabled switches support only 600W power supply providing a PoE budget of 370W. If the switch is installed with one power supply, the available POE budget is 370W and 740W, if there are two power supplies installed.

The following tables show the PoE available and PoE requirements for PoE switch models.

Table 4: Available PoE with AC Power Supply

Models	Default Power Supply	Available PoE	Full PoE with Redundant Power Supply
C9200 Switches			
C9200-24P	PWR-C5-600WAC or PWR-C6-600WAC	370W	740W
C9200-48P	PWR-C5-1KWAC or PWR-C6-1KWAC	740W	1440W
C9200-24T	PWR-C5-125WAC or PWR-C6-125WAC	-	-
C9200-48T	PWR-C5-125WAC or PWR-C6-125WAC	-	-
C9200-24PB	PWR-C5-600WAC or PWR-C6-600WAC	370W	740W
C9200-48PB	PWR-C5-1KWAC or PWR-C6-1KWAC	740W	1440W
C9200-48PL	PWR-C5-600WAC or PWR-C6-600WAC	370W	740W
C9200-24PXG	PWR-C5-600WAC or PWR-C6-600WAC	370W	740W
C9200-48PXG	PWR-C5-1KWAC or PWR-C6-1KWAC	740W	1440W
C9200L Switches			
C9200L-24P-4G	PWR-C5-600WAC	370W	740W

Models	Default Power Supply	Available PoE	Full PoE with Redundant Power Supply
C9200L-24P-4X	PWR-C5-600WAC	370W	740W
C9200L-24PXG-2Y	PWR-C5-600WAC	370W	740W
C9200L-24PXG-4X	PWR-C5-600WAC	370W	740W
C9200L-24T-4G	PWR-C5-125WAC	—	—
C9200L-24T-4X	PWR-C5-125WAC	—	—
C9200L-48P-4G	PWR-C5-1KWAC	740W	1440W
C9200L-48P-4X	PWR-C5-1KWAC	740W	1440W
C9200L-48PL-4G	PWR-C5-600WAC	370W	740W
C9200L-48PL-4X	PWR-C5-600WAC	370W	740W
C9200L-48PXG-2Y	PWR-C5-1KWAC	740W	1440W
C9200L-48PXG-4X	PWR-C5-1KWAC	740W	1440W
C9200L-48T-4G	PWR-C5-125WAC	—	—
C9200L-48T-4X	PWR-C5-125WAC	—	—

The power supply modules have two status LEDs.

Table 5: Switch Power Supply Module LEDs

| AC OK	Description	PS OK	Description
Off	No AC input power.	Off	Output is disabled, or input is outside operating range (AC LED is off).
Green	AC input power present.	Green	Power output to switch active.
		Red	Output has failed.

Fan Modules

The Cisco Catalyst 9200 Series Switches supports two internal fixed 12-V fan modules and two field-replaceable fan modules (C9200-FAN=). The C9200 models support modular fans whereas the C9200L models provide two internal fixed fans.

For information about the type of fan module supported on different switch models, see Switch Models, on page 1.

The air circulation system consists of the fan modules and the power supply modules. The airflow patterns vary depending on the power supply configuration. The switch can operate at ambient temperature if one of the fans fail.

Figure 7: Switch Airflow Pattern

The following illustration shows the airflow pattern for the switches. The blue arrow shows cool airflow, and the red arrow shows warm airflow.
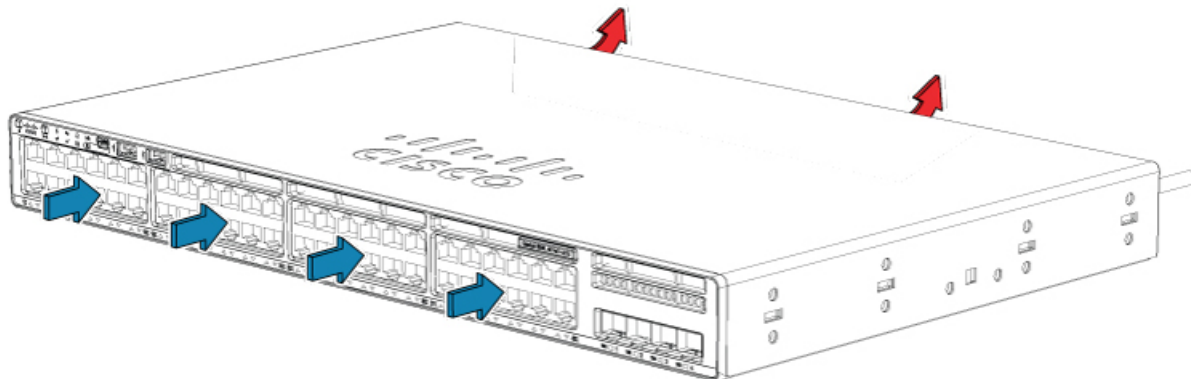
Ethernet Management Port

You can connect the switch to a host such as a Windows workstation or a terminal server through the 10/100/1000 Ethernet management port or one of the console ports. The 10/100/1000 Ethernet out-of-band management port is a virtual routing and forwarding (VRF) interface and uses a RJ-45 crossover or straight-through cable.

Note The 10/100/1000 Ethernet management port is an RJ-45 connector that should be connected to a Windows workstation or a terminal server. Do not connect this port to another port in the same switch or to any port within the same switch stack.

The following table shows the Ethernet management port LED colors and their meanings.

Table 6: Ethernet Management Port LED

Color	Description
Green	Link up but no activity.
Blinking green	Link up and activity.
Off	Link down.

RJ-45 Console Port

The RJ-45 console port connection uses the supplied RJ-45-to-DB-9 female cable.

The following table shows the RJ-45 console port LED colors and their meanings.

Table 7: RJ-45 Console LED

Color	Description
Green	RJ-45 console port is active.
Off	The port is not active.

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.

Installing the Switch

Preparing for Installation

Safety Warnings

This section includes the basic installation caution and warning statements. Read this section before you start the installation procedure. Translations of the warning statements appear in the Regulatory Compliance and Safety Information guide on Cisco.com.

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   Ethernet cables must be shielded when used in a central office environment. Statement 171

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   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   Use copper conductors only. Statement 1025

Warning   This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028

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   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

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

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.

    - The SFP/SFP+ module minimum bend radius and connector length is met. See the SFP/SFP+ module documentation for more information.

- 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.

- Make sure power-supply modules and fan modules are securely inserted in the chassis before moving the switch.

- Airflow around the switch and through the vents is unrestricted.

- For copper connections on Ethernet ports, cable lengths from the switch to connected devices can be up to 328 feet (100 meters).

- 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.

- Humidity around the switch does not exceed 95 percent.

- Altitude at the installation site is not greater than 10,000 feet.

- Cooling mechanisms, such as fans and blowers in the switch, can draw dust and other particles causing contaminant buildup 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.

Note   The illustrations used in this section shows a C9200L switch. The C9200 switch installation is similar to C9200L, follow the same steps for installing C9200 switches.

Shipping Box Contents

The shipping box contains the model of the switch you ordered and other components needed for installation. Some components are optional, depending on your order.
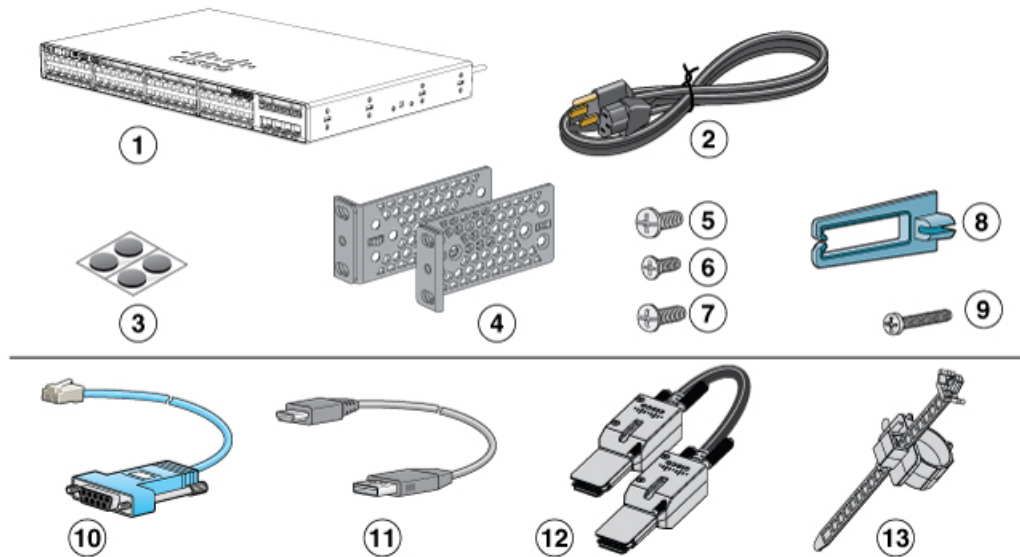
Note   Verify that you have received these items. If any item is missing or damaged, contact your Cisco representative or reseller for instructions. Verify that you have received these items. If any item is missing or damaged, contact your Cisco representative or reseller for instructions.

Figure 8: Components delivered in the shipping box

1	Cisco Catalyst 9200 Series switch[1] (power supply modules are not displayed)	8	Cable guide
2	AC power cord	9	M4.0 x 20mm Phillips pan-head screw
3	Four rubber mounting feet	10	RJ-45 USB console cable[1]
4	Two 19-inch mounting brackets	11	(Optional) USB console cable [1]
5	4 number-12 pan-head screw	12	(Optional) StackWise cable[1] (0.5-meter, 1-meter, or 3-meter)
6	4 number-10 pan-head screws	13	Power cord retainer
7	8 number-8 Phillips flat-head screws	-	-

1. Item is orderable.

Tools and Equipment

Obtain these necessary tools:

• A Number-2 Phillips screwdriver.

Verifying Switch Operation

Before you install the switch in a rack 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. POST lasts approximately 1 minute. The SYST LED blinks green, and the other LEDs remain solid green.

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

Planning a Switch Data Stack

Switch Stacking Guidelines

A StackWise adapter must be installed in the stacking port to enable stacking. The StackWise cable connects to the StackWise adapter in the stacking port. If the switch is not ordered with stacking, the adapters must be ordered separately and installed.

Before connecting the switches in a stack, observe these stacking guidelines:

- Number of switches in the stack. You can create data stacks with up to eight switches in a stack.

- Length of the cable. Order the appropriate cable from your Cisco sales representative. The length of the cable depends on your configuration. These are the different sizes available:

  - 0.5 meter cable (STACK-T4-50CM)

  - 1 meter cable (STACK-T4-1M)

  - 3 meter cable (STACK-T4-3M)

- Minimum bend radius and coiled diameter for StackWise cables. We recommend a minimum bend radius and coiled diameter for each StackWise cable.

Table 8: StackWise Cables Minimum Bend Radius and Coiled Diameter

Cable Part Number	Cable Length	Minimum Bend Radius	Minimum Coiled Diameter
STACK-T4-50CM	1.64 feet (0.5 m)	2.60 in. (66 mm)	5.20 in. (132 mm)
STACK-T4-1M	3.28 feet (1.0 m)	2.60 in. (66 mm)	5.20 in. (132 mm)
STACK-T4-3M	9.84 feet (3.0 m)	3.58 in. (91 mm)	7.17 in. (182 mm)
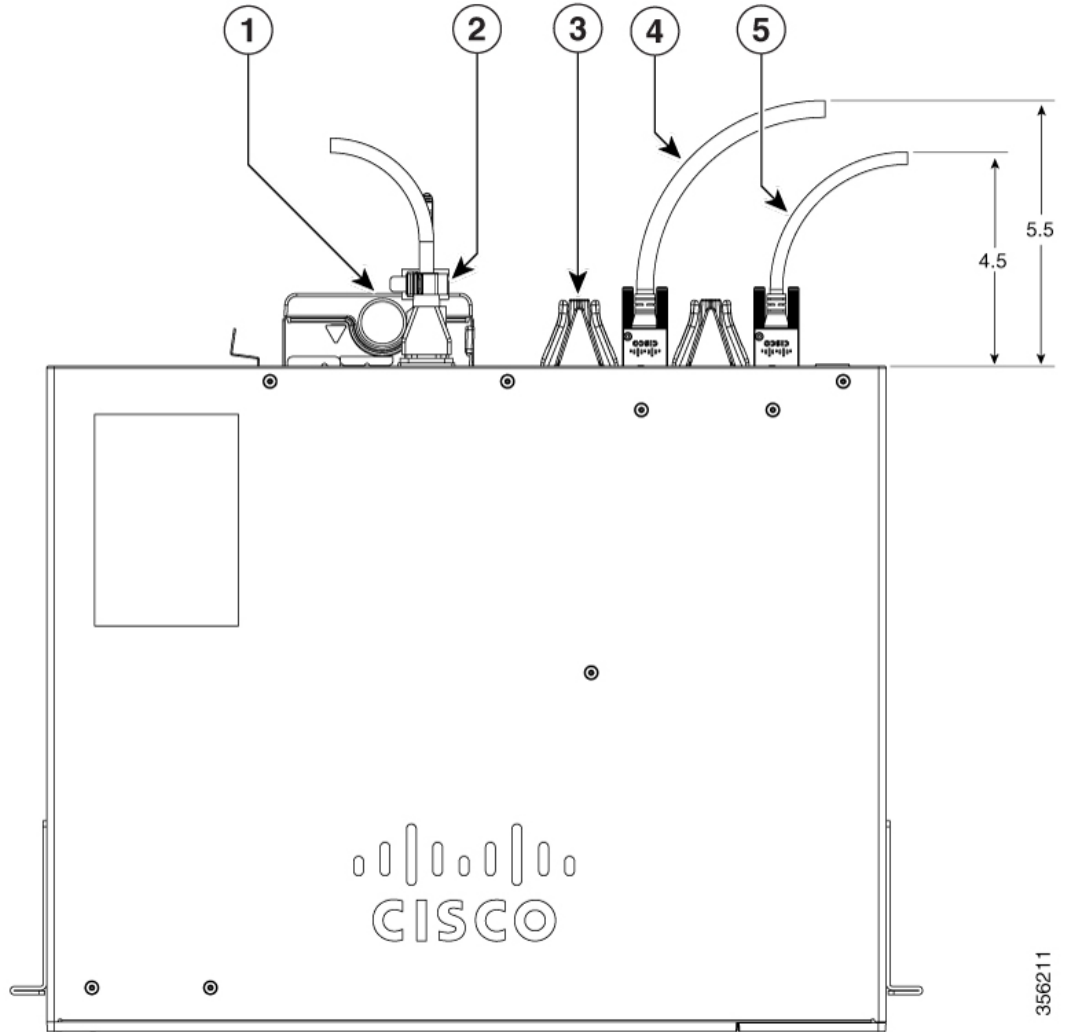
| 1	Power supply module	4	StackWise 3.0 m cable
2	Power cord retainer	5	StackWise 1.0 m and 0.5 m cable
3	Fan module	-	

Note Ensure that you maintain a proper clearance of 5.5 in. and 4.5 in. between the StackWise cable and the switch as depicted in the image.

Data Stack Cabling Configurations

This is an example of a recommended configuration that uses the supplied 0.5-meter StackWise cable. In this example, the switches are stacked in a vertical rack or on a table. This configuration provides redundant

connections. The configuration example uses the supplied 0.5-meter StackWise cable. The example shows the full-ring configuration that provides redundant connections.

Figure 9: Data Stacking the Switches in a Rack or on a Table Using the 0.5-meter StackWise Cables
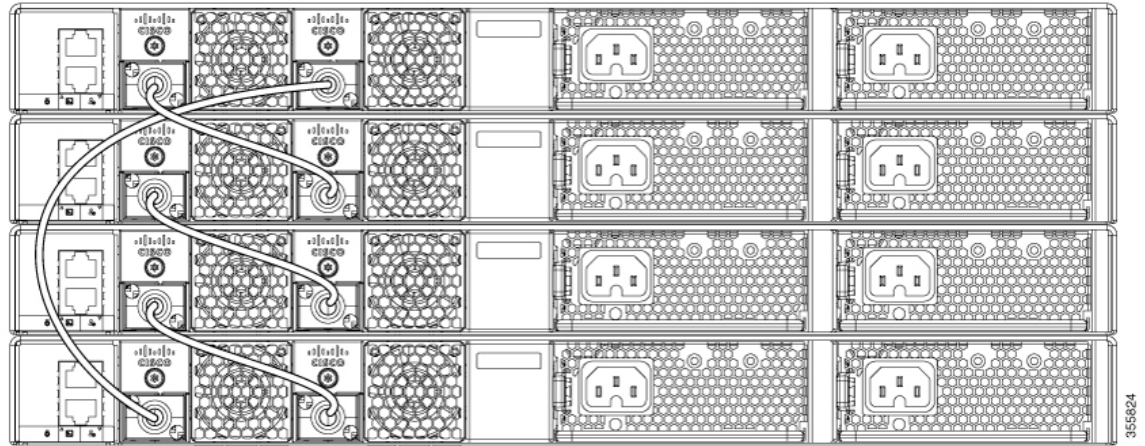
This example shows a recommended configuration when the switches are mounted side-by-side. Use the 1-meter and the 3-meter StackWise cables to connect the switches. This configuration provides redundant connections.

