Installing the Switch

> ⚠️ **Warning** **Before you install, operate, or service the system, read the *Site Preparation and Safety Guide*. This guide contains important safety information you should know before working with the system.** Statement 200

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

This chapter describes how to install the Catalyst 2948G, 2948G-GE-TX, and 2980G switches. For first-time installations, perform the procedures in these sections in the order listed:

- Preparing for Installation, page 2
- Installing the Catalyst 2948G and 2980G Switches, page 6
- Installing the Catalyst 2948G-GE-TX Switch, page 9
- Connecting Power to the Switches, page 19
- Connecting a Terminal to the Console Serial and Ethernet Management Ports, page 22

> ✎ **Note** Before starting the installation procedures in this chapter, complete the site-planning checklist in Chapter 2, "Site Planning."

Preparing for Installation

This section provides information about these topics:

EMC Regulatory Statements

This section includes specific regulatory statements about the switches.

U.S.A.

U.S. regulatory information for this product is in the front matter of this manual.

Taiwan

⚠️

Warning **This is a Class A Information Product, when used in residential environment, it may cause radio frequency interference, under such circumstances, the user may be requested to take appropriate countermeasures.**

警告   這是甲類資訊產品，在居住環境中使用時，可能會造成射頻干擾，
在這種情況下，使用者會被要求採取某些適當的對策。

VCCI Class A Notice for Japan

Warning   **This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.**

警告   これは、情報処理装置等電波障害自主規制協議会（VCCI）の規定に基づく
クラスA装置です。この装置を家庭環境で使用すると、電波妨害を引き起こ
すことがあります。この場合には、使用者が適切な対策を取るように要求
されることがあります。

Korea

Warning   **This is a Class A Device and is registered for EMC requirements for industrial use. The seller or buyer should be aware of this. If this type was sold or purchased by mistake, it should be replaced with a residential-use type.**

주의   A급 기기 이 기기는 업무용으로 전자파 적합 등록을 한 기기이
오니 판매자 또는 사용자는 이 점을 주의하시기 바라며 만약
잘못 판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Class A Notice for Hungary

⚠

Warning   **This equipment is a class A product and should be used and installed properly according to the Hungarian EMC Class A requirements (MSZEN55022). Class A equipment is designed for typical commercial establishments for which special conditions of installation and protection distance are used.**

Figyelem   **Figyelmeztetés a felhasználói kézikönyv számára: Ez a berendezés "A" osztályú termék, felhasználására és üzembe helyezésére a magyar EMC "A" osztályú követelményeknek (MSZ EN 55022) megfeleloen kerülhet sor, illetve ezen "A" osztályú berendezések csak megfelelo kereskedelmi forrásból származhatnak, amelyek biztosítják a megfelelo speciális üzembe helyezési körülményeket és biztonságos üzemelési távolságok alkalmazását.**

Checking the Shipping Container

Do not discard the packing carton and other packing materials after you unpack the switch. Flatten the packing carton and store it. You will need the packing materials if you need to move or ship the switch in the future. Repacking instructions are provided in Appendix B, "Repacking a Switch."

Check the contents of the accessory kit against the accessories checklist and the packing slip. Verify that you received all listed equipment.

Catalyst 2948G and 2980G Switches

The Catalyst 2948G and 2980G switches are shipped with these items:

- This hardware guide
- AC power cord
- RJ-45 to DB-9 cable
- DB-9 to RJ-45 cable

- ESD wrist strap
- Mounting kit

Catalyst 2948G-GE-TX Switches

The Catalyst 2948G-GE-TX switch is shipped with these items:

- This hardware guide
- *About the Catalyst 2948G Documentation* flyer
- AC power cord
- One RJ-45-to-DB-9 adapter cable (78-3383-XX)
- Mounting kit containing:
    - Four rubber feet for mounting the switch on a table (51-0089)
    - Two 19-inch rack-mounting brackets (700-08209-XX)
    - Four Phillips machine screws for attaching the brackets to a rack (48-0655-XX)
    - One cable guide (700-05613-XX)
    - One black Phillips machine screw for attaching the cable guide to one of the mounting brackets (48-0654-XX)
    - One Redundant Power System (RPS) connector cover for wall mounting (700-16465-XX)
    - Two Phillips pan-head screws for attaching the RPS cover (48-0482-XX)
    - Four Phillips truss-head screws for attaching wall-mounting brackets (48-0656-XX)
    - Four Phillips pan-head screws for attaching the switch to a rack (48-0523-XX)

Installing the Catalyst 2948G and 2980G Switches

⚠️

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

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

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

- **If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.** Statement 1006

A standard rack-mount kit is included for mounting the switch in a standard 19-inch (48.3 cm) equipment rack with two unobstructed outer posts. This kit is not suitable for racks with obstructions (such as a power strip) that could impair access to the switch.

