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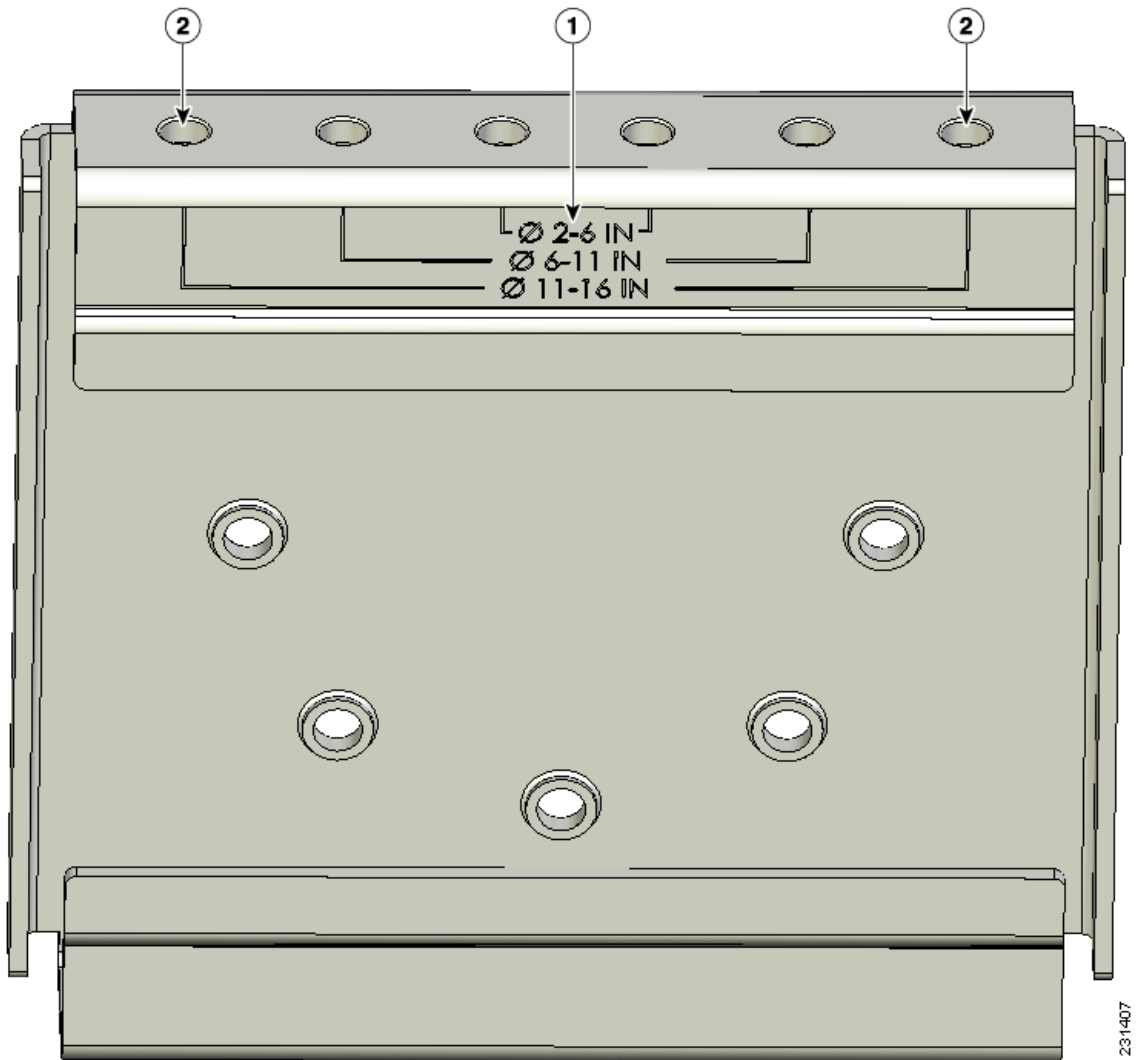
Mounting the Access Point on a Pole

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 assemble 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.

