This chapter describes warnings, safety information, and mounting information needed during the installation of your access point. The chapter contains these sections:

- Unpacking the Access Point, page 2-2
- Tools and Materials That You Supply, page 2-2
- Warnings, page 2-4
- Safety Information, page 2-4
- Avoiding Damage to Radios in a Testing Environment, page 2-7
- Installation Guidelines, page 2-8
- Mounting the Access Point, page 2-16
- Grounding the Access Point, page 2-42
- Connecting a Fiber-Optic Cable to the Access Point, page 2-43
- Powering the Access Point, page 2-46
- Installing the Access Point in Hazardous Locations, page 2-60
Unpacking the Access Point

When you are unpacking the access point, do not remove the foam blocks attached to the antenna connectors. The foam protects the antenna connectors during installation.

Follow these steps to unpack the access point:

**Step 1** Open the shipping container and carefully remove the contents.

**Step 2** Return all packing materials to the shipping container, and save it.

**Step 3** Ensure that all items listed in Package Contents are included in the shipment. If any item is damaged or missing, notify your authorized Cisco sales representative.

Package Contents

Each access point package contains the following items:
- Access point
- Cisco product documentation and translated safety warnings
- Grounding lug with two screws and lock washers
- Three liquid tight adapters
- Two-pin DC power connector
- Ground lug (Panduit PLCD6-10A-L) and screws with lock washers

Tools and Materials That You Supply

- Ground lug crimping tool (Panduit CT-720 with CD-720-1 die)
- 6-AWG copper ground wire
- 13 mm box-end wrench or socket set
- Adjustable wrench, 22 mm socket, or Sealcon S-2200-WR socket wrench
- Small flat screwdriver for DC power connector
- Optional power injector (AIR-PWRINJ1500-2=)
- Optional AC power cord
  - 40-ft (12.2-m) power cord (AIR-CORD-R3P-40NA=) for light pole installations in the US and Canada
  - 4-ft (1.2-m) streetlight power tap adapter (AIR-PWR-ST-LT-R3P=) for light pole installations in the US and Canada
- Antennas, 2.4 and 5 GHz (refer to the “External Antennas” section on page 1-7)
- Optional pole mount kit (AIR-ACCPMK1520=)
- Optional strand mount kit (AIR-ACCSMK1520=)
- Optional banding strap tool (BAND IT) (AIR-BAND-INST-TL=)
Chapter 2  Mounting Instructions

Tools and Materials That You Supply

- Optional fiber-optic 100BASE-BX10-U SFP, fiber-optic take-up reels, and liquid tight adapter (GLC-FE-100BX-URGD=)
- Optional outdoor-rated fiber-optic cable with 0.20 to 0.35 in. (0.51 to 0.89 cm) diameter
- Optional shielded outdoor-rated Ethernet (CAT5e or better) cable with 0.20 to 0.35 in (0.51 to 0.89 cm) diameter
- Optional Ethernet RJ-45 connector and installation tool
- Optional shielded outdoor-rated DC power cable with 0.20 to 0.35 in. (.0.51 to 0.89 cm) diameter
- Optional cable Stinger connector
- Optional ground rod, as required by local regulations
- Optional ladder, power lift, rope, or other tools as required

Pole Installation

To install the access point on a vertical or horizontal metal, wood, or fiberglass pole, you need the following additional material and tools:

- Pole mount kit (AIR-ACCPMK1520=)
  - Pole clamp bracket
  - Two gusset strap brackets
  - One mounting bracket
  - Twelve hex bolts (M8 x16)
  - One M8 flange nut
  - Six M8 flat washers
  - Ten M8 split lock washers
  - Two stainless steel mounting straps
- Customer banding strap tool (BAND IT)—(AIR-BAND-INST-TL=)
- Customer supplied 13-mm and box-end wrench or socket set
- Customer supplied adjustable wrench, 22 mm socket, or Sealcon S-2200-WR socket wrench

Cable Strand Installation

To install the access point on a cable strand, you need the following additional parts:

- Cable strand mount kit (AIR-ACCSMK1520=)
  - Strand mounting bracket
  - Strand clamp bracket
  - Four cable clamps
  - Four M8 flange nuts
  - Four hex bolts (M8 x16)
  - Four M8 split lock washers and six M8 flat washers
Warnings

Translated versions of all safety warnings are available in the safety warning document that shipped with your access point or on Cisco.com. To browse to the document on Cisco.com, refer to Appendix A, “Translated Safety Warnings” for instructions.

---

**Warning**

**IMPORTANT SAFETY INSTRUCTIONS**

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

Statement 1071

**SAVE THESE INSTRUCTIONS**

---

**Warning**

Do not operate the unit near unshielded blasting caps or in an explosive environment unless the device has been modified to be especially qualified for such use. Statement 364

---

**Warning**

This equipment must be externally grounded using a customer-supplied ground wire before power is applied. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 366

---

**Warning**

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

---

**Warning**

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

---

Safety Information

Follow the guidelines in this section to ensure proper operation and safe use of the access point.

FCC Safety Compliance Statement

The FCC, with its action in ET Docket 96-8, has adopted a safety standard for human exposure to RF electromagnetic energy emitted by FCC-certified equipment. When used with approved Cisco Aironet antennas, Cisco Aironet products meet the uncontrolled environmental limits found in OET-65 and ANSI C95.1, 1991. Proper operation of this radio device according to the instructions in this publication results in user exposure substantially below the FCC recommended limits.
Chapter 2  Mounting Instructions

Safety Information

Safety Precautions

**Warning** The AC power supply has double pole/neutral fusing. Statement 188

**Warning** Do not work on the system or connect or disconnect cables during periods of lightning activity. Statement 1001

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

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

**Warning** A readily accessible two-poled disconnect device must be incorporated in the fixed wiring. Statement 1022

**Warning** To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord. Statement 1023

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

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

**Warning** Connect the unit only to DC power source that complies with the safety extra-low voltage (SELV) requirements in IEC 60950 based safety standards. Statement 1033

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

**Warning**

Do not locate the antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, because they may cause serious injury or death. For proper installation and grounding of the antenna, please refer to national and local codes (for example, U.S.: NFPA 70, National Electrical Code, Article 810, Canada: Canadian Electrical Code, Section 54). Statement 1052

**Caution**

Before connecting or disconnecting a power cord, you must remove AC power from the power cord using a suitable service disconnect.

For additional important safety instructions for AC power cords, refer to the *AC Power Cords for Cisco Aironet 1520 Series Outdoor Mesh Access Points* document that shipped with your AC power cords.

For safety and to achieve a good installation, please read and follow these safety precautions:

1. Select your installation site with safety, as well as performance in mind. Remember: electric power lines and phone lines look alike. For safety, assume that any overhead line can kill.

2. Call your electric power company. Tell them your plans, and ask them to come look at your proposed installation.

3. Plan your installation carefully and completely before you begin. Successful raising of a mast or tower is largely a matter of coordination. Each person should be assigned to a specific task and should know what to do and when to do it. One person should be in charge of the operation to issue instructions and watch for signs of trouble.

4. When installing the access point and antennas, remember:
   a. Do not use a metal ladder.
   b. Do not work on a wet or windy day.
   c. Do dress properly—shoes with rubber soles and heels, rubber gloves, long sleeved shirt or jacket.

5. Use a rope to lift the access point. If the assembly starts to drop, get away from it and let it fall.

6. If any part of the antenna system should come in contact with a power line, do not touch it or try to remove it yourself. Call your local power company. They will remove it safely.

If an accident should occur, call for qualified emergency help immediately.
Avoiding Damage to Radios in a Testing Environment

The radios on outdoor units (bridges) have higher transmit power levels than radios on indoor units (access points). When you test high power radios in a link, you must avoid exceeding the receiver’s maximum receive input level. At levels above the normal operating range, packet error rate (PER) performance is degraded. At even higher levels, the receiver can be permanently damaged. To avoid receiver damage and PER degradation, you can use one of the following techniques:

- Separate the omnidirectional antennas by at least 2 ft (0.6 m) to avoid receiver damage or by at least 25 ft (7.6 m) to avoid PER degradation.
  
  **Note**
  
  These distances assume free space path loss and are conservative estimates. Required separation distances for damage and performance degradation levels in actual deployments are less if conditions are not non line-of-sight.

- Reduce the configured transmit power to the minimum level.
- Use directional antennas, and keep them away from each other.
- Cable the radios together using a combination of attenuators, combiners, or splitters to achieve a total attenuation of at least 60 dB.

For a radiated test bed, the following equation describes the relationships among transmit power, antenna gain, attenuation, and receiver sensitivity:

\[
\text{txpwr} + \text{tx gain} + \text{rx gain} - \left[\text{attenuation due to antenna spacing}\right] < \text{max rx input level}
\]

Where:

- \(\text{txpwr}\) = Radio transmit power level
- \(\text{tx gain}\) = transmitter antenna gain
- \(\text{rx gain}\) = receiver antenna gain

For a conducted test bed, the following equation describes the relationships among transmit power, antenna gain, and receiver sensitivity:

\[
\text{txpwr} - \left[\text{attenuation due to coaxial components}\right] < \text{max rx input level}
\]

**Caution**

Under no circumstances should you connect the antenna port from one access point to the antenna port of another access point without using an RF attenuator. If you connect antenna ports, you must not exceed the maximum survivable receive level of 0 dBm. Never exceed 0 dBm, or damage to the access point can occur. Using attenuators, combiners, and splitters having a total of at least 60 dB of attenuation ensures that the receiver is not damaged and that PER performance is not degraded.
Installation Guidelines

Because the access point is a radio device, it is susceptible to common causes of interference that can reduce throughput and range. Follow these basic guidelines to ensure the best possible performance:

- For information on planning and initially configuring your Cisco Mesh network, refer to the Deployment Guide: Cisco Mesh Networking Solution.
- Perform a site survey before beginning the installation.
- Install the access point in an area where structures, trees, or hills do not obstruct radio signals to and from the access point.
- The access points can be installed at any height, but best throughput is achieved when all the access points are mounted at the same height. We recommend installing the access points no higher than 40 feet to allow support for wireless clients on the ground.

