# Cisco C9350 Series Smart Switches Hardware Installation Guide

**Cisco C9350 Series Smart Switches**
Updated May 15, 2026

# 1 Introduction to Cisco C9350 Series Smart Switches

**Topics:**


- Switch models
- Front-panel components
- Rear panel components


This module introduces the Cisco C9350 Series Smart switches and provides detailed information of all the switch variants, front and rear panel components.

Cisco C9350 series smart switches are based on the Silicon-One ASIC architecture. The primary position of these switches is in campus access networks. You can also position these switches in campus distribution or collapsed core networks. A distribution network focuses on connecting one or more access layers to the core layer, and a collapsed core network connects multiple distribution layers to other network domains.

## Switch models

Cisco C9350 switch models.

Cisco C9350 series has eight stock keeping units (SKUs) with native copper downlink ports. The copper downlinks provide Ethernet connectivity using standard copper (RJ-45 connector) ports, typically supporting speeds such as 10/100/1000 Mbps (1G), or up to 10G over copper.

Each SKU has a daughter card that contains the front panel system LEDs, push-buttons, and USB interfaces.

**Table 1: Cisco C9350 series switches models and descriptions**

| Switch model | Description |
|---|---|
| C9350-24HX | Stackable 24 x 10/100 M and 1/2.5/5/10 GE MultiGigabit Ethernet downlink ports; UPoE+ budget of 90W, supports Stackwise-1.6T. |
| C9350-48HX | Stackable 48 x 10/100 M and 1/2.5/5/10 GE Multigigabit Ethernet downlink ports; UPoE+ budget of 90W, supports Stackwise-1.6T. |
| C9350-48HXN | Stackable 36 x 10/100 M and 1/2.5/5 GE and 12 x 10/100 M and 1/2.5/5/10 GE Multigigabit Ethernet downlink ports, UPoE+ budget of 90W, supports Stackwise-1.6T. |
| C9350-24P | Stackable 24 x 1 G and 10/100 M downlink ports, PoE+ budget of 30W, supports Stackwise-1.6T. |
| C9350-48P | Stackable 48 x 1 G and 10/100 M downlink ports, PoE+ budget of 30W, supports Stackwise-1.6T. |
| C9350-24T | Stackable 24 x 1 G and 10/100 M downlink ports, supports Stackwise-1.6T. |
| C9350-48T | Stackable 48 x 1 G and 10/100 M downlink ports, supports Stackwise-1.6T. |
| C9350-48TX | Stackable 48 x 10/100 M and 1/2.5/5/10 GE Multigigabit Ethernet downlink ports, supports Stackwise-1.6T. |
| C9350-24U | Stackable 24 x 1 G and 10/100 M downlink ports. UPoE+ budget of 60W, supports Stackwise-1.6T. |
| C9350-48U | Stackable 48 x 1 G and 10/100 M downlink ports; UPoE+ budget of 60W, supports Stackwise-1.6T. |

## Front-panel components

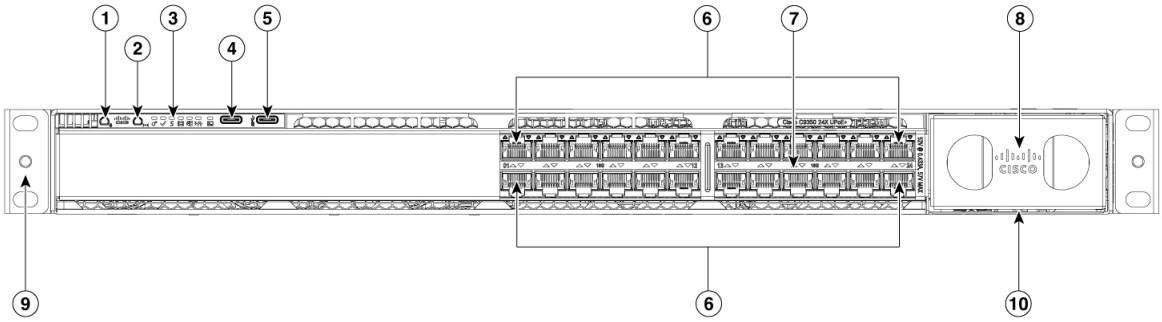
Describes the front-panel components of the Cisco C9350 switch.

This section describes the front-panel components of the Cisco C9350 series smart switches. All the switch models have similar components.

> **Note**
>
> The Cisco C9350 switches might have slight cosmetic differences on the bezels.

This illustration displays the front-panel of C9350-24HX

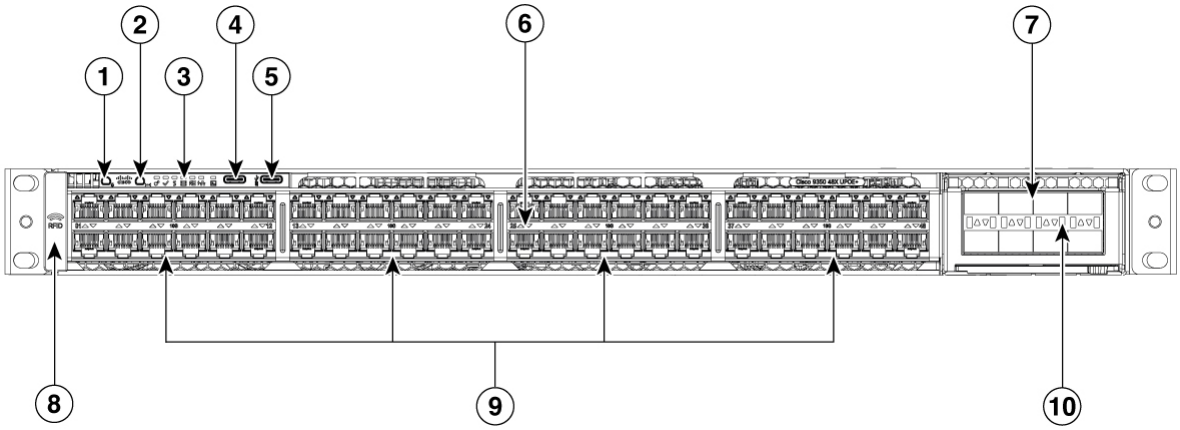
**Figure 1: Front-panel of C9350-24HX**




| | | | |
|---|---|---|---|
| 1 | Beacon LED (UID button) | 6 | 12x2 Multigigabit Ethernet RJ-45 ports |
| 2 | Mode button | 7 | Mgig port LEDs |
| 3 | Status LEDs | 8 | Network modules |
| 4 | USB-C console port | 9 | Optional RFID |
| 5 | USB-C host port | 10 | Network module LEDs |

This illustration displays the front-panel of C9350-48HX, C9350-48HXN, and C9350-48TX.

**Figure 2: Front-panel of C9350-48HX, C9350-48HXN, and C9350-48TX**

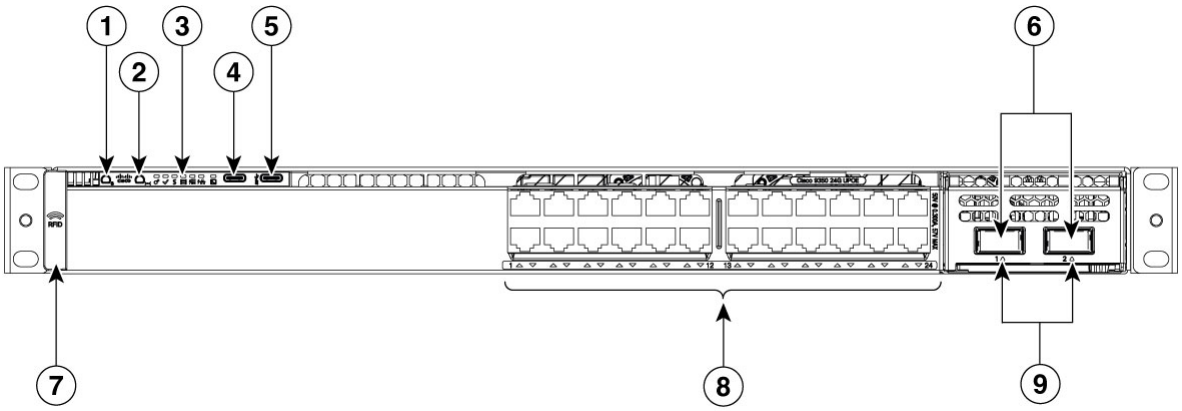



| | | | |
|---|---|---|---|
| 1 | Beacon LED (UID button) | 6 | Mgig port LEDs |
| 2 | Mode button | 7 | Network modules |
| 3 | Status LEDs | 8 | Optional RFID |

| | | | |
|---|---|---|---|
| 4 | USB-C console port | 9 | 24x2 Multigigabit Ethernet RJ-45 ports |
| 5 | USB-C host port | 10 | Network module LEDs |

This illustration displays the front-panel of C9350-24P, C9350-24T, and C9350-24U.

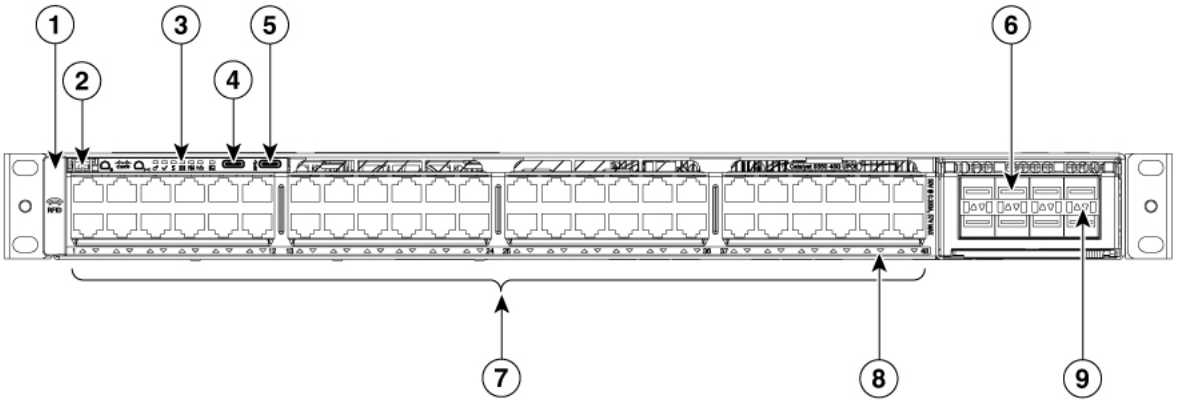
**Figure 3: Front-panel of C9350-24P, C9350-24T, and C9350-24U**




| | | | |
|---|---|---|---|
| 1 | Beacon LED (UID button) | 6 | Network module slots |
| 2 | Mode button | 7 | Optional RFID |
| 3 | Status LEDs | 8 | 12x2 1G and 10/100 M ports |
| 4 | USB-C console port | 9 | Network module LEDs |
| 5 | USB-C host port | - | |

This illustration displays the front-panel of C9350-48P, C9350-48T, and C9350-48U.

**Figure 4: Front-panel of C9350-48P, C9350-48T, and C9350-48U**




| | | | |
|---|---|---|---|
| 1 | Optional RFID | 6 | Network modules |
| 2 | System air intake | 7 | 24x2 1G and 10/100M ports |
| 3 | LEDs | 8 | Port LEDs |
| 4 | USB-C console port | 9 | Network module LEDs |

| | | | |
|---|---|---|---|
| 5 | USB-C host port | - | - |

## 10/100/1000 ports

Description of the 10/1000/1000 ports of the Cisco C9350 switch.

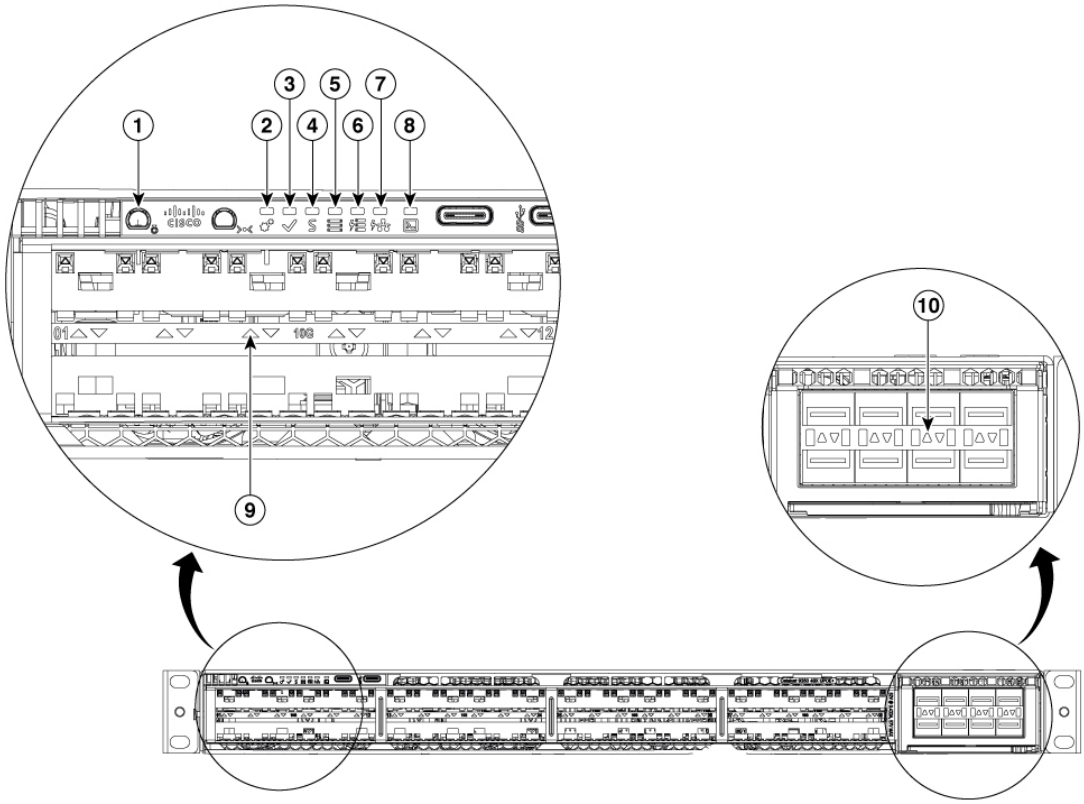
The 10/100/1000 ports are Ethernet interfaces that support multiple connection speeds. These ports use RJ-45 connectors with Ethernet pinouts. The maximum cable length is 328 feet (100 meters). The 100BASE-TX and 1000BASE-T traffic requires twisted pair (UTP) cable of Category 5 or higher. The 10BASE-T traffic can use Category 3 cable or higher.

## LEDs

Describes the LEDs in the front panel of the Cisco C9350 switch.

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

**Figure 5: Switch front-panel LEDs**




| | | | |
|---|---|---|---|
| 1 | Beacon LED in blue (UID button) | 6 | S-PWR LED |
| 2 | System LED (multi-color) | 7 | PoE LED |
| 3 | Active LED | 8 | USB console LED |
| 4 | Status LED | 9 | Port LEDs |
| 5 | Stack LED | 10 | Network module LEDs |

### Active LEDs

Provides description of each of the active LED colors.

This section describes the active LEDs.

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

### Beacon LEDs

Describes the beacon LEDs on the C9350 switch.

The unique device identifier (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 switched on by using the **hw-module beacon slot 1 { on | off }**command.

**Table 2: Beacon LED state and description**

| Color/State | Description |
|---|---|
|  Blue | The operator has indicated that the switch requires attention. |
| Off | Indicates that the module does not require any attention. |

### Fan LEDs

Fan LEDs on C9350

This section describes the status of fan LEDs.

| Color | 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. |

### Network module LEDs

The status of the network module LEDs on C9350 switches.

This table describes the network module link status.

| Color | Description |
|---|---|
| Off | Link is off. |
|  Green | Link is on; no activity. |
|  Blinking green | Activity on a link; no faults.<br>• The LED will blink green even when there is very little control traffic. |
|  Amber | Link for the SFP/SFP+/SFP28 has been disabled. |
|  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+/SFP28 port. Use only standard-compliant cabling to connect to Cisco SFP/SFP+/SFP28 ports. You must remove from the network any cable or device that causes a link fault.

### Ethernet RJ-45 network port LEDs

Ethernet RJ-45 network port LED description.

These LEDs indicate the status of PoE+, Cisco UPOE or Cisco UPOE+.

**Table 3: Ethernet RJ-45 network port LEDs**

| Color | Description |
|---|---|
| Off | PoE mode is not selected. None of the Ethernet RJ-45 network ports are 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 Ethernet RJ-45 network ports are denied power, or at least one of the ports have a PoE mode fault. |

### Port LEDs and modes

Port LEDs on C9350 switches and what the colors denote.

Each Ethernet port 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.