Figure 10: Data Stacking in a Side-by-Side Mounting
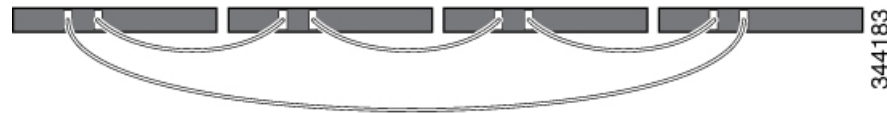
Data Stack Bandwidth and Partitioning Examples

This section provides examples of data stack bandwidth and possible data stack partitioning. The figure shows a data stack of switches that provides full bandwidth and redundant StackWise cable connections.
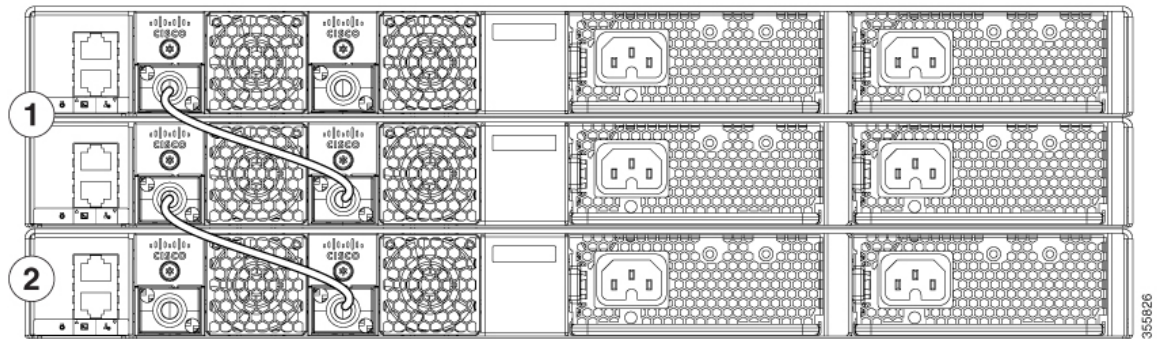
Figure 11: Example of a Data Stack with Full Bandwidth Connections
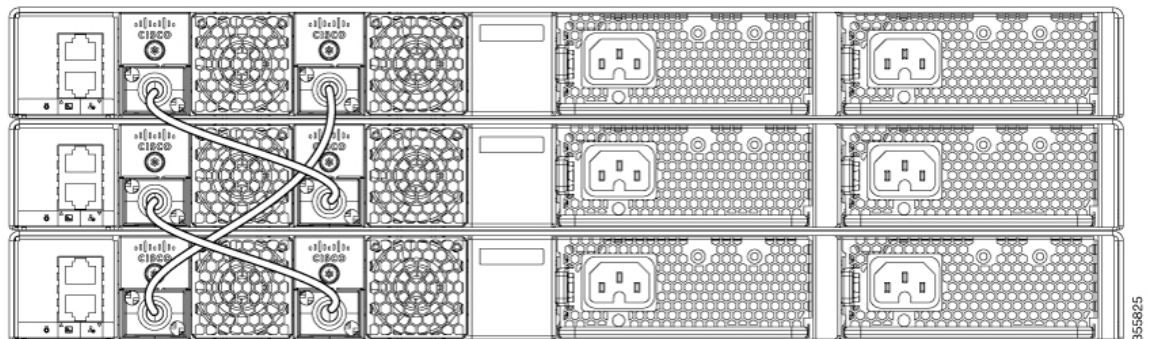
This figure shows an example of a stack of switches with incomplete StackWise cabling connections. This stack provides only half bandwidth and does not have redundant connections.
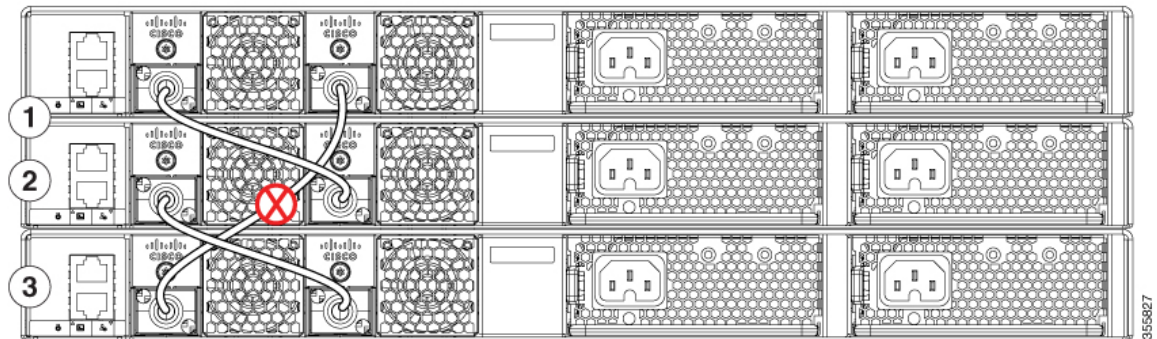
*Figure 12: Example of a Data Stack with Half Bandwidth Connections*

The figures below show data stacks of switches with failover conditions. In this figure, the StackWise cable is bad in link 2. Therefore, this stack provides only half bandwidth and does not have redundant connections.

Figure 13: Example of a Data Stack with a Failover Condition

In this figure, link 2 is bad. Therefore, this stack partitions into two stacks, and the top and bottom switches become the active switch in the stack. If the bottom switch is a member (not active or standby switch), it reloads.

Figure 14: Example of a Partitioned Data Stack with a Failover Condition
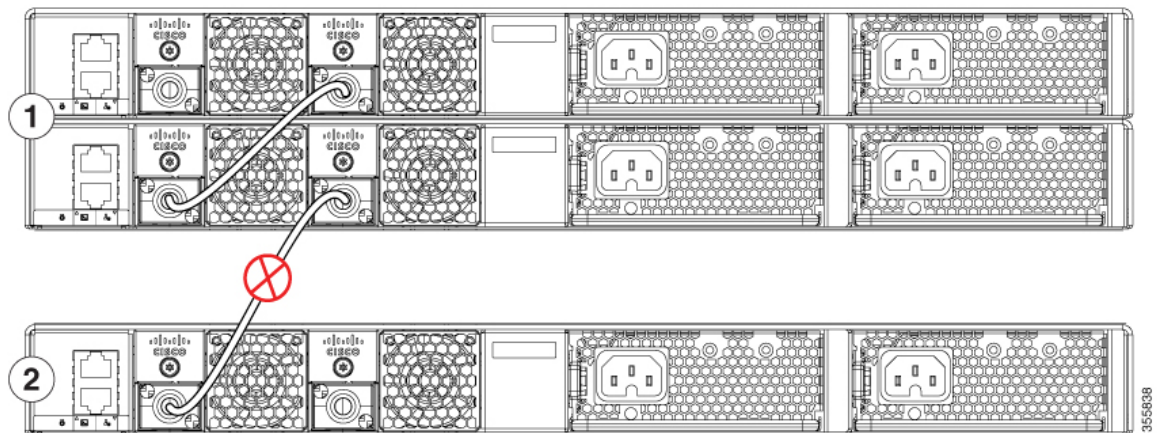
Power-On Sequence for Switch Stacks

Consider these guidelines before you power on the switches in a stack:

- The sequence in which the switches are first powered on might affect the switch that becomes the stack master.

- There are two ways to elect an active switch:

  - If you want a particular switch to become the active switch, configure it with the highest priority. Among switches with same priority, the switch with the lowest MAC address becomes the active switch.

  - If you want a particular switch to become the active switch, power on that switch first. This switch remains the active switch until a reelection is required. After 2 minutes, power on the other switches in the stack. If you have no preference as to which switch becomes the active switch, power on all the switches in the stack within 1 minute. These switches participate in the active switch election. Switches powered on after 2 minutes do not participate in the election.

- Power off a switch before you add it to or remove it from an existing switch stack. If changes are made to the stack without powering down the switches, the following results can occur:

  - If two operating partial ring stacks are connected together using a stack cable, a stack merge can take place. This situation reloads the whole stack (all switches in the stack).

  - If some switches in the stack are completely separated from the stack, a stack split can occur.

- A stack split can occur on a full ring stack if:

  - More than one running switch is removed without powering down.

  - More than one stack cable is removed without powering down.

- A stack split can occur in a partial ring stack if:

  - A switch is removed without powering down.

  - A stack cable is removed without powering down.

- In a split stack, depending on where the active and standby switches are located, either two stacks might be formed (with the standby taking over as the new active switch in the newly formed stack) or all the members in the newly formed stack might reload.

Note   These results depend on how the switches are connected. You can remove two or more switches from the stack without splitting the stack.

For conditions that can cause a stack reelection or to manually elect the active switch, see the stacking software configuration guide *Stack Manager and High Availability Configuration Guide for Cisco Catalyst 9200 Series Switches* on Cisco.com.

Mounting the Switch

Rack-Mounting

Installation in racks other than 19-inch racks requires a bracket kit not included with the switch.

⚠

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

Figure 15: Rack-Mounting Brackets

This figure shows the standard 19-inch brackets and other optional mounting brackets. You can order the optional brackets (ACC-KIT-T1=) from your Cisco sales representative.
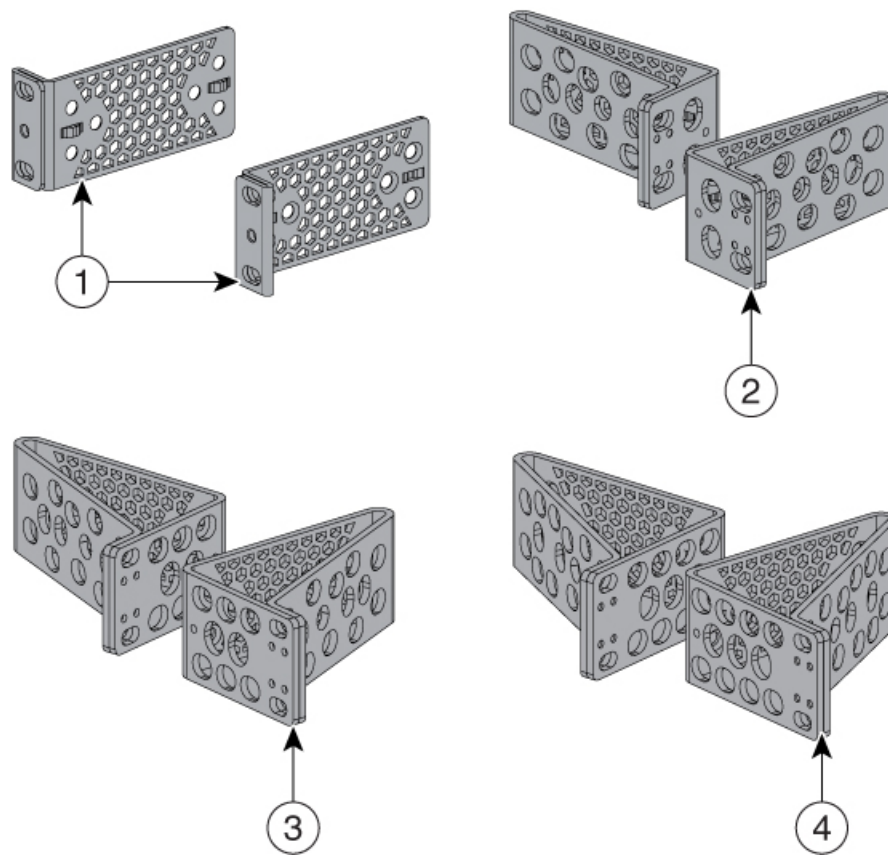
1	19-inch brackets (ACC-KIT-T1=)	3	23-inch brackets (RACK-KIT-T1=)
2	ETSI brackets (RACK-KIT-T1=)	4	24-inch brackets (RACK-KIT-T1=)

Attaching the Rack-Mount Brackets

Before you begin

You can use the minimum recommended number of two screws for installing the rack-mount bracket to each side of the switch. If required, while mounting, you can use the additional four screws provided in the accessory kit.

Procedure

Use two Phillips flat-head screws to attach the long side of the bracket to each side of the switch for the front- or rear-mounting positions.

The following illustration shows a C9200L switch. C9200 switches follow the same method for installing the rack mount bracket.

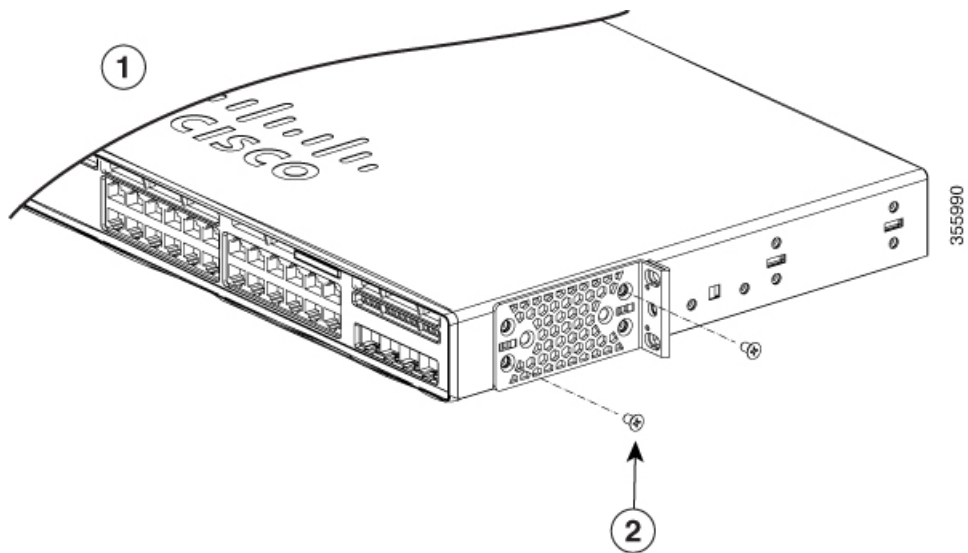*Figure 16: Attaching Brackets for 19-inch Racks in a two-post rack front-mount position*
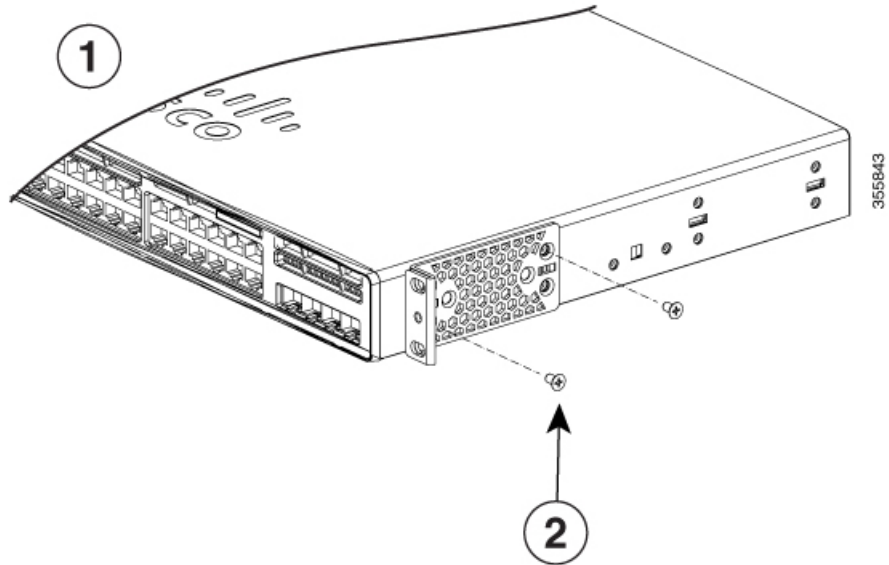
*Figure 17: Attaching Brackets for 19-inch Racks in a two-post rack rear-mount position*

2	Number-8 Phillips flat-head screws

Mounting the Switch in a Rack

Procedure

Step 1   Use the four supplied Phillips machine screws to attach the brackets to the rack.

Step 2   Use the black Phillips machine screw to attach the cable guide to the left or right bracket.

*Figure 18: Mounting the Switch in a Rack*
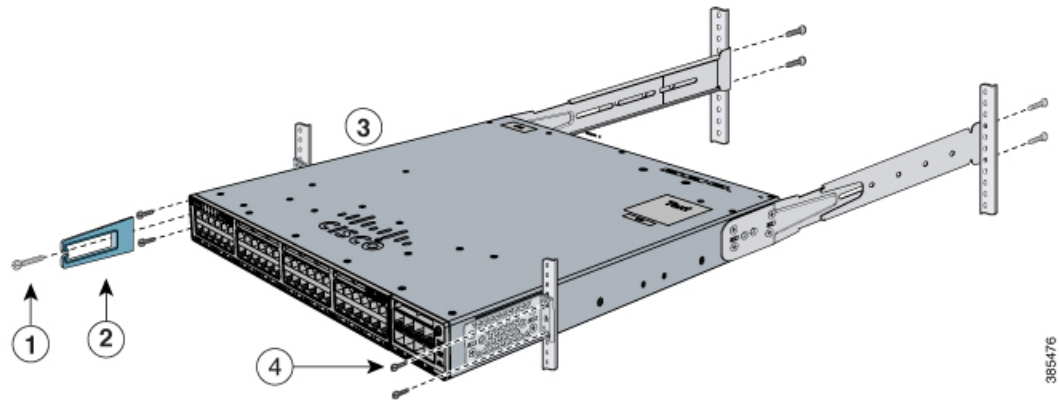
1	Phillips machine screw, black	3	Front-mounting position
2	Cable guide	4	Number-12 or number-10 Phillips machine screws

Installing the Switch on a Table or Shelf

Procedure

Step 1   To install the switch on a table or shelf, locate the adhesive strip with the rubber feet in the mounting-kit envelope.

Step 2   Attach the four rubber feet to the four circular etches on the bottom of the chassis.