REVIEW DRAFT – CISCO CONFIDENTIAL**Figure 2-9 Pole Clamp Bracket Adjustment Hole Locations**

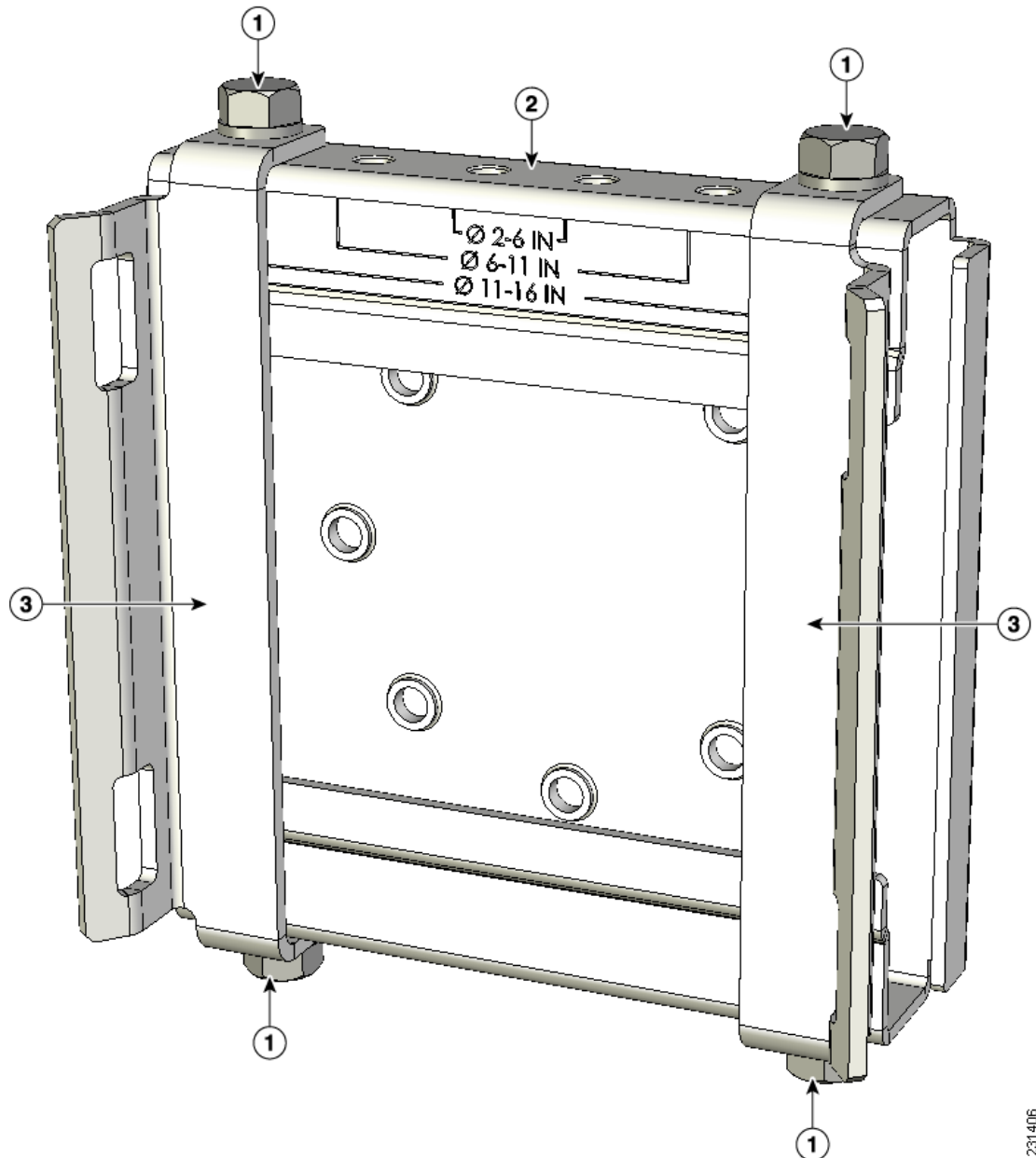
1 Pole size indicators <ul style="list-style-type: none"> • 2 to 6 in. • 6 to 11 in. • 11 to 16 in. 	2 Bolt holes for pole diameters (11 to 16 inches indicated)
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To assemble the pole clamp bracket, perform these steps:

- 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



1	M8 x1.25x16 bolts (with lock washers)	3	Strap bracket (shown positioned for 11 to 16 inch diameter pole)
2	Pole clamp bracket		

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- 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. The LAP1521 model uses the 2.4-GHz radio for both Mesh backhaul and 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*

Mounting Method	Materials Required	In Kit
Vertical or streetlight pole	Two 0.75-in. (1.9 cm) stainless steel bands	Yes
	Band hand tool (Cisco AIR-BAND-IT-TOOL=)	No
	Ground lug (provided with access point)	Yes
	Crimping tool for ground lug, Panduit CT-720 with CD-720-1 die (http://onlinecatalog.panduit.com)	No
	#6 AWG Ground wire	No

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.