Required Installation Tools

You will need the following tools and equipment to install the switch chassis in a rack:

- Rack-mount kit

- Tape measure and level

- Number 1 Phillips, number 2 Phillips, or a 3/16-inch flat-blade screwdriver

- Antistatic mat or antistatic foam

- Your own electrostatic discharge (ESD) grounding strap or the disposable ESD strap included with the switch

✎

Note   For more information about ESD, refer to the *Site Preparation and Safety Guide*.

Rack-Mounting the Catalyst 2948G and 2980G Switches

To install Catalyst 2940G and 2980G switches in a 19-inch rack, follow these steps:

Step 1 Prepare for installation as follows:

a. Place the chassis on the floor or on a sturdy table, as close as possible to the rack. Leave enough clearance to allow yourself to move around the chassis.

b. Use the tape measure to measure the depth of the rack. Measure from the outside of the front-mounting posts to the outside of the rear-mounting strip. The depth must be at least 19.25 inches (48.9 cm) and not greater than 32 inches (81.3 cm).

c. Measure the space between the inner edges of the left front- and right front-mounting posts to ensure that it is 17.75 inches (45.09 cm) wide. (The chassis is 17.5 inches [44 cm] wide and must fit between the mounting posts. See Figure 3-2.)

d. Open the rack-mount kit and refer to the component checklist in Table 3-1 to verify that all parts are included.

Table 3-1   Rack-Mount Kit Checklist

Part Description	Quantity
L brackets	2
M4 Phillips pan-head screws	4
12-24 x 3/4-inch Phillips binder-head screws	6

Note Some equipment racks have a power strip along the length of one of the rear posts. If the rack has this feature, consider the position of the strip when planning fastener points. Before installing the L brackets on the chassis, determine whether to install the chassis from the front or the rear of the rack.
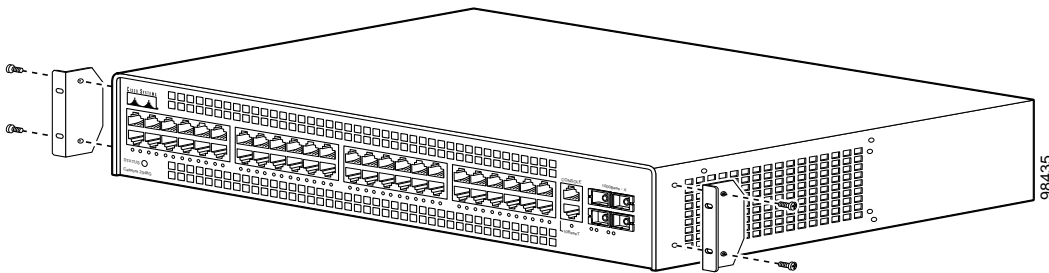
Step 2 Attach the left and right L brackets using the four M4 Phillips pan-head screws provided in the rack-mount kit (see Figure 3-1).

The L brackets connect the switch chassis to the rack. You can mount the
L brackets to the front- or rear-mounting holes of the chassis, depending on which
end is in the front of the rack.

✎
Note   The Catalyst 2948G switch is shown in the rack-mounting illustrations.
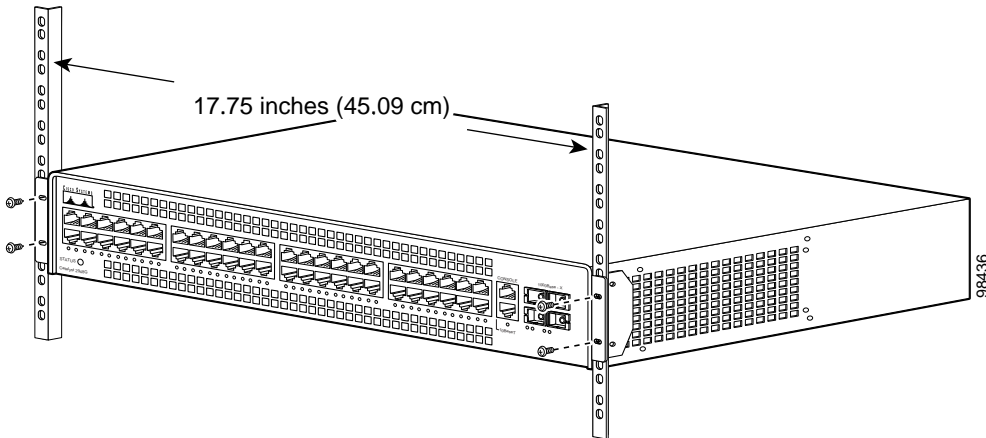The rack-mounting procedure for the Catalyst 2980G switch is the same.