Figure 19: Attaching the mounting feet for Table-Mounting or Shelf-Mounting
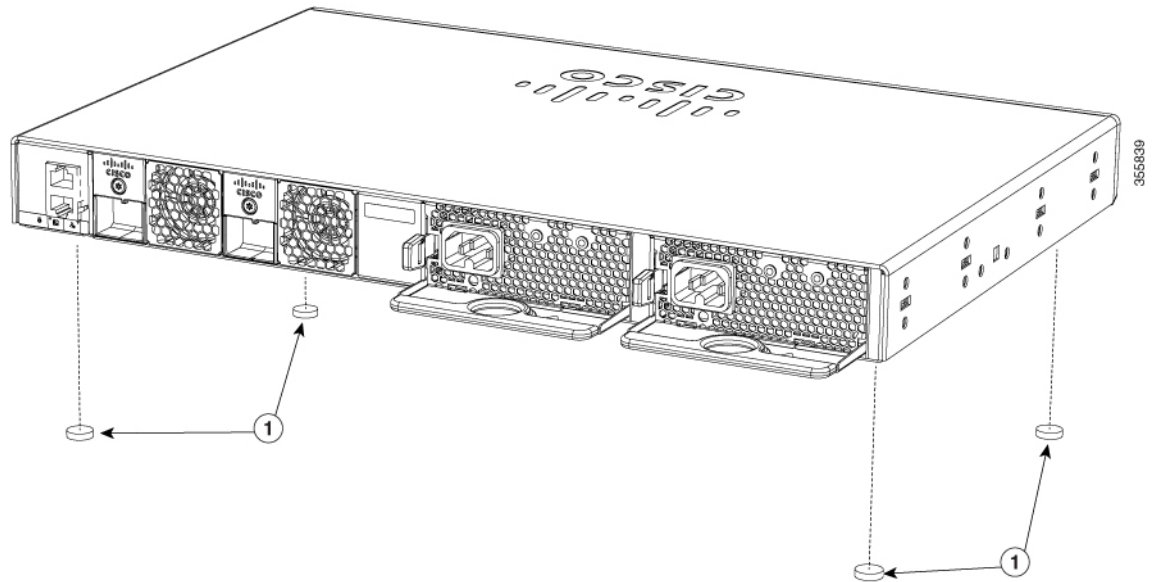
1	Rubber mounting feet

Step 3   Place the switch on the table or shelf near an AC power source.

What to do next

When you complete the switch installation, see After Switch Installation, on page 28 for information on switch configuration.

After Switch Installation

• Configure the switch. For more information, see "Setting up the Switch" topic.

• Connect to the front-panel ports.

Connecting to the StackWise Ports

Before you begin

Before connecting the StackWise cables, read the "Planning a Switch Data Stack" section. Always use a Cisco-approved StackWise cable to connect the switches.

Procedure

Step 1   Remove the dust covers from the StackWise cables and StackWise ports, and store them for future use.

A StackWise adapter must be installed in the StackWise port to enable stacking. In the default setup, the StackWise adapter blanks are installed in the StackWise ports. If StackWise stacking is ordered with the switch, StackWise adapters are already installed in the StackWise ports, and you can proceed to step 4.

Step 2   Remove the StackWise adapter blanks from each destination StackWise port using the Torx T15 Allen key provided in the stacking kit (or a Torx T15 screwdriver). Store them for future use.

Step 3   Install a StackWise adapter in each destination StackWise port, and secure it in place using the supplied Torx T15 key, or a Torx T15 screwdriver.

Figure 20: Installing the StackWise Adapter in a StackWise Port
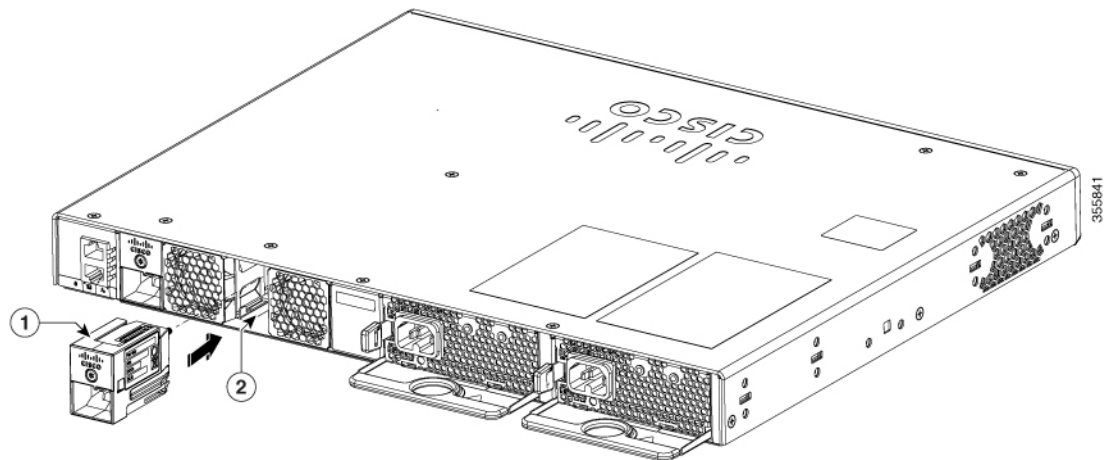
1	StackWise adapter	2	StackWise port

Step 4   Connect the cable to the StackWise port on the switch rear panel.

a)   Align the StackWise cable connector with the StackWise adapter in the StackWise port.

b)   Insert the StackWise cable connector into the StackWise port. Make sure that the Cisco logo is on the top side of the connector.

Figure 21: Connecting the StackWise Cable in a StackWise Port
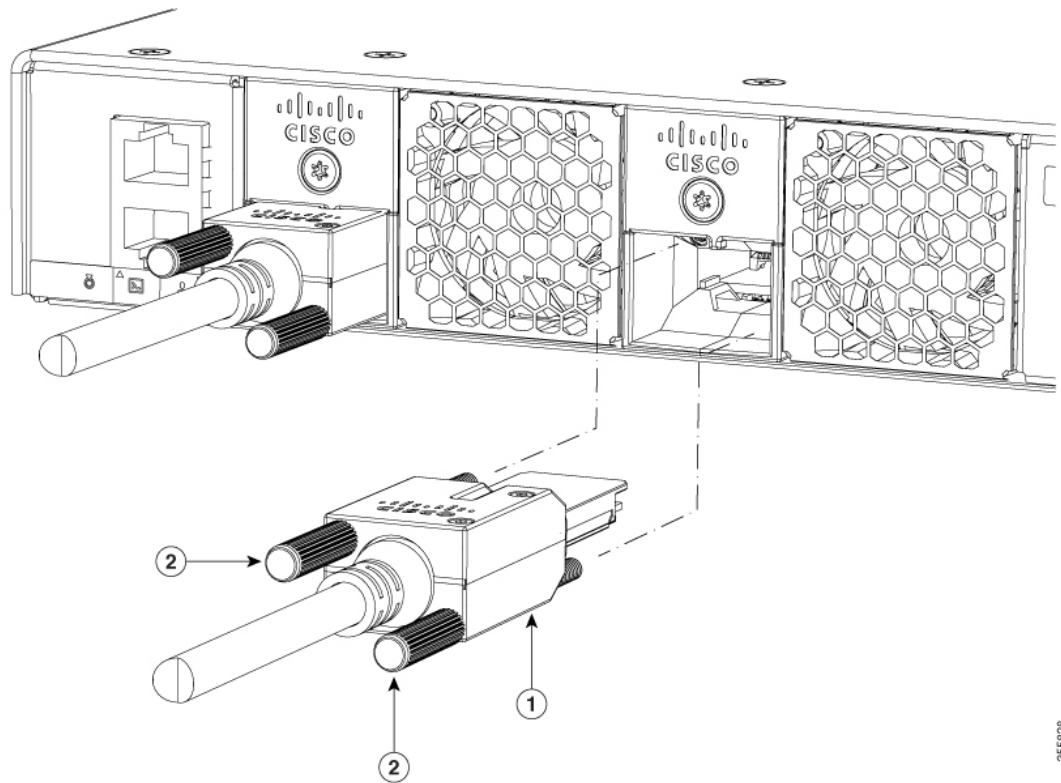
1	Connector screws	2	StackWise cable

   c) Finger-tighten the screws in clockwise direction.

Step 5 Connect the other end of the cable to the port on the other switch and finger-tighten the screws. Avoid over-tightening the screws.

> **Caution** Removing and installing the StackWise cable can shorten its useful life. Do not remove and insert the cable more often than is absolutely necessary (installing and removing it up to 200 times is supported).

When you need to remove the StackWise cable from the connector, make sure to fully unscrew the correct screws. When the connectors are not being used, replace the dust covers.

Connecting Devices to the Ethernet Ports

10/100/1000/Multigigabit Ethernet Port Connections

The switch 10/100/1000 and Multigigabit 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 9: 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

[1] 100BASE-TX and 1000BASE-T traffic requires twisted four-pair, Category 5 or higher. 10BASE-T traffic can use Category 3 cable or higher.

PoE and POE+ Port Connections

The 10/100/1000 PoE and PoE+ ports have the same autonegotiation settings and cabling requirements that are described in the 10/100/1000 Ports, on page 4. These ports can provide PoE and PoE+ inline power.

PoE inline power supports devices compliant with the IEEE 802.3af standard, as well as prestandard Cisco IP Phones and Cisco Aironet Access Points. Each port can deliver up to 15.4 W of PoE. PoE+ inline power supports devices compliant with the IEEE 802.3at standard, by delivering up to 30 W of PoE+ power per port to all switch ports.

See Power Supply Modules, on page 9 for the power supply modules required to support PoE and PoE+ on 24- and 48-port switches.

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 Voice over IP (VoIP) service and the emergency calling service do not function if power fails or is disrupted. After power is restored, you might have to reset or reconfigure equipment to regain access to VoIP and the emergency calling service. In the USA, this emergency number is 911. You need to be aware of the emergency number in your country. Statement 371

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.

CHAPTER 3

Installing a Network Module

Installing a Network Module in the Switch

Safety Warnings

This section includes the installation cautions and warnings. Translations of the safety warnings are available in the *Regulatory Compliance and Safety Information for Cisco Catalyst 9200 Series Switches* .

Read this section before you install a network module.

⚠️

Caution Proper ESD protection is required whenever you handle equipment. Installation and maintenance personnel should be properly grounded by grounding straps to eliminate the risk of ESD damage to the equipment. Equipment is subject to ESD damage whenever you remove it.

⚠️

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

⚠️

Warning Do not reach into a vacant slot or chassis while you install or remove a module. Exposed circuitry could constitute an energy hazard. Statement 206

Equipment That You Need

- Ratcheting torque screwdriver with a number-2 Phillips head that exerts up to 15 pound-force inches (lbf-in.) of pressure

- Panduit crimping tool with optional controlled-cycle mechanism (model CT-720, CT-920, CT-920CH, CT-930, or CT-940CH)

- Wire-stripping tools

- 12-gauge copper ground wire (insulated or not) for the single-hole ground connection

- Single-hole ground lug and screw (included in the switch accessory kit)

- Four leads of 14-gauge copper wire

Installing a Network Module

Note The switch can operate without a network module, but a blank module (with no ports or SFP slots) is available and should be installed when uplink ports are not required.

Note The switch generates logs when you insert or remove a network module with SFP/SFP+ slots.

Use only supported network modules and Cisco pluggable transceivers. Each module has an internal serial EEPROM that is encoded with security information.

The network module is hot-swappable. If you remove a module, replace it with another network module or a blank module.

Note The switch complies with EMC, safety, and thermal specifications when a network module is present. If no uplink ports are required, install a blank network module.

Before you begin

When installing network modules, observe these precautions:

- Do not remove the blank module from the slot unless you are installing a network module. A module must be in the uplink slot at all times.

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

- Removing and installing a network module can shorten its useful life. Do not remove and insert a network module more often than is necessary.

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

Procedure

Step 1   Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface.

Step 2   Remove the module from the protective packaging.

Step 3   Remove the blank module from the switch and save it. To remove the blank module, loosen the captive screw on the module using a screwdriver until it completely disengages from the chassis.

> **Caution**   Verify the correct orientation of your module before installing it. Incorrect installation can damage the module.

> **Caution**   Do not install the network module with connected cables or installed pluggable transceivers. Always remove any cables and transceiver modules before you install the network module.

> **Caution**   A module interface might become error-disabled when a network module with connected fiber-optic cables is installed or removed. If an interface is error-disabled, you can reenable the interface by using the **shutdown** and **no shutdown** interface configuration commands.

Step 4   Position the module face up to install it in the module slot. Slide the module into the slot until the screw makes contact with the chassis. Fasten the captive screws to secure the network module in place.

Figure 22: Installing the Network Module in the Switch
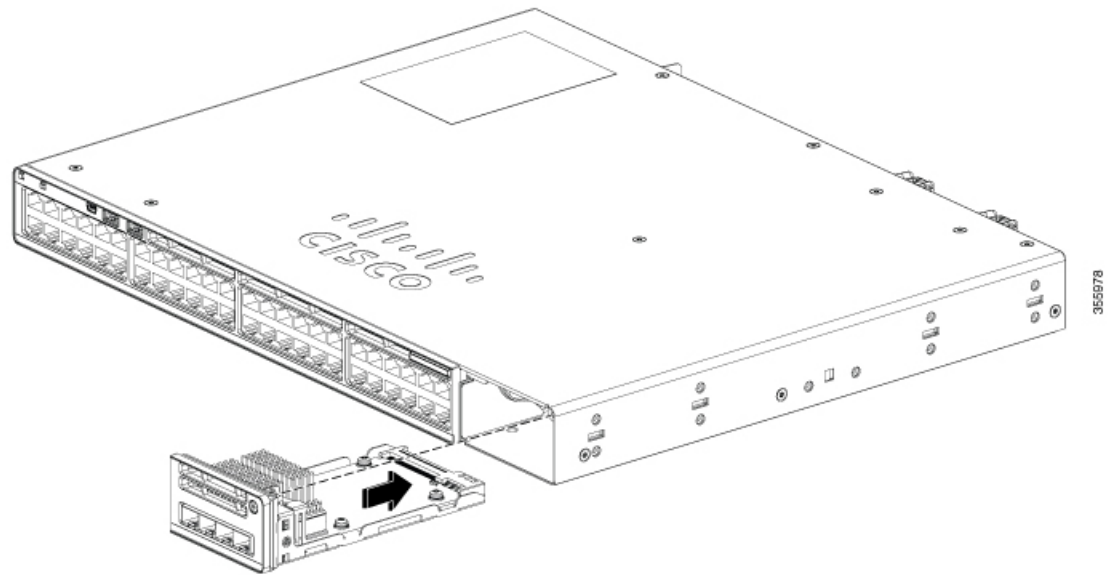
Removing a Network Module

Note The switch complies with EMC, safety, and thermal specifications when a network module is present. If no uplink ports are required, install a blank network module.

Note To avoid authentication failure and non-detection of modules, wait for a minimum of 6-8 seconds between the online insertion and removal (OIR) of network modules.

Procedure

**Step 1** Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface

Caution Do not remove the network module with connected cables or installed pluggable transceiver modules. Always remove any cables and modules before you remove the network module.

Caution A module interface might become error-disabled when a network module with connected fiber-optic cables is installed or removed. If an interface is error-disabled, you can reenable the interface by using the **shutdown** and **no shutdown** interface configuration commands.

Step 2 Disconnect the cables from the pluggable transceiver module.

Step 3 Remove the pluggable transceiver module from the network module.

Step 4 Loosen the captive screws that hold the network module in place until it completely disengages from the chassis.

Step 5 Carefully slide the network module out of the slot.

Step 6 Install a replacement network module or a blank module in the slot.

Step 7 Place the module that you removed in an antistatic bag or other protective environment.

Finding the Network Module Serial Number

If you contact Cisco Technical Assistance regarding a network module, you need to know its serial number.

Figure 23: Network Module Serial Number Location
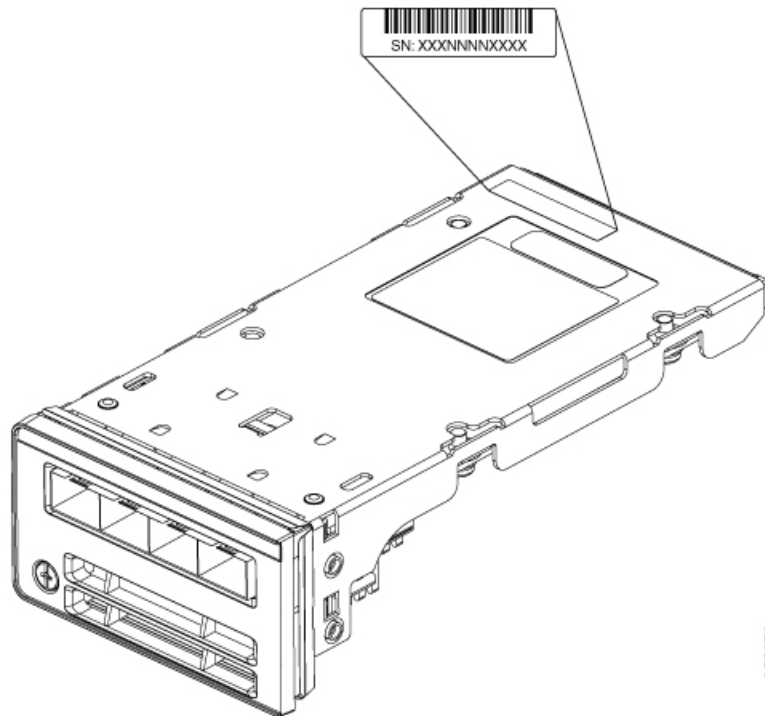
Installing and Removing Pluggable Transceiver Modules

Installing a Cisco Pluggable Transceiver Module

Before you begin

See the switch release notes on Cisco.com for the list of supported a Cisco pluggable transceiver modules (SFP, SFP, SFP28 and QSFP+ modules). Use only supported modules on the switch. For the latest information about the supported modules, refer to the Cisco Transceiver Modules Compatibility Information.