**Table 4: Port mode LEDs**

| Mode LED | Port mode | Description |
|---|---|---|
| STAT | Port status | The port status. This is the default mode. |
| ACTV | Active | The active switch status. |
| STACK | Stack member status | Stack member status. |
| | StackWise port status | The StackWise port status. For more information, refer to Stack LEDs on page 11. |
| PoE[1] | The PoE+ port status. | The PoE+ port status. |

**Table 5: Description 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.<br>After a port is reconfigured, the port LED can be amber for up to 30 seconds as STP checks the switch for possible loops. |
| |  Blinking amber | Port is blocked by STP and is only receiving control frames. |

[1] Only switches with PoE+ ports.

| Port mode | Port LED color | Meaning |
|---|---|---|
| ACTV (data active switch) | Off | The switch is not the active switch.<br><br>**Note**<br><br>For a standalone switch, this LED is off. |
| | <br>Green | The switch is the active switch. |
| | <br>Amber | Error during active switch election. |
| | <br>Blinking green | Switch is a standby member of a data stack and assumes active responsibilities if the current active switch fails. |
| STACK (stack member) | Off | No stack member corresponding to that member number. |
| | <br>Blinking green | Stack member number. |

| Port mode | Port LED color | Meaning |
|---|---|---|
| PoE+[2] | Off | PoE+ is off.<br>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. |
| | <br>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. |
| | <br>Blinking amber | PoE+ is off due to a fault or because it has exceeded a limit set in the switch software.<br>**Caution**<br>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. |
| | <br>Amber | PoE+ for the port has been disabled.<br>**Note**<br>PoE+ is enabled by default. |

### Stack LEDs

Stack LEDs displays the status of a data stack or Cisco StackWise .

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.

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 in the stack, 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.

### StackPower LEDs

StackPower LED status.

This section describes the StackPower LEDs, which indicates the status of the power supply unit (PSU) in the device.

[2] Only switches with PoE+ ports.

**Table 6: StackPower LEDs**

| Color | Description |
|---|---|
| Off | StackPower cable is not connected, or the switch is in standalone mode. |
|  Green | Each StackPower port is connected to another switch. |
|  Blinking green | This appears on the switch in a StackPower ring configuration that detects an open ring or has only one StackPower cable connected. |
|  Amber | There is a fault: load shedding is occurring, a StackPower cable is defective, or an administrative action is required. See the switch software configuration guide for information about configuring StackPower. |
|  Blinking amber | The StackPower budget is not sufficient to meet current power demands. |

### System LEDs

System LEDs on C9350 switches.

This section describes the system LEDs.

| Color | System status |
|---|---|
| Off | System is not powered on. |
|  Green | System is operating normally.<br>**Note**<br>This LED tend to look more Yellow or Amber than Green when operating normally. |
|  Blinking green | System is loading the software. |
|  Amber | System is receiving power but is not functioning properly.<br>The failure is either because of<br>• fan failure, or<br>• system POST failure. |

### USB console LEDs

USB console LEDs in the Cisco C9350 switch.

The USB console LED indicates whether there is an active USB connection to the port.

**Table 7: USB console LED**

| LED | Color | Description |
|---|---|---|
| USB console port |  Green | USB console port is active. |
| | Off | USB is disabled. |

## Management ports

Describes the management ports supported on the Cisco C9350 switch.

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

Management ports on Cisco C9350 series smart switches are

- Ethernet management port
- RJ-45 console port (EIA/TIA-232), and
- USB Type C console port.

The 10/100/1000/2.5G Ethernet management port connection uses a standard RJ-45 crossover or straight-through cable. The RJ-45 console port connection uses a RJ-45-to-DB-9 female cable. The USB console port connection uses a USB Type C to Type C or Type C to Type A cable. The USB console interface speeds are the same as the RJ-45 console interface speeds.

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 a 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 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.

## Multigigabit Ethernet ports

Describes the Multigigabit Ethernet ports and the cables supported on these ports.

The Multigigabit or mGig Ethernet ports can be configured to auto-negotiate multiple speeds on switch ports. The ports support100 Mbps, 10 Mbps, 5 Gbps, 2.5 Gbps, and 1 Gbps speeds on Category 5E (Cat5E), and up to 10 Gbps on Category 6 (Cat6) and up to a maximum of 100 Mbps on Category 6A (Cat6A) cables.

10Gbps over Cat6 cable is limited to distances up to 55 m. For 10GBASE-T, Cat6A can support up to 100 m when transmitting 10Gbps.

Due to the extra bandwidth requirements from cables, additional limitations exist for best performance. These limitations include, but are not limited to cable reach, cable bundling parameters (tightness, frequency, number of cables, speed with respect to each cable), and cable termination quality.

The 802.3 channel requirements for interoperability typically limit the cable reach to 100 m, but other factors can shorten this reach. In addition, for both Cisco UPOE and Cisco UPOE+, and data integrity, the 100 m should not include more than 10 m of total stranded or patch cable. Therefore, the assumption is that a 100 m link includes a maximum of two 5

m patch cables of the appropriate category, and 90 m of plenum or riser (that is, solid copper core) cables. Ensure that you follow the TIA guidance on cable dressing.

It is recommended to test the complete link using an appropriate cable tester for both 10 Gbps and 5 Gbps links. However, even if the link passes the cable testing, it is still prone to occasional errors due to aggressors in the bundle, and physical disturbances of the cables.

As an example of bundling limitations, for 5 Gbps with Cat5E cable, only a total 45 m bundled length is supported; the remaining 55 m should be unbundled. For bundling, follow the Cisco Guidelines and Best Practices for the Installation and Maintenance of Data Networking Equipment, which recommends the use of Velcro ties for every 1 to 2 m bundled sections.

When you are upgrading the network gear, but reusing the existing cable plant, note that at speeds above 2.5 Gbps traditional Cat5E channel specifications do not support a full 100 m reach. To ensure 5 Gbps link speeds, we recommend using Cat6A cabling. For more information, refer to the Whitepaper from NBASE-T alliance, which has now merged with Ethernet Alliance, archived at https://archive.nbaset.ethernetalliance.org/library/white-paper-2/.

## PoE, PoE+, Cisco UPoE, and Cisco UPoE+ ports

Explains the different types of Power over Ethernet ports available on Cisco C9350 switches.

A PoE (Power over Ethernet) port is an Ethernet interface that supplies power to connected devices over the same cable used for data transmission. A PoE+ port, also known as IEEE 802.3at, provides higher power to connected devices. It can supply up to 30W of power per port. The PoE port also supports BT 2-pair mode or IEEE 802.3bt (also known as PoE++ or Type 3/4 PoE) to deliver power using only two pairs of wires in an Ethernet cable, as an alternative to its advanced four-pair power delivery.

Universal Power over Ethernet (UPoE) can supply power up to 60W per port to connected devices. UPoE+ enables the powering of high-wattage devices through Ethernet cables; it can provides up to 90W of power per switch interface.

The PoE+, UPoE, and UPoE+ ports use the same connectors as described in 10/100/1000 ports on page 6.

This section lists the specifications and features of these ports.

- PoE+ ports: Support for IEEE 802.3af-compliant powered devices (up to 15.4 W PoE per port) and support for IEEE 802.3at-compliant powered devices (up to 30 W PoE+ per port). The maximum total PoE power in a 1RU switch is 1440W.
- Cisco UPoE ports: Support for Type 1 (IEEE 802.3af), Type 2 (IEEE 802.3at), Type 3 (IEEE 802.3bt), and Cisco UPoE powered devices delivering up to 60 W PoE per port. The maximum total PoE power in a 1RU switch is 2880W.
- Cisco UPoE+ ports: Support for Type 1 (IEEE 802.3af), Type 2 (IEEE 802.3at), Type 3 (IEEE 802.3bt), Type 4 (IEEE 802.3bt), and Cisco UPoE powered devices delivering up to 90 W per port. The maximum total PoE power in a 1RU switch is 4320W.
- Configuration for StackPower: When the switch internal power supply modules cannot support the total load, StackPower configurations allow the switch to leverage power available from other switches.
- Configurable support for Cisco intelligent power management, including enhanced power negotiation, power reservation, and per-port power policing.

Refer to the Power supply modules on page 18 for the power supply matrix that defines the available PoE, PoE+ and Cisco UPoE/UPoE+ power per port. The output of the PoE+ or Cisco UPoE/UPoE+ circuit has been evaluated as a Limited Power Source (LPS) per IEC 60950-1.

## Optional RFID

Optional RFID for Cisco C9350 switches.

The chassis has an optional built-in, front-facing, passive Radio Frequency Identification (RFID) tag that uses Ultra High Frequency (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.

For Cisco C9350 series smart switches, the RFID tag is optional. Based on your requirements, you can choose to order the switch with or without an RFID tag at the time of purchase through the PID.

## Network modules

Describes the network modules supported on Cisco C9350 switches.

The Cisco C9350 series smart switches support replaceable network modules. The switch generates logs when you insert or remove a network module with SFP/SFP+/SFP28 and QSP/QSFP28 ports.

**Table 8: Network modules**

This table lists the optional Cisco C9350 network modules.

| Network module | Description |
|---|---|
| C9350-NM-2C | This module has two 40 GE/100 GE slots with a QSFP28 connector in each slot. |
| C9350-NM-4C | This module has four 40 GE/100 GE slots with a QSFP28 connector in each slot. |
| C9350-NM-8Y | This module has eight 1/10/25 GE or four 50 GE slots with an SFP56 port in each slot. |

**Note**

All network modules are hot-swappable.

**Table 9: Supported network modules**

This table lists the network modules supported by the Cisco C9350 SKUs.

| Network module | Switch model |
|---|---|
| C9350-NM-2C | C9350-24HX, C9350-48HX, C9350-48HXN, C9350-24P, C9350-48P, C9350-24T, C9350-48T, C9350-48TX, C9350-24U, and C9350-48U |
| C9350-NM-4C | C9350-48HX, and C9350-48TX |
| C9350-NM-8Y | C9350-24HX, C9350-48HX, C9350-48HXN, C9350-24P, C9350-48P, C9350-24T, C9350-48T, C9350-48TX, C9350-24U, and C9350-48U |

## USB Type C ports

Describes the USB-C console and host ports available in the Cisco C9350 switch.

The USB Type C ports provide access to external USB flash devices (also known as thumb drives or USB keys). The USB Type C port supports flash drives with capacities from 128 MB to 256 GB.

Cisco C9350 series switches support both USB-C console port and host port.

- The USB-C console port

- Serves as a serial console interface for device management.
- Connects a computer or terminal directly to the Cisco device for configuration purposes.
- Enables terminal communication to configure routers, switches, firewalls, or other Cisco network devices.

- The USB-C host port
  - Connects USB devices such as flash drives or hardware tokens.
  - Functions as a host to manage connected peripherals.
  - Can be used for data transfer, storage expansion, or authentication devices.

In a switch stack, you can upgrade all switches in the stack with a USB key inserted in any switch member within the stack. Cisco IOS XE software enables the flash drive with standard file system access such as read, write, erase, and copy, and the ability to format the flash device with a File Allocation Table (FAT) file system.

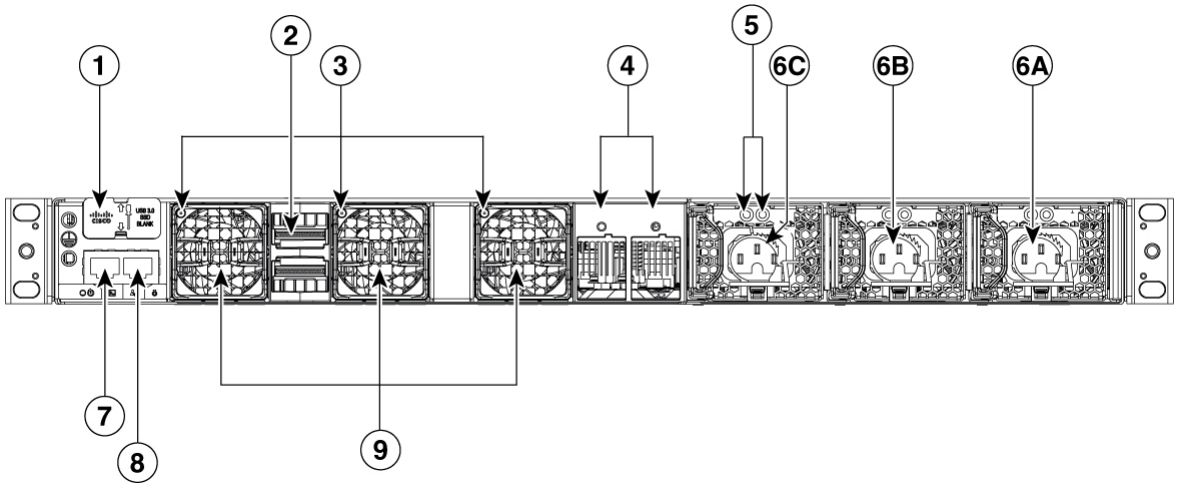
These ports enable you to automatically upgrade the internal flash with the USB drive's configuration and image for emergency switch recovery using USB auto-upgrade. This feature checks the internal flash for a bootable image and configuration and if either image or the configuration is not available,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

## Rear panel components

Describes the rear panel of the Cisco C9350 switch.

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

**Figure 6: Rear panel of a C9350-48HX and C9350-48TX**




| | | | |
|---|---|---|---|
| 1 | USB3.0-SSD port | 6 | Power supply modules |
| 2 | StackWise ports and connectors | 7 | RJ-45 console port |
| 3 | Fan status LEDs | 8 | Ethernet management port |
| 4 | StackPower ports and connectors | 9 | Fan modules |

| | | | |
|---|---|---|---|
| 5 | Power supply LEDs<br>• AC OK (input) status LED<br>• PS OK (output) status LED | - | - |

## Ethernet management port

Ethernet management port of the Cisco C9350 switch.

You can connect the switch to a host such as a Windows workstation or a terminal server through the 10/100/1000/2.5 G Ethernet management port or one of the console ports. The 10/100/1000/2.5 G Ethernet management port is a VPN routing and forwarding (VRF) interface and uses a RJ-45 crossover or straight-through cable.

**Note**

The 10/100/1000/2.5 G 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.

**Table 10: Ethernet management port LEDs**

This table shows the Ethernet management port LED colors and the description.

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

## Fan modules

Describes the fan modules available in the Cisco C9350 switch.

The Cisco C9350 series smart switches have three fan modules at the rear of the switch. The fans are hot-swappable and numbered from left to right.

A powered-on switch should always have more than one operational fan. The switch can operate with two operational fans and one nonfunctional fan, but the failed fan should be replaced as soon as possible to avoid a service interruption due to a second fan fault. A switch with one or more fans failed or removed will operate with fans at a faster speed, producing increased sound.

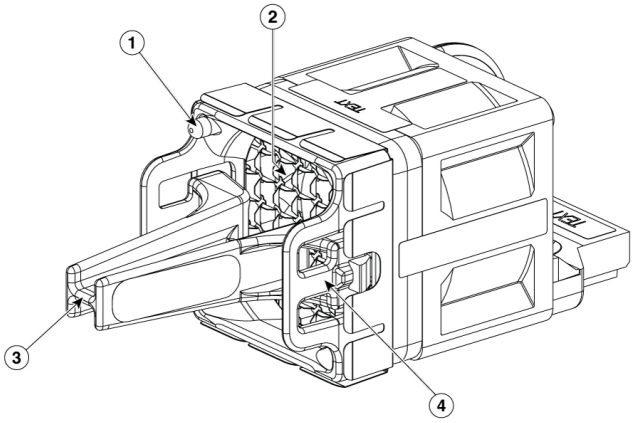
**Attention**

The switch requires three fans for proper cooling.

**DANGER**

Sharp edges on the fan module can cause serious injury. Keep fingers clear.

**Figure 7: Fan module**

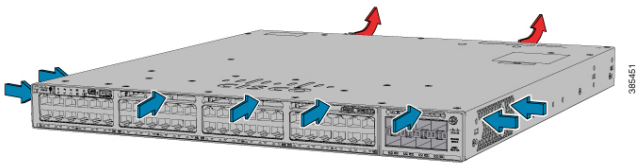



| | | | |
|---|---|---|---|
| 1 | Fan LED | 3 | Extraction handles |
| 2 | Exhaust vent | 4 | Retainer clip |

When the fan modules are operating properly, a green LED at the top left corner of the fan assembly (viewed from the rear), is ON. If the fan fails, the LED turns to amber.

The airflow direction is from front-to-rear and side-to-rear. This illustration shows the airflow pattern for the switches. The blue arrow shows cool airflow, and the red arrow shows warm airflow.

**Figure 8: Switch airflow pattern**



For information about installing a fan module and fan specifications, refer to the Replace and install a fan module on page 67.

## Power supply modules

Power supply modules for Cisco C9350 Series Switches.

An internal power supply module converts external electrical power (either AC or DC) into the precise DC voltages required to operate the switch's internal components, and also provides PoE to connected devices.

The Cisco C9350 series smart switches have three internal power supply module slots. You can use one, two, or three power supply modules. By default, these switches ship with one power supply module, and you can purchase more power supply modules when you order the switch or at a later date.

These switches can operate with either one, two, or three active power supply modules or with power supplied by a stack. A switch that is in a StackPower stack can operate with power supplied by other switches in the stack.

> ⚠ **Caution**
>
> A power supply module must be available in the power supply module slot A for efficient system cooling.

To ensure proper airflow, and maintain the recommended operating temperature, follow these power supply installation requirements:

- A power supply module must always be installed in slot A. Additional power supplies must be installed sequentially–first in slot B, followed by slot C.
- A power supply slot cover must be installed in every unused power supply slot.

**Table 11: Power supply module part numbers and descriptions**

The following table describes the supported internal power supply modules. In a switch, a mix of Platinum-certified and Titanium-certified power supply modules is supported.