Figure 3-1   Attaching the L Brackets

Step 3   Figure 3-2 shows how to attach the front of the switch to the rack. You can also
attach the rear of the switch to the rack, depending on the configuration of your
rack.

Install the chassis in the rack as follows:

a. Position the switch chassis in the rack (see Figure 3-2):

- If the chassis front panel is to be in the front of the rack, insert the rear
of the chassis between the mounting posts.

- If the rear of the chassis is to be in the front of the rack, insert the front
of the chassis between the mounting posts.

b. Align the mounting holes in the L bracket with the mounting holes in the
equipment rack.

c. Secure the chassis using six 12-24 x 3/4-inch screws (three per side) through
the elongated holes in the L bracket and into the threaded holes in the
mounting post.

d. Use the tape measure and level to ensure that the chassis is installed straight
and level.

Figure 3-2   Installing the Switch in the Rack

Installing the Catalyst 2948G-GE-TX Switch

⚠️

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

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

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

   • **If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.** Statement 1006

To install a Catalyst 2948G-GE-TX switch, follow the steps described in these procedures:

Rack-Mounting the Catalyst 2948G-GE-TX Switch

To install a Catalyst 2948G-GE-TX switch in a 19-inch rack (24-inch racks require optional mounting hardware), follow the instructions described in these procedures:
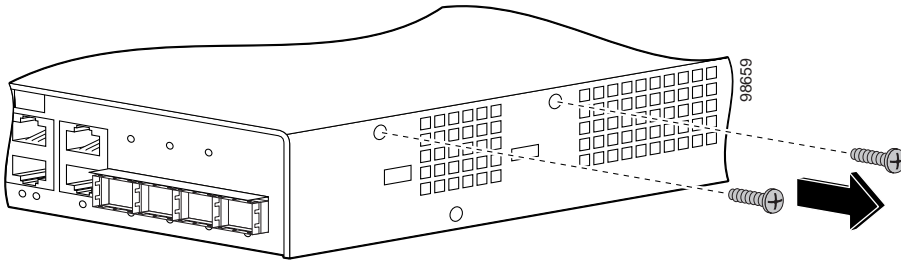
Note Installing the switch in a 24-inch rack requires an optional bracket kit not included with the switch. You can order a kit containing the 24-inch rack-mounting brackets and hardware (order part number RCKMNT-1RU=) from Cisco.

Removing Screws from the Switch

If you plan to install the switch in a rack, you must first remove screws in the switch chassis so that mounting brackets can be attached. Figure 3-3 shows how to remove the chassis screws from the switch.

Figure 3-3   Removing Screws from the Catalyst 2948G-GE-TX Switch

Attaching Brackets to the Switch

The bracket orientation and the brackets you use depend on whether you are attaching the brackets for a 19-inch or a 24-inch rack. For 19-inch racks, use the brackets that are included in the mounting kit.
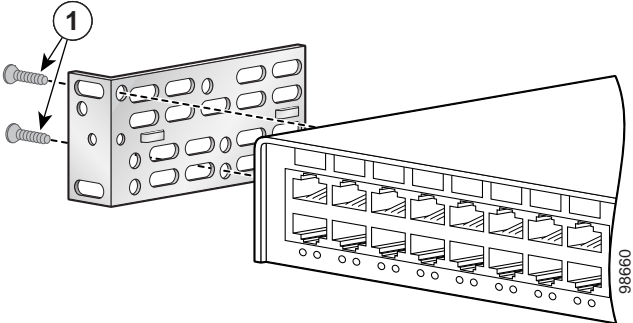
Note   Installing the switch in a 24-inch rack requires an optional bracket kit not included with the switch. You can order a kit containing the 24-inch rack-mounting brackets and hardware (order part number RCKMNT-1RU=) from Cisco.
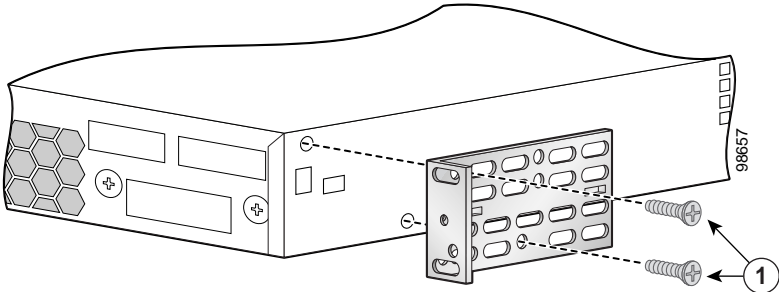
Figure 3-4 through Figure 3-9 show how to attach each type of bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side of the switch.