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

⚠️

Warning   Class 1 laser product. Statement 1008

- Do not remove the dust plugs from the transceiver 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.

- Removing and installing a transceiver module can shorten its useful life. Do not remove and insert any module more often than necessary.

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

- When you insert several transceiver modules in multiple switch ports, wait for 5 seconds between inserting each transceiver module. This will prevent the ports from going into error disabled mode. Similarly, when you remove a transceiver module from a port, wait for 5 seconds before reinserting it.

Procedure

Step 1	Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface.
Step 2	Find the send (TX) and receive (RX) markings that identify the top of the transceiver module.
	On some transceiver modules, the send and receive (TX and RX) markings might be shown by arrows that show the direction of the connection.
Step 3	If the transceiver 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.

Figure 24: Installing a tTransceiver Module into the Network Module
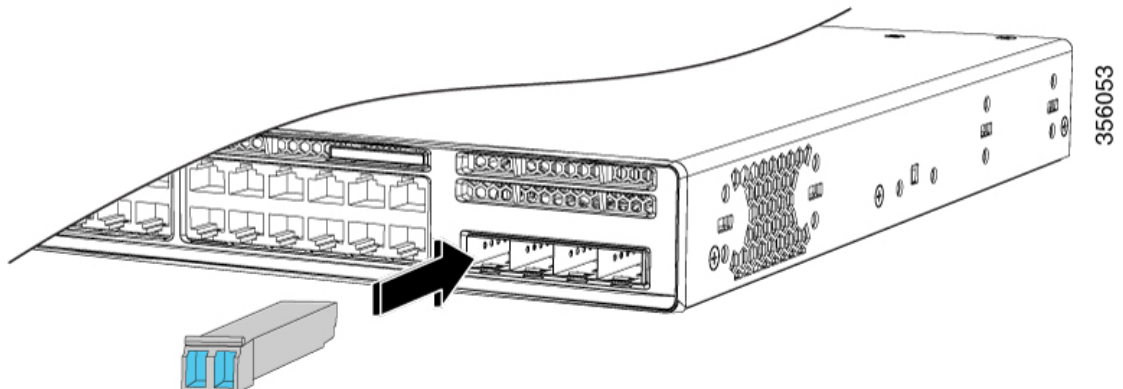
Step 5	If the module has a bale-clasp latch, close it to lock the transceiver module in place.
Step 6	Remove the transceiver module dust plugs and save.
Step 7	Connect the transceiver module cables.

Figure 25: Installing a Transceiver Module in the Uplink Module Slot
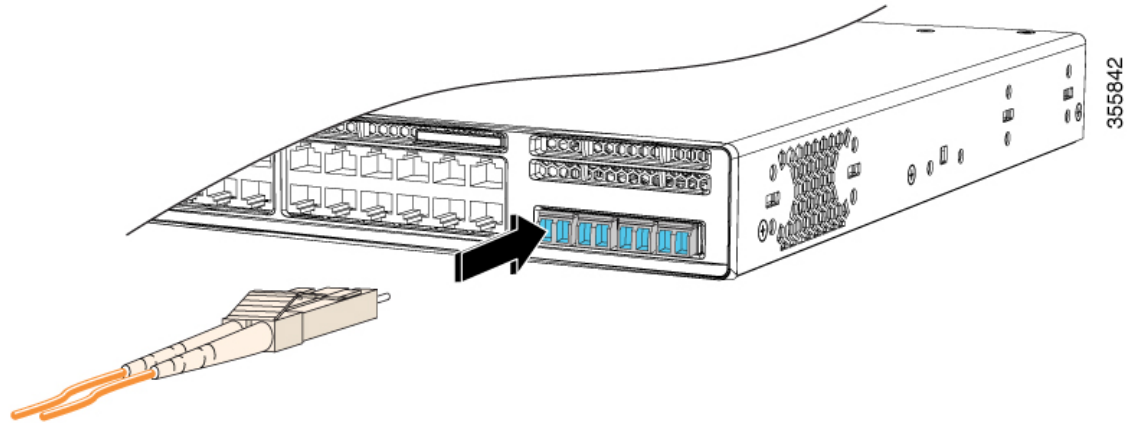
Removing a Cisco Pluggable Transceiver Module

Procedure

Step 1	Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface.
Step 2	Disconnect the cable from the transceiver 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 transceiver 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 you cannot use your finger to open the latch, use a small, flat-blade screwdriver or other long, narrow instrument to open it.
Step 5	Grasp the transceiver module and carefully remove it from the slot.
Step 6	Place the transceiver module in an antistatic bag or other protective environment.

Removing a Cisco Pluggable Transceiver Module

C H A P T E R **4**

Installing a Power Supply Unit

Power Supply Modules Overview

The switch chassis has two power supply slots that operates with either one active power supply module and a redundant power supply module. You can use two AC modules or one AC module and a blank cover. The active and redundant modules must be of the same type.

All power supply modules have internal fans. All switches ship with a blank cover in the second power supply slot.

The main module is field replaceable and the redundant module is hot-swappable. The redundant power supply can also be used for extra PoE power.

The following table describes the supported internal power supply modules.

Table 10: Power Supply Module Part Numbers and Descriptions

Part Number	Description
PWR-C5-125WAC	125 W AC power supply module
PWR-C5-600WAC	600 W AC power supply module
PWR-C5-1KWAC	1000 W AC power supply module
PWR-C6-125WAC[1]	125 W AC power supply module
PWR-C6-600WAC[1]	600 W AC power supply module
PWR-C6-1KWAC[1]	1000 W AC power supply module
PWR-C5-BLANK	Blank cover

1. Supported from Cisco IOS XE Gibraltar 16.11.1.

All the switches ship with a blank cover in the second power supply slot if the switches are ordered with only one power supply module.

For information about available PoE and PoE+ requirements, see these sections the .

The power supply modules are autoranging units that support input voltages between 100 and 240 VAC. Each AC power supply module has a power cord for connection to an AC power outlet. The modules use an 18-AWG power cord.

The following illustrations show the power supply modules.

Figure 26: 1000W AC Power Supply
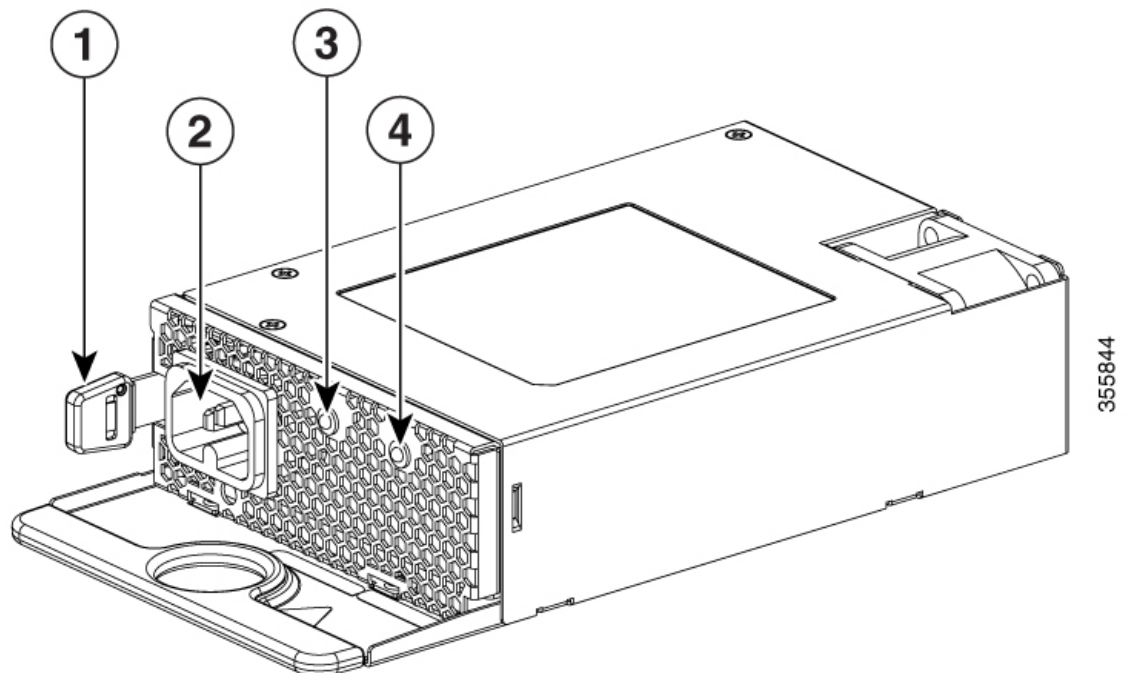
Figure 27: 125W AC Power Supply
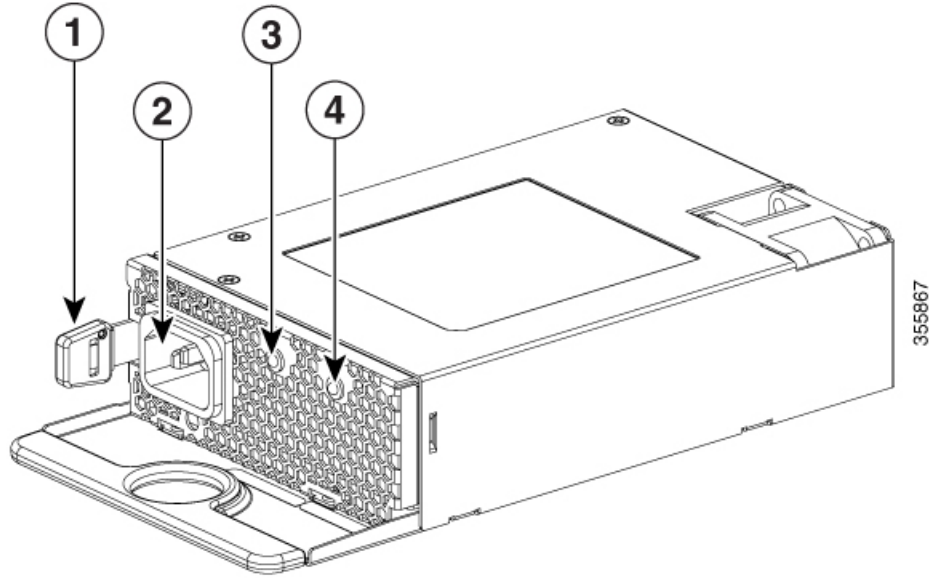
1	Release latch	3	AC OK LED
2	AC power cord connector	4	PS OK LED

If no power supply is installed in a power supply slot, install a power supply slot cover.

Figure 28: Power Supply Slot Cover
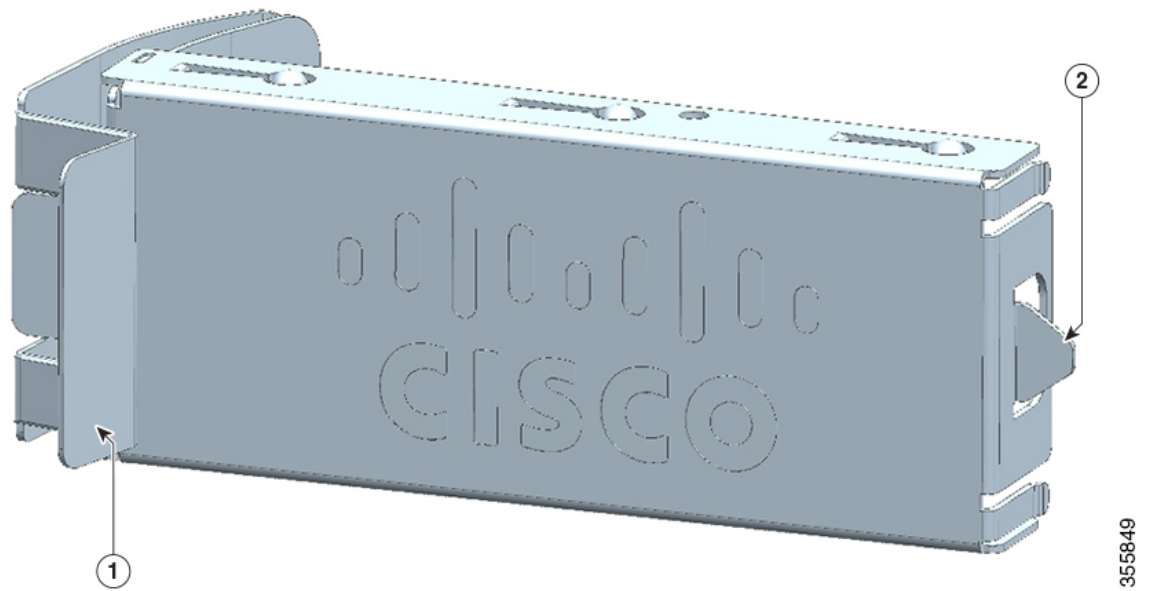
1	Release handles	2	Retainer clips

Table 11: Switch Power Supply Module LEDs

AC OK	Description	PS OK	Description
Off	No AC input power.	Off	Output is disabled, or input is outside the operating range (AC LED is off).
Green	AC input power present.	Green	Power output to switch active.
		Red	Output has failed.

Finding the Power Supply Module Serial Number

If you contact Cisco Technical Assistance regarding a power supply module, you need to know the serial number. See the following illustrations to find the serial number. You can also use the CLI to find out the serial number.

Figure 29: AC Power Supply Serial Number
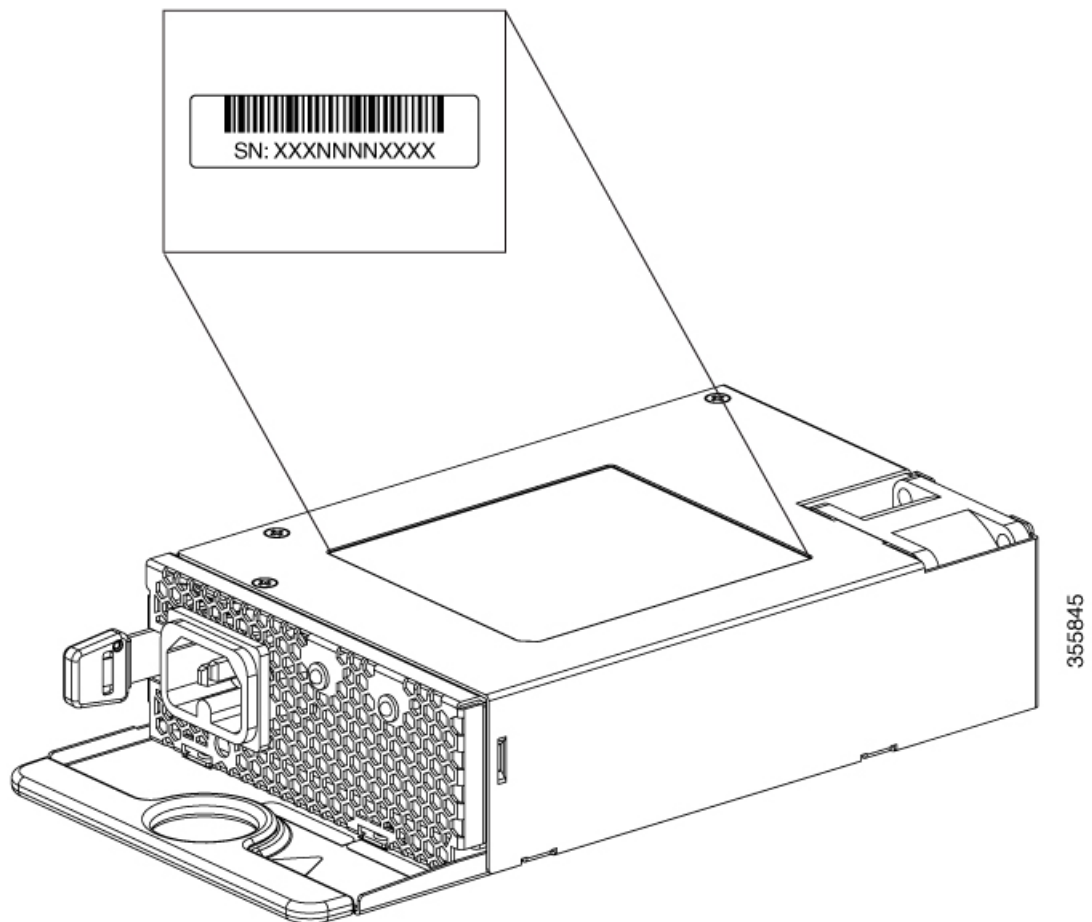
Installation Guidelines

Observe these guidelines when removing or installing a power supply module.

- Do not force the power supply module into the slot. This can damage the pins on the switch if they are not aligned with the module.

- A power supply module that is only partially connected to the switch can disrupt the system operation.

- Remove power from the power supply module before removing or installing the module.

- The power supply module is hot-swappable. In some configurations, such as full PoE+ or power sharing mode, removing a power supply module causes powered devices to shut down until the power budget matches the input power of a single power supply module. To minimize network interruption, ensure that an active backup is in progress.