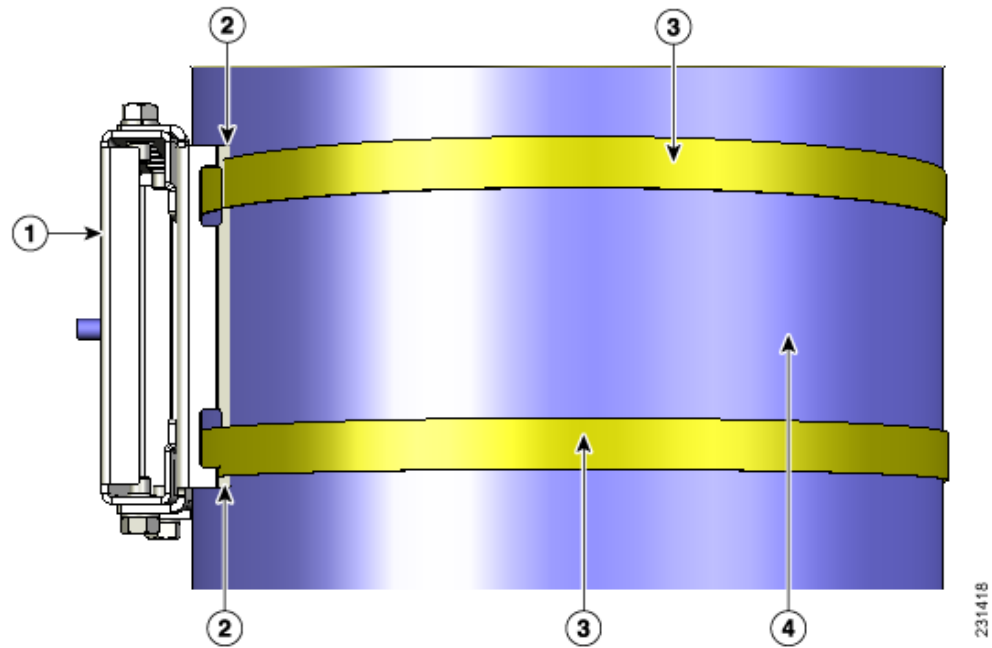


Note If you will be using a streetlight power tap adapter, position the access point within 3 ft (1 m) of the outdoor light control.

- 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 hand strap tool (AIR-BAND-INST-TL=), loop each metal strap twice through the slots on the strap bracket.