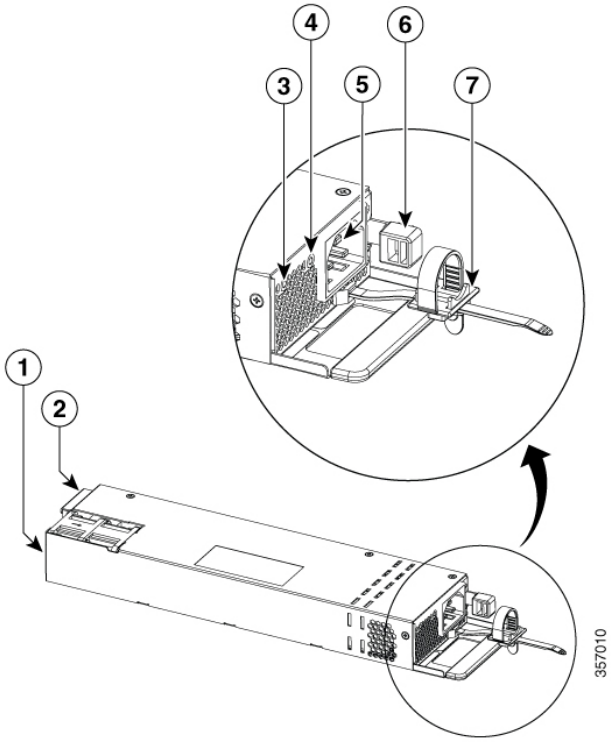
| Supported power supply modules | Description |
|---|---|
| PWR-C2-500WAC-I | 500 W AC Platinum-certified power supply module with port-side intake fan |
| PWR-C2-850WAC-I | 850 W AC Platinum-certified power supply module with port-side intake fan |
| PWR-C2-1600WAC-I | 1600W AC Titanium-certified power supply module with port-side intake fan, 1600W high-line input and 1200W low-line input |

### Power supply module components

Each AC power supply module has a power cord for connection to an AC power outlet. To view the list of available AC power cords, see the AC power cord specifications section.

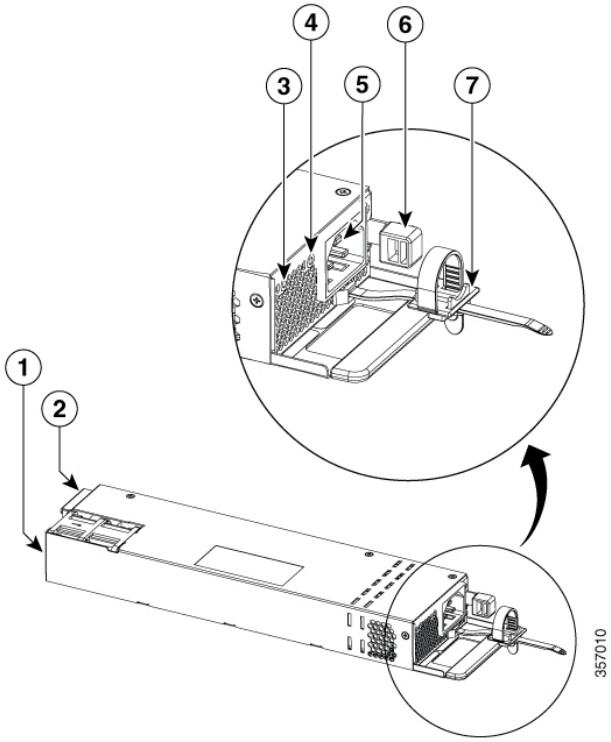
This section displays the supported power supply modules and the components of each of these.

**Figure 9: 500W AC power supply**



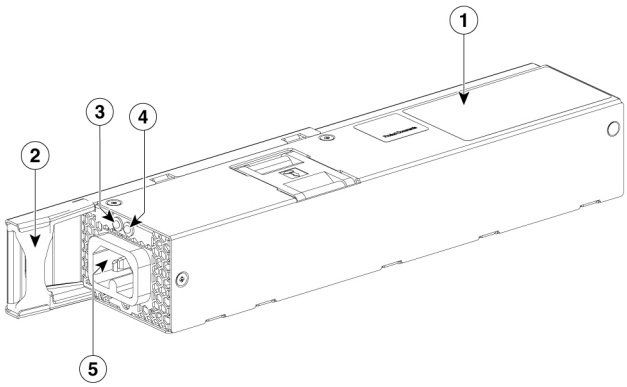

| | | | |
|---|---|---|---|
| 1 | 500 W AC power supply module | 5 | AC power cord connector |
| 2 | Keying feature | 6 | Release latch |
| 3 | AC OK LED | 7 | Power cord retainer |
| 4 | PS OK LED | - | - |

**Figure 10: 850 W AC power supply**




| | | | |
|---|---|---|---|
| 1 | 850 W AC power supply module | 5 | AC power cord connector |
| 2 | Keying feature | 6 | Release latch |
| 3 | AC OK LED | 7 | Power cord retainer |
| 4 | PS OK LED | - | - |

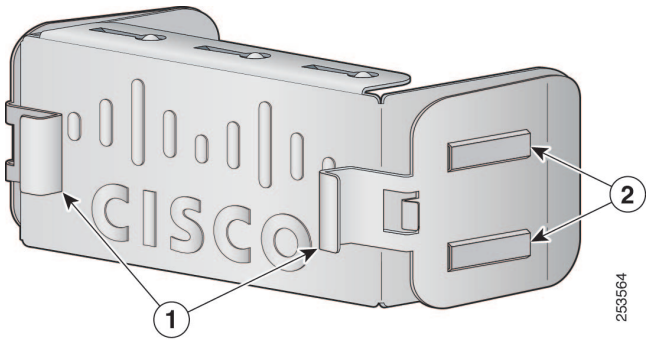
**Figure 11: 1600 W AC power supply**




| | | | |
|---|---|---|---|
| 1 | 1600 W AC power supply module | 5 | PS OK LED |
| 2 | Release latch | 6 | AC power cord connector |
| 3 | AC OK LED | | |

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

**Figure 12: Power supply slot cover**




| | | | |
|---|---|---|---|
| 1 | Release handles | 2 | Retainer clips |

The power supply LEDs are available at the rear of the switch, next to the power supply modules. This table explains the LEDs and what each color denotes.

**Table 12: 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 (LED is off). |
| Green | AC input power present. | Green | Power output to switch active. |
| | | Red | Output has failed. |

### Default power supply modules

All switches ship with a default power supply module. All the power supply modules (except the blank modules) have internal fans.

**Caution**

Do not operate the switch with one power supply module slot empty. Always install a blank module in the empty slot to keep the operating temperature and fan noise lower.

**Caution**

A power supply module must be installed in the power supply module Slot A for efficient system cooling.

This table displays the default power supply module that ships with each switch model.

**Table 13: Available PoE with default power supply**

| Switch model | Default power supply | Available PoE |
|---|---|---|
| C9350-24HX | PWR-C2-1600WAC | 1235W |

| Switch model | Default power supply | Available PoE |
|---|---|---|
| C9350-48HX | PWR-C2-1600WAC | 1120W |
| C9350-48HXN | PWR-C2-850WAC | 470W |
| C9350-48TX | PWR-C2-500WAC | No PoE |
| C9350-24P | PWR-C2-850WAC | 590W |
| C9350-48P | PWR-C2-850WAC | 590W |
| C9350-24T | PWR-C2-500WAC | No PoE |
| C9350-48T | PWR-C2-500WAC | No PoE |
| C9350-24U | PWR-C2-850WAC | 570W |
| C9350-48U | PWR-C2-850WAC | 570W |

### Power supply modes

Describes the combined and redundant power supply modes supported on Cisco C9350.

Cisco C9350 series smart switches offer redundant and combined configuration modes for power supplies. In both modes, the load is equally distributed among the power supplies.

The system load and number of power supply modules installed determine the power level required by the system from each power supply module, and consequently, the suitable power supply mode. For system power budgeting estimates and to determine power supply requirements, use the Cisco Power Calculator.

To configure a power supply mode, enter the **power redundancy-mode** command in global configuration mode. If you do not configure a mode, the default mode applies. The default mode is combined mode

#### Combined mode

In combined mode, the total power available for the entire chassis is equal to the sum of the output of all the power supplies, multiplied by the share ratio. In combined mode, the power supplies can be of different wattage.

Total combined power = P + (N-1) * P * (share ratio), where

- P is the power output of one PSU
- N is the number of PSUs available on the switch. This can be 1 or 2 or 3.

#### Redundant N+1 mode

In redundant mode, a given power supply module can either be active, or in a standby mode. In N+1 mode, N is the number of active power supply modules and +1 is the power supply module configured as the standby module.

When you configure the switch with N+1 redundancy, the Cisco IOS XE software ensures that there is a standby power supply available, and that sufficient power is available with the active power supply modules (N). All the power supplies including the active and standby shares the load equally.

However, with a standby power supply installed, the system ensures that the additional output power available with a standby is always reserved for use in case of a failure. If the power supply mode is set to redundant and the total active output power is not sufficient to meet the power requirements, the switch will not enter redundant mode.

## RJ-45 console port

RJ-45 console port and LEDs available on Cisco C9350 switches.

The RJ-45 console port is a serial communication port used for device management and configuration. It allows direct access to the device CLI for initial setup, troubleshooting, or recovery when network access is unavailable. The console port transmits serial data rather than Ethernet traffic.

**RJ-45 console port LEDs**
This table shows the RJ-45 console port LED colors and description.

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

## StackWise ports

Describes the StackWise ports and the supported cables.

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

You can order these StackWise cables from your Cisco sales representative:

- STACK-T1A-50CM Cisco StackWise-1.6T 50 cm stacking cable
- STACK-T1A-1M Cisco StackWise-1.6T 1 m stacking cable spare
- STACK-T1A-3M Cisco StackWise-1.6T 3 m stacking cable spare

> ⚠ **Caution**
>
> Use only approved cables, and connect only to similar Cisco equipment. Equipment might be damaged if connected to non-approved Cisco cables or equipment.

## StackPower connector

StackPower connector cables for StackPower ports.

The Cisco C9350 switches have a StackPower connector for use with Cisco StackPower cables to configure a switch power stack that includes up to four switches. A power stack can be configured in redundant or power-sharing mode.

You can order these StackPower cables from your Cisco sales representative:

- CAB-SPWR-35CM= (0.35-meter cable)
- CAB-SPWR-100CM= (1.0-meter cable)

For details about connecting StackPower cables and StackPower guidelines, refer to Plan a StackPower stack on page 48 section.

## USB 3.0 SSD port

Describes the USB 3.0 SSD port and the USB types supported by this port.

To support the storage needs on the switch, the Cisco C9350 Series Smart Switches provide support for pluggable 120 GB and 240 GB USB 3.0 Solid State Drive (SSD) modules. The USB 3.0 SSD module slot is located at the rear panel of

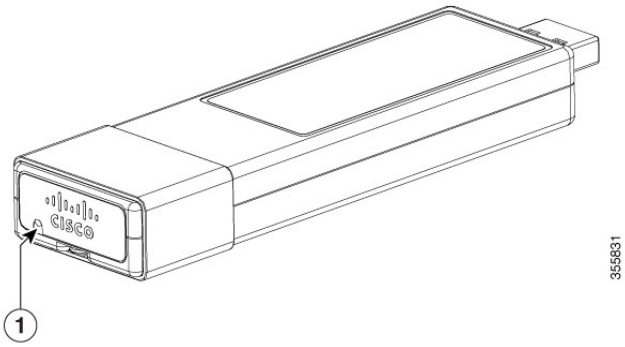
the switch. The storage drive can also be used to save packet captures and trace logs generated by the operating system. The USB 3.0 SSD device is field replaceable.

The USB 3.0 supports an optional 120 GB USB 3.0 SSD (SSD-120G) and 240 GB USB 3.0 SSD (SSD-240G) storage devices. SSD-120G provides an extra 120GB and SSD-240G provides 240 GB of storage for application hosting.

Applications can be hosted in KVM (Kernel-based Virtual Machines), LXC (Linux Containers), or Docker containers. USB 3.0 SSD can also be used to save packet captures, trace logs generated by the operating system, Graceful Insertion and Removal (GIR) snapshots and third-party applications. It can be used simultaneously as a general-purpose storage device and as an app hosting device. You must use only Cisco USB drives; non-Cisco USB drives are not supported.

USB 3.0 SSD is enabled with Self-Monitoring, Analysis and Reporting Technology (S.M.A.R.T) functionality to monitor endurance, predict wear-out and carry out various self-tests.

**Figure 13: SSD-120G**




| | |
|---|---|
| 1 | Status LED |

# 2 Prepare to Install

**Topics:**


- Before installing the Cisco C9350 switch
- Safety warnings
- Guidelines to install the switch
- Site requirements
- Shipping box contents
- Tools and equipment
- Verify the switch operation
- When to plan for a data and power stack
- Plan a switch data stack
- Plan a StackPower stack
- Power-on sequence for switch stacks


Explains how to prepare the site where your Cisco C9350 Series Switches along with safety and installation guidelines, and the required tools and equipment information. The module also explains how and when to prepare for data and power stacks.

## Before installing the Cisco C9350 switch

Pre-installation steps for the Cisco C9350 switch.

Before you install your Cisco C9350 series smart switches, follow these guidelines.

- Comply with the safety warnings.
- Explore the data stacks options, if you are planning a Switch Data Stack.
- Explore the StackPower stack options, if you are planning a StackPower Stack.
- Verify the contents of the shipping box.
- Ensure that you have the tools and equipment required to install the switch.
- Verify if the switch is powering on.

## Safety warnings

Adhere to these safety warning before you install your Cisco C9350 switch.

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**

**Statement 1071–**Warning Definition

IMPORTANT SAFETY INSTRUCTIONS

Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Read the installation instructions before using, installing, or connecting the system to the power source. Use the statement number at the beginning of each warning statement to locate its translation in the translated safety warnings for this device.

SAVE THESE INSTRUCTIONS



**Note**

**Statement 407–**Japanese Safety Instruction

You are strongly advised to read the safety instruction before using the product.

https://www.cisco.com/web/JP/techdoc/pldoc/pldoc.html

When installing the product, use the provided or designated connection cables/power cables/AC adapters.

**〈製品使用における安全上の注意〉**

**www.cisco.com/web/JP/techdoc/index.html**

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**Warning**

**Statement 445–**Connect the Chassis to Earth Ground

To reduce the risk of electric shock, connect the chassis of this equipment to permanent earth ground during normal use.

**Warning**

**Statement 1006–**Chassis Warning for Rack-Mounting and Servicing

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.

**Warning**

**Statement 1008–**Class 1 Laser Product

This product is a Class 1 laser product.

Take note of the following power safety warnings:

**Warning**

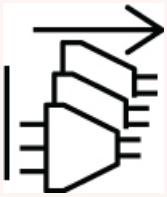
**Statement 1017**—Restricted Area

This unit is intended for installation in restricted access areas. Only skilled, instructed, or qualified personnel can access a restricted access area.

**Warning**

**Statement 1028**—More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.



**Warning**

**Statement 1055**—Class 1/1M Laser

Invisible laser radiation is present. Do not expose to users of telescopic optics. This applies to Class 1/1M laser products.




**Warning**

**Statement 1073**—No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

**Warning**

**Statement 1074**—Comply with Local and National Electrical Codes

To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes.

**Warning**

**Statement 1079—**Hot Surface

This icon is a hot surface warning. To avoid personal injury, do not touch without proper protection.



**Note**

**Statement 1089—**Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.

**Warning**

**Statement 1090—**Installation by a Skilled Person

Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.

**Warning**

**Statement 1091—**Installation by an Instructed Person or Skilled Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed person or skilled person.

**Warning**

**Statement 1099—**Before Connecting to System Power Supply

High touch/leakage current–Permanently connected protective earth ground is essential before connecting to the system power supply.

**Warning**

**Statement 7003–** Shielded Cable Requirements for Intrabuilding Lightning Surge

The intrabuilding port(s) of the equipment or subassembly must use shielded intrabuilding cabling/wiring that is grounded at both ends.

The following port(s) are considered intrabuilding ports on this equipment: RJ-45 Copper Ethernet ports.

**Note**

**Statement 7004–** Special Accessories Required to Comply with GR-1089 Emission and Immunity Requirements

To comply with the emission and immunity requirements of GR-1089, shielded cables are required for the following ports: RJ-45 Copper Ethernet ports.

**Warning**

**Statement 7005–** Intrabuilding Lightning Surge and AC Power Fault

The intrabuilding port(s) of the equipment or subassembly is suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding port(s) of the equipment or subassembly MUST NOT be metallically connected to interfaces that connect to the OSP or its wiring for more than 6 meters (approximately 20 feet). These interfaces are designed for use as intrabuilding interfaces only (Type 2, 4, or 4a ports as described in GR-1089) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection in order to connect these interfaces metallically to an OSP wiring system.

The following ports are considered intrabuilding ports on the equipment: RJ-45 Copper Ethernet ports.

**Note**

**Statement 7013–**Equipment Grounding Systems–Common Bonding Network (CBN)

This equipment is suitable for installations using the CBN.