    For the switch commands that display available power budget, see the software configuration guide.

⚠

Caution Do not operate the switch with one power-supply module slot empty. For proper chassis cooling, both module slots must be populated, with either a power supply or a blank module.

⚠

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 Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

Statement 1029

⚠

Warning Do not reach into a vacant slot or chassis while you install or remove a module. Exposed circuitry could constitute an energy hazard.

Statement 206

⚠

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

Statement 1030

⚠️

Warning   If a Cisco external power system is not connected to the switch, install the provided connector cover on the back of the switch.
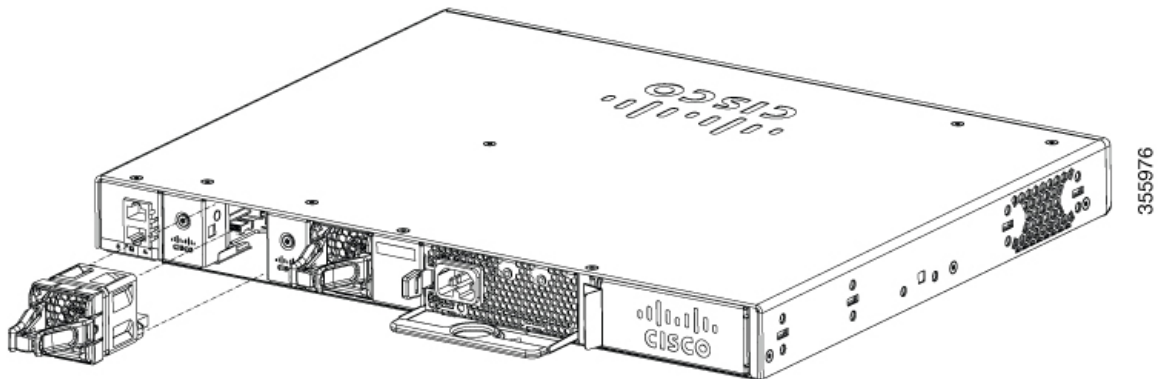
Statement 386

Installing or Replacing an AC Power Supply Module

Procedure

Step 1   Turn off the power at its source.

Step 2   Remove the power cord from the power cord retainer.

Step 3   Remove the power cord from the power connector.

Step 4   Press the release latch at the right side of the power supply module inward and slide the power supply out.

Caution   Do not leave the power-supply slot open for more than 90 seconds while the switch is operating.

Warning   This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028

Step 5   Insert the new power supply into the power-supply slot, and gently push it into the slot. When correctly inserted, the power supplies (excluding the power cord retainer) are flush with the switch rear panel.

Figure 30: Inserting the AC-Power Supply in the Switch
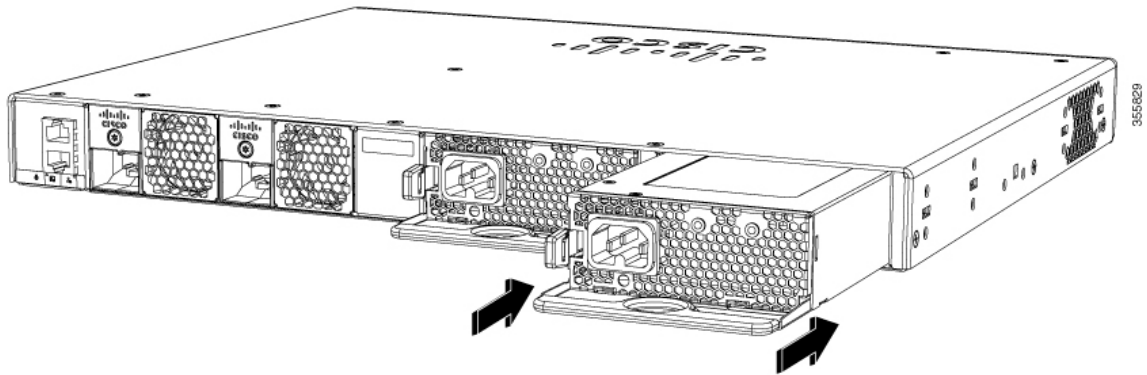
Step 6   (Optional) Install the power cord retainer as follows:

Figure 31: AC-Power Supply with Power Cord Retainer
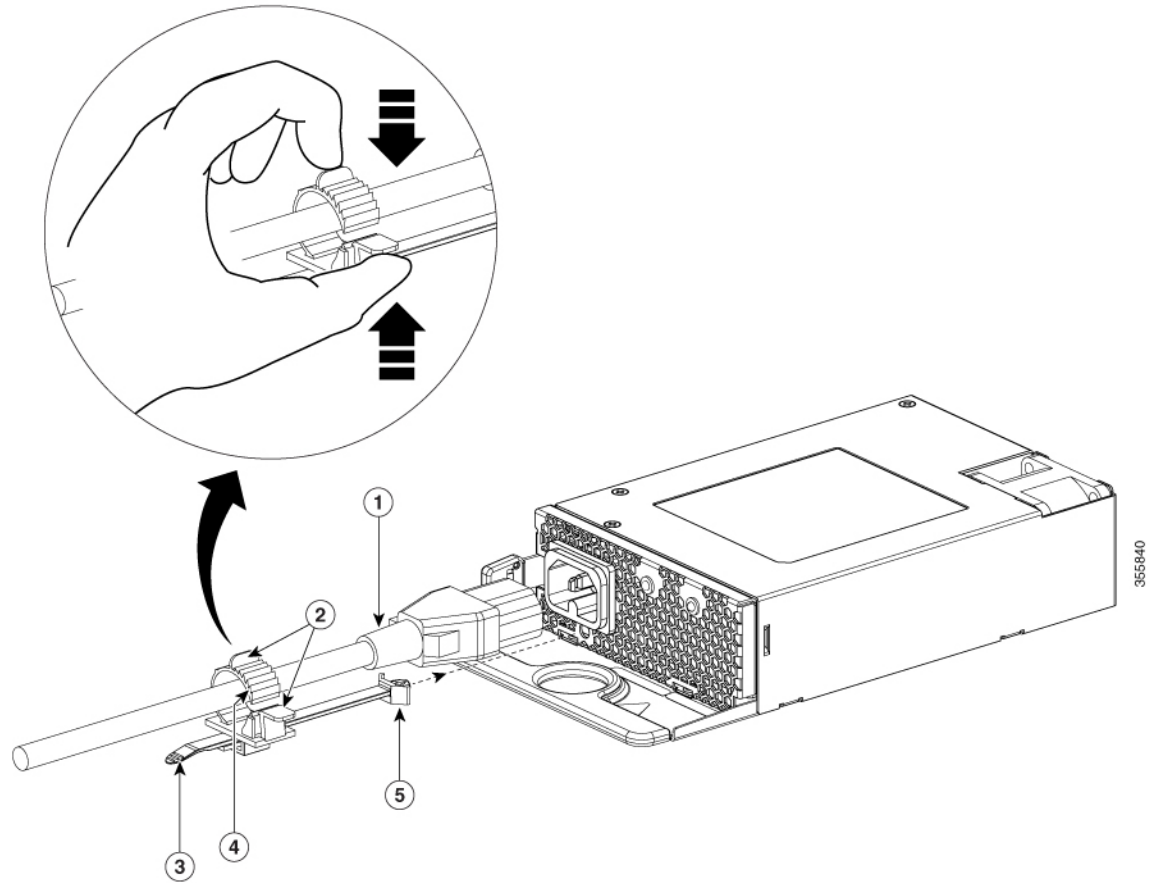
1	Power cord	4	Retainer clamp
2	Tabs on the retainer clamp	5	The strap end that is fixed to the power supply module
3	Power cord retainer strip	-	-

a) Fix the strap in the power cord retainer to the power supply module, to hold the clamp in place.

b) Slide the retainer clamp around the AC power cord and position the retainer closest to the power supply.

Note   Depending on the width of the power cord, adjust the size of the retainer clamp, if required.

c) Press the tabs on the retainer clamp towards each other to secure the AC power cord.

Step 7   Connect the power cord to the power supply and to an AC power outlet. Turn on the power at the power source.

Step 8   Confirm that the power supply AC OK and PS OK LED are green.

CHAPTER **5**

Installing a Fan Module

Fan Modules Overview

Cisco Catalyst 9200 (C9200) Series switches support two field-replaceable fan modules providing N+1 redundancy support. The switch should be able to operate at ambient temperature if one of the fans fails.

Figure 32: Fan Module
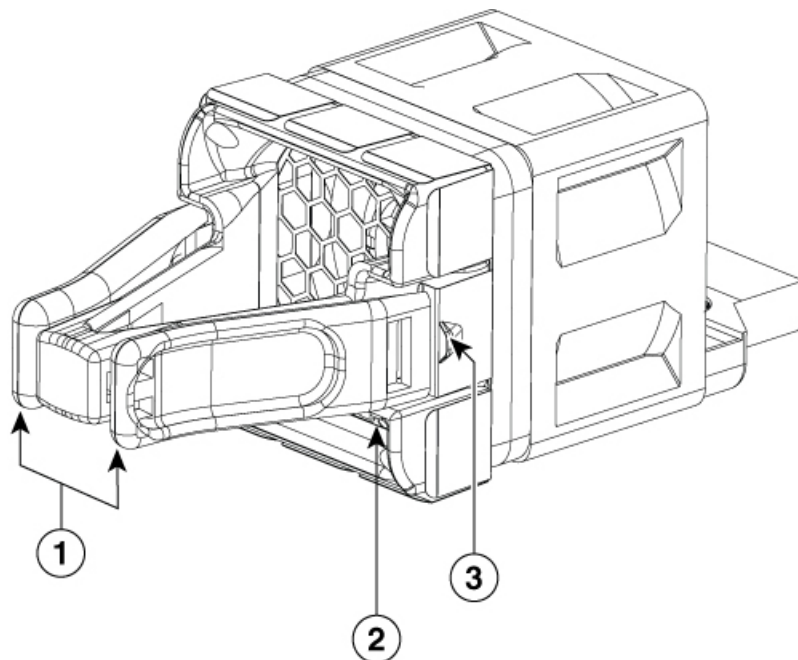
1	Extraction handles	3	Retainer clip
2	Fan LED		

Installation Guidelines

Observe these guidelines when removing or installing a fan module:

- Do not force the fan module into the slot. This can damage the pins on the switch if they are not aligned with the module.

- A fan module that is only partially connected to the switch can disrupt the system operation.

- The switch supports hot swapping of the fan module. You can remove and replace the module without interrupting normal switch operation.

⚠

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

Installing a Fan Module

Procedure

Step 1   Pinch the fan module release handle, and slide the module out.

Caution   You should replace the fan module within 5 minutes to avoid overheating the switch.

Step 2   Install the fan module in the fan slot, and firmly push it into the slot, applying pressure to the end of the module, not the extraction handles. When correctly inserted, the fan module is flush with the switch rear panel. When the fan is operating, a green LED is on in the top left corner of the fan.

Figure 33: Installing a Fan Module

Warning   Do not reach into a vacant slot when installing or removing a module. Exposed circuitry is an energy hazard. Statement 206

Finding the Fan Module Serial Number

If you contact Cisco Technical Assistance regarding a fan module, you need to know the fan module serial number. See the following illustration to find the serial number.

Figure 34: Fan Module Serial Number
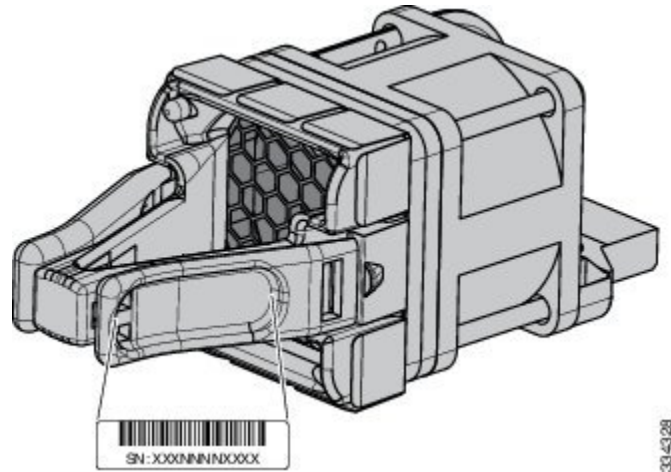
Configuring the Switch

Configuring the Switch Using the Web User Interface

Setting up the Switch

After you complete the hardware installation, you need to setup the switch with configuration required to enable traffic to pass through the network. On your first day with your new device, you can perform a number of tasks to ensure that your device is online, reachable and easily configured.

The Web User Interface (Web UI) is an embedded GUI-based device-management tool that provides the ability to provision the device, to simplify device deployment and manageability, and to enhance the user experience. It comes with the default image, so there is no need to enable anything or install any license on the device. You can use WebUI to build configurations, and to monitor and troubleshoot the device without having CLI expertise.

Connecting to the Switch

Before you begin

Set up the DHCP Client Identifier on the client to get the IP address from the switch, and to be able to authenticate with Day 0 login credentials.

Setting up the DHCP Client Identifier on the client for Windows

1. Type **`regedit`** in the Windows search box on the taskbar and press *enter*.

2. If prompted by User Account Control, click **Yes** to open the Registry Editor.

3. Navigate to

   Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfaces
   and locate the **Ethernet Interface** Global Unique Identifier (GUID).

4. Add a new REG_BINARY **DhcpClientIdentifier** with Data **77 65 62 75 69** for **`webui`**. You need to manually type in the value.

Figure 35: Setting up DHCP Client Identifier on Windows
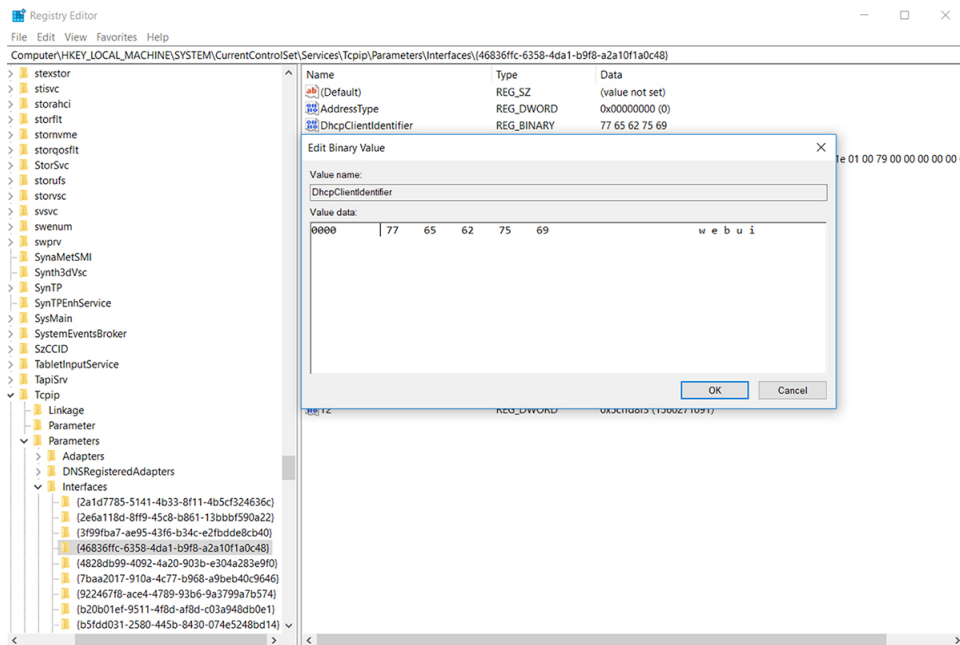
5. Restart the PC for the configuration to take effect.

Setting up the DHCP Client Identifier on the client for MAC

1. Go to **System Preferences >Network >Advanced >TCP >DHCP Client ID:** and enter `webui`.

Figure 36: Setting up DHCP Client Identifier on MAC
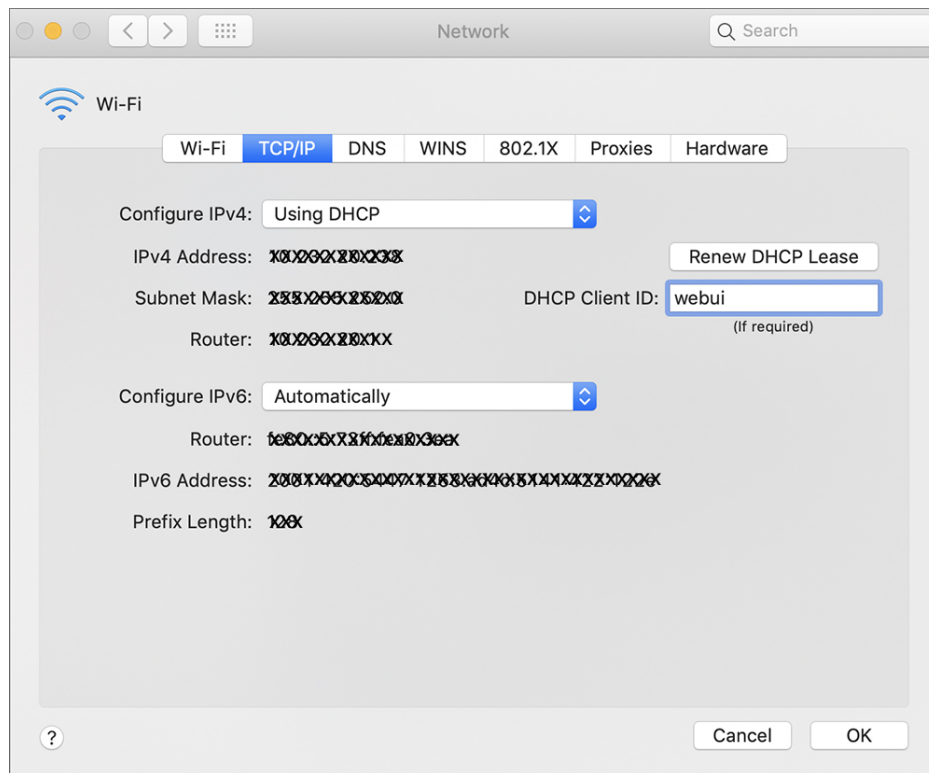
2. Click **OK** to save the changes.