**Note**

To calculate path loss and to determine how far apart to install access points, consult an RF planning expert.

Site Surveys

Every network application is a unique installation. Before installing multiple access points, you should perform a site survey to determine the optimum use of networking components and to maximize range, coverage, and network performance.

Consider the following operating and environmental conditions when performing a site survey:

- **Data rates**—Sensitivity and range are inversely proportional to data bit rates. The maximum radio range is achieved at the lowest workable data rate. A decrease in receiver sensitivity occurs as the radio data increases.
- **Antenna type and placement**—Proper antenna configuration is a critical factor in maximizing radio range. As a general rule, range increases in proportion to antenna height. However, do not place the antenna higher than necessary, because the extra height also increases potential interference from other unlicensed radio systems and decreases the wireless coverage from the ground.
- **Physical environment**—Clear or open areas provide better radio range than closed or filled areas.
- **Obstructions**—Physical obstructions such as buildings, trees, or hills can hinder performance of wireless devices. Avoid locating the devices in a location where there is an obstruction between the sending and receiving antennas.
Before Beginning the Installation

Before you begin the installation process:

- Ensure that a site survey has been performed.
- Ensure that your network infrastructure devices are operational and properly configured.
- Ensure that your controllers are connected to switch trunk ports.
- Ensure that your switch is configured with untagged access ports for connecting your access points.
- Ensure that a DHCP server with Option 43 configured is reachable by your access points, or manually configure the controller information in the access point (for additional information, refer to the “Configuring DHCP Option 43” section on page F-1).
- Become familiar with the access point installation components (see the “Becoming Familiar with Access Point Installation Components” section on page 2-9).

Becoming Familiar with Access Point Installation Components

The access point is designed to be installed in an indoor or outdoor environment, such as an interior wall or ceiling or the exterior roof overhang of a tall building or a streetlight pole. Carefully review the following figures to become familiar with the system components, connectors, indicators, cables, system interconnection, and grounding:

- Components in a typical access point installation (see Figure 2-1)
- Pole mount installation (see Figure 2-2)
- Cable strand mount installation (see Figure 2-3)
- Streetlight power tap installation (see Figure 2-4)

Note

The illustrations in this document show all available connections for the access point. Unused connections are capped with a connector plug to ensure the access point’s watertight integrity. Liquid tight adapters are provided for connector openings, which can be installed before or after deploying the access point. The illustrations do not show antenna port 5, which is reserved for future use.
### Warning

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

---

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Building roof-overhang</td>
</tr>
<tr>
<td>2</td>
<td>Shielded outdoor-rated Ethernet (CAT5e or better) cable(^1)</td>
</tr>
<tr>
<td>3</td>
<td>Water drip loop</td>
</tr>
<tr>
<td>4</td>
<td>6-AWG copper grounding wire(^1)</td>
</tr>
<tr>
<td>5</td>
<td>Ground rod(^1)</td>
</tr>
<tr>
<td>6</td>
<td>Ground</td>
</tr>
<tr>
<td>7</td>
<td>AC power cord(^2)</td>
</tr>
<tr>
<td>8</td>
<td>Power injector(^3)</td>
</tr>
<tr>
<td>9</td>
<td>Shielded Ethernet (CAT5e or better) cable(^1)</td>
</tr>
<tr>
<td>10</td>
<td>Controller (through a switch)</td>
</tr>
</tbody>
</table>

1. User supplied.
2. The safety ground wire in the AC power cord must have a ground path to a grounding rod.
3. The shielded Ethernet cable has a ground path through the power injector and the safety ground wire in the AC power cord.

---

![Figure 2-1 Components in a Typical Access Point Installation](image-url)
### Figure 2-2 Pole Mount Installation

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stainless steel mounting straps (part of pole mount kit)</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>2.4-GHz antenna&lt;sup&gt;1&lt;/sup&gt;</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>5-GHz antenna&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2.4-GHz antennas&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Pole (wood, metal, or fiberglass)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Mounting bracket (part of pole mount kit)</td>
<td></td>
</tr>
</tbody>
</table>

<sup>1</sup> Illustration shows antennas for an access point with two radios.
Figure 2-3  Cable Strand Mounting

1. Clamp bracket with cable clamps (part of strand mount kit)
2. 5-GHz antenna¹
3. 2.4-GHz antennas ¹
4. Strand support cable
5. Cable bundle
6. Fiber-optic connection²
7. Cable POC power input³
8. Strand mount bracket (part of strand mount kit)

1. Illustration shows antennas for an access point with two radios.
2. Liquid tight connector not shown.
3. Stinger connector shown is user supplied.
Antenna Connector Locations

The access point is manufactured in three configurations, cable, pole mount, and mesh. These configurations support specific locations for the access point antennas as shown in Table 2-1.

Table 2-1  Antenna Locations for Each Access Point Configuration

<table>
<thead>
<tr>
<th>Antenna Port</th>
<th>Access Point Configurations</th>
<th>Pole Mount and Mesh</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.4-GHz antenna connector (RX)</td>
<td>5-GHz antenna connector (TX/RX)</td>
</tr>
<tr>
<td>2</td>
<td>5-GHz antenna connector (TX/RX)</td>
<td>2.4-GHz antenna connector (Rx)</td>
</tr>
<tr>
<td>3</td>
<td>2.4-GHz antenna connector (TX/RX)</td>
<td>2.4-GHz antenna connector (Tx/RX)</td>
</tr>
<tr>
<td>4</td>
<td>2.4-GHz antenna connector (TX/RX)</td>
<td>2.4-GHz antenna connector (Rx)</td>
</tr>
<tr>
<td>5</td>
<td>2.4-GHz antenna connector (TX/RX)</td>
<td>2.4-GHz antenna connector (Rx)</td>
</tr>
<tr>
<td>6</td>
<td>4.9-GHz antenna connector (TX/RX)</td>
<td>4.9-GHz antenna connector (TX/RX)</td>
</tr>
</tbody>
</table>

1. Antenna locations specified for a two radio access point.
2. Reserved for future use. A plug is installed.
Adding the Access Point MAC Addresses to the Controller Filter List

Before installing your access points, configure your controller by adding the MAC addresses of the access points to the filter list. MAC address filtering is enabled by default. This enables the controller to respond to the listed access points. Follow these steps to add a MAC filter entry on the controller:

Step 1  
Log into your controller using a web browser.

Step 2  
Choose SECURITY > MAC Filtering > New.

Step 3  
Enter the MAC address of the access point to the MAC Filter list; for example, 00:0B:91:21:3A:C7.

Note  
The access point MAC address is located on the bottom of the unit. When two MAC addresses are shown, use the top MAC address.

Step 4  
Select a WLAN ID or Any WLAN from the WLAN ID pop-up menu.

Step 5  
Enter a description (32 characters maximum) of the access point in the Description field; for example, Fisher_Street_00.0B.91.21.3A.C7 shows the location and MAC address of the access point.
Step 6  Choose an interface from the Interface Name pop-up menu, and click Apply.

Step 7  Repeat Steps 2 to 6 to add other access points to the list.

Step 8  Log out of your controller, and close your web browser.

**Configuring a RAP**

The access point defaults to the MAP radio role. One or more of your access points must be reconfigured as a RAP. The RAPs connect to a wired Ethernet link through a switch to the controller. The MAPs use their wireless backhaul interface to connect to a RAP to reach the controller.

Follow these steps to configure a RAP on the controller GUI:

---

**Step 1**  Log into your controller using a web browser.

**Step 2**  Click Wireless. When your access point associates to the controller, your access point’s name appears in the AP Name list.

**Step 3**  Double-click your access point’s name.

**Step 4**  Find Mesh Information, and choose Root AP by clicking the drop down arrow in the AP Role field.

**Step 5**  Click Apply.

**Step 6**  Repeat Steps 2 through 5 for each RAP.

**Step 7**  Log out from your controller, and close your web browser.

---

**Configuring a Bridge Group Name**

The bridge group name (BGN) controls the association of the access points to a RAP. BGNs can be used to logically group the radios to avoid different networks on the same channel from communicating with each other. This setting is also useful if you have more than one RAP in your network in the same area.

If you have two RAPs in your network in the same area (for more capacity), we recommend that you configure the two RAPs with the same BGN, but on different channels.

The BGN is a string of ten characters maximum. A factory-set bridge group name (NULL VALUE) is assigned during manufacturing. It is not visible to you, but allows new access point radios to join a network of new access points. The BGN can be reconfigured from the Controller CLI and GUI. After configuring the BGN, the access point reboots.

The BGN should be configured very carefully on a live network. You should always start from the farthest node (last node) from the RAP and move towards the RAP. If you start configuring the BGN in a different location, then the access points beyond this point (farther away) are dropped, as they have a different BGN.
To configure the BGN for the access points using the GUI, follow these steps:

---

**Step 1** Log into your controller using a web browser.

**Step 2** Click **Wireless**. When access points associates to the controller, the access point’s name appears in the AP Name list.