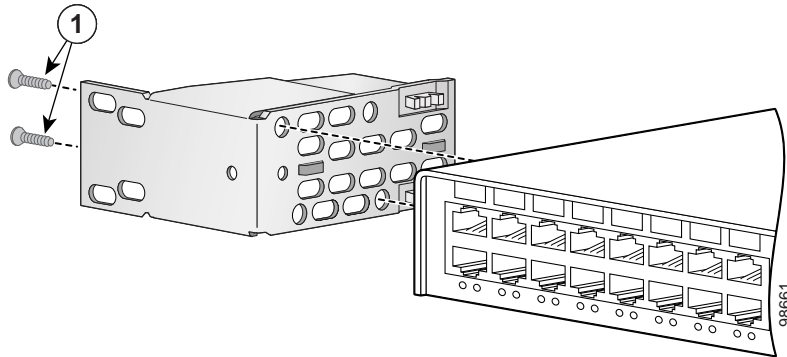*Figure 3-4   Attaching Brackets for 19-Inch Racks, Front Panel Forward*

1	Phillips flat-head screws

Figure 3-5   Attaching Brackets for 19-Inch Racks, Rear Panel Forward

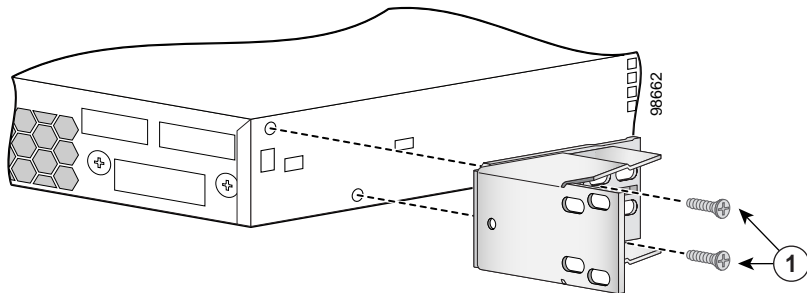| 1	Phillips flat-head screws

Figure 3-6   Attaching Brackets for 24-Inch Racks, Front Panel Forward
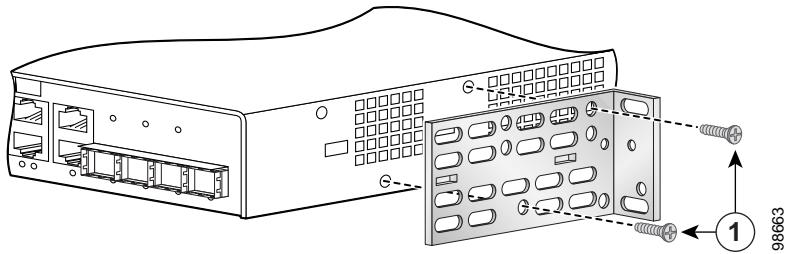