The bootup script runs the configuration wizard, which prompts you for basic configuration input: (**Would you like to enter the initial configuration dialog? [yes/no]:**). To configure Day 0 settings using the web UI, do not enter a response. Perform the following tasks instead:

Procedure

Step 1 Make sure that no devices are connected to the switch.

Step 2 Connect one end of an ethernet cable to one of the downlink (non-management) ports on the active supervisor and the other end of the ethernet cable to the host (PC/MAC).

Step 3 Set up your PC/MAC as a DHCP client, to obtain the IP address of the switch automatically. You should get an IP address within the 192.168.1.x/24 range.

Figure 37: Obtaining the IP Address
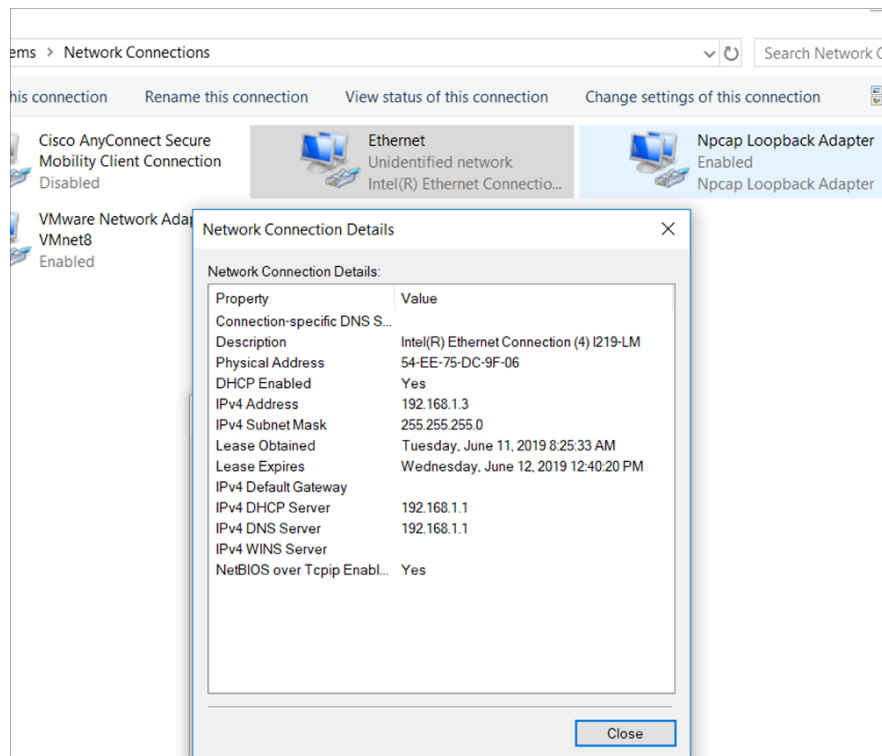
It may take up to three mins. You must complete the Day 0 setup through the web UI before using the device terminal.

Step 4   Launch a web browser on the PC and enter the device IP address (`https://192.168.1.1`) in the address bar.

Step 5   Enter the Day 0 **username `webui`** and **password `serial number`** of the switch. Note that the serial number is case sensitive.

> **Note**   The Day 0 username and password depends on the software version of your switch.
>
> For Cisco Catalyst switches running software versions earlier than Cisco IOS XE Fuji 16.9.x, the default username is `webui`; the default password is the serial number of the switch chassis.
>
> For Cisco Catalyst switches running software version Cisco IOS XE Amsterdam 17.1.x, the default username is `webui`; the default password is `cisco`.

What to do next

Create a user account.

Creating User Accounts

Setting a username and password is the first task you will perform on your device. Typically, as a network administrator, you will want to control access to your device and prevent unauthorized users from seeing your network configuration or manipulating your settings.

Procedure

Step 1 Log on using the default username and password provided with the device. These details differ based on the software version of your switch.

The default username is `cisco`; the default password is the serial number of the switch chassis. For Cisco Catalyst switches running software versions earlier than Cisco IOS XE Fuji 16.9.x, the default username is `webui`; the default password is the serial number of the switch chassis.

Step 2 Set a password of up to 25 alphanumeric characters. The username password combination you set gives you privilege 15 access. The string cannot start with a number, is case sensitive, and allows spaces but ignores leading spaces.

Figure 38: Create Account

Choosing Setup Options

Select **Wired Network** to configure your device based on a site profile, and continue to configure switch wide settings. Otherwise, continue to the next step and configure only basic settings for your device.

Configuring Basic Device Settings

On the **Basic Device Settings** page configure the following information:

Procedure

Step 1   In the **Device ID and Location Settings** section, type a unique name to identify your device in the network.

Step 2   Choose the date and time settings for your device. To synchronize your device with a valid outside timing mechanism, such as an NTP clock source, choose Automatic, or choose Manual to set it yourself.

Figure 39: Basic Settings - Device ID and Location Settings

Step 3   In the **Device Management Settings** section, assign an `IP address` to the management interface. Ensure that the IP address you assign is part of the subnet mask you enter.

Step 4   Optionally, enter an `IP address` to specify the default gateway.

Step 5   To enable access to the device using telnet, check the **Telnet** check box.

Step 6   To enable secure remote access to the device using Secure Shell (SSH), check the **SSH** check box.

Step 7   Check the **VTP transparent mode** check box to disable the device from participating in VTP.

If you did not select **Wired Network**, in the earlier step, continue to the next screen to verify your configuration on the **Day 0 Config Summary** screen, and click **Finish**. To automatically configure your device based on a site profile, click **Setup Options**, and select **Wired Network**.

Figure 40: Basic Settings - Device Management Settings
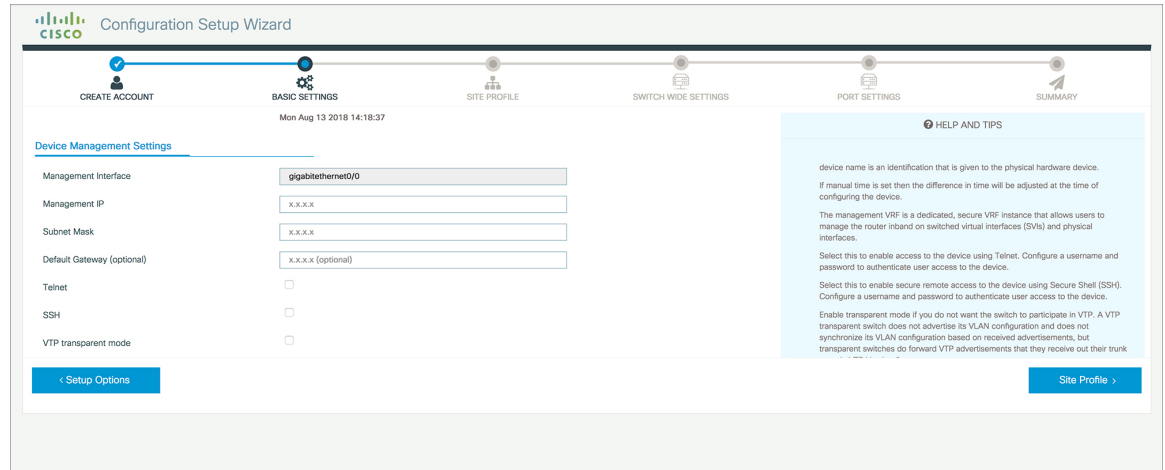
Configuring Your Device Based on a Site Profile

To ease your configuration tasks and save time, choose a site profile based on where your device may be installed and managed in your network. Based on the site profile you choose, your device is automatically configured according to Cisco best practices. You can easily modify this default configuration, from the corresponding detailed configuration screens.

Choosing a site profile as part of Quick Setup allows you to configure your device based on the business needs of your enterprise. For example, you could use your device as an access switch, to connect client nodes and endpoints on your network, or as a distribution switch, to route packets between subnets and VLANs.

Table 12: Default Configuration Loaded with Each Site Profile (Access Switches)

Setting	Single Access Switch (Single Uplink)	Single Access Switch (Single Port Channel Uplink)	Single Access Switch (Redundant Port Channel Uplink)
Hostname	The hostname or device name you provided as part of Quick Setup	The hostname or device name you provided as part of Quick Setup	The hostname or device name you provided as part of Quick Setup
Spanning Tree Mode	RPVST+	RPVST+	RPVST+
VTP	Mode Transparent	Mode Transparent	Mode Transparent
UDLD	Enabled	Enabled	Enabled
Error Disable Recovery	Recovery mode set to Auto	Recovery mode set to Auto	Recovery mode set to Auto
Port Channel Load Balance	Source Destination IP	Source Destination IP	Source Destination IP

Setting	Single Access Switch (Single Uplink)	Single Access Switch (Single Port Channel Uplink)	Single Access Switch (Redundant Port Channel Uplink)
SSH	Version 2	Version 2	Version 2
SCP	Enabled	Enabled	Enabled
VTY Access to Switch	Enabled	Enabled	Enabled
Service Timestamp	Enabled	Enabled	Enabled
VLAN	The following VLANs are created: • Default VLAN • Data VLAN • Voice VLAN • Management VLAN	The following VLANs are created: • Default VLAN • Data VLAN • Voice VLAN • Management VLAN	The following VLANs are created: • Default VLAN • Data VLAN • Voice VLAN • Management VLAN
Management Interface	Layer 3 settings configured on the management port, based on Quick Setup	Layer 3 settings configured on the management port, based on Quick Setup	Layer 3 settings configured on the management port, based on Quick Setup
IPv6 Host Policy	IPv6 host policy created	IPv6 host policy created	IPv6 host policy created
QoS Policy for Downlink Ports	Auto QoS Policy for Access defined	Auto QoS Policy for Access defined	Auto QoS Policy for Access defined
QoS Policy for Uplink Ports	QoS Policy for Distribution created	QoS Policy for Distribution created	QoS Policy for Distribution created
Uplink Interfaces	Selected uplink interfaces configured as trunk ports, set to allow all VLANs	Selected ports configured as Port-channel in trunk mode, set to allow all VLANs.	Selected ports configured as Port-channel in trunk mode, set to allow all VLANs.
Downlink Interfaces	Downlink ports configured in Access mode	Downlink ports configured in Access mode	Downlink ports configured in Access mode
Port-channel	Not configured	Port-channel to distribution created	Port-channel to distribution created

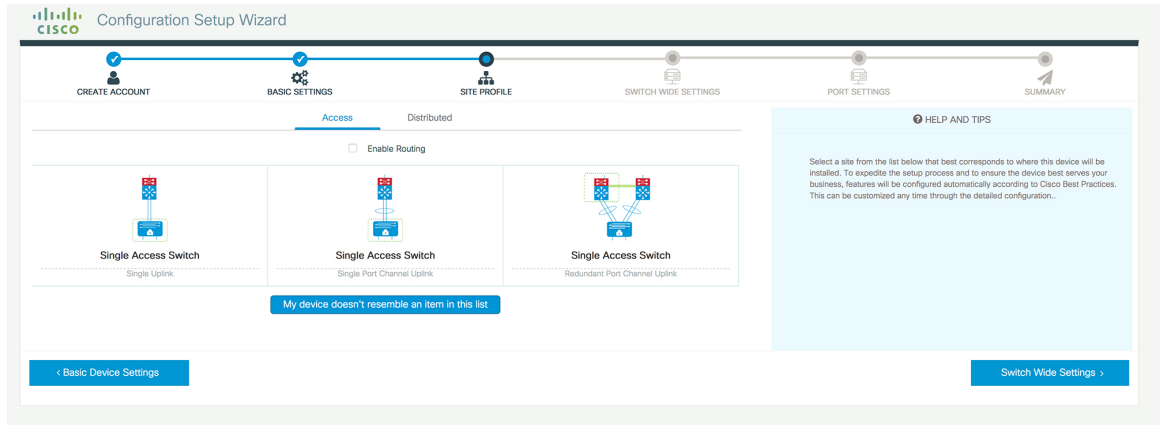*Figure 41: Site Profile - Access Switches*

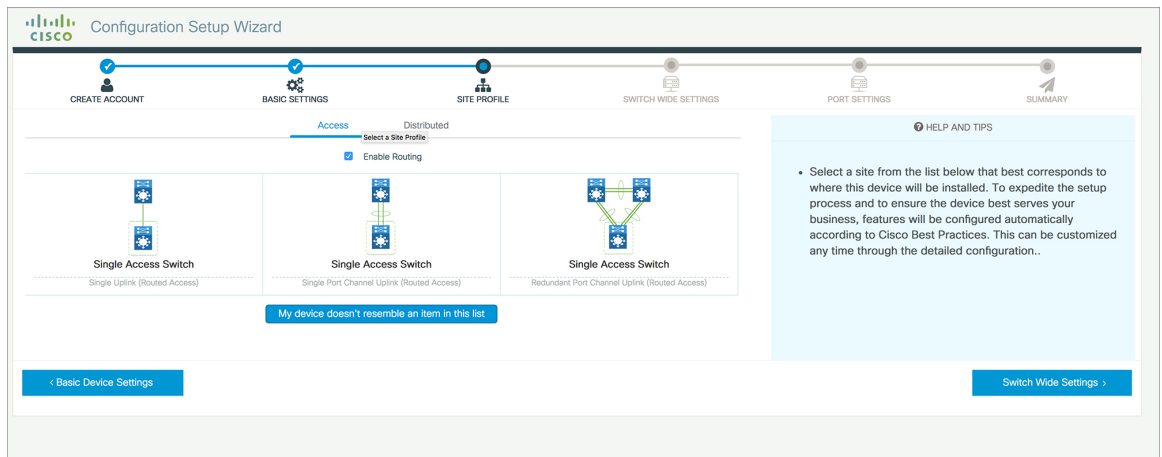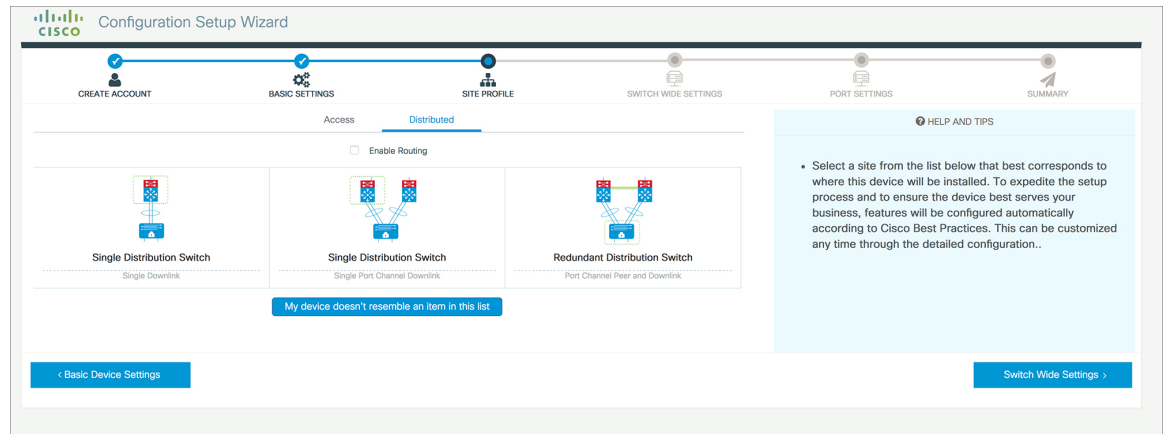*Figure 42: Site Profile - Access Switches (with Routed Access)*

Table 13: Default Configuration Loaded with Each Site Profile (Distribution Switches)

Setting	Single Distribution Switch (Single Downlink)	Single Distribution Switch (Single Port Channel Downlink)	Redundant Distribution Switch (Port Channel Peer and Downlink)
Hostname	The hostname or device name you provided as part of Quick Setup	The hostname or device name you provided as part of Quick Setup	The hostname or device name you provided as part of Quick Setup
Spanning Tree Mode	RPVST+	RPVST+	RPVST+
VTP	Mode Transparent	Mode Transparent	Mode Transparent
UDLD	Enabled	Enabled	Enabled
Error Disable Recovery	Recovery mode set to Auto	Recovery mode set to Auto	Recovery mode set to Auto

Setting	Single Distribution Switch (Single Downlink)	Single Distribution Switch (Single Port Channel Downlink)	Redundant Distribution Switch (Port Channel Peer and Downlink)
Port Channel Load Balance	Source Destination IP	Source Destination IP	Source Destination IP
SSH	Version 2	Version 2	Version 2
SCP	Enabled	Enabled	Enabled
VTY Access to Switch	Enabled	Enabled	Enabled
Service Timestamp	Enabled	Enabled	Enabled
VLAN	The following VLANs are created: • Default VLAN • Data VLAN • Voice VLAN • Management VLAN	The following VLANs are created: • Default VLAN • Data VLAN • Voice VLAN • Management VLAN	The following VLANs are created: • Default VLAN • Data VLAN • Voice VLAN • Management VLAN
Management Interface	Layer 3 settings configured on the management port, based on Quick Setup	Layer 3 settings configured on the management port, based on Quick Setup	Layer 3 settings configured on the management port, based on Quick Setup
QoS Policy	QoS Policy for Distribution defined	QoS Policy for Distribution defined	QoS Policy for Distribution defined
Uplink Interfaces	Selected uplink ports connect to other distribution or core switches	Selected uplink ports connect to other distribution or core switches	Selected uplink ports connect to other distribution or core switches
Downlink Interfaces	Downlink connections to access switches configured in Trunk mode	Downlink connections to access switches configured in Trunk mode	Downlink connections to access switches configured in Trunk mode
Port-channel	Port-channel to core created	Port-channel to core or access created	Port-channel to core or distribution created