**Step 3** Double-click on an access point’s name.

**Step 4** Find Mesh Information, and enter the new BGN in the Bridge Group Name field.

**Step 5** Click **Apply**.

**Step 6** Repeat Steps 2 through 5 for each access point.

**Step 7** Log out from your controller, and close your web browser.

---

## Mounting the Access Point

This section provides instructions for installing your access points. Personnel installing the access point must understand wireless access points and bridging techniques and grounding methods.

---

**Caution**

All mounting methods on any wall surface is subject to the acceptance of local jurisdiction.

## Installation Options

There are two optional installation kits:

- Pole mount kit—used for pole, wall, or streetlight installations
- Strand mount kit—used for cable strand installations

---

**Warning**

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

---

**Warning**

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

---

**Caution**

To provide inline PoE, you must use the power injector (AIR-PWRINJ1500-2=) specified for the access point. Other power injectors, PoE switches, and 802.3af power sources do not provide adequate power, which might cause the access point to malfunction and cause over-current conditions at the power source. You must ensure that the switch port connected to the access point has PoE turned off.
Refer to these sections for installation details.

- **Access Point Mounting Orientation, page 2-17**
- **Mounting the Access Point on a Wall, page 2-17**
- **Mounting the Access Point on a Pole, page 2-21**
- **Cable Strand Mounting, page 2-30**

### Access Point Mounting Orientation

When installing an access point on a horizontal or vertical surface, you must ensure that the access point is oriented with the LED indicators pointing down (see Figure 2-2, Figure 2-3, and Figure 2-4). This positioning allows the LEDs to be visible to someone on the ground below the access point.

You must also ensure the access point is mounted with the hinged access cover facing out.

**Note**

Omnidirectional antennas are vertically polarized and should be mounted vertically.

### Mounting the Access Point on a Wall

The optional pole mount kit contain a mounting bracket for wall mounting. You can use the mounting bracket as a template to mark the positions of the mounting holes for your installation. You then install the mounting plate, and attach the access point when you are ready. Table 2-2 lists the material that you will need to provide in addition to the pole mount kit.

**Table 2-2**

<table>
<thead>
<tr>
<th>Materials Required</th>
<th>In Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground lug and screws (provided with access point)</td>
<td>Yes</td>
</tr>
<tr>
<td>Crimping tool for ground lug, Panduit CT-720 with CD-720-1 die (<a href="http://onlinecatalog.panduit.com">http://onlinecatalog.panduit.com</a>)</td>
<td>No</td>
</tr>
<tr>
<td>Four M8 or 5/16 in. (31 mm) screws</td>
<td>No</td>
</tr>
<tr>
<td>Four wall anchors (specified for wall material)</td>
<td>No</td>
</tr>
<tr>
<td>Drill bit for wall anchors</td>
<td>No</td>
</tr>
<tr>
<td>Electric drill and standard screwdriver</td>
<td>No</td>
</tr>
<tr>
<td>#6-AWG ground wire</td>
<td>No</td>
</tr>
<tr>
<td>Shielded outdoor-rated Ethernet (CAT5e or better) cable</td>
<td>No</td>
</tr>
<tr>
<td>Grounding block</td>
<td>No</td>
</tr>
<tr>
<td>Grounding rod</td>
<td>No</td>
</tr>
<tr>
<td>13-mm box-end wrench or socket set</td>
<td>No</td>
</tr>
</tbody>
</table>

**Caution**

The mounting surface, attaching screws, and optional wall anchors must be able to support a 50 lb (22.7 kg) static weight.
To mount the access point on a vertical wall, follow these instructions:

**Step 1**
Use the mounting bracket as a template to mark four screw hole locations on your mounting surface. See Figure 2-6 for the mounting bracket screw hole locations. You can optionally use the individual mounting holes or the mounting slots.

**Caution**
The mounting surface, attaching screws, and optional wall anchors must be able to support a 50 lbs (22.7 kg) static weight.

**Figure 2-6  Mounting Bracket for Wall Mounting**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Access point quick mount notch</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Mounting holes</td>
<td></td>
</tr>
</tbody>
</table>

**Step 2**
Use four customer-supplied screws and optional screw anchors to attach the mounting plate to the mounting surface.

**Note**
If necessary, use suitable screw anchors and an exterior-grade plywood backboard to mount the access point to stucco, cement, or drywall.
Step 3  Screw a M8 x16 bolt in the top support bolt hole on each side the access point (see Figure 2-7). Do not screw the bolt all the way in; leave approximately a 0.25 in. (0.635 cm) space.

Figure 2-7  Location of Access Point Top Support Bolt Hole

1  Ground lug location
2  M8 x16 bolt (supplied with pole mount kit)
3  Second bolt hole location
**Step 4** Position the two bolts on the access point into the quick mount notches on each side of the mounting bracket (see Figure 2-8). Ensure that the hinged door is facing out.

**Figure 2-8 Access Point Hanging in Mounting Bracket**

---

**Step 5** Screw a M8 x16 bolt (with flat and lock washers) into the second bolt hole on each side of the access point.

**Step 6** Ensure that the front of the access point is vertical, and tighten the four bolts to 13 to 15 ft lbs (17.6 to 20.3 Nm).

**Step 7** (Optional) When using the optional Cisco external omnidirectional antennas, connect them to the access point as shown in Figure 2-2. Hand-tighten the antennas to the access point.

**Note** Some access point configurations might support two or three of the 2.4-GHz antennas.

**Step 8** Continue with the “Grounding the Access Point” section on page 2-42 and the “Powering the Access Point” section on page 2-46.
Mounting the Access Point on a Pole

When installing an access point on a vertical pole, mast, or a streetlight pole, you should use the optional Cisco pole mount kit. The kit supports metal, wood, or fiberglass poles from 2 to 16 inches in diameter.

Assembling the Pole Clamp Bracket and the Mounting Bracket

When installing an access point on a pole, mast, or a streetlight, you should use the optional Cisco pole mount kit. The kit supports metal, wood, or fiberglass poles from 2 to 16 inches in diameter. The pole mount kit contains several parts that you must assembled prior to mounting on a pole. First you need to assemble two strap brackets on the pole clamp bracket that are positioned for the pole diameter you are using to mount the access point. Figure 2-9 illustrates the pole diameter indicators and bolt holes on the pole clamp bracket.
Figure 2-9 Pole Clamp Bracket Adjustment Hole Locations

1 Pole size indicators
   - 2 to 6 in.
   - 6 to 11 in.
   - 11 to 16 in.

2 Bolt holes for pole diameters
   (11 to 16 inches indicated)
To assemble the pole clamp bracket, perform these steps:

**Step 1** Position the strap brackets on the pole clamp bracket for the pole diameter you are using and secure each strap bracket with two M8 x16 bolts (with lock washers) (see Figure 2-10). Tighten the bolts to 13 to 15 ft lbs (17.6 to 20.3 Nm).

*Figure 2-10  Assembled Pole Clamp Bracket and Strap Brackets*
Step 2  Screw the M8 nut onto the pole clamp bracket support bolt, and tighten just enough to prevent the bolt from falling off.

Step 3  Go to the “Pole Mounting” section on page 2-24.

Pole Mounting

The access point can be installed where power is available, without the need for a wired LAN connection. The access point uses intelligent wireless routing that is based on the Adaptive Wireless Path Protocol (AWPP). AWPP enables a remote access point to dynamically optimize the best route to the wired LAN network using another access point.

The LAP1522 model uses the 5-GHz radio for the Mesh backhaul Mesh connections. The 2.4-GHz radio is used for local wireless client access.

To mount your access point on a vertical pole or streetlight pole, you need to install two metal bands around the pole to support the access point. This process requires extra tools and material not provided in the pole mount kit (see Table 2-3).

Table 2-3  Material Needed to Mount Access Point on a Pole

<table>
<thead>
<tr>
<th>Mounting Method</th>
<th>Materials Required</th>
<th>In Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical or streetlight pole</td>
<td>Two 0.75-in. (1.9 cm) stainless steel bands</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>banding strap tool (BAND IT) (Cisco AIR-BAND-INST-TL=)</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Ground lug (provided with access point)</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Crimping tool for ground lug, Panduit CT-720 with CD-720-1 die (<a href="http://onlinecatalog.panduit.com">http://onlinecatalog.panduit.com</a>)</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>#6 AWG Ground wire</td>
<td>No</td>
</tr>
</tbody>
</table>

To mount the access point onto a vertical pole or streetlight pole, follow these steps:

Step 1  Select a mounting location on the pole to mount the access point. You can attach the access point to any pole from 2 to 16 in. (5.1 to 40.6 cm) in diameter.

Note  If you will be using a streetlight power tap adapter, position the access point within 3 ft (1 m) of the outdoor light control.

Step 2  For poles larger than 3.5 in. (8.9 cm), mount the pole clamp bracket assembly to a pole (see Figure 2-11) using two metal straps. Following the instructions provided with the banding strap tool (BAND IT) (AIR-BAND-INST-TL=), loop each metal strap twice through the slots on the strap bracket.

Caution  Do not place the metal straps in the large open area between the pole clamp bracket and the strap brackets, because this does not properly secure the access point.
Figure 2-11  Clamp Bracket Assembly Mounted on Poles Larger than 3.5 in. (8.9 cm)

1 Pole clamp bracket  
2 Strap slot in strap bracket  
3 Metal mounting strap  
4 Pole
Step 3  For pole diameters of 3.5 in. (8.9 cm) or less, mount the pole clamp bracket assembly to a pole using two metal straps looped through the space between the pole clamp bracket and the strap brackets (see Figure 2-12) to provide maximum holding strength for extreme environments. Following the instructions provided with the banding strap tool (BAND IT) (AIR-BAND-INST-TL=), loop each metal strap twice.