**Note**

**Statement 7015–**Equipment Bonding and Grounding

When you use thread-forming screws to bond equipment to its mounting metalwork, remove any paint and nonconductive coatings and clean the joining surfaces. Apply an antioxidant compound before joining the surfaces between the equipment and mounting metalwork.

**Note**

**Statement 7016–** Battery Return Conductor

Treat the battery return conductor of this equipment as Isolated DC return (DC-I).

**Note**

**Statement 7018–**System Recover Time

The equipment is designed to boot up in less than 30 minutes provided the neighboring devices are fully operational.

**Note**

**Statement 8015–**Installation Location Network Telecommunications Facilities

This equipment is suitable for installation in network telecommunications facilities.

**Note**

**Statement 8016–**Installation Location Where the National Electric Code (NEC) Applies

This equipment is suitable for installation in locations where the NEC applies.

**Warning**

**Statement 9001–**Product Disposal

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

**Note**

The grounding architecture of this product is DC-isolated (DC-I).

## Guidelines to install the switch

Guidelines to install the Cisco C9350 switch.

When determining where to install the switch, ensure that these guidelines are met.

- Clearance to the switch front and rear panels meet these conditions.
  - Front-panel LEDs can be easily read.
  - Access to ports is sufficient for unrestricted cabling.
  - AC power cord can reach from the AC power outlet to the connector on the switch rear panel.
  - The pluggable transceiver module minimum-bend radius and connector length is met. See the Cisco pluggable transceiver 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.
- 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 free from dust and foreign conductive or corrosive materials. For more information, see Air Quality and Corrosion.

## Site requirements

How to plan a proper location for your Cisco C9350 switch.

Planning a proper location for the switch and layout of the equipment rack or wiring closet is essential for successful system operation. These sections describe some of the basic site requirements that you should be aware of as you prepare to install your switch.

- Environmental factors can adversely affect the performance and longevity of your system.
- Install the switch in an enclosed, secure area, ensuring that only qualified personnel have access to the switch and control of the environment.
- Equipment that is placed too closely together or that is inadequately ventilated may cause system over-temperature conditions, leading to premature component failure.
- Poor equipment placement can make chassis panels inaccessible and difficult to maintain.
- The switch requires a dry, clean, well-ventilated, and air-conditioned environment.
- To ensure normal operation, maintain ambient airflow. If the airflow is blocked or restricted, or if the intake air is too warm, an over-temperature condition may occur. The switch environmental monitor may then shut down the system to protect the system components.

### Air flow

Describes the air flow in the Cisco C9350 switch.

The switch is designed to be installed in an environment where there is a sufficient volume of air available to cool the switch and its components. If there are any constraints with regard to the free flow of air through the chassis, or if the ambient air temperature is elevated, the switch environmental monitor may then shut down the system to protect the system components.

To maintain proper air circulation through the switch chassis, we recommend that you maintain a minimum space of 6 inches (15 cm) between a wall and the chassis and power supply unit air intakes or a wall and the chassis and power supply unit hot air exhausts. In situations where the switch chassis are installed in adjacent racks, you should allow a minimum space of 12 inches (30.5 cm) between the air intake of one chassis and the hot air exhaust of another chassis. Failure to maintain adequate spacing between chassis may cause the switch chassis that is drawing in the hot exhaust air to overheat and fail.

If you are installing your switch in an enclosed or partially enclosed rack, we strongly recommend that you verify that your site meets these guidelines.

- Verify that the ambient air temperature within the enclosed or partially enclosed rack is within the chassis operating temperature limits. After installing the chassis in the rack, power up the chassis and allow the chassis temperature to stabilize (approximately 2 hours).

  Measure the ambient air temperature at the chassis air intake grill by positioning an external temperature probe 1 inch (2.5 cm) away from the chassis left side, and centered on the chassis both horizontally and vertically.

  Measure the ambient air temperature at the power supply unit air intake grill by positioning an external temperature probe 1 inch (2.5 cm) away from the chassis front, centered on the power supply unit section located above the card slots.

  - If the ambient intake air temperature is less than 109° F (45° C) at altitudes of 6,000 feet and below, the rack meets the intake air temperature criterion. At altitudes above that threshold and up to 10,000 feet (3000 m), the air intake should not exceed 104° F (40° C).
  - If the ambient intake air temperature exceeds this recommendation, the system may experience minor temperature alarms and increase fan speeds in response.
  - If the ambient intake air temperature equals or is greater than 131° F (55° C), the system may experience a major temperature alarm with maximum fan speeds in response. If ambient temperature continues to increase, system will respond with protective shut down.

- Plan ahead. A switch that is currently installed in an enclosed or partially enclosed rack might meet ambient air temperature and air flow requirements at present. However, if you add more chassis to the rack or more modules to a chassis in the rack, the additional heat generated might cause the ambient air temperature at the chassis or power supply unit inlets to exceed recommended conditions which may trigger thermal alarms.

  If installation conditions for inlet temperature and airflow are marginal or not fully met, activate the fan tray's Network Equipment-Building System (NEBS) mode, which has more aggressive programming to address restricted spacing and elevated ambient temperatures. This should result in reduced thermal alarms along with greater acoustic noise and increased power consumption associated with higher fan speeds.

## Air quality

Issues your Cisco C9350 switch may face if the air quality is not maintained.

Dust is everywhere and often invisible to the naked eye. It consists of fine particles in the air that originate from various sources, such as soil dust lifted by weather, from volcanic eruptions, or pollution. Dust at an installation site may contain small amounts of textile, paper fibers, or minerals from outdoor soil. It may also contain natural contaminants, such as chlorine from the marine environment and industrial contaminants such as sulfur. Ionized dust and debris are dangerous and get attracted to electronic equipment.

The accumulation of dust and debris on electronic equipment has the following adverse effects:

- It increases the operating temperature of the equipment. According to the Arrhenius effect, an increase in the operating temperature leads to a decrease in reliability and life of the equipment.

- The moisture and corrosive elements that are present in the dust can corrode the electronic or mechanical components and cause premature board failure.

These adverse effects are further accelerated by the presence of fans in the data networking equipment that ingest dust and other particles into the equipment. Higher the volume of air that is generated by the fans for cooling, the higher the quantity of dust and particulates that get deposited and trapped inside the equipment. Remove or minimize the presence of dust and particulates at the installation site by following the guidelines mentioned in ANSI 71-04-2013 regulations.

**Note**

In addition to the guidelines mentioned in ANSI 71-04-2013 regulations, follow all applicable guidelines as per site conditions to remove or minimize other contaminants.

## Altitude

Issues your Cisco C9350 switch can face in high altitudes.

Operating a system at high altitude (low pressure) reduces the efficiency of forced and convection cooling and may result in electrical problems related to arcing and corona effects. This condition may also cause sealed components with internal pressure, such as electrolytic capacitors, to fail or perform at reduced efficiency.

## Corrosion

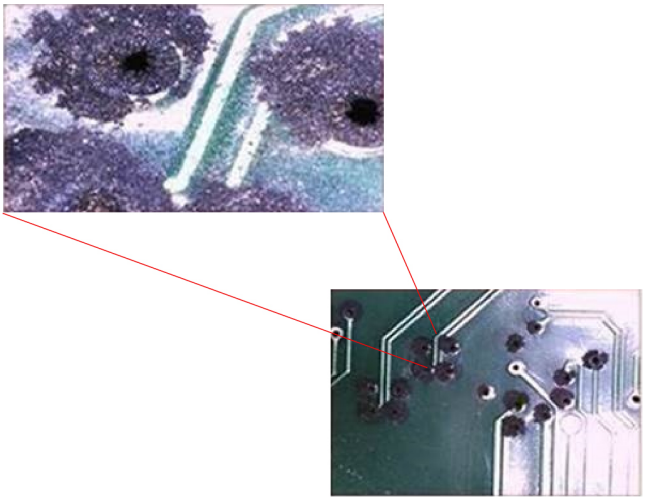
How corrosion can happen to your Cisco C9350 switch.

Corrosion is a chemical reaction that occurs between electronic components and gases which results in metal deterioration. Corrosion attacks edge connectors, pin connectors, IC plug-in sockets, wirewraps, and all other metal components. Depending on the type and concentration level of the corrosive gases, performance degradation of the components occurs either rapidly or over a period of time. It also leads to blocked currents, brittle connection points, and overheated electrical systems. Corrosion by-products form insulating layers on circuits and causes electronic failure, short circuits, pitting, and metal loss.

A type of corrosion known as creep corrosion, that primarily affects PCBA (Printed Circuit Board Assembly) occurs when the PCBA is subjected to a harsh, and sulfur-rich (hydrogen sulfide) end-use environment over a prolonged period of time. The corrosion begins on certain exposed metals, such as copper and silver, and then creeps along the remaining metal surface either causing electrical short circuits or creating holes. Creep corrosion also occurs on electronic components such as resistors and PCBs.

To prevent corrosion, remove or minimize the presence of dust and particulates at the installation site by following the guidelines mentioned in ANSI 71-04-2013 regulations.

**Figure 14: A PCB with corrosion on its metal contacts**



## Dust and particles

Guidelines for acceptable working environments for your Cisco C9350 switch.

Fans cool power supplies and system components by drawing in room-temperature air and exhausting heated air out through various openings in the chassis. However, fans also ingest dust and other particles, causing contaminant buildup in the system and increased internal chassis temperature. A clean operating environment can greatly reduce the negative effects of dust and other particles, which act as insulators and interfere with the mechanical components in the system.

The standards listed below provide guidelines for acceptable working environments and acceptable levels of suspended particulate matter:

- National Electrical Manufacturers Association (NEMA) Type 1
- International Electrotechnical Commission (IEC) IP-20

## EMI and radio frequency interference

How EMI and RFI can adversely affect radio and television receivers operating near your switch.

Electro-Magnetic interference (EMI) and radio frequency interference (RFI) from a system can adversely affect devices such as radio and television (TV) receivers operating near the system. Radio frequencies emanating from a system can also interfere with cordless and low-power telephones. Conversely, RFI from high-power telephones can cause spurious characters to appear on the system monitor. RFI is defined as any EMI with a frequency above 10 kilohertz (kHz). This type of interference can travel from the system to other devices through the power cable and power source, or through the air in the form of transmitted radio waves. The Federal Communications Commission (FCC) publishes specific regulations to limit the amount of harmful interference emitted by computing equipment. Each system meets these FCC regulations. To reduce the possibility of EMI and RFI, follow these guidelines:

- Always operate the system with the chassis covers installed.
- Ensure that all chassis slots are covered by a metal filler bracket and that an unused power supply bay has a metal cover plate installed.
- Ensure that the screws on all peripheral cable connectors are securely fastened to their corresponding connectors on the back of the chassis.
- Always use shielded cables with metal connector shells for attaching peripherals to the system.

When wires are run for any significant distance in an electromagnetic field, interference can occur between the field and the signals on the wires. This fact has two implications for the construction of plant wiring:

- Bad wiring practice can result in radio interference emanating from the plant wiring.

- Strong EMI, especially when it is caused by lightning or radio transmitters, can destroy the signal drivers and receivers in the chassis, and even create an electrical hazard by conducting power surges through lines into equipment.

> **Note**
>
> To predict and provide a remedy for strong EMI, consult experts in RFI.

If you use twisted-pair cable in your plant wiring, include a good distribution of grounding conductors to reduce EMI. If you exceed the recommended distances, use a high-quality twisted-pair cable with one ground conductor for each data signal when applicable.

If the wires exceed the recommended distances, or if wires pass between buildings, give special consideration to the effect of a lightning strike in your vicinity. The electromagnetic pulse caused by lightning or other high-energy phenomena can easily couple enough energy into unshielded conductors to destroy electronic devices. If you have had problems of this sort in the past, you may want to consult experts in electrical surge suppression and shielding.

> **Caution**
>
> The intra-building ports (Copper-based Ethernet ports) of the equipment or subassembly is suitable for connection to inside a building or unexposed wiring or cabling only. If the intra-building ports of the equipment or subassembly is metalically connected to interfaces that connect to the Out Side Plant (OSP) or its wiring, the metallic-connection MUST NOT be more than 6 meters (approximately 20 feet). These interfaces are designed for use as intra-building interfaces only (Type 2, 4, or 4a ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection in order to connect these interfaces metallically to an OSP wiring system.

## Humidity

How humidity causes issues to your C9350 switch.

High-humid conditions may cause moisture to enter the system, and cause corrosion of internal components and degradation of properties such as electrical resistance, thermal conductivity, physical strength, and size. Extreme moisture buildup inside the system may result in electrical short circuit, which may cause serious damage to the system.

Each system is rated for storage and operation in 10 to 95 percent relative humidity, non-condensing with a humidity gradation of 10 percent per hour. Buildings in which climate is controlled by air-conditioning in the warmer months and by heat during the colder months usually maintain an acceptable level of humidity for system equipment. However, if a system is located in an unusually humid location, a dehumidifier should be used to maintain the humidity within an acceptable range.

## Maintaining safety with electricity

Maintaining safety with electricity for Cisco C9350 switch.

When working on electrical equipment, follow these guidelines.

- Do not work alone if potentially hazardous conditions exist anywhere in your work space.
- Never assume that power is disconnected from a circuit; always check the circuit before working on it.
- When the power is switched off, put a lock-box on the circuit, so that no one can accidentally switch it on.

- Look carefully for possible hazards in your work area, such as damp floors, ungrounded power extension cables, frayed or damaged power cords, and missing safety grounds.
- If an electrical accident occurs, proceed as follows:
  - Use extreme caution; do not become a victim yourself.
  - Disconnect power from the system.
  - Seek medical attention, if necessary.
- Use the product within its marked electrical ratings and product usage instructions.
- Install the product in compliance with the local and national electrical codes.
- Contact the Cisco Technical Assistance Center, if any of these conditions occur.
  - The power cable or plug is damaged.
  - An object has fallen into the product.
  - The product has been exposed to water or other liquids.
  - The product has been dropped or shows signs of damage.
  - The product does not operate correctly when you follow the operating instructions.
- Use the correct external power source. Operate the product only from the type of power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult a local electrician.
- To help prevent electrical shock, plug all the power cables into properly grounded electrical outlets. These power cables are equipped with three-prong plugs to ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a power cable.
- Observe power strip ratings. Make sure that the total current rating of all products that are plugged into the power strip does not exceed 80 percent of the power strip rating.
- Do not modify power cables or plugs yourself. Consult with a licensed electrician or your power company for site modifications. Always follow your local and national wiring codes.

## Power source interruptions

How to minimize power source interruptions for Cisco C9350 switch.

Systems are especially sensitive to variations in voltage supplied by the AC power source. Overvoltage, undervoltage, and transients (or spikes) can erase data from the memory or even cause components to fail. To protect against these types of problems, power wiring ground conductors should always be properly grounded. Also, place the system on a dedicated power circuit (rather than sharing a circuit with other heavy electrical equipment). In general, do not allow the system to share a circuit with any of these machines.

- Copy machines
- Air conditioners
- Vacuum cleaners
- Space heaters
- Power tools
- Teletype machines
- Laser printers

- Facsimile machines
- Any other motorized equipment

Besides these appliances, the greatest threats to a system's power supply are surges or blackouts that are caused by electrical storms. Whenever possible, turn off the system and peripherals, if any, and unplug them from their power sources during thunderstorms. If a blackout occurs—even a temporary one—while the system is turned on, turn off the system immediately and disconnect it from the electrical outlet. Leaving the system on may cause problems when the power is restored; all other appliances left on in the area may create large voltage spikes that may damage the system.

## Preventing ESD damage

Guidelines for preventing ESD damage on Cisco C9350 switches.

An electrostatic discharge (ESD) strap, is a tool used to prevent damage to sensitive electronic components from static electricity. It is a wrist strap that connects the wearer to a grounding point, ensuring that any static charge on the body is safely dissipated to the ground, thus preventing damage to electronic components during handling.

ESD damage might occur when modules or other field replaceable units (FRUs) are improperly handled, resulting in intermittent or complete failure of the modules or FRUs. Modules consist of printed circuit boards that are fixed in metal carriers. EMI shielding and connectors are integral components of a carrier. Although the metal carrier helps to protect the board from ESD, always use an ESD-grounding strap when handling modules.

Follow these guidelines to prevent ESD damage.

- Always use an ESD wrist or ankle strap and ensure that it makes good skin contact.
- Connect the equipment end of the strap to an unfinished chassis surface.
- When installing a component, use an available ejector lever to properly seat the bus connectors in the backplane or midplane. These devices prevent accidental removal, provide proper grounding for the system, and help to ensure that bus connectors are properly seated.
- When removing a component, use an available ejector lever to release the bus connectors from the backplane or midplane.
- Handle carriers by available handles or edges only; avoid touching the printed circuit boards or connectors.
- Place a removed component board-side-up on an antistatic surface or in a static-shielding container. If you plan to return the component to the factory, immediately place it in a static-shielding container.
- Avoid contact between the printed circuit boards and clothing. The wrist strap only protects components from ESD voltages on the body; ESD voltages on clothing can still cause damage.
- Never attempt to remove the printed circuit board from the metal carrier.

## Shock and vibration

GR-63-CORE criteria for the Cisco C9350 switch.

The Cisco C9350 series smart switches comply with the Earthquake, Office, and Transportation Vibration, and Equipment Handling Criteria of GR-63-CORE.