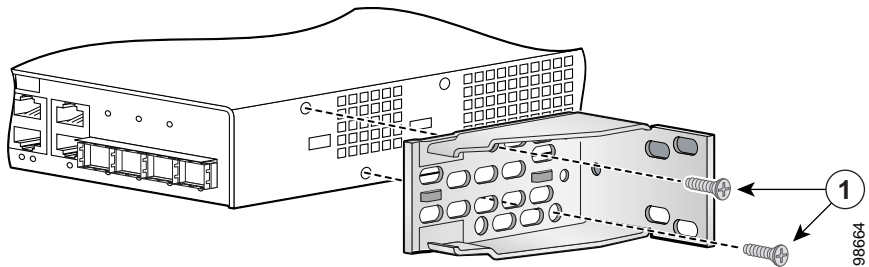| 1	Phillips flat-head screws

Figure 3-7   Attaching Brackets for 24-Inch Racks, Rear Panel Forward

1	Phillips flat-head screws

Figure 3-8   Attaching Brackets for 19-Inch Telco Racks

1	Phillips flat-head screws

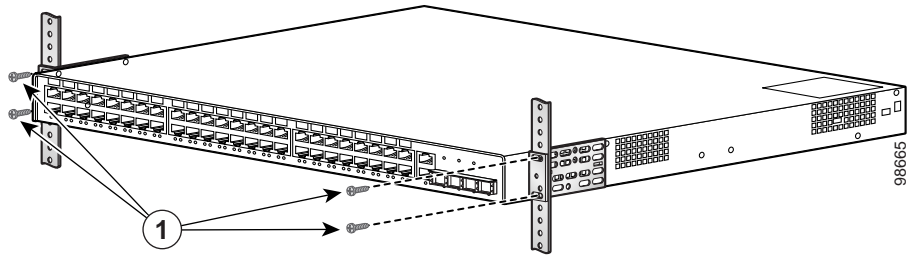*Figure 3-9   Attaching Brackets for 24-Inch Telco Racks*

1	Phillips flat-head screws

Mounting the Switch in a Rack

After the brackets are attached to the switch, use the four supplied number-12 Phillips machine screws to securely attach the brackets to the rack, as shown in Figure 3-10.

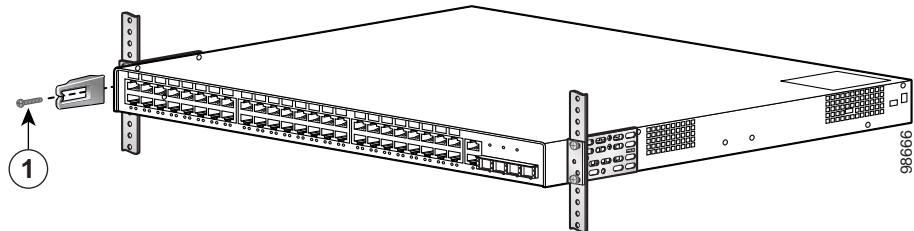*Figure 3-10   Mounting the Catalyst 2948G-GE-TX Switch In a Rack*

1	Phillips machine screws

Attaching the Cable Guide

We recommend attaching the cable guide to the left or right bracket to prevent the cables from obscuring the front panel of the switch and the other devices installed in the rack. Use the supplied black screw, as shown in Figure 3-11, to attach the cable guide to the left or right bracket.

Figure 3-11   Attaching the Cable Guide on the Catalyst 2948G-GE-TX Switch

1	Cable guide screw

Note   The Catalyst 2948G-GE-TX switch ships with a special cable guide, as shown in Figure 3-11. This cable guide secures up to 48 cables. Use the supplied black screw to mount it on the left or right bracket.

Catalyst 2984G, 2948G-GE-TX, and 2980G Switch Hardware Installation Guide
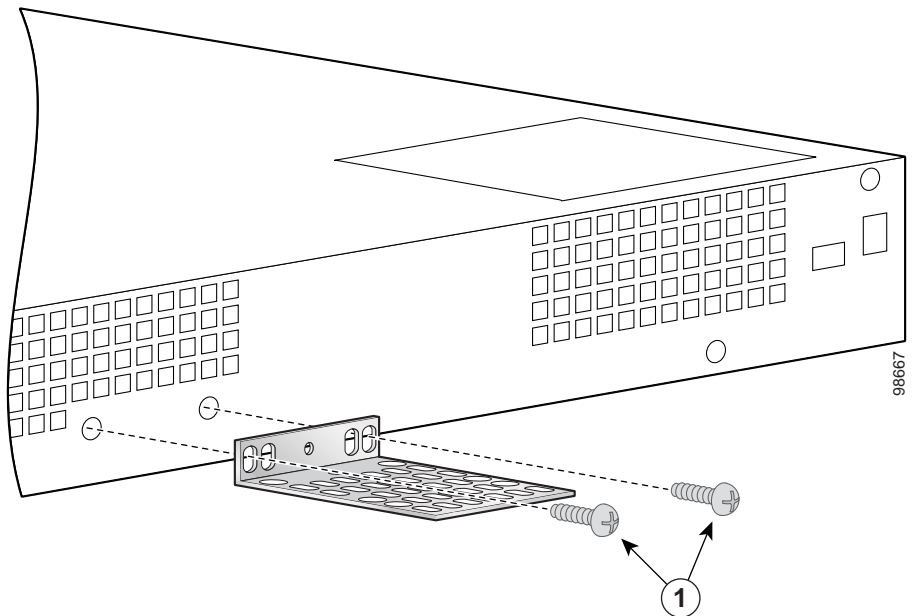
Wall-Mounting the Catalyst 2948G-GE-TX Switch