![Figure 2-12  Metal Strap Open Space for 3.5 in. (8.9 cm) and Smaller Poles](image)

| Caution | Do not place the metal straps in the large open area between the pole clamp bracket and the strap brackets, because this does not properly secure the access point. |

| 1 | Metal strap open space |
Step 4  Position the pole clamp bracket on the pole as needed before tightening the metal bands.

---

**Note**  When the metal bands are tightened to the full tension, the pole clamp bracket cannot be adjusted unless the metal bands are cut or disassembled.

Step 5  Tighten the metal bands using the banding strap tool (BAND IT) (Cisco AIR-BAND-INST-TL=), following the operating instructions in the box with the tool. Ensure the metal bands are as tight as possible.

Step 6  Place the mounting bracket onto the pole clamp bracket support bolt (see Figure 2-13).

Step 7  For vertical poles, position the mounting bracket as shown in Figure 2-13. For horizontal streetlight poles, rotate the mounting bracket 90° from the position shown in Figure 2-13.

Step 8  Install four M8 x16 bolts (with flat and lock washers) into the bolt holes.

---

**Figure 2-13  Screw Hole Locations on the Mounting Bracket and Pole Clamp Bracket Assembly**

---

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pole clamp bracket assembly</td>
</tr>
<tr>
<td>2</td>
<td>Access point support bolt (M8 flange nut not shown)</td>
</tr>
<tr>
<td>3</td>
<td>Bolt holes</td>
</tr>
<tr>
<td>4</td>
<td>Mounting bracket</td>
</tr>
</tbody>
</table>

---

Step 9  Hand-tighten the bolts and the nut (do not overtighten).

Step 10 Adjust the top edge of the mounting bracket until it is horizontal and tighten the bolts and the flange nut (see Figure 2-13) to 13 to 15 ft lbs (17.6 to 20.3 Nm).

---

**Note**  The mounting bracket can be adjusted up to 45° to compensate for tilted horizontal streetlight poles.
Step 11 Screw a M8 x16 bolt (without a flat or lock washer) in the top support bolt hole on each side the access point (see Figure 2-14). Do not screw the bolt all the way in. Leave a gap of approximately 0.25 in (0.635 cm).

**Figure 2-14 Location of Access Point Top Support Bolt Hole**

<table>
<thead>
<tr>
<th></th>
<th>Ground lug screw holes location</th>
<th></th>
<th>Second bolt hole location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ground lug screw holes location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>M8 x16 bolt (without flat or lock washers) (supplied with pole mount kit)</td>
<td></td>
<td>Second bolt hole location</td>
</tr>
</tbody>
</table>
Step 12  Position the two bolts on the access point into the access point quick-mount notch on the mounting bracket (see Figure 2-15).

Note  The access point should be positioned with the LEDs on the bottom to allow viewing from the ground and with the hinged cover facing out.

Figure 2-15  Access Point Hanging in Mounting Bracket

Step 13  Screw a M8 x16 bolt (with flat and lock washers) into the second bolt hole on each side of the access point (see Figure 2-15).

Step 14  Ensure the front of the access point is vertical, and tighten the four bolts to 13 to 15 ft lbs (17.6 to 20.3 Nm).

Step 15  When using the optional Cisco external omnidirectional antennas, connect them to the access point as shown in Figure 2-2. Hand-tighten the antennas to the access point.

Step 16  Continue with the “Grounding the Access Point” section on page 2-42 and the “Powering the Access Point” section on page 2-46.
Cable Strand Mounting

When mounting the access point on a cable strand, you must use the optional strand mount kit. The kit contains several parts that you should assemble before mounting on a cable strand. To install the access point to a cable strand, you need to perform these operations:

- Attach cable clamps to the clamp bracket
- Attach the strand bracket to the access point
- Attach the clamp bracket to the fiber or cable strand
- Attach the strand bracket (with access point) to the clamp bracket
- Attach antennas
- Attach a ground wire
- Connect cables and power to the access point

Note

The access point must be installed on a cable strand by a professional cable installer.

To mount the access point perform these steps:

Step 1

Install two cable clips, a flat washer, and a M8 flange nut on each clamp support bolt on the front of the clamp bracket (see Figure 2-16). You should only hand-tighten the nuts sufficiently to prevent them from falling off.
**Step 2**

Attach the strand bracket to the access point using two M8 x 16 bolts (with flat and lock washers) on each side of the access point (see Figure 2-17). Only hand-tighten the bolts.

**Note**

When attached to the cable strand, the access point must be vertically adjusted before the final tightening of the bolts.
Mounting the Access Point

Figure 2-17  Strand Bracket Attached to Access Point

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strand bracket</td>
</tr>
<tr>
<td>2</td>
<td>First M8 x16 bolt (with flat and lock washers)</td>
</tr>
<tr>
<td>3</td>
<td>Second M8 x16 bolt (with flat and lock washers)</td>
</tr>
</tbody>
</table>
Step 3  Place the clamp bracket on the strand support cable (see Figure 2-18). On each cable support bolt, ensure that one cable clamp is placed on each side of the support cable (see Figure 2-20). Tighten the two M8 flange nuts to 13 to 15 in. lbs (17.6 to 20.3 Nm).

Figure 2-18  Clamp Bracket Attached to Cable Strand

1 Two cable clips, flat washer, and a M8 flange nut on each cable support bolt
### Figure 2-19 Location of Strand Clips

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strand clamp bracket</td>
</tr>
<tr>
<td>2</td>
<td>Flat washer</td>
</tr>
<tr>
<td>3</td>
<td>M8 flange nut</td>
</tr>
<tr>
<td>4</td>
<td>Strand support cable</td>
</tr>
<tr>
<td>5</td>
<td>Fiber or cable bundle</td>
</tr>
<tr>
<td>6</td>
<td>Cable clip</td>
</tr>
<tr>
<td>7</td>
<td>Cable clip</td>
</tr>
</tbody>
</table>

**Note**

The strand support cable might have to be pulled away from the fiber or cable bundle. Be sure to resecure the cable as necessary.

**Note**

The strand support cable and the mounting hardware provide grounding for the access point.
Step 4  Select the appropriate hole pair (see Figure 2-20) for the orientation of the cable strand where you will mount your access point.

The strand bracket contains several support hole pairs that allows the user to mount the access point onto cable strands that are horizontal or sloped (see Figure 2-20). Depending on the orientation of the cable strand, the access point is supported by these hole pairs:

- H fixed hole pair used for a horizontal cable strand.
- R fixed and R adjustable hole pair used for a cable strand sloping up to the right.
- L fixed and L adjustable hole pair used for a cable strand sloping up to the left.

![Strand Bracket Support Holes](image_url)
Step 5  

Insert the two support bolts located on back of the clamp bracket (see Figure 2-21) into the strand bracket support hole pairs for your strand orientation. Screw two M8 flange nuts on the support bolts, and tighten to 13 to 15 in. lbs (17.6 to 20.3 Nm).

**Figure 2-21  Attaching Strand Bracket to Clamp Bracket**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Left support bolt and M8 flange nut</td>
</tr>
<tr>
<td>2</td>
<td>Right support bolt and M8 flange nut</td>
</tr>
<tr>
<td>3</td>
<td>Strand bracket</td>
</tr>
</tbody>
</table>
Step 6 When using the optional Cisco external omnidirectional antennas, connect them to the access point as shown in Figure 2-22.

Figure 2-22 Access Point Mounted to Cable Strand

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clamp bracket with cable clamps (part of strand mount kit)</td>
</tr>
<tr>
<td>2</td>
<td>5-GHz antenna¹</td>
</tr>
<tr>
<td>3</td>
<td>2.4-GHz antennas¹</td>
</tr>
<tr>
<td>4</td>
<td>Support cable</td>
</tr>
<tr>
<td>5</td>
<td>Cable strand (only one strand shown)</td>
</tr>
<tr>
<td>6</td>
<td>Fiber-optic cable connection</td>
</tr>
<tr>
<td>7</td>
<td>Cable POC power input</td>
</tr>
<tr>
<td>8</td>
<td>Strand mount bracket (part of strand mount kit)</td>
</tr>
</tbody>
</table>

1. Illustration shows antennas for an access point with two radios.
Chapter 2
Mounting Instructions

Step 7  Continue with the “Grounding the Access Point” section on page 2-42 and the “Powering the Access Point” section on page 2-46.

Opening the Access Point Hinged Cover

You need to open the access point hinged cover when you are performing these operations:

- Installing a cable POC Stinger connector
- Installing fiber-optic SFP module and fiber cable take-up reels

To open the access point hinged cover, follow these steps:

Step 1  Use 0.5-in. (13-mm) box-end wrench or socket set to unscrew the six bolts on the front cover of the unit. Only unscrew the bolts about 2 turns until they are easily turned by hand, do not remove the bolts.

Step 2  The cover is hinged on the bottom. Carefully open the cover and swing it down.

Note  If the cover does not swing open easily, carefully loosen the hinge bolts again.
Closing the Access Point Hinged Cover

To close the access point cover, follow these steps:

**Step 1** When closing the access point cover, be careful not to pinch internal wires.

**Step 2** Carefully position the cover flush with all sides of the access point, then slowly hand-tighten each bolt.

**Step 3** When all bolts are hand-tightened, use a 13 mm closed-end wrench or socket to partially tighten the bolts in the tightening sequence shown in Figure 2-24. Tighten each bolt to 3 to 4 ft lbs (0.34 to 0.45 Nm).