## System grounding

System grounding practices for your Cisco C9350 switch.

This section describes the system grounding guidelines.

**Warning**

**Statement 1046–**Installing or Replacing the Unit

To reduce risk of electric shock, when installing or replacing the unit, the ground connection must always be made first and disconnected last.

If your unit has modules, secure them with the provided screws.

You must install a system ground as part of the chassis installation process. Chassis installations that rely only on the AC third-prong ground are insufficient to adequately ground the systems. If installing in NEBS-compliant mode, you must install an NEBS-compliant system ground as part of the chassis installation process.

Proper grounding practices ensure that the buildings and the installed equipment within them have low-impedance connections and low-voltage differentials between chassis. When you install a system ground, you reduce or prevent shock hazards, chances of equipment damage due to transients, and the potential for data corruption.

Without proper and complete system grounding, you run the risk of increased component damage due to ESD. Additionally, you have a greatly increased chance of data corruption, system lockup, and frequent system reboot situations by not using a system ground.

**Caution**

Installations that rely solely on system grounding that uses only an AC third-prong ground run a substantially greater risk of equipment problems and data corruption than those installations that use both the AC third-prong ground and a properly installed system ground.

This table lists some general grounding practice guidelines.

**Table 14: Grounding practice guidelines**

| Environment | Electromagnetic noise severity level | Grounding recommendations |
|---|---|---|
| Commercial building is subjected to direct lightning strikes.<br>For example, some places in the United States, such as Florida, are prone to more lightning strikes than other areas. | High | All lightning protection devices must be installed in strict accordance with manufacturer recommendations. Conductors carrying lightning current should be spaced away from power and data lines in accordance with applicable recommendations and building codes. Best grounding practices must be closely followed. |
| Commercial building is located in an area where lightning storms occur frequently, but is not prone to direct lightning strikes. | High | Best grounding practices must be closely followed. |
| Commercial building contains a mix of information technology equipment and industrial equipment, such as welding. | Medium to High | Best grounding practices must be closely followed. |

| Environment | Electromagnetic noise severity level | Grounding recommendations |
|---|---|---|
| Existing commercial building is not subject to natural environmental noise or man-made industrial noise. This building contains a standard office environment. This installation has a history of malfunction due to electromagnetic noise. | Medium | Best grounding practices must be closely followed. Determine source and cause of noise if possible, and mitigate as closely as possible at the noise source or reduce coupling from the noise source to the victim equipment. |
| New commercial building is not subject to natural environmental noise or man-made industrial noise. This building contains a standard office environment. | Low | Best grounding practices should be followed as closely as possible. Electromagnetic noise problems are not anticipated, but installing a best-practice grounding system in a new building is often the least expensive route, and the best way to plan for the future. |
| Existing commercial building is not subject to natural environmental noise or man-made industrial noise. This building contains a standard office environment. | Low | Best grounding practices should be followed as much as possible. Electromagnetic noise problems are not anticipated, but installing a best-practice grounding system is always recommended. |

**Note**

In all situations, grounding practices must comply with Section 250 of the National Electric Code (NEC) requirements or local laws and regulations. A 6 AWG grounding wire is preferred from the chassis to the rack ground or directly to the common bonding network (CBN). The equipment rack should also be connected to the CBN with a 6 AWG grounding wire.

**Note**

Grounding lugs must be installed on the location marked on the chassis only.

**Note**

Always ensure that all of the modules are completely installed and that the captive installation screws are fully tightened. In addition, ensure that all the I/O cables and power cords are properly seated. These practices are normal installation practices and must be followed in all installations.

## Temperature

The temperature to maintain while using your Cisco C9350 switch.

Temperature extremes may cause a system to operate at reduced efficiency and cause a variety of problems, including premature aging and failure of chips, and failure of mechanical devices. Extreme temperature fluctuations may also cause chips to become loose in their sockets. Observe these guidelines:

- Ensure that the chassis has adequate ventilation.

- Do not place the chassis within a closed-in wall unit or on top of cloth, which can act as thermal insulation.
- Do not place the chassis where it will receive direct sunlight, particularly in the afternoon.
- Do not place the chassis next to a heat source of any kind, including heating vents.
- Adequate ventilation is particularly important at high altitudes. Make sure that all the slots and openings on the system remain unobstructed, especially the fan vent on the chassis.
- Clean the installation site at regular intervals to avoid buildup of dust and debris, which may cause a system to overheat.
- If system is exposed to abnormally low temperatures, allow a two hour warm up period, in ambient temperature no lower than 32° F (0 ° C) before turning on.

Failure to observe these guidelines may damage the internal components of the chassis.

## Shipping box contents

Contents that are shipped with your Cisco C9350 switch.

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.

**Table 15: Shipping box contents (standard and optional)**

| Item | Quantity |
|---|---|
| Cisco C9350 Series Smart Switch with optional network module [1] | 1 |
| AC power cord | 1 |
| Documentation pointer card | 1 |
| Product documentation and compliance document | |
| Rubber mounting feet | 4 |
| Ground lug screw and ring terminal | 1 |
| Number 12 pan-head screws | 4 |
| Number 10 pan-head screws | 4 |
| Number 8 Phillips flat-head screws | 8 |
| Cable guide | 1 |
| M4.0 x 20mm Phillips pan-head screw | 1 |
| (Optional) RJ-45 console cable [1] | - |

| Item | Quantity |
| --- | --- |
| (Optional) USB console cable [1] | - |
| (Optional) StackWise-1.6T cable (0.5-meter, 1-meter, or 3-meter) [1] | - |
| (Optional) StackPower cable (0.35-meter or 1-meter) [1] | - |

**Note**

1. The item is orderable.

## Tools and equipment

Tools for installing your Cisco C9350 switch.

You need a Number-2 Phillips screwdriver for installing your Cisco C9350 switch.

## Verify the switch operation

Verify if your Cisco 9350 switch is operational.

Before you install the switch in a rack, or on a table or shelf, power on the switch and verify that it passes the Power-On Self Test (POST). POST is an automatic diagnostic process that runs immediately when a switch is powered on. Its primary purpose is to verify the integrity and basic functionality of the switch hardware components before the operating system loads.

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, and a series of tests run automatically to ensure that the switch functions properly. LEDs can blink during the test; the SYST LED blinks green, and the other LEDs remain solid green.

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

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

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

## When to plan for a data and power stack

Use these guidelines to plan for a data and power stack before you install your switches.

Before you install your Cisco C9350 switch, you must decide on your data stack and power stack requirements.

### StackWise stack

A Cisco data stack is a network solution that combines multiple stackable switches to function as a single logical device. Data stacks allows network administrators to expand the network capacity and manage multiple switches as a single unit.

Cisco StackWise is a data stack that allows two physical switches to operate as a single logical switch. It simplifies management, provides high availability, and enhances scalability in enterprise networks, data centers, and campus environments.

Up to eight Cisco C9350 series switches can be connected together through the StackWise ports, using the StackWise cables to form a data stack.

**StackPower stack**

A StackPower Stack is a power management solution for Cisco switches that combines the available power supplies in multiple connected switches into a single shared power pool. This technology allows for more efficient power distribution and management across a stack of switches. With Cisco StackPower, a common pool of power is made available to all switches in the stack, and the additional power is automatically redirected to the appropriate switch based on the available power budget in the common power pool.

You can stack up to four switches together through the StackPower ports, using the StackPower cables to form a power stack. So a full eight-switch stack, forms two separate power pools, each sharing power among their four members.

For more information about data stacks and power stacks, refer to the *Stacking* document.

# Plan a switch data stack

How to create a switch data stack with your Cisco C9350 switch.

Cisco C9350 switches can share bandwidth by using data stacking. This table lists the supported stacking options.

**Table 16: Supported stacking option**

| Switch model | Stacking option | Supported bandwidth | Number of members | Supported stack members |
|---|---|---|---|---|
| Cisco C9350 series smart switches | StackWise-1.6T | 1.6 Tbps | Up to a maximum of eight | Stacks with other Cisco C9350 models at StackWise-1.6T speeds with same license level |

## Data stack guidelines

Data stack guidelines for Cisco C9350 switches.

Refer to these guidelines before you connect the switches into a stack.

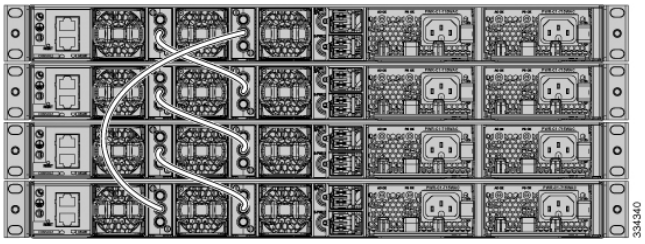
- Size of the switch and any optional power supply module: The 1600 W power supply module is longer than the other modules. Stacking switches with the same power supply modules together makes it easier to cable the switches.
- Length of cable: Depending on the configurations that you have, you might need different sized cables. If you do not specify the length of the StackWise cable, the 0.5 meter cable is supplied. If you need the 1 meter cable or the 3 meter cable, you can order it from your Cisco supplier. For cable part numbers, see StackWise accessories section. The Data stack cabling configurations on page 45 provides examples of recommended configurations.

## Data stack cabling configurations

Recommended data stack configurations.

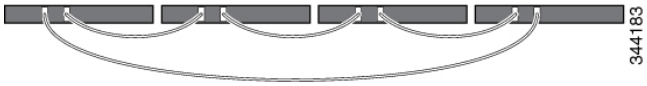
This is an example of a recommended data stacking configuration that uses the supplied 0.5-meter StackWise cable. In this example, the switches are stacked in a vertical rack or on a table. This example shows a full-ring configuration that provides redundant connections.

**Figure 15: Data stacking the switches using the 0.5-meter StackWise cables**




This example shows a 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 16: Side-by-side mounting of data stack**



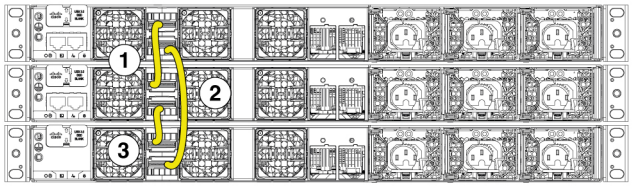

### Data stack bandwidth and partitioning

Examples for data stack bandwidth and partitioning of Cisco C9350 switches.

This section provides examples of data stack bandwidth and possible data stack partitioning.

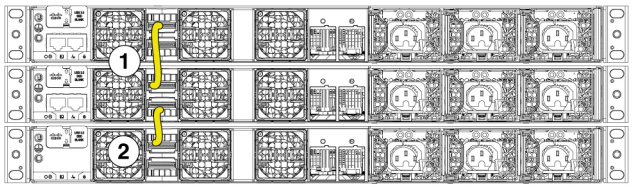
This figure shows a data stack of switches that provides full bandwidth and redundant StackWise cable connections.

**Figure 17: Example of a data stack with full bandwidth connections**




This figure shows a switch stack with incomplete StackWise cabling connections. This stack provides only half-bandwidth and does not have redundant connections.

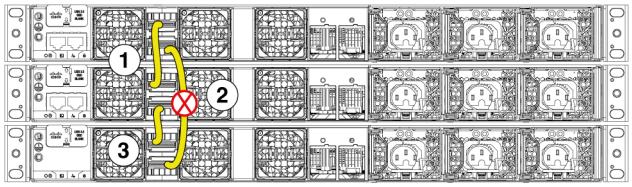
**Figure 18: Example of a data stack with half-bandwidth connections**




This sections describes data stacks of switches with failover conditions.

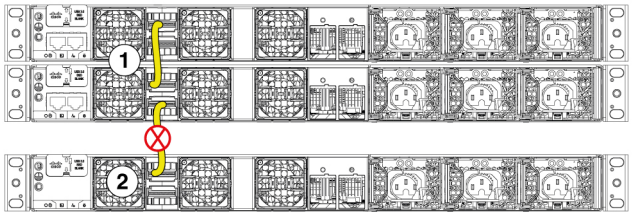
In this figure, the StackWise cable is faulty in link 2. Therefore, this stack provides only half bandwidth and does not have redundant connections.

**Figure 19: Example of a data stack with a failover condition**




In this figure, link 2 is faulty. Therefore, this stack partitions into two stacks. Top two switches form one stack and the bottom switch become the single active switch. If the bottom switch was a member of the stack previously, (not active or standby switch), it will reload to become active.

**Figure 20: Example of a partitioned data stack with a failover condition**




### Power-on sequence for switch stacks

Guidelines before you power on the switches in a stack.

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.
- You can elect an active switch either by
  - configuring the highest priority for the switch among all other switches in the stack.
  - or, by powering on that switch first.

    This switch remains the active switch until a reelection is required. Power on the other switches in the stack, two minutes after powering on the active switch.
- If you have no preference as to which switch becomes the active switch, power on all the switches in the stack within 180 seconds. Only stack members that are powered on within the same 180-second timeframe from the initial power-on of the stack can participate in the active switch election and have a chance to become the active switch. Stack members powered on after this window will join the stack as regular members and will not participate in the initial election.
- Among the switches with same priority, the switch with the lowest MAC address becomes the active switch.

To avoid service disruptions, do not add a powered-on or active switch to an existing, operational switch stack.

Follow this procedure to avoid service disruptions.

1. Ensure that the new switch is powered down before physically adding it to the stack.
2. Connect the stack cables between the new switch and the existing stack members.
3. Power on the new switch only after all cabling is complete.

> **Note**
>
> Adding an active switch directly to a live stack can disrupt operations, potentially causing the entire stack to reload - especially if the new switch has a higher stack priority or lower MAC address.

# Plan a StackPower stack

What to look for when planning a StackPower stack on Cisco C9350 switches.

## Guidelines for a StackPower stack

StackPower stacking guidelines for Cisco C9350 Switches.

You can configure a StackPower stack for either power sharing or redundancy. In power-sharing mode, the power of all the power supplies in the stack is aggregated and distributed among the stack members.

In redundant mode, when the total power budget of the stack is calculated, the wattage of the largest power supply is not included. That power is held in reserve and used to maintain power to the switches and attached devices when one power supply fails. Following the failure of a power supply, the StackPower mode becomes power-sharing mode.

> **Note**
>
> Power-sharing mode is the recommended configuration for Cisco C9350 series switches.

For general concepts and management procedures for switch power stacks, see the Software Configuration Guide on Cisco.com.

Before connecting the switches in a power stack, read the following guidelines:

- Cisco C9350 switches support Cisco StackPower providing up to 1000 W of power in nominal conditions and 2400 W of power in failure conditions across a power stack.
- Up to four switches can be configured in a StackPower stack using the StackPower connector at the rear of the switch.
- A switch power stack can include a maximum of four switches in a ring topology.

  If a switch stack has more than four switches, we will have more than one StackPower groups.
- Size of the switch and any optional power supply module: Stacking switches with the same power supply modules together makes it easier to cable the switches. The 1600W power supply module is 3.14 inches (8 cm) longer than the other modules.
- Length of cable: Depending on the configurations that you have, you might need different sized cables. If you do not specify the length of the StackPower cable, the 0.35 meter cable is supplied. If you need the 1 meter cable, you can order it from your Cisco supplier. The *Data stack cable configurations* section provides examples of the recommended configurations.

## StackPower cable configurations

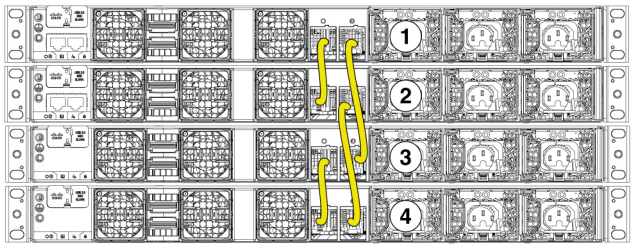
Recommended cabling configurations for a StackPower stack

This section describes the recommended cabling configurations for a StackPower stack.

The two types of StackPower cables are

| Part Number | Cable Type | Length |
|---|---|---|
| CAB-SPWR-35CM= | StackPower Cable | 0.35 meter |
| CAB-SPWR-100CM= | StackPower Cable | 1 meter |

**Figure 21: StackPower ring topology**



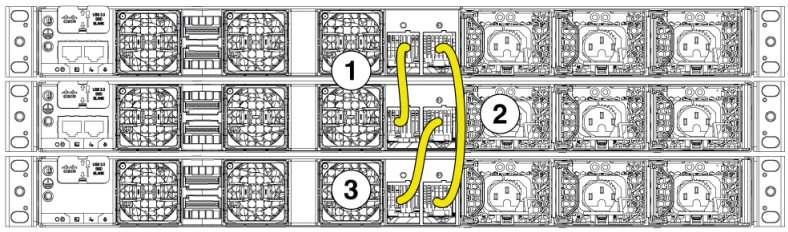

## StackPower partition examples

How to partition your StackPower stack.

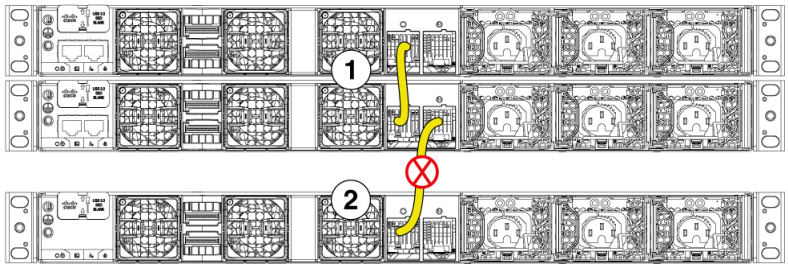
The examples in this section displays StackPower stacks of switches with failover conditions.

