Switch Installation

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Safety Warnings

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

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

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

Warning
Read the wall-mounting instructions carefully before beginning installation. Failure to use the correct hardware or to follow the correct procedures could result in a hazardous situation to people and damage to the system. Statement 378
Warning
Do not work on the system or connect or disconnect cables during periods of lightning activity. **Statement 1001**

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

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

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

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

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

**Statement 1006**

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

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

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

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

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

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

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**Warning**

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

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**Warning**

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

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**Note**

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

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**Warning**

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

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**Warning**

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

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**Warning**

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

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**Warning**

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

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**Warning**

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

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

Figure 1: Box Contents of an 8-Port and 16-Port Cisco Catalyst 2960-L Switch

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Quantity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8-port or 16-port Cisco Catalyst 2960-L switch</td>
<td>6</td>
<td>(Optional) Console cable or USB cable</td>
</tr>
<tr>
<td>2</td>
<td>AC power cord</td>
<td>7</td>
<td>(Optional) Power cord retainer</td>
</tr>
<tr>
<td>3</td>
<td>Four rubber mounting feet (51-0089)</td>
<td>8</td>
<td>(Optional) Magnet tray combo</td>
</tr>
<tr>
<td>4</td>
<td>Three number-8 screws (48-1689-01)</td>
<td>9</td>
<td>(Optional) Cable guard</td>
</tr>
<tr>
<td>5</td>
<td>Screw template (47-100996-02)</td>
<td>10</td>
<td>(Optional) DIN rail mount</td>
</tr>
</tbody>
</table>
Tools and Equipment

Obtain these necessary tools:

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

Installation Guidelines

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

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

- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures. Make sure that the cabling is safely away from other devices that might damage the cables.

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

- Temperature around the unit does not exceed 113°F (45°C). If the switch is installed in a closed or multirack assembly, the temperature around it might be greater than normal room temperature.

### Note

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

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

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

- Humidity around the switch does not exceed 90 percent.

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

- For 10/100/1000 fixed ports, the cable length from a switch to a connected device cannot exceed 328 feet (100 meters).
Verifying Switch Operation

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

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

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

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

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

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

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**Note**

When you connect the RPS to the switch, put the RPS in standby mode. Set the RPS to active mode during normal operation.

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**Warning**

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

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Mounting the Switch

Mounting on a Desk or Shelf Without Mounting Screws

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Locate the adhesive strip with the rubber feet in the accessory kit.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Remove the four rubber feet from the adhesive strip, and attach them to the recessed areas at the bottom of the unit. This prevents the switch from sliding on the desk or shelf.</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>We strongly recommend that you attach the rubber feet. Doing so also helps prevent airflow restriction and overheating.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Place the switch on the desk or shelf.</td>
</tr>
</tbody>
</table>
On a Desk, Shelf, or Wall (with Mounting Screws)

Desk- or Shelf-Mounting

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

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

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

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

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

*Figure 2: Installing the Mounting Screws on Top of a Desk or a Shelf*

**Step 6** Remove the screw template from the desk or shelf.

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

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

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**Under a Desk- or Shelf-Mounting**

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

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

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

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

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

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

*Figure 4: Installing the Mounting Screws Under a Desk or Shelf*

**Step 6** Remove the screw template from underneath the desk or shelf.

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

**Warning** To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 in. (7.6 cm)
Statement 1076
Figure 5: Mounting the Switch Under a Desk or Shelf

Wall-Mounting

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

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

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

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

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

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

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

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

**Step 6**  
Insert two screws in the slots on the screw template, and tighten them until they touch the top of the screw template.
Step 7  Remove the screw template from the wall.
Step 8  Place the switch onto the mounting screws, and slide it down until it locks in place.
With a Mounting Tray

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

The mounting kit ships contents:

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

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

Mounting Tray with Screws

You can use the mounting tray to secure the switch:

- On a desk or shelf
- Under a desk or shelf
• On a wall

Caution

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

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

Step 1
Place the mounting tray on the desk.

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

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

Step 4
Place the switch onto the mounting screws, and slide the switch until it locks into place.
Step 5  
Use the two number-10 Phillips pan-head screws to secure the switch to the mounting tray.

*Figure 10: Securing the Switch to the Mounting Tray*

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

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**Mounting Tray with a Magnet**

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

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**Caution**  
Do not use the magnet without a mounting tray

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

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**Step 1**  
Place the switch on the mounting tray.
Step 2  Use the two number-10 Phillips pan-head screws to secure the mounting tray to the switch.

*Figure 12: Securing the Mounting Tray to the Switch*

Step 3  Place one side of the magnet against the bottom of the mounting tray. Mount the magnet and switch on a metal wall.

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

**Caution**  Do not wall-mount the switch with its front panel facing up. Following safety regulations, wall-mount the switch with its front panel facing down or to the side, to allow sufficient airflow and to provide easier access to the cables.
Figure 13: Wall-Mounting with a Magnet

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

In a Rack

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

- 19-inch rack-mounting brackets (RCKMNT-19-CMPCT=)
- 23- and 24-inch rack-mounting brackets (RCKMNT-23-CMPCT=)

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

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

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

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

Statement 1006
Attach a bracket to one side of the switch. Follow the same steps to attach the second bracket to the opposite side. The following figure show how to attach the 19-inch rack-mounting bracket and the 23-inch rack-mounting bracket.