To install the Catalyst 2948G-GE-TX switch on a wall, follow the instructions in these procedures:

- Attaching the Brackets to the Switch for Wall-Mounting, page 16
- Attaching the RPS Connector Cover, page 17
- Mounting the Switch on a Wall, page 17

Attaching the Brackets to the Switch for Wall-Mounting

Figure 3-12 shows how to attach a 19-inch bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side of the switch.

Figure 3-12   Attaching the 19-Inch Brackets for Wall-Mounting

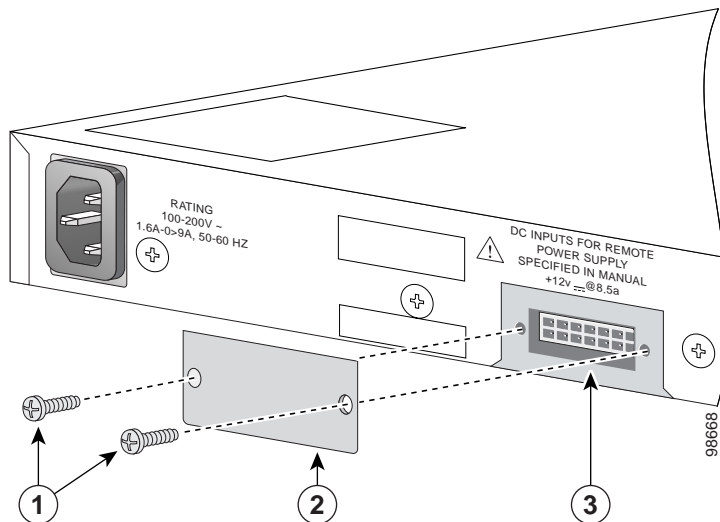| 1	Phillips truss-head screws

Attaching the RPS Connector Cover

If you are not using a Cisco RPS with your switch, use the two Phillips pan-head screws to attach the RPS connector cover to the back of the switch before you mount it, as shown in Figure 3-13.

⚠

Warning   **If an RPS is not connected to the switch, install an RPS connector cover on the back of the switch.** Statement 265

Figure 3-13   Attaching the RPS Connector Cover on the Catalyst 2948G-GE-TX Switch