In this illustration, the StackPower cable 2 is faulty. This is considered a broken ring and is a fault condition. Power is still shared across the stack, but this condition will place a limitation on power budgeting and the number of high priority ports it can protect in the case of further failures, such as, failure of power supply, AC mains, StackPower port, and so on. StackPower is not intended for secondary failures and hence restoration of the failed component or power should be done immediately.

**Figure 22: Example of a StackPower stack with a failover condition**




In this illustration, StackPower port B on the center switch has failed and the stack partitions into two stacks. The top two switches share power, and the bottom switch is now a separate stack. After the initial failure of cable 2, any further failure of a port is considered a double fault, which StackPower cannot handle. A double fault could result in unintended high priority ports being shut. If you are unable to physically restore a bad cable, adjust the port priorities and restore any offline supplies, as available.



## Power-on sequence for switch stacks

Guidelines before you power on the switches in a stack.

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.
- You can elect an active switch either by
  - configuring the highest priority for the switch among all other switches in the stack.
  - or, by powering on that switch first.

    This switch remains the active switch until a reelection is required. Power on the other switches in the stack, two minutes after powering on the active switch.
- If you have no preference as to which switch becomes the active switch, power on all the switches in the stack within 180 seconds. Only stack members that are powered on within the same 180-second timeframe from the initial power-on of the stack can participate in the active switch election and have a chance to become the active switch. Stack members powered on after this window will join the stack as regular members and will not participate in the initial election.
- Among the switches with same priority, the switch with the lowest MAC address becomes the active switch.

To avoid service disruptions, do not add a powered-on or active switch to an existing, operational switch stack.

Follow this procedure to avoid service disruptions.

1. Ensure that the new switch is powered down before physically adding it to the stack.
2. Connect the stack cables between the new switch and the existing stack members.
3. Power on the new switch only after all cabling is complete.

> **Note**
>
> Adding an active switch directly to a live stack can disrupt operations, potentially causing the entire stack to reload - especially if the new switch has a higher stack priority or lower MAC address.

# 3 Install the Cisco C9350 Series Smart Switches

**Topics:**


- Install Cisco C9350 Series Smart Switches
- Connect StackWise cables
- Connect StackPower cables
- Install and remove network modules
- Install and remove Cisco transceiver modules
- Install and remove power supply modules
- Install and remove fan modules
- Install and remove an SSD module


Describes how to rack mount the switch, post-installation checks, how to connect StackWise and StackPower cables, remove and reinstall network modules, power supply units and fan trays.

# Install Cisco C9350 Series Smart Switches

How to install the Cisco C9350 switch.

You can either rack mount the Cisco C9350 series smart switches or install the switch on a shelf or table. This section describes both these methods.

For more information about the installing the Cisco C9350 series switches and field replaceable units (FRUs), refer to the C9350 install video.

## Rack mount the switch

Rack mounting the Cisco C9350 switch.

Installation in racks other than 19-inch racks requires a bracket kit that is not shipped with the switch. You must order this bracket kit separately.

**Warning**

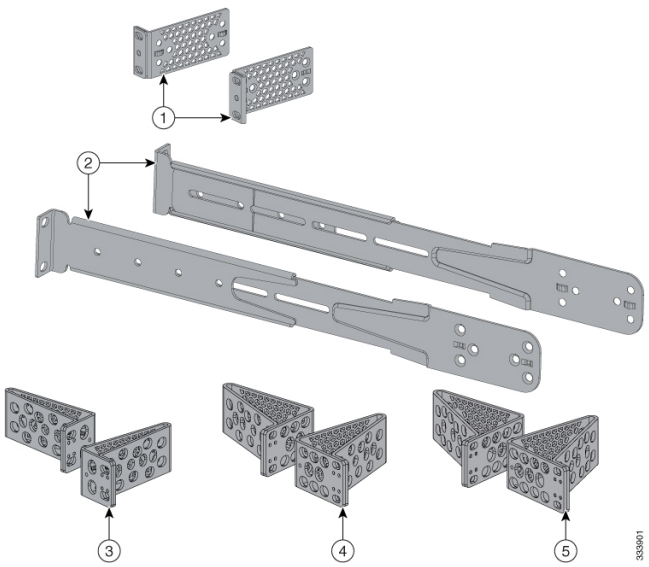
**Statement 1006**—Chassis Warning for Rack-Mounting and Servicing

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.

This figure shows the standard 19-inch brackets and other optional mounting brackets. You can order the optional brackets from your Cisco sales representative.

**Figure 23: Rack-mount brackets**



| | | | |
|---|---|---|---|
| 1 | 19-inch brackets (ACC-KIT-T1=) | 4 | 23-inch brackets (RACK-KIT-T1=) |
| 2 | Extension rails and 5 brackets for four-point mounting, includes 19-inch brackets (4PT-KIT-T2=) | 5 | 24-inch brackets (RACK-KIT-T1=) |
| 3 | ETSI brackets (RACK-KIT-T1=) | - | - |

### Attach the rack mount brackets

How to attach the rack mount brackets for the Cisco C9350 switch.

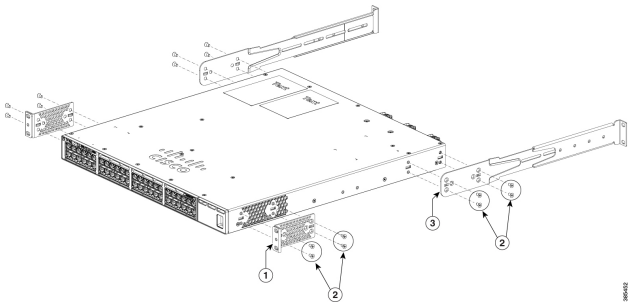
#### Before you begin

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.

**Figure 24: Attach 19-inches rack mount brackets and extension rails**



| | | | |
|---|---|---|---|
| 1 | 19-inch bracket | 3 | 19-inch extension rail |
| 2 | Number-8 Phillips flat-head screws (48-2927-01) | - | - |

### Mount the switch in a rack

Mounting the Cisco C9350 switch in a rack.

#### Procedure

1. Use the four supplied Phillips machine screws to attach the brackets to the rack.
2. Use the black Phillips machine screw to attach the cable guide to the left or right bracket.

   You can do front-mounting, rear-mounting, mid-mounting, or four-point mounting of the switch.

### Install the switch on a table or shelf

How to install the Cisco C9350 switch on a table or shelf.

**Procedure**

1. To install the switch on a table or shelf, locate the adhesive strip with the rubber feet in the mounting-kit envelope.
2. Attach the four rubber feet to the four circular etches on the bottom of the chassis.
3. Place the switch on the table or shelf near an AC power source.
4. When you complete the switch installation, refer to the Post-install procedures on page 55 for information on switch configuration.

### Post-install procedures

Post-installation procedures.

After installing the Cisco C9350 series smart switches

- Configure the switch either through the CLI or Web User Interface,
- Connect the StackWise cables for a data stack,
- Connect the StackPower cables for a switch stack,
- Install the power cord retainer (optional),
- Install network modules,
- Install transceiver modules,
- Connect the required devices to the switch ports, and
- Switch on the power supply switches to power up the system. While powering up, the switch performs a series of bootup diagnostic tests.

  **Note**

  The switch is designed to boot up in less than 30 minutes, provided that the neighboring devices are in fully operational state.

- Verify the port connectivity after connecting devices to the switch ports. The LED turns green when the switch and the attached device have a link.

## Connect StackWise cables

How to connect StackWise cable to create a data stack.

**Procedure**

1. Remove the dust covers from the StackWise cables and store them for future use.
2. Align the stack cable connector with the StackWise port on the switch rear panel.

3. Gently push the stack cable connector into the stack port.

   Continue to push the cable connector until it is fully seated into the port.

   **Figure 25: Connect the StackWise cable in a StackWise port**



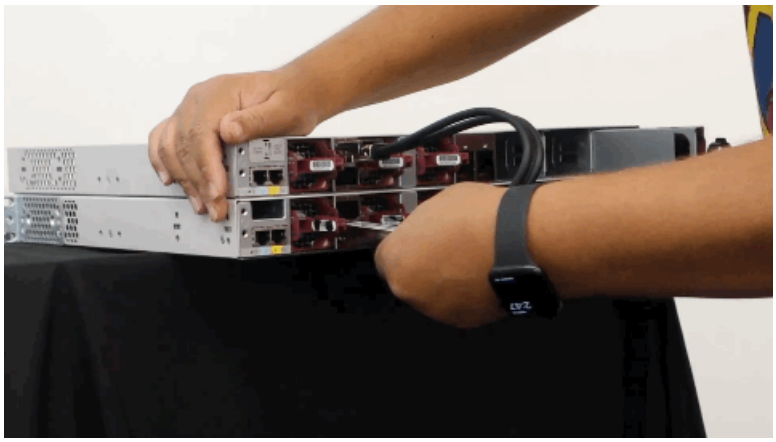
   To view the animation in PDF, click this link.

   When you insert the cable completely, listen for a click sound that confirms that the cable is correctly inserted and locked into the port.

4. Connect the other end of the cable to the port on the other switch.

   Listen for a click sound that confirms that the cable is locked into the port.

   **Figure 26: StackWise cable connected to two switches**



   To view the animation in PDF, click this link.

5. Gently pull on the cable to ensure that it is locked and does not come loose. If the cable moves or does not click, remove it and try reinserting until the click sound is heard.

**Note**

A secure connection is essential for stack operation. Loose or improperly seated cables can result in communication failures between devices in the stack.

**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).

## Connect StackPower cables

Describes how to connect StackPower cables.

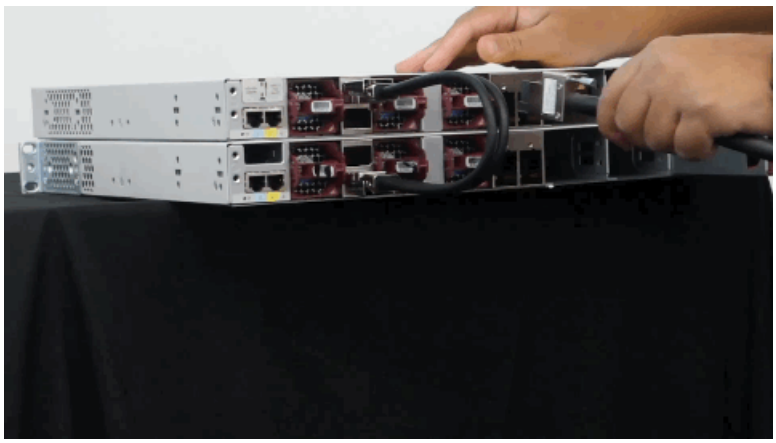
### Before you begin

Before connecting the StackPower cables, review the Plan a StackPower stack on page 48 section. Always use a Cisco-approved StackPower cable to connect the switches.

#### Procedure

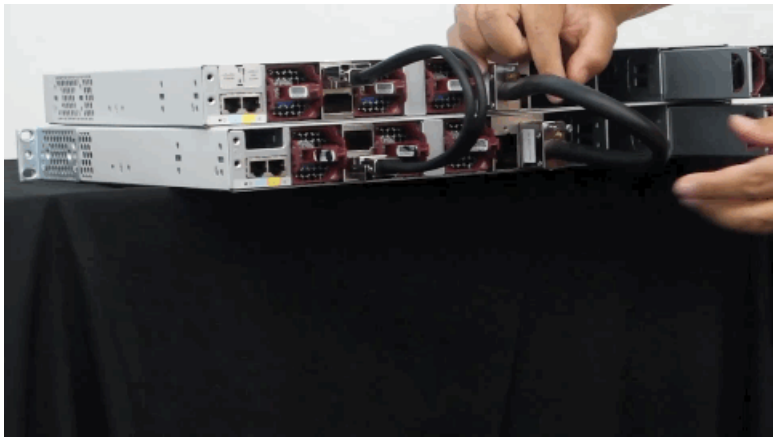
1. Remove the dust covers from the StackPower cable connectors.
2. Connect the end of the cable to the StackPower port on the first switch. Align the connector correctly, and insert it into a StackPower port on the switch rear panel.

   **Figure 27: Connect the StackPower cable**

   To view the animation in PDF, click this link.
3. Connect the other end of the cable to another switch (to configure StackPower power sharing).
4. Hand-tighten the captive screws to secure the StackPower cable connectors in place.

   **Figure 28: Tighten the captive screws**



To view the animation in PDF, click this link.

> **Caution**
>
> Removing and installing the StackPower cable can shorten its useful life. Do not remove and insert the cable more often than is absolutely necessary.

## Install and remove network modules

Describes how to install and remove a network module on Cisco 9350 series switches.

This section provides the following information.

- Safety warnings
- Network module port configurations
- Installing a network module
- Removing a network module
- Finding the network module serial number

### Safety warnings

Safety warning to follow before installing network modules on C9350 smart switches.

This section includes the installation cautions and warnings. Translations of the safety warnings are available in the *Regulatory Compliance and Safety Information for Cisco C9350 Series Smart Switches*.

> **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.

## Network module port configurations

Specifies the network module ports on C9350.

This Cisco C9350 series smart switches support these optional network modules for uplink ports. The port configurations supported for each network module are listed here.

### C9350-NM-2C Module

| Interface | Action |
|---|---|
| HundredGigE1/1/1 | Configurable interface |
| HundredGigE1/1/2 | Configurable interface |

### C9350-NM-4C Module

| Interface | Action |
|---|---|
| HundredGigE1/1/1 | Configurable interface |
| HundredGigE1/1/2 | Configurable interface |
| HundredGigE1/1/3 | Configurable interface |
| HundredGigE1/1/4 | Configurable interface |

### C9350-NM-8Y

You can convert the four top-row ports on C9350-NM-8Y from 25 G to 50 G mode using the **hw-module switch** command. When the top-row ports are moved to 50 G mode, the bottom-row ports are automatically set to inactive, offering enhanced bandwidth for applications.

The example shows how to convert the ports from 25 G to 50 G:

```
Device(config)# hw-module switch 1 network-module
c9350-NM-8Y mode 50G
```

| Interface | Action |
|---|---|
| FiftyGigE1/1/1 | Configurable interface |
| FiftyGigE1/1/2 | Configurable interface |
| FiftyGigE1/1/3 | Configurable interface |

| Interface | Action |
|---|---|
| FiftyGigE1/1/4 | Configurable interface |
| TwentyFiveGigE1/1/5 | Configurable interface |
| TwentyFiveGigE1/1/6 | Configurable interface |
| TwentyFiveGigE1/1/7 | Configurable interface |
| TwentyFiveGigE1/1/8 | Configurable interface |

## Install a network module

How to install a network module on Cisco C9350 switches.

> ⚠ **Caution**
>
> The switch can operate without a network module, but a blank module (with no ports or SFP slots) is available and must always be installed when uplink ports are not required.

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.

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

The switch complies with EMC, safety, and thermal specifications when a network module is present.

### Before you begin

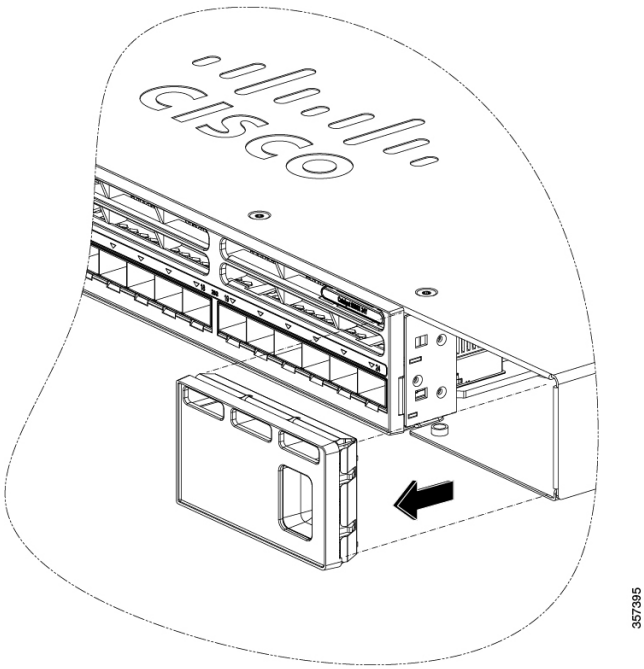
When installing network modules, observe these precautions.

- 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

1. Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface.
2. Remove the module from the protective packaging.
3. Remove the blank module from the switch and save it.