Figure 43: Site Profile - Distribution Switches

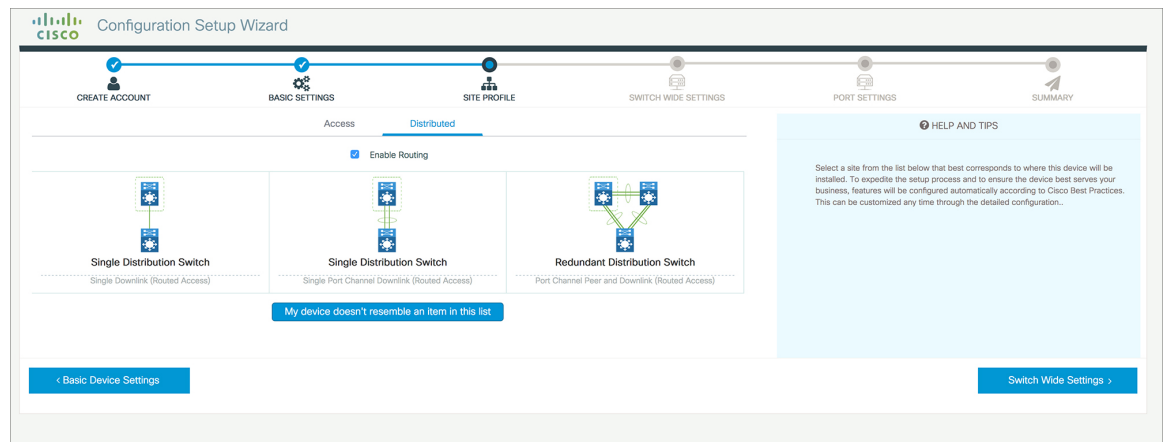**Figure 44: Site Profile - Distribution Switches (with Routed Access)**

Table 14: Default Configuration Loaded with Each Site Profile (Core Switches)

Setting	Standalone Core Switch (with ECMP Peers)	Standalone Collapsed Core Switch (with ECMP Peer and Port Channel Downlink)
Hostname	The hostname or device name you provided as part of Quick Setup	The hostname or device name you provided as part of Quick Setup
UDLD	Enabled	Enabled
Error Disable Recovery	Recovery mode set to Auto	Recovery mode set to Auto
Port Channel Load Balance	Source Destination IP	Source Destination IP
SSH	Version 2	Version 2
SCP	Enabled	Enabled
VTY Access to Switch	Enabled	Enabled

Setting	Standalone Core Switch (with ECMP Peers)	Standalone Collapsed Core Switch (with ECMP Peer and Port Channel Downlink)
Mitigate Address Spoofing	Unicast RPF (uRPF) in strict mode	Unicast RPF (uRPF) in strict mode
Service Timestamp	Enabled	Enabled
Management Interface	Layer 3 settings configured on the management port, based on Quick Setup	Layer 3 settings configured on the management port, based on Quick Setup
QoS Policy	QoS Policy for Distribution/Core defined	QoS Policy for Distribution/Core defined
Uplink Interfaces	Selected uplink ports connect to MAN/WAN device	Selected uplink ports connect to MAN/WAN device
Downlink Interfaces	Downlink connections to access switches	Downlink connections to distribution switches
Cross-connect Interfaces	Selected ports connect to other core switches	Selected ports connect to other core switches

Figure 45: Site Profile - Core Switches
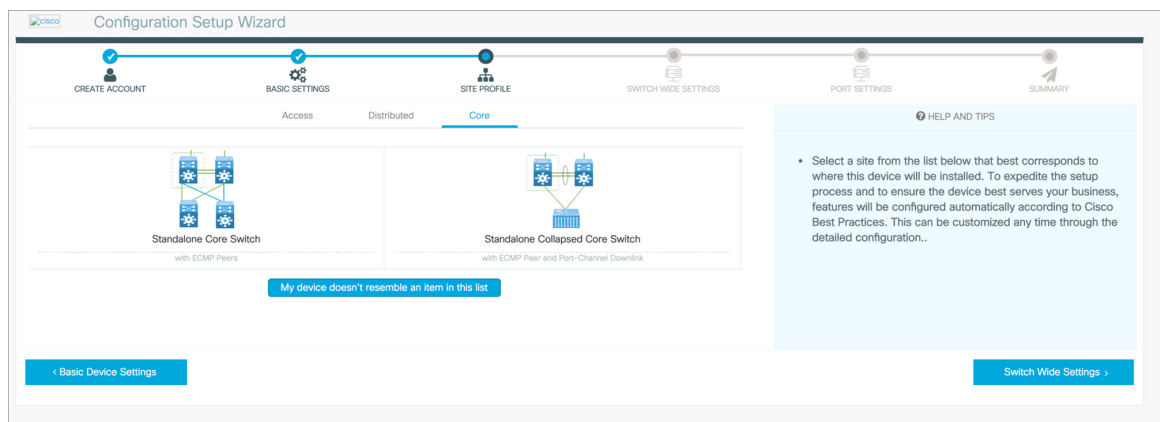
Configuring Switch Wide Settings

Configuring VLAN Settings

Procedure

Step 1 In the **VLAN Configuration** section, you can configure both data and voice VLANs. Type a name for your data VLAN.

Step 2 To configure a data VLAN, ensure that the **Data VLAN** check box is checked, type a name for your VLAN, and assign a VLAN ID to it. If you are creating several VLANs, indicate only a VLAN range.

Step 3 To configure a voice VLAN, ensure that the **Voice VLAN** check box is checked, type a name for your VLAN, and assign a VLAN ID to it. If you are creating several VLANs, indicate a VLAN range.

Configure STP Settings

Procedure

Step 1 RPVST is the default STP mode configured on your device. You can change it to PVST from the **STP Mode** drop-down list.

Step 2 To change a bridge priority number from the default value 32748, change **Bridge Priority** to Yes and choose a priority number from the drop-down list.

Figure 46: VLAN and STP Settings

Configuring DHCP, NTP, DNS and SNMP Settings

Procedure

Step 1 In the **Domain Details** section, enter a domain name that the software uses to complete unqualified hostnames.

Step 2 Type an IP address to identify the DNS server. This server is used for name and address resolution on your device.

Step 3 In the **Server Details** section, type the IP address of the DNS server that you want to make available to DHCP clients.

Step 4 In the **Syslog Server** field, type the IP address of the server to which you want to send syslog messages.

Step 5 To ensure that your device is configured with the right time, date and timezone, enter the IP address of the NTP server with which you want to synchronize the device time.

Step 6   In the **Management Details** section, type an IP address to identify the SNMP server. SNMPv1, SNMPv2, and SNMPv3 are supported on your device.

Step 7   Specify the **SNMP community** string to permit access to the SNMP protocol.

*Figure 47: DHCP, NTP, DNS and SNMP Settings*

What to do next

Configure port settings.

Configuring Port Settings

Procedure

Step 1   Based on the site profile chosen in the earlier step which is displayed in the left-pane, select the **Port Role** from among the following options:

- Uplink – For connecting to devices towards the core of the network.
- Downlink – For connecting to devices further down in the network topology.
- Access – For connecting guest devices that are VLAN-unaware.

Step 2   Choose an option from the **Select Switch** drop-down list.

Step 3   Make selections from the **Available** list of interfaces based on how you want to enable them and move them to the **Enabled** list.
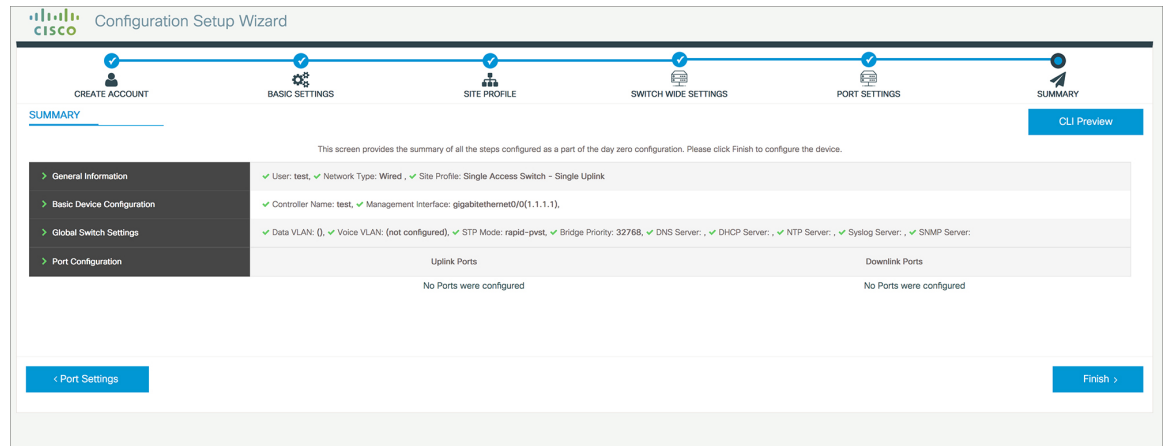
Figure 48: Port Settings
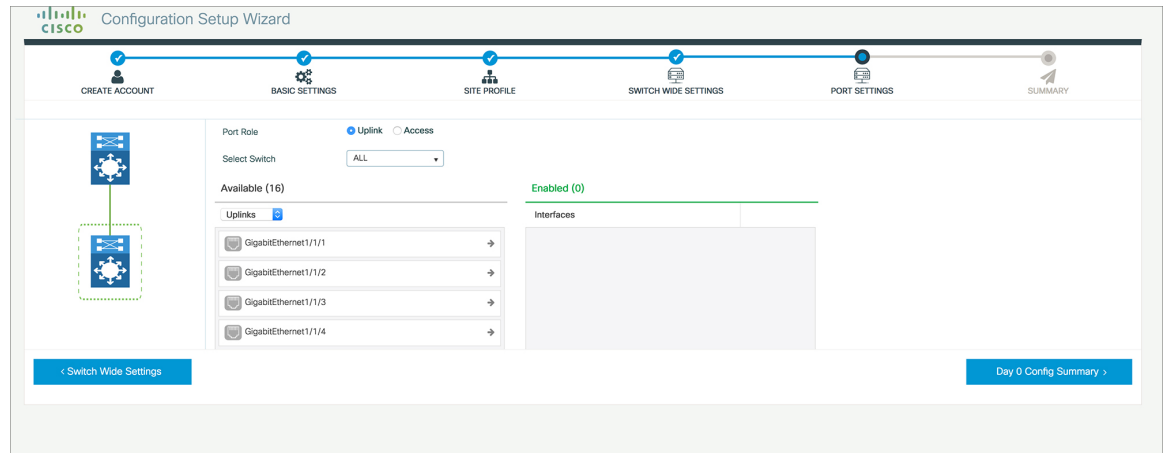
What to do next

- Click **Day 0 Config Summary** to verify your setup.

- Click **Finish**.

Figure 49: Day 0 Config Summary

Configuring VTY Lines

For connecting to the device through Telnet or SSH, the Virtual Terminal Lines or Virtual TeleType (VTY) is used. The number of VTY lines is the maximum number of simultaneous access to the device remotely. If the device is not configured with sufficient number of VTY lines, users might face issues with connecting to the WebUI. You must change the default value for VTY Line, 0-15 (or 0-4 in some models), to 0-30 to allow up to thirty simultaneous sessions.

Procedure

Step 1 From the WebUI, navigate through **Administration > Device** and select the **General** page.

Step 2 In the **VTY Line** field, enter `0-30`.

Figure 50: Configuring VTY Line

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 70.

    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 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 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.**

Technical Specifications

Environmental and Physical Specifications

This table describes the environmental specifications.

Table 15: Environmental Specifications for the Switch

Environmental Ranges	
Operating temperature [2]	23 to 113°F (–5 to 45°C)
Storage temperature	–40 to 158°F (–40 to 70°C)
Relative humidity	5 to 90% (noncondensing)
Operating altitude	Up to 10,000 ft (3000 m)
Storage altitude	Up to 15,000 ft (4500 m)

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

This table describes the environmental specifications.

Table 16: Environmental Specifications for the Power Supplies

Environmental Ranges	
Operating temperature	23°F to 113°F (–5°C to 45°C) up to 5000 feet (1500m) 23°F to 104°F (–5°C to 40ºC) up to 10,000 feet (3000m)
Storage temperature	–40 to 158°F (–40 to 70°C)
Relative humidity	10 to 90% (noncondensing)

Environmental Ranges	
Altitude	10,000 ft (3,000 m) up to 40°C

This table describes the physical specifications.

Table 17: Physical Specifications for the Switch

Dimensions (H x W x D)	
Chassis Dimensions	Chassis Dimensions with the FAN FRUs and the power supplies installed
1.73 x 17.5 x 13.8 in. (4.4 x 44.4 x 35 cm) C9200-24P	1.73 x 17.5 x 15.4 in. (4.4 x 44.4 x 39.1 cm) C9200-24P
1.73 x 17.5 x 13.8 in. (4.4 x 44.4 x 35 cm) C9200-24PB	1.73 x 17.5 x 15.4 in. (4.4 x 44.4 x 39.1 cm) C9200-24PB
1.73 x 17.5 x 13.8 in. (4.4 x 44.4 x 35 cm) C9200-48P	1.73 x 17.5 x 15.4 in. (4.4 x 44.4 x 39.1 cm) C9200-48P
1.73 x 17.5 x 13.8 in. (4.4 x 44.4 x 35 cm) C9200-48PB	1.73 x 17.5 x 15.4 in. (4.4 x 44.4 x 39.1 cm) C9200-48PB
1.73 x 17.5 x 13.8 in. (4.4 x 44.4 x 35 cm) C9200-48PL	1.73 x 17.5 x 15.4 in. (4.4 x 44.4 x 39.1 cm) C9200-48PL
1.73 x 17.5 x 13.8 in. (4.4 x 44.4 x 35 cm) C9200-48T	1.73 x 17.5 x 15.4 in. (4.4 x 44.4 x 39.1 cm) C9200-48T
1.73 x 17.5 x 13.8 in. (4.4 x 44.4 x 35 cm) C9200-24PXG	1.73 x 17.5 x 15.4 in. (4.4 x 44.4 x 39.1 cm) C9200-24PXG
1.73 x 17.5 x 13.8 in. (4.4 x 44.4 x 35 cm) C9200-48PXG	1.73 x 17.5 x 15.4 in. (4.4 x 44.4 x 39.1 cm) C9200-48PXG
1.73 x 17.5 x 11.3 in. (4.4 x 44.5 x 28.8 cm) C9200L-24P-4G	1.73 x 17.5 x 12.9 in. (4.4 x 44.5 x 32.9 cm) C9200L-24P-4G
1.73 x 17.5 x 11.3 in. (4.4 x 44.5 x 28.8 cm) C9200L-24P-4X	1.73 x 17.5 x 12.9 in. (4.4 x 44.5 x 32.9 cm) C9200L-24P-4X
1.73 x 17.5 x 11.3 in. (4.4 x 44.5 x 28.8 cm) C9200L-24T-4G	1.73 x 17.5 x 12.9 in. (4.4 x 44.5 x 32.9 cm) C9200L-24T-4G
1.73 x 17.5 x 11.3 in. (4.4 x 44.5 x 28.8 cm) C9200L-24T-4X	1.73 x 17.5 x 12.9 in. (4.4 x 44.5 x 32.9 cm) C9200L-24T-4X
1.73 x 17.5 x 11.3 in. (4.4 x 44.5 x 28.8 cm) C9200L-48P-4G	1.73 x 17.5 x 12.9 in. (4.4 x 44.5 x 32.9 cm) C9200L-48P-4G
1.73 x 17.5 x 11.3 in. (4.4 x 44.5 x 28.8 cm) C9200L-48P-4X	1.73 x 17.5 x 12.9 in. (4.4 x 44.5 x 32.9 cm) C9200L-48P-4X

1.73 x 17.5 x 11.3 in. (4.4 x 44.5 x 28.8 cm) C9200L-48PL-4G	1.73 x 17.5 x 12.9 in. (4.4 x 44.5 x 32.9 cm) C9200L-48PL-4G
1.73 x 17.5 x 11.3 in. (4.4 x 44.5 x 28.8 cm) C9200L-48PL-4X	1.73 x 17.5 x 12.9 in. (4.4 x 44.5 x 32.9 cm) C9200L-48PL-4X
1.73 x 17.5 x 11.3 in. (4.4 x 44.5 x 28.8 cm) C9200L-48T-4G	1.73 x 17.5 x 12.9 in. (4.4 x 44.5 x 32.9 cm) C9200L-48T-4G
1.73 x 17.5 x 11.3 in. (4.4 x 44.5 x 28.8 cm) C9200L-48T-4X	1.73 x 17.5 x 12.9 in. (4.4 x 44.5 x 32.9 cm) C9200L-48T-4X
1.73 x 17.5 x 13.8 in. (4.4 x 44.5 x 35 cm) C9200L-24PXG-4X	1.73 x 17.5 x 15.4 in. (4.4 x 44.5 x 39.1 cm) C9200L-24PXG-4X
1.73 x 17.5 x 13.8 in. (4.4 x 44.5 x 35 cm) C9200L-24PXG-2Y	1.73 x 17.5 x 15.4 in. (4.4 x 44.5 x 39.1 cm) C9200L-24PXG-2Y
1.73 x 17.5 x 13.8 in. (4.4 x 44.5 x 35 cm) C9200L-48PXG-4X	1.73 x 17.5 x 15.4 in. (4.4 x 44.5 x 39.1 cm) C9200L-48PXG-4X
1.73 x 17.5 x 13.8 in. (4.4 x 44.5 x 35 cm) C9200L-48PXG-2Y	1.73 x 17.5 x 15.4 in. (4.4 x 44.5 x 39.1 cm) C9200L-48PXG-2Y

Weight measurement is calculated with one power supply installed.