1	Phillips pan-head screws	3	RPS connector
2	RPS connector cover		

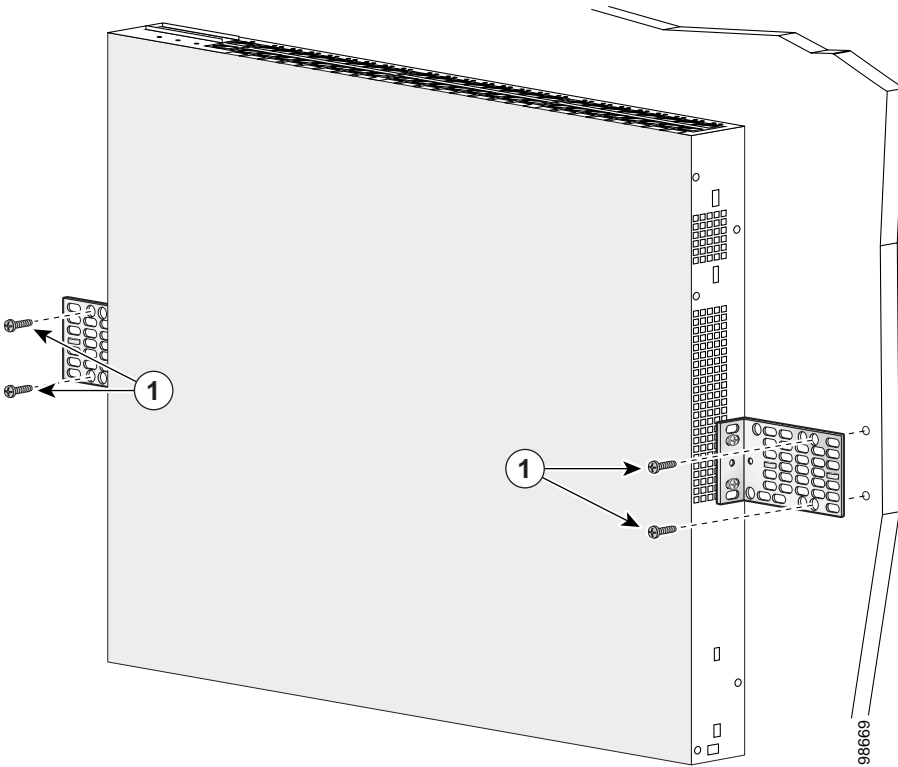## Mounting the Switch on a Wall

For the best support of the switch and cables, make sure the switch is attached securely to wall studs or to a firmly attached plywood mounting backboard. Mount the switch with the front panel facing up, as shown in Figure 3-14.

Catalyst 2984G, 2948G-GE-TX, and 2980G Switch Hardware Installation Guide

⚠️

Warning   **To comply with safety regulations, mount the switches on a wall with the front panel facing up.** Statement 266

Figure 3-14   Mounting the Switch on a Wall

1	User-supplied screws

Mounting the Catalyst 2948G-GE-TX Switch on a Table or Shelf

To install the switch on a table or shelf, follow these steps:

Step 1   Locate the adhesive strip with the rubber feet in the mounting-kit envelope.

Step 2   Attach the four rubber feet to the recessed areas on the bottom of the unit.

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

Connecting Power to the Switches

To connect power to Catalyst 2948G, 2948G-GE-TX, and 2980G switches, follow these steps:

Step 1   Before you connect the power supply to a power source, ensure that all site power and grounding requirements described in "Site Planning" section on page 2-1 have been met.

Step 2   Plug the power cord into the chassis.

Step 3   Connect the other end of the power cord to an AC-power input source.

Step 4   Verify power supply operation by checking the front panel power supply LEDs:

- When the power supply is operational, the LED is green.
- When the power supply has failed, the LED is amber.

From the system console, enter the **show system** command to display the power supply and system status. For more information on commands, refer to the command reference for your switch.

If the LEDs or the **show system** command indicate a power problem or other system problem, see Appendix D, "Translated Safety Warnings" for more information.

Connecting to 10/100 and 10/100/1000 Ports

The 10/100 ports on the Catalyst 2948G and 2980G switches configure themselves to operate at the speed and duplex settings of attached devices. They operate at 10 or 100 Mbps in half- or full-duplex mode. If the attached devices do not support autonegotiation, the speed should resolve correctly. You can also explicitly set the speed and duplex parameters.

The 10/100/1000 ports on the Catalyst 2948G-GE-TX switches configure themselves to operate at the speed setting of attached devices. These ports operate at 10, 100, or 1000 Mbps in full-duplex mode. If the attached devices do not support autonegotiation, you can set the speed.

Connecting devices that do not autonegotiate or devices with manually set speed and duplex parameters can reduce performance or result in link failures between the devices. To maximize performance, choose one of these methods for configuring the ports:

 • Allow the ports to autonegotiate both speed and duplex for 10/100 ports and only speed for 10/100/1000 ports.

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

⚠

Caution   To comply with the intrabuilding lightning surge requirements, intrabuilding wiring must be shielded, and the shield for the wiring must be grounded at both ends.