**Step 4** Repeat Step 3 using the same tightening sequence to fully tighten each bolt to 6 to 7 ft lbs (0.68 to 0.79 Nm).
Using the Reset Button

The access point has a reset button located on the bottom of the unit (see Figure 2-25). The reset button is recessed in a small hole that is sealed with a screw and a rubber gasket. The reset button can be used to perform these functions:

- Reset the access point—press the reset button for less than 10 seconds.
- Disable battery backup power—press the reset button for more than 10 seconds.
**Reboot the Access Point**

To reboot (power cycle) the access point, follow these steps:

**Step 1**  
Use a Phillips screwdriver to remove the reset button screw. Be careful not to lose the screw.

**Step 2**  
Use a straightened paperclip, and push the reset button for less than 10 seconds. This causes the access point to reboot (power cycle), all LEDs turn off for approximately 5 seconds and then the LEDs reactivate.

**Step 3**  
Replace the reset button screw, and use a Phillips screwdriver to tighten to 22 to 24 in. lbs (2.49 to 2.71 Nm).
Disabling Backup Battery Power

To disable battery backup power, follow these steps:

<table>
<thead>
<tr>
<th>Step</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Use a Phillips screwdriver to remove the reset button screw. Be careful not to loose the screw.</td>
</tr>
<tr>
<td>Step 2</td>
<td>Use a straighten paper clip and push the reset button for greater than 10 seconds.</td>
</tr>
</tbody>
</table>
  - When the access point is only battery powered, this causes the access point to reboot and then disable the backup battery power. The LEDs turn off for approximately 5 seconds, reactivate for approximately 5 seconds, and then turn off and stay off.
  - When the access point has battery power and another power source, this causes the access point to reboot, then disable the battery and continue operating from the second power source. The LEDs turn off for approximately 5 seconds and then reactivate.

| Note | If your access point does not contain a battery backup unit, the access point will only reboot. |

| Note | The battery backup unit is reactivated when the access point is rebooted (power cycled) again. |

| Step 3 | Replace the reset button screw, and use a Phillips screwdriver to tighten to 22 to 24 in. lbs (2.49 to 2.71 Nm). |

Grounding the Access Point

The access point must be grounded prior to connecting power.

**Warning** This equipment must be externally grounded using a customer-supplied ground wire before power is applied. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 366

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

**Note** When the access point is cable strand mounted, the strand support cable and the mounting hardware provide grounding for the access point.

In all outdoor installations and when powering the access point with AC power, you must follow these instructions to properly ground the case:

| Step 1 | If using insulated 6-AWG copper ground wire, strip the insulation as required for the grounding lug. |
| Step 2 | Use the appropriate crimping tool to crimp the bare 6-AWG copper ground wire to the supplied grounding lug (Panduit PLCD6-10A-L). |
Step 3
Open the electrical joint compound (supplied), and apply a liberal amount over the metal surface where the ground strap screw holes are located (see Figure 2-1).

Step 4
Connect the grounding lug to the access point grounding screw holes (see Figure 2-14) using the supplied two Phillips head screws (M4 x 10 mm) with lock washers. Tighten the grounding screw to 22 to 24 in. lbs (2.49 to 2.71 Nm).

Step 5
If necessary, strip the other end of the ground wire, and connect it to a reliable earth ground such as a grounding rod (see Figure 2-2), an appropriate grounding point on a metal streetlight pole that is grounded (see Figure 2-31), or a grounded cable on a cable strand.

Connecting a Fiber-Optic Cable to the Access Point

The fiber-optic kit (GLC-FE-100BX-URGD=) enables the access point to support fiber-optic network connections. The kit contains these parts:

- 100BASE-BX10-U rugged SFP module
  - Single strand fiber bidirectional optical transceiver
  - 1.3/1.5 micro-meter wavelength division multiplexing (WDM) function
  - 125-Mb/s data rates
  - Single mode LC receptacle
- Eight screws
- Two small take-up reels
- Two large take-up reels
- One liquid tight adapter—accepts a cable diameter of 0.20 to 0.35 in. (0.51 to 0.89 cm)

⚠️ Warning
Class 1 laser product. Statement 1008

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

Note
You need a customer supplied outdoor-rated fiber-optic cable with an LC connector. The cable diameter must be 0.20 to 0.35 in. (0.52 to 0.89 cm) in diameter.

To connect a fiber-optic cable to the access point, follow these steps:

Step 1
Ensure that all power sources have been disconnected from the access point.

Note
If your access point contains a backup battery pack, you must depress the reset button for 10 seconds or more (see the “Disabling Backup Battery Power” section on page 2-4).
Connecting a Fiber-Optic Cable to the Access Point

**Step 2**  Open the hinged cover (see the “Opening the Access Point Hinged Cover” section on page 2-38 for instructions).

**Step 3**  For cable strand deployments, remove the SCTE 5/8 plug (item 1 in Figure 2-26) using a 13 mm wrench or socket. For all other deployments, remove the fiber-optic connector plug (item 5 in Figure 2-26) using an adjustable wrench, the 22 mm socket, or the Sealcon S-22-WR wrench.

**Step 4**  Place the two large reels with the small reels on top as shown in Figure 2-26.

**Step 5**  Align the screw holes in the large and small reels, and insert four attachment screws in each of the reel pairs. Tighten the screws to 3 to 4 in. lbs (0.34 to 0.45 Nm).

**Step 6**  Remove the plug from the end of the SFP module, and insert the module into the SFP receptacle (see Figure 2-26).

*Figure 2-26  Fiber-Optic Cable Components*

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SCTE 5/8 plug</td>
</tr>
<tr>
<td>2</td>
<td>SFP module slot</td>
</tr>
<tr>
<td>3</td>
<td>Fiber reels (large reel with small reel on top)</td>
</tr>
<tr>
<td>4</td>
<td>Four screws for each reel assembly</td>
</tr>
<tr>
<td>5</td>
<td>Fiber-optic connector plug</td>
</tr>
</tbody>
</table>
Step 7  Loosen the round end of the liquid tight connector by turning counterclockwise, but do not remove (see Figure 2-27).

Figure 2-27  Liquid -Tight Adapter

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>Thread end</th>
<th>2</th>
<th>Round end</th>
</tr>
</thead>
</table>

Step 8  Carefully screw the threaded end of the adapter into the access point and hand-tighten.

Step 9  Use an adjustable wrench, the 22 mm socket, or the Sealcon S-2200-WR wrench to tighten the threaded end of the adapter to 6 to 7 ft lbs (8.1 to 9.5 Nm).

Step 10  Carefully remove approximately 1 to 2 ft (30.5 cm) of the external jacket from the fiber-optic cable, exposing the inner strand.

Step 11  Carefully insert the fiber-optic LC cable connector into the rounded end of the liquid tight adapter (see Figure 2-27), and push through the adapter.

Step 12  Wrap excess fiber-optic cable around the take-up reels in a figure 8 pattern.

Step 13  Insert the fiber-optic LC cable connector into the SFP module.

Step 14  Use an adjustable or open-end wrench to tighten the round end of the adapter to 2.7 to 3.2 ft lbs (3.66 to 4.34 Nm).

Step 15  Close the hinged cover (see the “Closing the Access Point Hinged Cover” section on page 2-39).
Powering the Access Point

The access point can be powered by one of these methods:

- PoE—56 VDC
  - Connecting a 1520 Series Power Injector, page 2-46
- AC power
  - 100 to 480 VAC—Connecting Streetlight AC Power, page 2-50
  - 120 VAC—Connecting an AC Power Cable to the Access Point, page 2-52
- External 12 VDC
  - Connecting a DC Power Cable to the Access Point, page 2-53
- POC—40 to 90 VAC (Quasi-AC)
  - Connecting a Cable POC Power to the Access Point, page 2-57

Connecting a 1520 Series Power Injector

The power injector provides 56 VDC to the access point over the Ethernet cable and supports a total end-to-end Ethernet cable length of 100 m (328 ft) from the switch to the access point.

Note

The cable from the power injector to the access point (PoE-in port) must be at least 10 ft (3.05 m) long.

Note

The PoE-out port is disabled when the access point is powered by the power injector.

When your access point is powered by an optional power injector, follow these steps to complete the installation:

Step 1
Before applying PoE to the access point, ensure the access point is grounded (see the “Grounding the Access Point” section on page 2-42.

Step 2
Review Figure 2-2 to identify the components needed for the installation.

Note

The 1520 power injector can only be used in an indoor environment.

Step 3
Connect a CAT5e or better Ethernet cable from your wired LAN network to the power injector.

Warning

To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord. Statement 1023

Use only the 1520 power injector (AIR-PWRINJ1500-2) for the access point. This power injector is designed to meet the power requirements of the access point and is a listed Class 2 limited power source (LPS).
Connecting an Ethernet Cable to the Access Point

You need to supply these tools and materials:

- Shielded outdoor-rated Ethernet (CAT5e or better) cable with 0.2 to 0.35 in. (0.51 to 0.89 cm) diameter

Note The Ethernet cable from the power injector to the access point must be at least 10 ft (3.05 m) long. The PoE-out port is disabled when the access point is powered by the power injector.

- RJ-45 connector and installation tool
- Adjustable wrench

To connect the shielded Ethernet cable to the access point, follow these steps:

**Step 1** Disconnect power to the power injector, and ensure all power sources to the access point are turned-off.

![Warning](image)

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

Note If your access point contains a backup battery pack, you must press the reset button for 10 seconds or more (see the “Disabling Backup Battery Power” section on page 2-42).