**Figure 29: Remove the blank module**




**Caution**

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

**Caution**

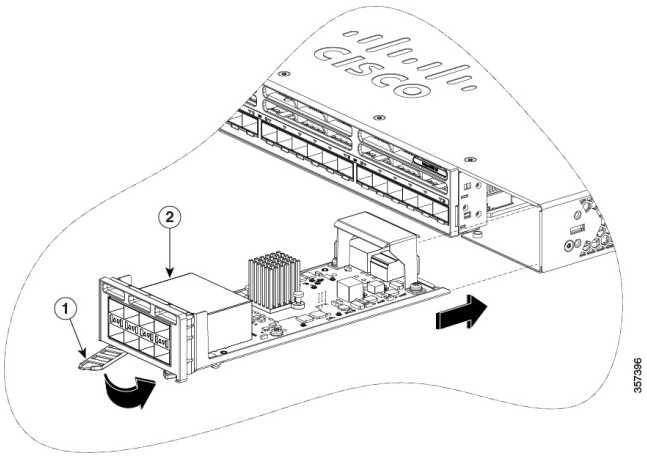
Do not install the network module with connected cables or installed pluggable transceivers. Always remove any cables and transceiver modules before you install the network module.

**Attention**

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 re-enable the interface by using the **shutdown** and **no shutdown** interface configuration commands.

4. While installing Cisco C9350 network modules, position the module face up to install it in the module slot. Slide the module into the slot until the back of the module faceplate is flush with the switch faceplate. Secure the network module in place by the ejector and the latch.

**Figure 30: Install the Cisco C9350 network module**




## Remove a network module

How to remove a network module on Cisco C9350 switches.

> **Note**
>
> The switch complies with Electromagnetic Compatibility (EMC), safety, and thermal specifications when a network module is present. If no uplink ports are required, install a blank network module in the slot.

> **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

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 re-enable the interface by using the **shutdown** and **no shutdown** interface configuration commands.

2. Disconnect the cables from the pluggable transceiver module.
3. Remove the pluggable transceiver module from the network module.
4. Press the ejector and latch on the network module until it completely disengages from the chassis.
5. Carefully slide the network module out of the slot.
6. Install a replacement network module or a blank module in the slot.
7. Place the module that you removed in an antistatic bag or other protective environment.

## Install and remove Cisco transceiver modules

Describes how to install and remove a Cisco transceiver module.

This section describes how to install and remove Cisco transceiver modules.

### Remove Cisco-pluggable transceiver modules

How to remove transceiver modules from your switch.

**Procedure**

1. Attach an ESD-preventive wrist strap to your wrist and to an earth ground surface.
2. Disconnect the cable from the transceiver module. For reattachment, note which cable connector plug is send (TX) and which is receive (RX).
3. Insert a dust plug into the optical ports of the transceiver module to keep the optical interfaces clean.
4. If the transceiver 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.
5. Grasp the transceiver module, and carefully remove it from the slot.
6. Place the transceiver module in an antistatic bag or other protective environment.

# Install and remove power supply modules

This section provides instructions to install and reinsert power supply modules when the switch is operational.

Cisco C9350 series smart switches are shipped with preinstalled power supply modules. This section describes how to remove and install a power supply module.

## Power supply install guidelines

Installation guidelines for the power supply modules on the Cisco C9350 switch.

Adhere to these guidelines when removing or installing a power supply or fan module.

- Do not force the power supply into the slot. This can damage the pins on the switch if they are not aligned with the module.
- A power supply 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 is hot-swappable. In some configurations, such as full PoE+ or power sharing mode, removing a power supply causes powered devices to shut down until the power budget matches the input power of a single power supply. To minimize network interruption, hot swap the power supply under these circumstances:
  - the switch is in StackPower mode and sufficient power is available, or
  - the switch is powered by other switches in a power stack, and no active backup is in progress.

  For more information, see the *Stacking* document.

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

Take note of the following safety warnings:

**Warning**

**Statement 1024**—Ground Conductor

This equipment must be grounded. To reduce the risk of electric shock, 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.

**Warning**

**Statement 1029**—Blank Faceplates and Cover Panels

Blank faceplates and cover panels serve three important functions: they reduce the risk of electric shock and fire, 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.

## Replace and install an AC power supply

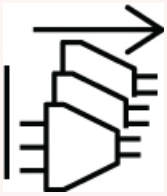
Installing or replacing an AC power supply on a Cisco C9350 switch.

### Before you begin

**Warning**

**Statement 1028**—More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.



**Note**

A power supply must always be installed in slot A; it is the default power supply.

### Procedure

1. Turn off the power at its source.

2. Remove the power cord from the power cord retainer.
3. Remove the power cord from the power connector.
4. Hold the handle on the left side of the power supply module and slide the power supply out.

**Figure 31: Slide the power supply out of the switch**



To view the animation in PDF, click this link.

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

5. Insert the new power supply module into the power supply slot, and gently push it in. When correctly inserted, the 500 W and 850 W power supplies (excluding the power cord retainer) are flush with the switch rear panel. The 1600 W power supply modules extend 1.5 inches from the switch rear panel.

**Figure 32: Insert an AC power supply**



To view the animation in PDF, click this link.

6. (Optional) Use the cable-tie retainer clip on the 1600 W supply.
7. Connect the power cord to the power supply and to an AC power outlet. Switch on the power at the power source.

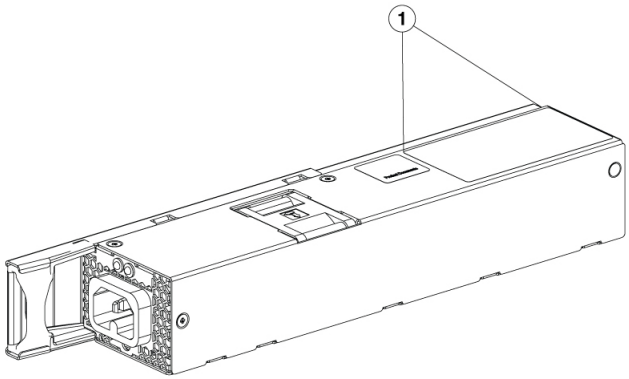
   Add the power cord to the retainer clip.
8. Confirm that the power supply AC OK and PS OK LEDs are green.

### Find the power supply serial number

The location of the power supply serial number.

To 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 33: Power supply serial number**




| | |
|---|---|
| 1 | Serial number location |

## Install and remove fan modules

Describes how to install and remove fan modules on Cisco C9350 series smart switches.

This section provides instructions to install and remove fan modules.

### Guidelines to install fans

Guidelines to follow to install fans on a Cisco C9350 switch.

Adhere to these guidelines when removing or installing a fan module on Cisco C9350 series smart switches.

- 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 the normal switch operation.

### Replace and install a fan module

Instructions on how to replace and reinstall a fan module.

**Procedure**

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

   **Figure 34: Sliding the fan out of the switch**

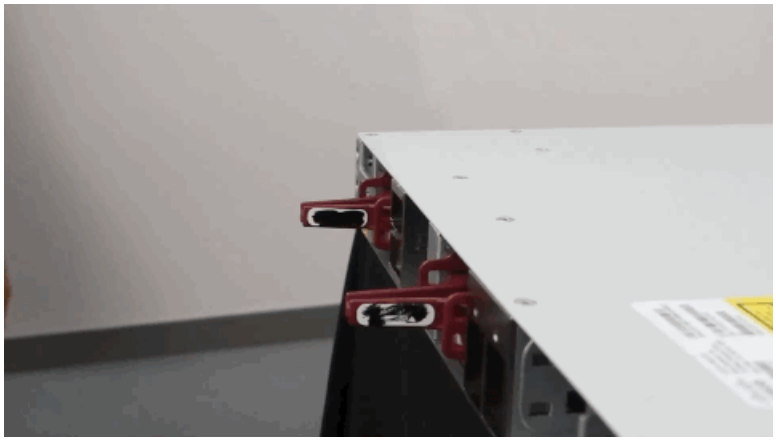


To view the animation in PDF, click this link.

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

2. To install the fan module in the fan slot, firmly push it in, 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 35: Installing a fan module**



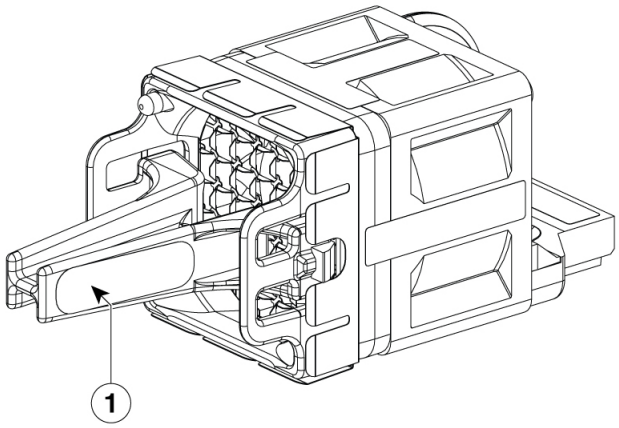
To view the animation in PDF, click this link.

## Find the fan module serial number

The location of the fan module serial number.

To 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 36: Fan module serial number**




| | |
|---|---|
| 1 | Serial number location |

## Install and remove an SSD module

Installing and removing an SSD module from Cisco C9350.

**Procedure**

1. Remove the cover on the USB 3.0 SSD slot on the switch and store it for future use.

   **Figure 37: Remove the SSD cover**

   To view the animation in PDF, click this link.

2. Insert the SSD into the module slot, and firmly push it into the slot. Make sure your insert the SSD in such a way that the Cisco label on the drive stays upright.

   **Figure 38: Install the SSD**




To view the animation in PDF, click this link.

3. Verify that the LED on SSD turns solid green.
4. To remove the SSD, hold the SSD on both sides, and slowly pull it out.

**Figure 39: Remove the SSD**




To view the animation in PDF, click this link.

5. Install a replacement SSD or alternatively, if the slot is to remain empty, install the blank cover.

---

**What to do next**

*USB 3.0 SSD storage device* document.

# 4 Configure the Cisco C9350 Series Smart Switches

**Topics:**


- Configure the switch using the web user interface
- Access the CLI through the console port


You can either configure your Cisco C9350 Series Switches through the WebUI or console ports. This module describes how to configure your switch using the RJ-45 or USB console ports, and provides a link to the WebUI configuration information.

## Configure the switch using the web user interface

Configuring Cisco 9350 using the Web UI.

For instructions on setting up the switch using the WebUI, refer to the *Configuring the Switch Using the Web User Interface* article.

## Access the CLI through the console port

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.

### Connect the RJ45 console port

Describes how to connect the RJ45 console adapter to the port and power on the switch

This task describes how to connect the RJ45 console adapter to the port and power on the switch

**Procedure**

1. Connect the RJ45 port adapter to the serial port on the terminal server or your PC using the optional RJ45-to-DB9 adapter cable. Connect the other end of the cable to the switch console port.
2. Start the terminal-emulation program on the PC or the terminal. The program, frequently a PC application such as Putty or TeraTerm, makes communication between the switch and your PC or terminal possible.
3. Configure the baud rate and character format of the PC or terminal to match the console port default characteristics:
   - 9600 baud (default)
   - 8 data bits
   - 1 stop bit
   - No parity
   - None (flow control)
4. Power on the switch.
5. The PC or terminal displays the bootloader sequence.

### Connect to the USB console port

Describes how to connect an USB driver to a Windows-based PC or Mac-based PC for the first time

The Cisco C9350 series smart switches will either have a Cisco USB Device or Silicon Labs USB Device (CP2102N). To identify which USB device is available,

- connect a USB cable from the Windows-based PC or Mac-based PC to the USB console port.

> **Note**
>
> On a Windows-based device, we recommend using the default Windows driver.

**Procedure**

1. To install the USB driver to a Windows-based PC or Mac-based PC for the first time, do the following:.

   Windows-based PC

   We recommend using the default Windows driver.

   Mac-based PC

   - For Cisco USB devices, no driver installation is required.
   - For Silicon Labs USB device. you can download the USB driver from the Silicon Labs website . Once the installation is completed, a virtual COM port session, "tty.SLAB_USBtoUART", will be started.

     > **Note**
     >
     > Do not use the generic USB serial driver available on Mac-based PCs.

2. On a Mac-based PC: Before connecting the USB cable to the MAC, run the “ls -lrt /dev/tty.usb*” command from the terminal application on MAC.
3. Connect a USB cable to the PC USB port. Connect the other end of the cable to the switch Type C USB console port.
4. Start the terminal-emulation program on the PC or the terminal. The program, frequently a PC application such as Putty or TeraTerm, makes communication between the switch and your PC or terminal possible.
5. On a MAC-based PC: After connecting the USB cable, run the “ls -lrt /dev/tty.usb*” command from the terminal application to identify the device.

   The new device is identified as “/dev/tty.usbserial-XXXXX”.

6. Configure the baud rate and character format of the PC or terminal to match the console port default characteristics.
   - 9600 baud (default)
   - 8 data bits
   - 1 stop bit
   - No parity
   - None (flow control)

   a) To configure the baud rate on a Mac-based PC, run the “screen /dev/tty.usbserial-XXXXX <baud-rate>” command.
7. Power on the switch as described in the switch getting started guide.

**8.** The PC or terminal displays the bootloader sequence.

# A Technical Specifications

**Topics:**


- Environmental and physical specifications
- Specifications for the power supplies and fans
- AC power cord specifications
- StackWise accessories
- StackPower accessories
- Transceiver module network cables
- Connectors


Provides information about the weight and dimensions of the Cisco C9350 Series Switches, the fans and power supply units supported by the switch. This module also talks about the altitude, humidity, and temperature the switch can withstand. It also lists the power cords, StackWise and StackPower cables, and other connectors.

# Environmental and physical specifications

Describes the environmental and physical specifications of the Cisco C9350 switch.

This section provides the environmental specifications for the switch and power supply modules, and the height, weight, depth of each SKUs.

### Environmental specifications

This table lists the environmental specifications for the Cisco C9350 switch models and power supply modules.

**Table 17: Environmental specifications for the switch**

| Environmental ranges | |
|---|---|
| Operating temperature [3] | • -5 to 45° C (23° to 113° F) up to 6,000 feet (1,800 meters)<br>• -5° to 40° C 23° to 104° F) up to 10,000 ft (about 3,000 meters) |
| Storage temperature | -40 to 167° F (-40 to 75° C) |
| Relative humidity | 10 to 95% (non-condensing) |
| Operating altitude | Up to 10,000 ft (3,000 m) |
| Storage altitude | Up to 15,000 ft (4,500 m) |

**Table 18: Environmental specifications for the power supplies**

| Environmental ranges | |
|---|---|
| Operating temperature | 23° F to 113° F (-5° C to 45° C) up to 5,000 feet (1,500m)<br>23° F to 104° F (-5° C to 40ºC) up to 10,000 feet (3,000m) |
| Storage temperature | -40 to 167° F (-40 to 75° C) |
| Relative humidity | 10 to 95% (non-condensing) |
| Altitude | 10,000 ft (3,000 m) up to 40° C |

### Physical specifications of the switch

This table lists the dimensions and weight of the switch models and power supply modules.

**Table 19: Dimensions (H x W x D) of Cisco C9350 series smart switches**

This table describes the physical specifications with the FAN FRUs and the power supplies installed.

| Switch PID | Dimensions (H x W x D) in inches and centimeter | Weight (with the default power supply unit) |
|---|---|---|
| C9350-24HX | 1.73 x 17.5 x 18.6 in (4.4 x 44.5 x 47.2 cm) | 16.4 lb (7.43 kg) |
| C9350-48HX | 1.73 x 17.5 x 18.6 in (4.4 x 44.5 x 47.2 cm) | 18.73 lb (8.5 kg) |

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

| Switch PID | Dimensions (H x W x D) in inches and centimeter | Weight (with the default power supply unit) |
|---|---|---|
| C9350-48HXN | 1.73 x 17.5 x 18.6 in (4.4 x 44.5 x 47.2 cm) | 16.8 lb (7.62 kg) |
| C9350-24P | 1.73 x 17.5 x 15.1 in (4.4 x 44.5 x 38.3 cm) | 13.54 lb (6.14 kg) |
| C9350-48P | 1.73 x 17.5 x 15.1 in (4.4 x 44.5 x 38.3 cm) | 13.54 lb (6.14 kg) |
| C9350-24T | 1.73 x 17.5 x 15.1 in (4.4 x 44.5 x 38.3 cm) | 13.8 lb (6.26 kg) |
| C9350-48T | 1.73 x 17.5 x 15.1 in (4.4 x 44.5 x 38.3 cm) | 13.8 lb(6.26kg) |
| C9350-48TX | 1.73 x 17.5 x 18.6 in (4.4 x 44.5 x 47.2 cm) | 17.7 lb (8 kg) |
| C9350-24U | 1.73 x 17.5 x 15.1 in (4.4 x 44.5 x 38.3 cm) | 13.94 lb( 6.35 kg) |
| C9350-48U | 1.73 x 17.5 x 15.1 in (4.4 x 44.5 x 38.3 cm) | 14.14 lb( 6.42 kg) |

**Physical specifications of power supply modules**

The dimensions shown include the extraction handle and the keying feature.

| Power supply module | Weight | Dimensions (H x D x W) |
|---|---|---|
| PWR-C2-1600WAC | 2.425 lb (1.09 kg) | 2.18 x 1.57 x 11.81 in (5.55 x 4 x 30 cm) |
| PWR-C2-850WAC | 1.54 lb (0.69 kg) | 2.18 x 1.57 x 8.66 in (5.55 x 4 x 22 cm) |
| PWR-C2-500WAC | 1.2 lb (0.54 kg) | 2.18 x 1.57 x 8.66 in (5.55 x 4 x 22 cm) |

## Specifications for the power supplies and fans

Specifications for the PSUs and fans of the Cisco C9350 series smart switches.