⚠

Caution   To prevent electrostatic-discharge (ESD) damage, follow your normal board and component handling procedures.
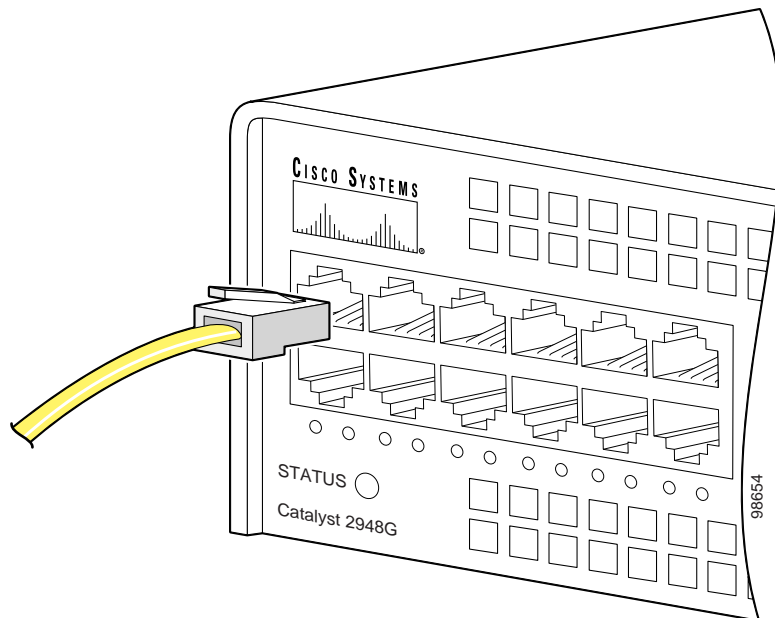
To connect the switch to 10BASE-T, 100BASE-TX, or 1000BASE-T devices, follow these steps:

Step 1   When connecting to servers, workstations, and routers, insert a twisted-pair straight-through cable in a front-panel RJ-45 connector, as shown in Figure 3-15. When connecting to switches or repeaters, insert a twisted-pair crossover cable. (See the Appendix A, "Specifications," for cable-pinout descriptions.)

Note   When connecting to 1000BASE-T devices, be sure to use a four twisted-pair, Category 5 cable.

Figure 3-15   Connecting to a 10/100 or 10/100/1000 Port

Step 2   Insert the other cable end in an RJ-45 connector on the target device.

Step 3   Observe the port STATUS LED:

- The LED turns amber while Spanning Tree Protocol (STP) discovers the network topology and searches for loops. This process takes about 30 seconds.

- The LED turns green when the switch and the target device have an established link.

The LED does not light when the target device is not turned on, a cable problem exists, or a problem exists with the adapter installed in the target device.

If the STATUS LED does not turn green or does not light at all, see "Troubleshooting the Installation" section on page 5-1 for solutions to cabling problems.

Step 4   Reconfigure and restart the target device if necessary.

Step 5   Repeat Steps 1 through 4 to connect each port.

Connecting a Terminal to the Console Serial and Ethernet Management Ports

The console serial and Ethernet management ports are located on the front panel of the Catalyst 2948G, 2948G-GE-TX, and 2980G switches. These ports use an RJ-45 media-dependent interface crossed-over (MDIX) connector, as shown in Figure 3-16. For information about port pinouts, see Appendix A, "Specifications."
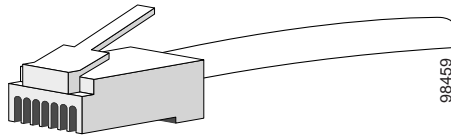
The Catalyst 2948G switches have a 10BASE-T management port. The Catalyst 2948G-GE-TX and 2980G-A switches have a 10/100BASE-T management port.

Note   The MDIX Ethernet ports are crossed over internally. For an MDI-to-MDI or MDIX-to-MDIX connection, use a crossover cable. For an MDI-to-MDIX connection, use a straight-through cable, which allows the Tx pins to connect with the Rx pins.

Figure 3-16   Ethernet Cable with RJ-45 Connector

Verifying Switch Operation

After you have connected all the interfaces, check all connections, and then perform the following steps to power on the system to verify that it is operational:

Step 1   Before powering on the system, make sure the connector is installed securely in a grounded outlet at the power-source end of the power cord and that the source power is within the range labeled on the back of the switch. When two power supplies are present, make sure that the second cord is connected to a separate line from the first, if possible.

Step 2   Check the console terminal and make sure it is powered on.

Step 3   Connect the power cords to the switch.

Step 4   Verify that the PSI or PWR LEDs on the power supply front panel is green.

Step 5   Listen for the system fans to ensure that they are operational.

Step 6   While the system initializes, check that the STATUS LED on the supervisor engine is amber until the boot is complete.

> **Note**   Many of the interface LEDs do not illuminate until you configure the interfaces.

When the system boot is complete (it takes a few seconds), the supervisor engine begins to initialize the interfaces. During this initialization, the interface LEDs flash on and off. When initialization is complete, the console screen displays a script and system banner.

Note When interface LEDs are on, the interface ports may not be functional or enabled. Although the LEDs for many interface types might turn on at system startup, they do not indicate an accurate status until the interface is configured.

Note If the system does not complete this verification process, see Chapter 5, "Troubleshooting the Installation."