*Figure 14: Attaching the 19-inch and 23-inch Brackets for Rack-Mounting*

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

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**Warning**

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

Statement 1076
**On a DIN Rail**

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

The DIN-mount kit contains:

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

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

**Attaching the DIN-Mount Tray to the Switch**

| Step 1 | Place the switch on the DIN rail mount. |
Mounting the Switch on a DIN Rail

**Caution**

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

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

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

Figure 18: Mounting the Switch on a DIN Rail

Step 2
Rotate the switch down toward the DIN rail until the release tabs on the DIN rail mount clicks.

Step 3
Lift lightly on the bottom of the switch to ensure that it is firmly locked in place.

Removing the Switch from a DIN Rail

Step 1
Ensure that power is removed from the switch, and disconnect all cables and connectors from the front panel of the switch.
Step 2  Pull down on the DIN rail mount release tabs. As the clips release, lift the bottom of the switch.

*Figure 19: Switch Removal*

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**Installing the Power Cord Retainer (Optional)**

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**Note**

This section applies to switches with an AC power connector.

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

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

**Step 2**  Slide the retainer around the AC power cord, and pass it around the loop on the switch.
Figure 20: Inserting the Retainer through the Lanced Loop

Step 3
Slide the retainer through the first latch.

Figure 21: Sliding the Retainer Through the Latch

<table>
<thead>
<tr>
<th></th>
<th>AC power cord</th>
<th>3</th>
<th>Sleeve for thinner power cords</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Power cord retainer</td>
<td>4</td>
<td>Loop</td>
</tr>
</tbody>
</table>

Step 4
Slide the retainer through the other latches to lock it.
Step 5  (Optional) Use the small sleeve for thin power cords. Use the small sleeve to provide greater stability for thin cords. Detach the sleeve, and slide it over the power cord.

Figure 23: Sleeve Around the Power Cord

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

Step 6  Secure the AC power cord by pressing on the retainer.
Installing the Cable Guard (Optional)

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

Note

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

The cable guard is shipped with these items:

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

Step 1

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

Note

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

Figure 25: Using the Washer

| 1 | Washer |
Step 2  Use the supplied number-10 pan-head screws to attach the cable guard to the switch.

*Figure 26: Attaching the Cable Guard to the Switch*

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Switch</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Cable Guard</td>
<td></td>
</tr>
</tbody>
</table>

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

*Figure 27: Pivoting the Cable Guard Upwards*

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cable guard</td>
<td>2</td>
</tr>
</tbody>
</table>

Step 4  Attach the cables to the switch.
Step 5  Guide the connected cables through the slots in the front of the cable guard. Slide the cable guide in as shown in the following figure. Tighten the screws.

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

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

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

Installing an SFP Module

Before you begin

When installing SFP modules, observe these guidelines:

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

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

Caution

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

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

DETAILED STEPS

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

Figure 31: Installing an SFP Module

Removing an SFP Module

Step 1  Attach an ESD-preventive wrist strap to your wrist and to a bare metal surface.
Step 2  Disconnect the cable from the SFP module. For reattachment, note which cable connector plug is send (TX) and which is receive (RX).
Step 3  Insert a dust plug into the optical ports of the SFP module to keep the optical interfaces clean.
If the module has a bale-clasp latch, pull the bale out and down to eject the module. If the latch is obstructed and you cannot use your finger, use a small, flat-blade screwdriver or other long, narrow instrument to open the latch.

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

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

### 10/100/1000 PoE and PoE+ Port Connections

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

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

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

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

**Warning**

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

Statement 1072

**Caution**

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

**Caution**

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

**SUMMARY STEPS**

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

Step 1  Connect one end of the cable to the switch PoE port.
Step 2  Connect the other end of the cable to an RJ-45 connector on the other device. The port LED turns on when both devices have established link.

The port LED is amber while STP discovers the topology and searches for loops. This process takes about 30 seconds, and then the port LED turns green. If the LED is off, the other device might not be turned on, there might be a cable problem, or there might be a problem with the adapter in the other device.

Step 3  Reconfigure and reboot the connected device, if needed.
Step 4  Repeat Steps 1 through 3 to connect each device.

Note  Many legacy powered devices, including older Cisco IP phones and access points that do not fully support IEEE 802.3af, might not support PoE when connected to the switches by a crossover cable.

10/100/1000 Port Connections

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

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

• Let the ports autonegotiate both speed and duplex.
• Set the interface speed and duplex parameters on both ends of the connection.

Auto-MDIX Connections

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

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

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

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

<table>
<thead>
<tr>
<th>Device</th>
<th>Crossover Cable</th>
<th>Straight-Through Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch to switch</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Switch to hub</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
Auto-MDIX Connections

<table>
<thead>
<tr>
<th>Device</th>
<th>Crossover Cable</th>
<th>Straight-Through Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch to computer or server</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Switch to router</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Switch to IP phone</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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