Table 18: Weight Measurements

Switch Model	Weight
C9200-24T	11 lb (5 kg)
C9200-24P	11 lb (5 kg)
C9200-24PB	11 lb (5 kg)
C9200-48T	11.5 lb (5.2 kg)
C9200-48P	11.5 lb (5.2 kg)
C9200-48PB	11.5 lb (5.2 kg)
C9200-48PL	11.5 lb (5.2 kg)
C9200-24PXG	11.4 lb (5.15 kg)
C9200-48PXG	11.9 lb (5.44 kg)
C9200L-24T-4G	9.6 lb (4.35 kg)
C9200L-24P-4G	10.4 lb (4.71 kg)
C9200L-48T-4G	10 lb (4.53 kg)
C9200L-48P-4G	10.6 lb (4.8 kg)

Switch Model	Weight
C9200L-48T-4X	10 lb (4.53 kg)
C9200L-48P-4X	10.6 lb (4.8 kg)
C9200L-24P-4X	10.4 lb (4.71 kg)
C9200L-24T-4X	9.6 lb (4.35 kg)
C9200L-48PL-4G	10.6 lb (4.8 kg)
C9200L-48PL-4X	10.6 lb (4.8 kg)
C9200L-24PXG-4X	12 lb (5.44 kg)
C9200L-24PXG-2Y	12 lb (5.44 kg)
C9200L-48PXG-4X	12.6 lb (5.71 kg)
C9200L-48PXG-2Y	12.6 lb (5.71 kg)

This table describes the physical specifications.

Table 19: Physical Specifications for the Power Supplies

Weight	
PWR-C5-125WAC	1.5 lb (0.68 kg)
PWR-C5-600WAC	1.7 lb (0.77 kg)
PWR-C5-1KWAC	2 lb (0.9 kg)
PWR-C6-125WAC	1.5 lb (0.68 kg)
PWR-C6-600WAC	1.7 lb (0.77 kg)
PWR-C6-1KWAC	2 lb (0.9 kg)
Dimensions (H x D x W)	
The dimensions shown include the extraction handle and the keying feature.	
PWR-C5-125WAC	1.58 x 4.0 x 7.6 in. (40.1 X 101.6 X 193 mm)
PWR-C5-600WAC	
PWR-C5-1KWAC	
PWR-C6-125WAC	
PWR-C6-600WAC	
PWR-C6-1KWAC	

Specifications for the Power Supplies and Fans

Table 20: Power Specifications for the AC Power Supplies

Power Requirements	
Maximum output power	• PWR-C5-125WAC and PWR-C6-125WAC: 125 W • PWR-C5-600WAC and PWR-C6-600WAC: 600 W • PWR-C5-1KWAC and PWR-C6-1KWAC: 1000 W
Input voltage and Frequency	100 to 240 VAC(autoranging) 50-60 Hz
Input current	• PWR-C5-125WAC and PWR-C6-125WAC: 1.6-0.7A • PWR-C5-600WAC and PWR-C6-600WAC: 7-2.8A • PWR-C5-1KWAC and PWR-C6-1KWAC: 12-6A
Output ratings	• PWR-C5-125WAC and PWR-C6-125WAC: 12V @ 10.5A • PWR-C5-600WAC and PWR-C6-600WAC: 54V @ 11.1A • PWR-C5-1KWAC and PWR-C6-1KWAC: 54V @ 16.5A
Total output BTU	• PWR-C5-125WAC and PWR-C6-125WAC: 426.5 BTUs per hour, 125W • PWR-C5-600WAC and PWR-C6-600WAC: 2047.3 BTUs per hour, 600W • PWR-C5-1KWAC and PWR-C6-1KWAC: 3412 BTUs per hour, 1000W

Table 21: Fan Module Environmental and Physical Specifications

Environmental Ranges	
Operating temperature	23 to 176°F (–5 to 80°C)
Storage temperature	–40 to 185°F (–40 to 85°C) up to 15,000 ft (4500 m)

Relative humidity	5 to 95% (noncondensing)
Altitude	Up to 13,000 ft (4000 m)
Physical Specification	
Dimensions (H x D x W)	1.62 x 1.73 x 4.24 in. (4.11 x 4.39 x 10.76 cm)
Weight (for three fans)	0.48 lb (0.21 kg)
Operating Specification	
Airflow	20 cfm

Switch LEDs

LEDs

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

Figure 51: Switch Front Panel LEDs
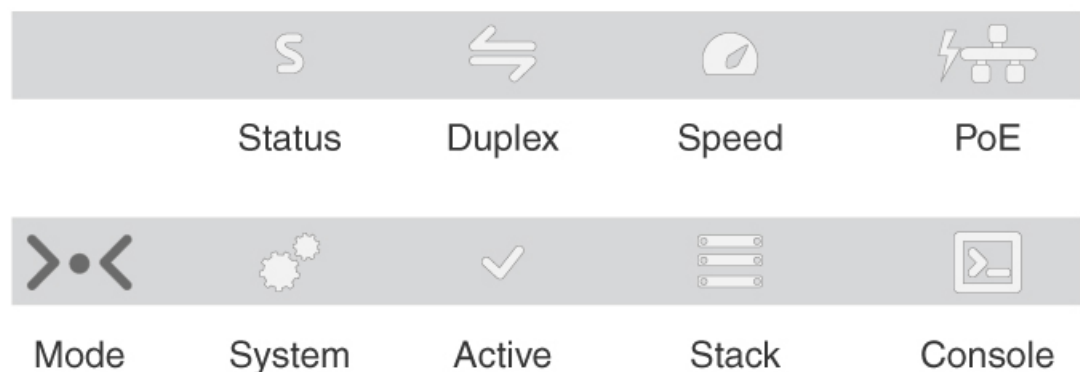
Console LED

The console LED indicates whether the USB console port or the bluetooth console is enabled.

Table 22: Console LED

LED	Color	Description
Console	Solid green	USB Mini-Type B console port is active.
	Off	USB cable not connected

System LED

Table 23: System LED

Color	System Status
Off	System is not powered on.
Green	System is operating normally.
Blinking green	System is loading the software.
Amber	System is receiving power but is not functioning properly.
Blinking amber	There is a fault with one of the following: • Network module (non traffic-related) • Power supply • Fan module

MASTER LED

Table 24: MASTER LED

Color	Description
Off	Switch is not the master switch.
Green	Switch is the stack master or a standalone switch.
Fast blinking green	Switch is in stack standby mode.
Amber	An error occurred when the switch was selecting the stack master switch, or another type of stack error occurred.

STACK LED

The STACK LED shows the sequence of member switches in a stack. Up to eight switches can be members of a stack. The first eight port LEDs show the member number of a switch in a stack.

Figure 52: STACK LED

This figure shows the LEDs on for each switch. When you press the Mode button to select the STACK LED, the corresponding port LEDs will blink green for each switch. For example, for switch 1, port 1 will blink green and the rest of the LEDs will be off. On switch 2, port 2 will blink green and the rest of the LEDs will be off. The same behavior will be seen with the remaining switches in the stack.
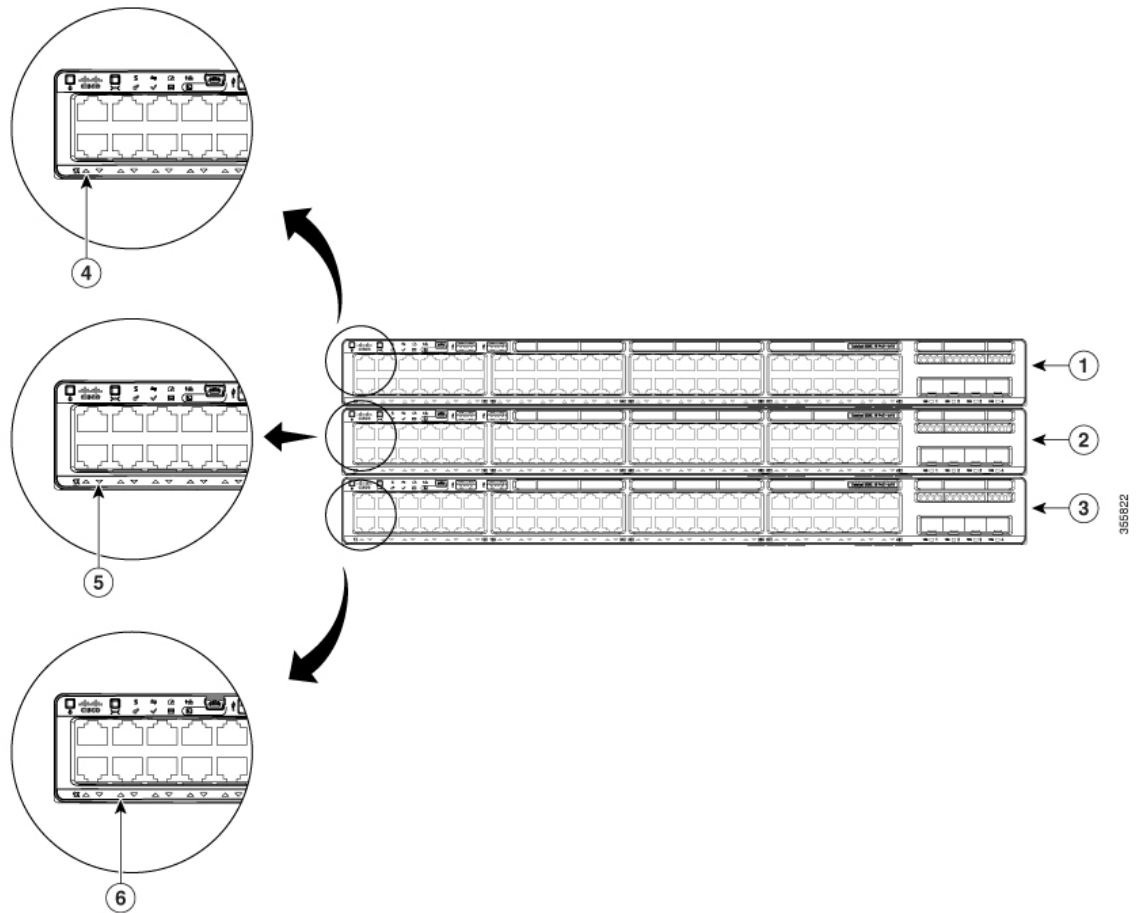
1	Stack member 1	4	LED blinks green to show that this is switch 1 in the stack.
2	Stack member 2	5	LED blinks green to show that this is switch 2 in the stack.

3	Stack member 3	6	LED blinks green to show that this is switch 3 in the stack.

PoE LED

The PoE LED indicates the status of the PoE mode: either PoE or PoE+.

Table 25: PoE LED

Color	Description
Off	PoE mode is not selected. None of the 10/100/1000 ports have been denied power or are in a fault condition.
Green	PoE mode is selected, and the port LEDs show the PoE mode status.
Blinking amber	PoE mode is not selected. At least one of the 10/100/1000 ports has been denied power, or at least one of the 10/100/1000 ports has a PoE mode fault.

Port LEDs and Modes

Each Ethernet port, 1-Gigabit Ethernet module slot, and 10-Gigabit Ethernet module slot has a port LED. These port LEDs, as a group or individually, display information about the switch and about the individual ports. The port mode determines the type of information shown by the port LEDs.

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.

When you press the Mode button on any switch in the switch stack, all the stack switches change to show the same selected mode. For example, if you press the Mode button on the active switch to show the SPEED LED, all the other switches in the stack also show the SPEED LED.

Table 26: Port Mode LEDs

Mode 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.
DUPLX	Port duplex mode	The port duplex mode: full duplex or half duplex.
ACTV	Active	The active switch status.
STACK	Stack member status StackWise port status	Stack member status. The StackWise port status. See STACK LED, on page 81.
PoE[3]	The PoE+ port status.	The PoE+ port status.

[3] Only switches with PoE+ ports.

Table 27: Meaning of Switch LED Colors in Different Modes

Port Mode	Port LED Color	Meaning
STAT (port status)	Off	No link, or port was administratively shut down.
	Green	Link present, no activity.
	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 and jabber errors are monitored for a link-fault indication.
	Amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. After a port is reconfigured, the port LED can be amber for up to 30 seconds as STP checks the switch for possible loops.
SPEED	**10/100/1000/SFP ports**	
	Off	Port is operating at 10 Mb/s.
	Green	Port is operating at 100 Mb/s.
	Single green flash (on for 100 ms, off for 1900 ms)	Port is operating at 1000 Mb/s.
	Uplink ports	
	Off	Port is not operating.
	Blinking green	Port is operating at up to 10 Gb/s.
DUPLX (duplex)	Off	Port is operating in half duplex.
	Green	Port is operating in full duplex.
ACTV (data active switch)	Off	The switch is not the active switch. **Note** For a standalone switch, this LED is off.
	Green	The switch is the active switch.
	Amber	Error during active switch election.
	Blinking green	Switch is a standby member of a data stack and assumes active responsibilities if the current active switch fails.

Port Mode	Port LED Color	Meaning
STACK (stack member)	Off	No stack member corresponding to that member number.
	Blinking green	Stack member number.
	Green	Member numbers of other stack member switches.
PoE+[4]	Off	PoE+ is off. If the powered device is receiving power from an AC power source, the port LED is off even if the device is connected to the switch port.
	Green	PoE+ is on. The port LED is green 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.
	Blinking amber	PoE+ is off due to a fault or because it has exceeded a limit set in the switch software. **Caution** PoE+ faults occur when noncompliant cabling or powered devices are connected to a PoE+ port. Use only standard-compliant cabling to connect Cisco prestandard IP Phones and wireless access points or IEEE 802.3af-compliant devices to PoE+ ports. You must remove from the network any cable or device that causes a PoE+ fault.
	Amber	PoE+ for the port has been disabled. **Note** PoE+ is enabled by default

[4] Only switches with PoE or PoE+ ports.

Beacon LED

The UID and the Beacon LED can be turned on by the administrator to indicate that the switch needs attention. It helps the administrator identify the switch. The beacon can be turned on by either pressing the UID button on the switch front panel, or by using the CLI. There is a blue beacon on the front and rear panel of the switch. The blue beacon on the front panel is a button labeled UID, and on the back panel it is a LED labeled BEACON.

Color/State	Description
Solid blue	The operator has indicated that the system needs attention.

RJ-45 Console Port LED

Table 28: RJ-45 Console Port LED

Color	RJ-45 Console Port Status
Off	RJ-45 console is disabled. USB console is active.
Green	RJ-45 console is enabled. USB console is disabled.

Fan LED

Table 29: Fan LED Indicator

Color/State	Description
Off	The fan is not receiving power; the fans have stopped.
Green	All fans are operating normally.
Amber	One or more fans have encountered tachometer faults.
Red	One or more fans' tachometer faults have exceeded the maximum limit.

Uplink Port LEDs

The uplink ports have various status LEDs. Each port LED is labeled according to its module status.

- For SFP ports, a G labeling nomenclature is used, where G = 1 Gigabit. The The G label appears to the left of the uplink port LED.

- For SFP+ ports, a 10G labeling nomenclature is used, where 10G = 10 Gigabit. The 10G label appears to the left of the uplink port LED. SFP+ module ports support both SFP+ and SFP modules

- For SFP28 ports, a 25G labeling nomenclature is used, where 25G = 25 Gigabit. The The G label appears to the left of the uplink port LED.

- For QSFP+ ports, a 40G labeling nomenclature is used, where 40G = 40 Gigabit. The The G label appears to the left of the uplink port LED.

Figure 53: SFP+ Port LEDs
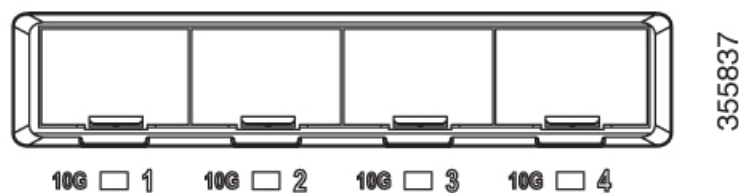
Color	Network Module Link Status
Off	Link is off.
Green	Link is on; no activity.
Blinking green	Activity on a link; no faults. **Note** The LED will blink green even when there is very little control traffic.
Blinking amber	Link is off due to a fault or because it has exceeded a limit set in the switch software. **Caution** Link faults occur when non-compliant cabling is connected to an SFP/SFP+ port. Use only standard-compliant cabling to connect to Cisco SFP/SFP+ ports. You must remove from the network any cable or device that causes a link fault.
Amber	Link for the SFP/SFP+/SFP28/QSFP+ has been disabled.