**Step 2** Ensure a 6 AWG ground wire is connected to the access point (see the “Grounding the Access Point” section on page 2-42).

**Step 3** Use an adjustable wrench, a 22 mm socket, or the Sealcon S-2200-WR wrench to remove the Ethernet connector plug from the access point (see Figure 2-28 for the location).
Step 4 Loosen the round end of the liquid tight adapter by turning counterclockwise, but do not remove (see Figure 2-29).

**Figure 2-29 Liquid Tight Adapter**

<table>
<thead>
<tr>
<th>1</th>
<th>PoE-out port</th>
<th>2</th>
<th>PoE-in port</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>1</th>
<th>Thread end</th>
<th>2</th>
<th>Round end</th>
</tr>
</thead>
</table>
Step 5 Insert the unterminated end of the Ethernet cable into the round end of the liquid tight adapter (see Figure 2-29), and pull several inches of cable through the adapter.

Step 6 Install an RJ-45 connector on the unterminated end of the Ethernet cable using your Ethernet cable installation tool.

**Warning**

To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord. Statement 1023

Step 7 Carefully insert the RJ-45 cable connector into the Ethernet port opening on the access point, and connect to the internal Ethernet connector (see Figure 2-30).

**Figure 2-30 Inserting RJ-45 Connector into the Ethernet Port Opening in Case**

<table>
<thead>
<tr>
<th>1</th>
<th>Liquid tight adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Ethernet port opening in access point case</td>
</tr>
<tr>
<td>3</td>
<td>RJ-45 connector</td>
</tr>
<tr>
<td>4</td>
<td>Shielded outdoor-rated Ethernet (CAT5e or better) cable</td>
</tr>
</tbody>
</table>

Step 8 Slide the liquid tight adapter towards the access point, and screw the threaded end of the adapter into the access point, and hand-tighten.

Step 9 Use an adjustable wrench, a 22 mm socket, or a Sealcon S-2200-WR wrench to tighten the threaded end of the adapter to 6 to 7 ft lbs (8.1 to 9.5 Nm).

Step 10 Use an adjustable wrench and tighten the round end of the adapter to 2.7 to 3.2 ft lbs (3.66 to 4.34 Nm).

Step 11 Ensure that the antennas are connected to the access point before you apply power to the access point.

Step 12 Route your Ethernet cable, and cut off any excess cable.

Step 13 Install an RJ-45 connector on the unterminated cable end, and insert it into the power injector. For typical installation components see Figure 2-2.

Step 14 Turn on power to the power injector.
Connecting Streetlight AC Power

The access point can be installed on a streetlight pole and powered from a streetlight outdoor light control using the optional streetlight power tap adapter.

Caution

The access point can be powered by a light pole twist-lock outdoor light control that provides 100-to 480-VAC 50/60 Hz power. Do not connect to an outdoor light control powered by higher voltages.

When powering the access point with AC power other than the streetlight power tap adapter, you must ensure that the following conditions are observed:

1. AC power can be conveniently removed from the unit. The power should not be removed by disconnecting the AC power connector on the unit.

Warning

A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.
Statement 1022

Caution

Before connecting or disconnecting a power cord, you must remove AC power from the power cord using a suitable service disconnect.

2. You must protect any AC power plugs and AC receptacles from water and other outdoor elements. You can use a UL-listed waterproofing enclosure suitable for covering the AC receptacle and AC power plug that supplies power to the unit as described in Article 406 of the NEC.

3. When you install the access point outdoors or in a wet or damp location, the AC branch circuit that powers the access point should have ground fault protection (GFCI), as required by Article 210 of the National Electrical Code (NEC).

Warning

Be very careful when connecting the streetlight adapter to Category 3 pole-top power. If you are not careful, you may electrocute yourself or fall. Statement 363

For additional important safety instructions for AC power cords, refer to the AC Power Cords for Cisco Aironet 1520 Series Outdoor Mesh Access Points document that shipped with your AC power cords.

To install an access point on a streetlight pole, follow these steps:

Step 1
Before beginning the installation, ensure the AC power to the streetlight pole is turned off.

Step 2
Turn off power to the AC power source at the designated circuits.

Warning

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

Caution

For your safety, when connecting the access point AC power connector, always connect the access point end of the cable FIRST. When removing the AC power connector, always disconnect the access point end of the cable LAST.
If your access point contains a backup battery pack, you must press the reset button for 10 seconds or more (see the “Disabling Backup Battery Power” section on page 2-42.)

**Step 3** When using the streetlight power tap adapter (AIR-PWR-ST-LT-R3P=), ensure that the access point is mounted within 3 ft (1 m) of the outdoor light control. For mounting instructions, refer to the “Mounting the Access Point on a Pole” section on page 2-21.

**Step 4** Ensure a 6-AWG ground wire is attached to the access point (see Figure 2-31) and connected to the streetlight pole (for instructions see Grounding the Access Point, page 2-42).

*Figure 2-31 Using the Streetlight Power Tap Adapter*

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Outdoor light control</td>
</tr>
<tr>
<td>2</td>
<td>Streetlight power tap adapter</td>
</tr>
<tr>
<td>3</td>
<td>6-AWG copper grounding wire</td>
</tr>
</tbody>
</table>

**Step 5** Refer to Figure 2-31. The streetlight power tap adapter uses a 3-pronged LC-10 twist-lock adapter that is placed between the outdoor light control and its fixture. The LC-10 twist-lock adapter is designed to be used with LC-10 listed outdoor light controls operating at 100 to 480 V AC, 50 to 60 Hz.

**Step 6** Disconnect the outdoor light control from its fixture.

**Step 7** Verify that the voltage available at the fixture is between 100 and 480 V AC, 50 to 60 Hz.

**Step 8** Turn off power to the fixture at the designated circuits.

**Caution**

When installing the streetlight power tap adapter to the access point AC power connector, always connect the access point end of the cable FIRST. When removing the streetlight power tap adapter, always disconnect the access point end of the cable last.

**Note**

Ensure that your antennas are connected to the access point before you apply power to the access point.
Step 9 Connect the streetlight power tap adapter to the access point AC power connector, as shown in Figure 2-32. Hand-tighten the connector.

Figure 2-32 AC Power Connector

![AC Power Connector](image)

1. AC power connector

Step 10 Plug the streetlight power tap adapter into the outdoor light control fixture, as shown in Figure 2-31.

Step 11 Plug the outdoor light control into the streetlight power tap adapter.

Step 12 Ensure that the antennas are connected to the access point before you apply power to the access point.

Step 13 Turn on the power to the outdoor light control fixture at the designated circuits.

### Connecting an AC Power Cable to the Access Point

When powering the access point with AC power other than the streetlight power tap adapter, you must ensure that the following conditions are observed:

1. AC power can be conveniently removed from the unit. The power should not be removed by disconnecting the AC power connector on the unit.

**Warning** A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.

Statement 1022

**Caution** Before connecting or disconnecting a power cord, you must remove AC power from the power cord using a suitable service disconnect.
2. You must protect any AC power plugs and AC receptacles from water and other outdoor elements. You can use a UL-listed waterproofing enclosure suitable for covering the AC receptacle and AC power plug that supplies power to the unit as described in Article 406 of the NEC.

3. When you install the access point outdoors or in a wet or damp location, the AC branch circuit that powers the access point should have ground fault protection (GFCI), as required by Article 210 of the National Electrical Code (NEC).

---

**Note**
For additional important safety instructions for AC power cords, refer to the *AC Power Cords for Cisco Aironet 1520 Series Outdoor Mesh Access Points* document that shipped with your AC power cords.

The access point supports this Cisco AC power cable:
- 40 ft (12.2 m) AC power cable (AIR-CORD-R3P-40NA=)

To connect an AC power cable to the access point, perform these steps:

---

**Step 1**
Prior to applying AC power, ensure the access point is grounded (see *Grounding the Access Point*, page 2-42).

**Step 2**
Turn off power to the AC power source at the designated circuits.

---

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

---

**Caution**
When connecting the access point AC power connector, always connect the access point end of the cable *first*. When removing the AC power connector, always disconnect the access point end of the cable *last*.

---

**Note**
If your access point contains a backup battery pack, you must press the reset button for 10 seconds or more (see the “Disabling Backup Battery Power” section on page 2-42).

**Step 3**
Align the notch in the AC power cable connector with the key in the access point AC power connector, and push the cable connector into the access point connector (see Figure 2-32). When fully seated, rotate the cable connector ring clockwise until hand-tight.

**Step 4**
Ensure the antennas are connected to the access point before you apply power to the access point.

**Step 5**
Turn on the AC power at the designated circuits.

---

**Connecting a DC Power Cable to the Access Point**

When powering the access point with DC power, you must ensure that DC power can be conveniently removed from the unit. The power should not be removed by disconnecting the DC power connector on the unit.

---

**Warning**
*A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.*

Statement 1022
Warning  Connect the unit only to DC power source that complies with the safety extra-low voltage (SELV) requirements in IEC 60950 based safety standards. Statement 1033

To connect a DC power cable, you need to supply these tools and material:

- Shielded outdoor-rated DC power cable with cable diameter of 0.20 to 0.35 in. (0.51 to 0.89 cm).
- Internal DC terminal connector
- Adjustable or open-end wrench
- Small flat screw driver

To connect the DC power cable to the access point, follow these steps:

**Step 1**
Before connecting DC power to the access point, ensure that the ground is connected to the access point (see the “Grounding the Access Point” section on page 2-42.