This section lists the environmental and physical specifications of the power supply units and fans supported by Cisco C9350 series smart switches.

**Table 20: 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% (non-condensing) |
| 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 |

**Table 21: Specifications for power supply modules**

| Specification | Power supply | | |
|---|---|---|---|
| | **PWR-C2-1600WAC** | **PWR-C2-850WAC** | **PWR-C2-500WAC** |
| Maximum output power | • 1600 W with 230 V<br>• 1200 W with 115 V | 850 W | 500 W |
| Input voltage and frequency | • 180 V to 264 V, (1600 W)<br>103.5 V to 132 V (1200 W) | 90 V to 264 V, 47 to 63 Hz | 90 V to 264 V, 47 to 63 Hz |
| Input current | 12.5 A (maximum) | 10 A (maximum) | 6 A (maximum) |
| Output ratings | • 28.57A (maximum)<br>• 21.43A (maximum) | 15.18 A (maximum) | 8.93 A (maximum) |
| Total output BTU | • 5461 BTUs per hour for 1600 W<br>• 4096 BTU per hour for 1200 W | 2900 BTUs per hour | 1706 BTU per hour |

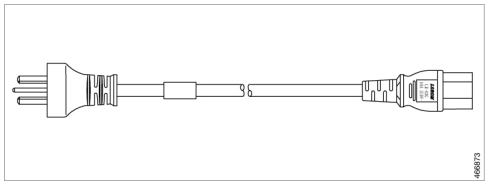
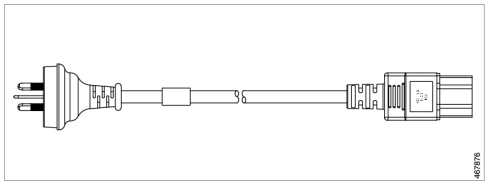
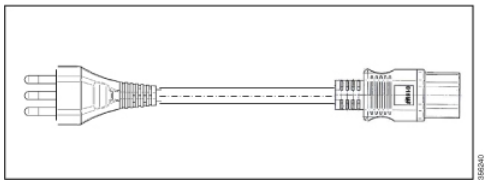
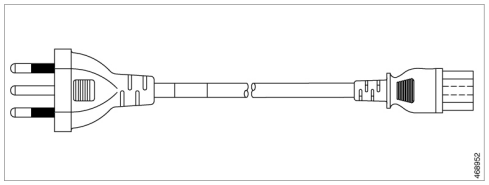
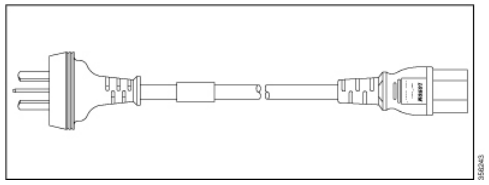
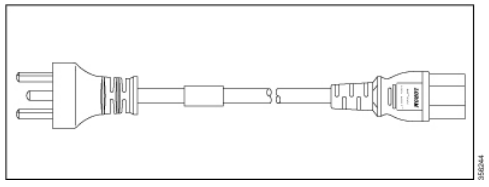
## AC power cord specifications

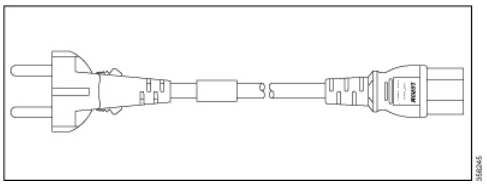
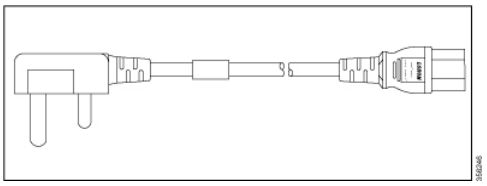
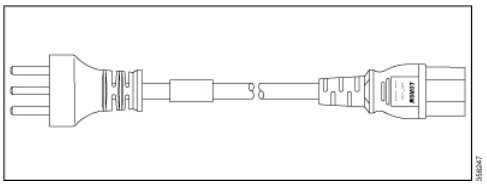
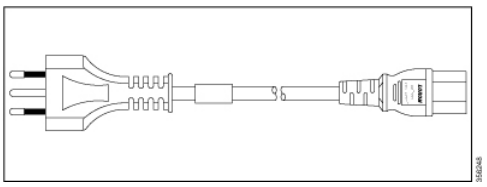
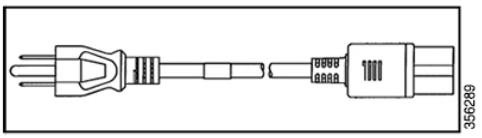
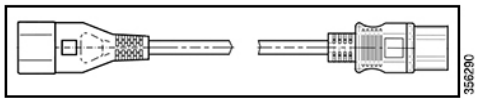
AC power cord specifications for the C9350 power supply units.

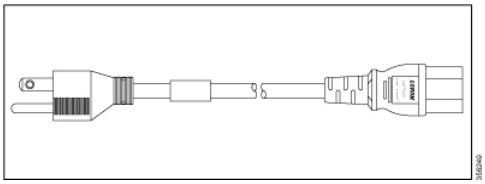
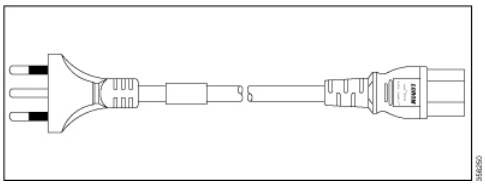
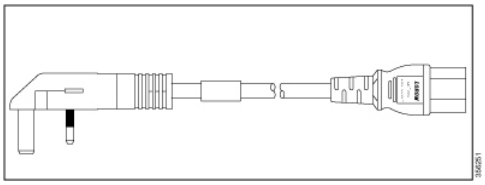
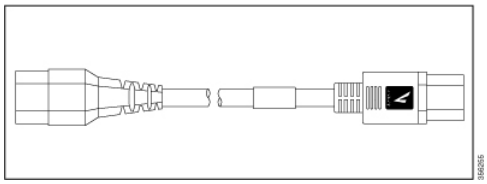
This section lists the AC power cords for 500 W, 850 W and 1600 W power supply units,along with illustrations of the power cords.

This table lists the specifications for the AC power cords that are supported for the 500 W, 850 W, and 1600W AC-input power supplies supported with Cisco C9350 series smart switches.

**Table 22: AC power cords for 500 W, 850 W, 1600W PSUs**

| Locale | Part number | Cordset rating | Length | Power cord |
|---|---|---|---|---|
| Argentina | CAB-TA-AR | 250 VAC, 10 A | 2.5 m | **Figure 40: CAB-TA-AR= (Argentina)**  |
| Australia | CAB-TA-AP | 250 VAC, 10 A | 2.5 m | **Figure 41: CAB-TA-AP= (Australia)**  |
| Brazil | CAB-ACBZ-12A | 125 VAC, 12 A | 2.5 m | **Figure 42: CAB-ACBZ-12A= (Brazil)**  |
| Brazil | CAB-ACBZ-10A | 250 VAC, 10 A | 2.5 m | **Figure 43: CAB-ACBZ-10A= (Brazil)**  |
| China | CAB-TA-CN | 250 VAC, 10 A | 2.5 m | **Figure 44: CAB-TA-CN= (China)**  |
| Denmark | CAB-TA-DN | 250 VAC, 10 A | 2.5 m | **Figure 45: CAB-TA-DN= (Denmark)**  |
| Europe | CAB-TA-EU | 250 VAC, 10 A | 2.5 m | |

| Locale | Part number | Cordset rating | Length | Power cord |
|---|---|---|---|---|
| | | | | **Figure 46: CAB-TA-EU= (Continental Europe)** |
| | | | |  |
| India | CAB-TA-IN | 250 VAC, 10 A | 2.5 m | **Figure 47: CAB-TA-IN= (India)** |
| | | | |  |
| Israel | CAB-TA-IS | 250 VAC, 16 A | 2.5 m | **Figure 48: CAB-TA-IS= (Israel)** |
| | | | |  |
| Italy | CAB-TA-IT | 250 VAC, 10 A | 2.5 m | **Figure 49: CAB-TA-IT= (Italy)** |
| | | | |  |
| Japan | CAB-TA-JP | 125 VAC, 12 A | 2.5 m | **Figure 50: CAB-TA-JP= (Japan)** |
| | | | |   |
| Japan | CAB-TA-250V-JP | 250 VAC, 12 A | 2.5 m | **Figure 51: CAB-TA-250V-JP= (Japan)** |
| | | | |  |
| Japan | CAB-C15-CBN-JP | 250 VAC, 12 A | 3.05 m | **Figure 52: CAB-C15-CBN-JP=(Japan)** |
| | | | |   |
| Korea | CAB-AC -C15-KOR | 250 VAC, 10 A | 2.5 m | - |

| Locale | Part number | Cordset rating | Length | Power cord |
|---|---|---|---|---|
| North America | CAB-TA-NA | 125 VAC, 15 A | 2.5 m | **Figure 53: CAB-TA-NA= (North America)**  |
| Switzerland | CAB-TA-SW | 250 VAC, 10 A | 2.5 m | **Figure 54: CAB-TA-SW= (Switzerland)**  |
| Taiwan | CAB-AC-C15-TW | 125 VAC, 15 A | 2.5 m | - |
| United Kingdom | CAB-TA-UK | 250 VAC, 10 A | 2.5 m | **Figure 55: CAB-TA-UK= (United Kingdom)**  |
| Cabinet jumper power cord, C14-C15 connectors | CAB-C15-CBN | 250 VAC, 13 A | 1.22 m | **Figure 56: CAB-C15-CBN=**  |

## StackWise accessories

Lists the StackWise accessories used with Cisco C9350 switches.

All Cisco stack cables are halogen-free. The StackWise cables of lengths 0.5 m, 1 m, and 3 m are supported. You can order the stacking cables from your Cisco sales representative.

**Table 23: Cisco StackWise cables**

| Product ID | Product description |
|---|---|
| STACK-T1A-50CM | 50 cm stacking cable for Cisco StackWise |
| STACK-T1A-1M | 1 m stacking cable for Cisco StackWise |
| STACK-T1A-3M | 3 m stacking cable for Cisco StackWise |

**Table 24: StackWise cables minimum bend radius and coiled diameter**

| Cable part number | Cable length | Minimum bend radius | Minimum coiled diameter |
|---|---|---|---|
| STACK-T1A-50CM | 1.64 feet (0.5 m) | 1.6 in. (41 mm) | Not applicable |
| STACK-T1A-1M | 3.28 feet (1.0 m) | 1.6 in. (41 mm) | 5.2 in. (132 mm) |
| STACK-T1A-3M | 9.84 feet (3.0 m) | 3.2 in. (82 mm) | 7.17 in. (182 mm) |

**Note**

With a 0.5 m cable, the minimum coiled diameter is negligible and the cable cannot be physically coiled without exceeding the bending limit.

## StackPower accessories

Lists the StackPower cables for your Cisco C9350 series switches.

All Cisco stack cables are halogen-free. The StackPower cables of lengths 0.35 m and 1 m are supported on Cisco C9350 switches. You can order the stacking cables from your Cisco sales representative.

**Table 25: Cisco StackPower cables**

| Product ID | Product description |
|---|---|
| CAB-SPWR-35CM | 35 cm cable for Cisco StackPower |
| CAB-SPWR-100CM | 1 m cable for Cisco StackPower |

## Transceiver module network cables

Provides links to the transceiver module installation notes.

For transceiver cabling specifications, refer to these documents:

- Cisco SFP and SFP+ Transceiver Module Installation Notes
- Cisco 40-Gigabit QSFP+ Transceiver Modules Installation Note

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

## Connectors

Lists the port pinouts, module and cable connectors.

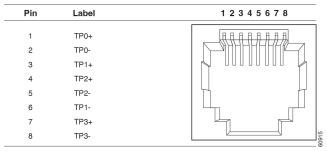
This section describes the connectors supported by Cisco C9350 series smart switches.

## 10/100/1000 Ports

Provides an illustration that shows the 10/100/1000 port pinouts.

This illustrations shows all 10/100/1000 ports including the PoE ports that use standard RJ-45 connectors and Ethernet pinouts

**Figure 57: 10/100/1000 port pinouts**




## Module connectors

Describes the module connectors supported on Cisco C9350 switches.

This section describes the different SFP/QSFP/QSFP-DD module connectors used on various ports on the Cisco C9350 series smart switches.

**Figure 58: Duplex LC cable connector**

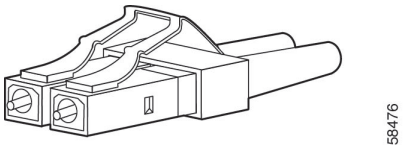



**Figure 59: Simplex LC cable connector**

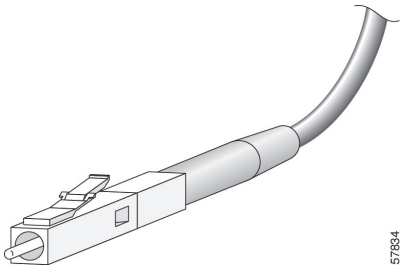
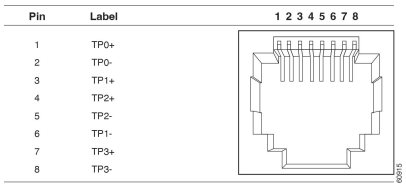



**Figure 60: Copper SFP module LC connector**




## MPO-12 connectors

Describes the MPO-12 high-density fiber optic connector.

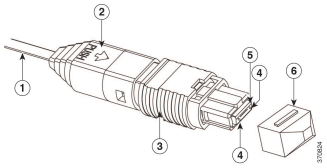
The multi-fiber push on (MPO) connector is used in high-density fiber optic networks. An MPO-12 connector has 12 fiber strands in a single connector that enables high-speed data transmission and efficient cable management. Its footprint is similar to the SC simplex connector. The MPO connector conforms to the TIA/EIA-604-5 intermateability standard. It is used for establishing 40G and 100G optical parallel connections.

The MPO connector conforms to the TIA/EIA-604-5 intermateability standard. It is used for establishing 40G and 100G optical parallel connections.

Key characteristics of MPO-12 connectors include

- compatibility with various transceivers: Many Cisco transceivers use MPO-12 connectors for data transmission.
- breakout cable support: MPO-12 connectors can be used in breakout cables.

**Figure 61: MPO-12 fiber-optic connector**




## Cable pinouts

Provides illustrations of the various cable pinouts and crossover cables used in the Cisco C9350 series smart switches.

A cable pinout refers to the specific arrangement of wires within a cable connector. Pinouts define how each pin is connected between the two ends of a cable.

**Figure 62: Four twisted-pair straight-through cable schematic**

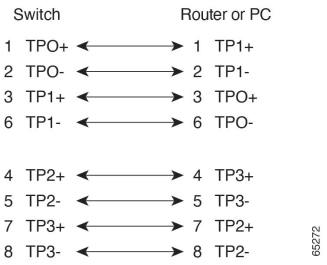



**Figure 63: Four twisted-pair semi-cross cable schematic**

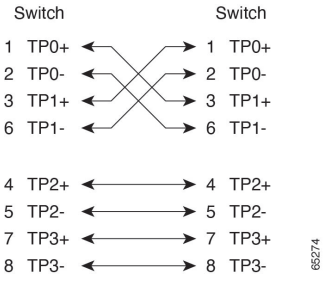



**Figure 64: Two twisted-pair straight-through cable schematic**

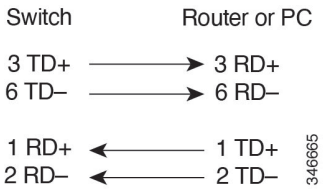
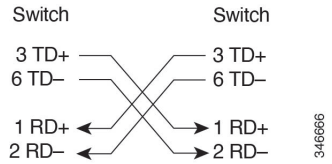


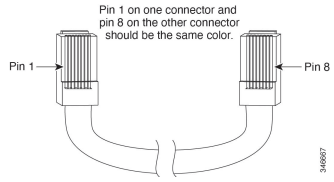

**Figure 65: Two twisted-pair crossover cable schematic**




**Identify crossover cables**

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

**Figure 66: Identify a crossover cable**




## Console port adapter pinouts

Lists the switch console ports, associated terminal adapters, and console devices.

Use an RJ-45-to-DB-9 adapter cable to connect the switch console port to a console PC. You need to provide a RJ-45-to-DB-25 female DTE adapter to connect the switch console port to a terminal.

**Table 26: Console port signaling with a DB-9 adapter**

| Switch console port (DTE) | RJ-45-to-DB-9 terminal adapter | Console device |
|---|---|---|
| **Signal** | **DB-9 Pin** | **Signal** |
| TxD | 2 | RxD |
| GND | 5 | GND |
| GND | 5 | GND |
| RxD | 3 | TxD |

**Table 27: Console port signaling with a DB-25 adapter**

| Switch console port (DTE) | RJ-45-to-DB-25 terminal adapter | Console device |
|---|---|---|
| **Signal** | **DB-25 pin** | **Signal** |
| TxD | 3 | RxD |
| GND | 7 | GND |
| GND | 7 | GND |
| RxD | 2 | TxD |