**Step 2**
Turn off all power sources to the access point, including the DC power source.

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

Caution  When installing DC power to the access point, always connect the access point end of the cable first. When removing the DC power connector, always disconnect the access point end of the cable last.

If your access point contains a backup battery pack, you must press the reset button for 10 seconds or more (see the “Disabling Backup Battery Power” section on page 2-42.)

**Step 3**
Use an adjustable wrench, a 22 mm socket, or a Sealcon S-2200-WR wrench to remove the plug in the DC power connector opening (see Figure 2-33 for the location of the DC power connector).
Step 4 Loosen the round end of the liquid tight adapter by turning counterclockwise, but do not remove (see Figure 2-34).
**Note**  The liquid tight adapter accepts a cable diameter of 0.20 to 0.35 in. (0.51 to 0.89 cm).

**Step 5**  Insert a bare end of the DC power cable into the rounded end of the liquid tight adapter (see Figure 2-34), and pull approximately 6 inches of cable through the adapter.

**Step 6**  Strip the DC cable jacket back about 1 inch to expose the wires and strip the insulation about 3/8 in. (9.5 mm) from each wire.

**Step 7**  Insert each wire into the two-position terminal strip (supplied), and tighten each wire using a 0.1 in. (0.25 cm) flat screw driver (see Figure 2-35).

![Figure 2-35 Two-Position Terminal Strip](image)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Securing screws</td>
</tr>
<tr>
<td>2</td>
<td>Wire opening for ground (DC return)</td>
</tr>
<tr>
<td>3</td>
<td>Wire opening for DC +</td>
</tr>
</tbody>
</table>

**Step 8**  Insert the two-position terminal strip into the DC power opening in the access point case, and carefully push the terminal strip into the internal connector (see Figure 2-36).
Chapter 2  Mounting Instructions

Powering the Access Point

Figure 2-36  Inserting the Terminal Strip into the DC Power Opening in the Access Point Case

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Two-position terminal strip</td>
</tr>
<tr>
<td>2</td>
<td>DC power cable</td>
</tr>
<tr>
<td>3</td>
<td>Liquid tight adapter</td>
</tr>
<tr>
<td>4</td>
<td>DC power opening in access point case</td>
</tr>
</tbody>
</table>

Note: For specifications and restrictions on power cable connections, refer to Figure 2-41.

Step 9  Slide the liquid tight adapter towards the access point, and screw the threaded end of the adapter into the access point, and hand-tighten.

Step 10 Use an adjustable wrench, a 22 mm socket, or a Sealcon S-2200-WR wrench to tighten the threaded end of the adapter to 6 to 7 ft lbs (8.1 to 9.5 Nm).

Step 11 Use an adjustable or open-end wrench to tighten the round end of the adapter to 2.7 to 3.2 ft lbs (3.66 to 4.34 Nm).

Step 12 Ensure that the antennas are connected to the access point before you apply power to the access point.

Step 13 Turn on the DC power at the designated circuits.

Connecting a Cable POC Power to the Access Point

The cable configuration access point contains a cable modem and RF splitter but does not contain a cable stinger connector. The cable stinger connector is customer supplied.

Note: The access point uses the Scientific Atlanta DPC2100 cable modem board and the 4015821 RF splitter.

Follow these instructions to connect a cable stinger connector to the access point:
**Step 1** Before connecting cable POC power to the access point, ensure that the ground is connected to the access point (see the “Grounding the Access Point” section on page 2-42).

**Step 2** Ensure that all power sources have been disconnected from the access point.

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

If your access point contains a backup battery pack, you must press the reset button for 10 seconds or more (see the “Disabling Backup Battery Power” section on page 2-42.).

**Step 3** Open the hinged cover (see the “Opening the Access Point Hinged Cover” section on page 2-38 for instructions).

**Step 4** Pull out the RF splitter shunt (see Figure 2-37).

**Step 5** Follow your cable company’s procedures to measure the cable signal strength and possibly adjust signal attenuation externally to the access point or on the RF splitter (see Figure 2-37).

**Note** The cable modem MAC address is located on the bottom of the access point under the LEDs.

**Step 6** Use an adjustable wrench to remove the cable connector plug (see Figure 2-37) from the access point.

**Step 7** Locate the stinger set-screw on the RF splitter (see Figure 2-37).

*Figure 2-37  Stinger Connector Location and RF Splitter Components*
Chapter 2      Mounting Instructions

Powering the Access Point

Step 8  Use a Phillips screw driver, and loosen, but be careful not to remove the set-screw.

Step 9  Cut the cable stinger connector’s pin (see Figure 2-38) to 0.75 ± 0.1 in. (1.91 ± 0.25 cm).

Figure 2-38  Cable Stinger Connector Pin

1  Pin length is 0.75 ± 0.1 in. (1.91 ± 0.25 cm).

2  Cable connector plug

3  Stinger set-screw

4  RF splitter shunt

5  RF splitter

6  Cable modem

Step 10  Insert the cable Stinger connector pin into the cable POC connector opening in the access point case.

Step 11  Screw the Stinger connector into the POC connector opening, and hand-tighten.

Step 12  Use an adjustable wrench to tighten the Stinger connector to 6 to 7 ft lbs (8.1 to 9.5 Nm).

Step 13  Use a Phillips screw driver to tighten the stinger set-screw on the RF splitter to 2.7 to 3.2 ft lbs (3.66 to 4.34 Nm).

Step 14  Before connecting cable POC power to the access point, ensure that the antennas are attached to the access point.

Step 15  Connect or attach the cable company’s POC cable to the Stinger connector according to their specifications.

Step 16  Turn on cable POC power.

Step 17  Reinsert the RF splitter shunt.

Step 18  Check the cable modem’s Power and Cable LEDs and verify the cable modem receives power and registers to the cable network. The Power LED (fifth LED from the hinge) is green to indicate power is available. The Cable LED (second LED from the hinge) should be blinking green to indicate scanning the cable network and green to indicate registered on the cable network.

Step 19  Close the hinged cover (see the “Closing the Access Point Hinged Cover” section on page 2-39).
Installing the Access Point in Hazardous Locations

Note
This document does not provide specific procedures for installing conduit. You must ensure that your installation techniques and procedures comply with Class I, Division 2, Zone 2 hazardous location installation regulations for your geographic location.

Caution
This product is rated only IP66 for hazardous location installations and IP67 for non-hazardous location installations.

The access point’s hazardous location option complies with safety standards for Class I, Division 2, Zone 2 hazardous locations where ignitable concentrations of flammable gases, vapors, or liquids are not likely to exist under normal operation conditions.

When you select the hazardous location option as part of the ordering process, Cisco configures the system to contain the new components. Two conduit adaptors and assembly instructions placed in the shipping box provide information and assembly procedures. The hazardous location option configures the access point as follows:

- The battery pack is removed because battery construction does not meet hazardous location requirements.
- The AC power connections are moved to the inside of the access point by installing an AC entry board containing a terminal block. To comply with hazardous location requirements, AC power must be installed through rigid metal conduit to the terminal block.

Caution
Do not use any form of sealant or gasket material when joining conduit components.

Caution
The electrical rating for hazardous location installations has a lower voltage rating (100-240 VAC, 50/60 Hz, 1A) than a non-hazardous location installation (100-480 VAC).

Note
To provide a proper seal, threaded conduit must be used to route the power and data cabling to the access point.

- Two PG13 - 1/2 NPT adapters are provided. The adapters connect the conduit to the access point’s AC power port and Ethernet backhaul port.
- When used in hazardous locations, the access point is rated 100–240 VAC only.

This section describes the steps required to retrofit the access point and prepare it for installation in Class I, Division 2, Zone 2 hazardous locations.

Required Tools and Materials

See the “Package Contents” section on page 2-2 for a list of tools and materials you will need to install the access point.
Chapter 2  Mounting Instructions

Installing the Access Point in Hazardous Locations

**Warnings**

⚠️ **Warning**  Do not disconnect connections to this equipment unless power has been removed or you have verified that the area is nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product. Substitution of components may impair suitability for Class I, Zone 2, Division 2. **Statement 1062**

⚠️ **Warning**  When used in a Class I, Zone 2, Division 2 hazardous location, this equipment must be mounted with a proper wiring method that complies with the governing electrical codes. **Statement 1069**

⚠️ **Warning**  If you connect or disconnect the console cable with power applied to the unit or any device on the network, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

To verify unit operation, perform POST on the device in a nonhazardous location before installation. **Statement 1080**

**Compliance**

An access point complies with the following versions of hazardous location certifications:

- IEC 60079-0: 2004
- IEC 60079-15: 2005
- CAN/CSA E60079-0: 2007
- CAN/CSA E60079-15: 2002
- UL 60079-0: Edition 4
- UL 60079-15: Edition 1
- EN 600079-0: 2006
- EN 60079-15: 2006

**Compliance Label**

Figure 2-39 shows the access point hazardous location compliance label.
Table 2-4 interprets the information on the compliance labels.
### Table 2-4 Interpreting the Hazardous Compliance Labels

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
</table>
| Class I, Division 2, Groups A, B, C, D | Defines the environment in which the access point can be used:  
  - Class I—Environment containing flammable gases, vapors, or liquids  
  - Division 2—Environmental classification used by the U.S. and Canada  
  - Groups A, B, C, D—Gas identification for the U.S. and Canada:  
    - A—Acetylene  
    - B—Hydrogen  
    - C—Ethylene  
    - D—Propane |
| Class I, Zone 2, Group II | Defines the environment in which the access point can be used:  
  - Class I—Environment containing flammable gases, vapors, or liquids  
  - Zone 2—Environment classification used in North America  
  - Group II—Gas identification for Zone II, which includes:  
    - IIa—Propane  
    - IIb—Ethylene  
    - IIc—Acetylene & Hydrogen |
| AEx nA II T5 | Defines parameters that the product complies with for U.S. Certification:  
  - Ex —Denote explosive atmosphere  
  - nA —Non-sparking  
  - II = group II as defined previously  
  - T5 = Temperature code < 100 degrees C, maximum surface temperature |
| Ex nA II T5 | This marking is the same as AEx line except it is for the Canada certification. |
| -40°C ≤ Ta ≤ 55°C | The operating temperature range for the access point in all countries. |
| Type 4, IP66 | Defines the enclosure’s degree of protection (Type 4 = indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water, and damage from external ice formation. IP66 = Dust tight, protected against powerful water jets. |
| Type 4, IP67 | Defines the enclosure’s degree of protection (Type 4 = indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water, and damage from external ice formation. IP67 = Dust tight (dust, dirt, sand, and so forth) and protected against powerful water jets. |
Mounting the Access Point

You can mount the access point using any of the mounting systems described in this document. Follow the instructions in the appropriate section or sections for the installation you intend to use.

Routing and Connecting Ground, AC Power, and Ethernet Backhaul Cables

After you have mounted the access point, you must route ground, AC power, and backhaul Ethernet cabling to the access point using rigid steel conduit.

---

**Note**

When you install the conduit, be sure to comply with the local electrical codes for your area.

The procedure is divided into five parts:

1. “Installing the PG-13 1/2 NPT Conduit Adapters” section on page 2-65
2. “Opening the Access Point Hinged Cover” section on page 2-66
3. “Connecting Ground and AC Power” section on page 2-67
4. “Closing the Access Point Hinged Cover” section on page 2-68
5. “Connecting the Ethernet Backhaul Cable” section on page 2-69

We recommend that you follow these steps in the sequence listed. Before you begin, you should refer to Figure 2-41 for AC power and ground installation details and to Figure 2-42 for Ethernet backhaul installation details.

**Figure 2-41  Hazardous Location AC Power Installation**

AC Entry Cover
Loosen the Captive Screws (3x)
To open cover.
Reattach after harness has been installed

Attach GND wire to terminal Ring.
Attach terminal ring to chassis as shown

Customer supplied harness

1/2 NPT Adapter and O-ring (North American/ATEX) or Sheathed Cable Adapter (ATEX) – See Notes 1, 2 and 3

Customer supplied 1/2 NPT Pipe (North American/ATEX) or Sheathed Cable (ATEX only)
Installing the Access Point in Hazardous Locations

Installing the PG-13 1/2 NPT Conduit Adapters

Follow these steps to install the PG-13 1/2 NPT conduit adapters on your access point.

Step 1  Locate and remove two plugs in the upper left corner of the access point. See Figure 2-43.
Installing the Access Point in Hazardous Locations

Figure 2-43  Port Plugs to Remove

1  AC entry port plug
2  Ethernet backhaul port plug

Step 2  Start a PG-13 1/2 NPT conduit adapter into each threaded hole identified in Figure 2-43.

Caution  To ensure a proper seal, make sure you have positioned an O-ring on the adapter threads.

Caution  Do not use any type of pipe thread sealant or other gasket material. Doing so will invalidate the unit’s hazardous location compliance certification.

Step 3  Tighten the adapters hand-tight to avoid damaging the O-ring seal.

Opening the Access Point Hinged Cover

You need to open the access point hinged cover to access the AC entry terminal block and the Ethernet backhaul port. See Figure 2-44.

To open the access point hinged cover, follow these steps:

Step 1  Use 0.5-in. (13-mm) box-end wrench or socket set to unscrew the six bolts on the front cover of the unit. Only unscrew the bolts about 2 turns until they are easily turned by hand, do not remove the bolts.

Step 2  The cover is hinged on the bottom. Carefully open the cover and swing it down.

Note  If the cover does not swing open easily, carefully loosen the hinge bolts again.
Connecting Ground and AC Power

Follow these steps to route and connect the ground and AC power cabling to the access point.

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

**Caution**
Always install the ground wire before connecting the AC power leads.

**Step 1**
Open the access point hinged cover. See the “Opening the Access Point Hinged Cover” section on page 2-66 for instructions.

**Step 2**
Using a Phillips head screwdriver loosen the three captive screws that secure the AC entry module cover.

**Step 3**
Remove the cover and set it aside.

**Step 4**
Route the AC power cable through the PG-13 1/2 NPT adapter serving the AC entry module.

**Step 5**
Using a wire stripper tool, remove the insulation from each wire. Remove only enough wire to provide a solid connection in the terminal block. The hot wires should have no bare wire exposed after the connection is made.
Installing the Access Point in Hazardous Locations

Step 6  Insert the ground wire into the provided ground lug and use a crimping tool to secure the connection.

Step 7  Install the ground lug and tighten the connection with a Phillips screwdriver. To prevent stripping the screw threads, do not overtighten.

Note  Use the short screw (0.188 in. long, or 4.77 mm long) included in the Hazardous Location Mounting Kit (AIR-1520 HAZLOC KIT) to connect the ground lug to the chassis. Using one of the three longer screws (0.31 in. long, or 7.87 mm long) in the kit can damage the electronics under the connection point.

Step 8  Insert each hot wire into the AC entry terminal block.

Step 9  Using a Phillips screwdriver, tighten the terminal block set screws to secure the wires in the terminal block.

Step 10  Verify that no bare wire is exposed. If wire is exposed, remove it from the terminal block, adjust the length, and reinstall.

Step 11  Check your work.

Step 12  Reinstall the AC entry module top cover and tighten the captive screws. Do not overtighten.

Step 13  Close the access point’s hinged cover. See the “Closing the Access Point Hinged Cover” section on page 2-39 for details.

Step 14  Install the Ethernet backhaul cable. See the next section for instructions.

Closing the Access Point Hinged Cover

To close the access point cover, follow these steps:

Step 1  When closing the access point cover, be careful not to pinch internal wires.

Step 2  Carefully position the cover flush with all sides of the access point, then slowly hand-tighten each bolt.

Step 3  When all bolts are hand-tightened, use a 13 mm closed-end wrench or socket to partially tighten the bolts in the tightening sequence shown in Figure 2-45. Tighten each bolt to 3 to 4 ft lbs (0.34 to 0.45 Nm).

Step 4  Repeat Step 3 using the same tightening sequence to fully tighten each bolt to 6 to 7 ft lbs (0.68 to 0.79 Nm).
Connecting the Ethernet Backhaul Cable

The Ethernet backhaul cable plugs into the port identified by call out 2 in Figure 2-43. Follow these steps to connect the Ethernet backhaul cable.

Step 1  Route the Ethernet cable through the PG-13 1/2 NPT serving the backhaul connection on the access point.
Step 2  Insert the cable’s RJ-45 connector into the Ethernet connection in the access point. Make sure the connection is tight.
Step 3  Check your work.

Performing Maintenance

The access point requires minimal periodic or preventive maintenance as it has no moving parts, filters, lubricants, or mechanical contact components. However, when installed in a hazardous location, periodic inspections should be conducted in order to ensure that the access point is operating satisfactory. This section provides information about performing maintenance on an access point installed in a hazardous location.
Additional maintenance information can be found in Chapter 3 of the *Cisco Aironet 1520 Series Outdoor Mesh Access Point Hardware Installation Guide* and *Troubleshooting a Mesh Network*. These documents are available at cisco.com at the following URLs:


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**Warning**

Do not disconnect connections to this equipment unless power has been removed or you have verified that the area is nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product. Substitution of components may impair suitability for Class I, Zone 2, Division 2. Statement 1062

---

**Warning**

If you connect or disconnect the console cable with power applied to the unit or any device on the network, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

To verify unit operation, perform POST on the device in a nonhazardous location before installation. Statement 1080

---

**Warning**

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

---

**Removing the Access Point from Service**

When removing an access point from service, make sure you remove power from the access point before opening the cover and disconnecting the AC input wiring. When removing the AC wiring, the ground connection should be the last to be disconnected.

---

**Conducting Periodic Inspections**

The access point should be inspected periodically to ensure normal and airtight operation in the hazardous location environment. Table 2-5 lists the inspection routines and their periodicity.

<table>
<thead>
<tr>
<th>Inspection Routine</th>
<th>Periodicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspect O-ring seals and exterior electrical connections for aging, corrosion, and low ground resistance.</td>
<td>Every 3 years</td>
</tr>
<tr>
<td>Inspect cover and liquid tight adapter gaskets for airtightness</td>
<td>Every 5 years</td>
</tr>
</tbody>
</table>
What to Do Next

When you power up a MAP that is not connected to a wired Ethernet, fiber-optic, or cable network to the controller, the access point uses the Cisco Adaptive Wireless Path Protocol to bind to another MAP with the best path to a RAP connected to the wired network to a controller. The access point sends a discovery request when powered up. If you have configured the access point in the controller correctly, the controller sends back a discovery response to the access point. When that happens, the access point sends out a join request to the controller, and the controller responds with a join confirmation response. Then the access point establishes an LWAPP connection to the controller and gets the shared secret configured on the controller.

Refer to the Cisco Wireless LAN Controller Configuration Guide for more information on configuring, monitoring, and operating your access points. The following lists some of the configuration settings you might want to reconfigure:

- Selecting a backhaul channel when using the 4.9 MHz band
- Reconfiguring the bridge group name