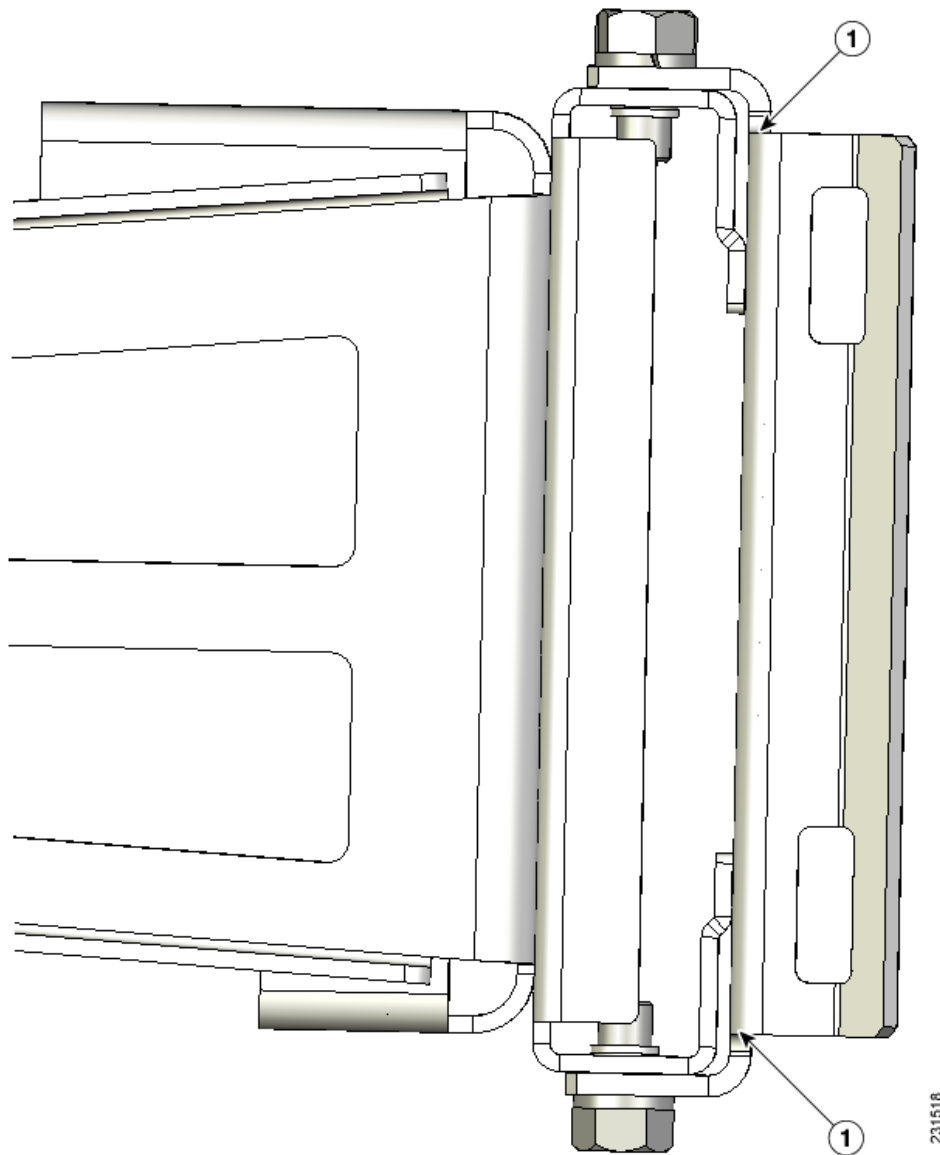


Caution Do not place the metal straps in the large open area between the pole clamp bracket and the strap brackets, because this does not properly secure the access point.

REVIEW DRAFT – CISCO CONFIDENTIAL**Figure 2-11** Clamp Bracket Assembly Mounted on Poles Larger than 3.5 in. (8.9 cm)

1	Pole clamp bracket	3	Metal mounting strap
2	Strap slot in strap bracket	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 hand strap tool (AIR-BAND-INST-TL=), loop each metal strap twice.

REVIEW DRAFT – CISCO CONFIDENTIAL**Figure 2-12 Metal Strap Open Space for 3.5 in. (8.9 cm) and Smaller Poles**

1 Metal strap open space

**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.

Step 4

Position the pole clamp bracket on the pole as needed before tightening the metal bands.

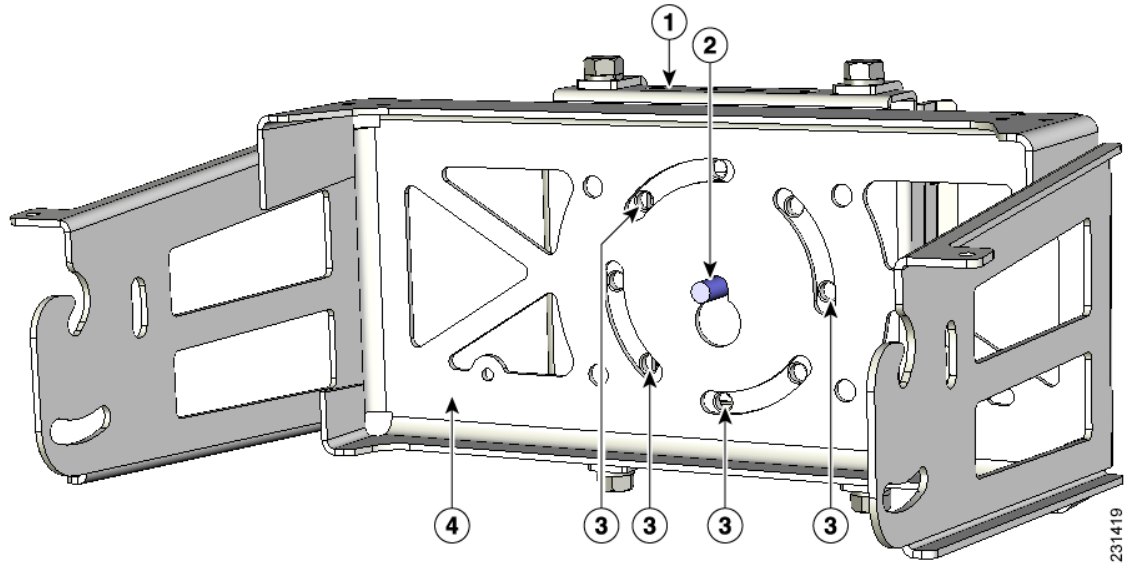
**Note**

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.

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- Step 5** Tighten the metal bands using the band strap tool (Cisco AIR-BAND-IT-TOOL=), 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



1	Pole clamp bracket assembly	3	Bolt holes
2	Access point support bolt (M8 flange nut not shown)	4	Mounting bracket

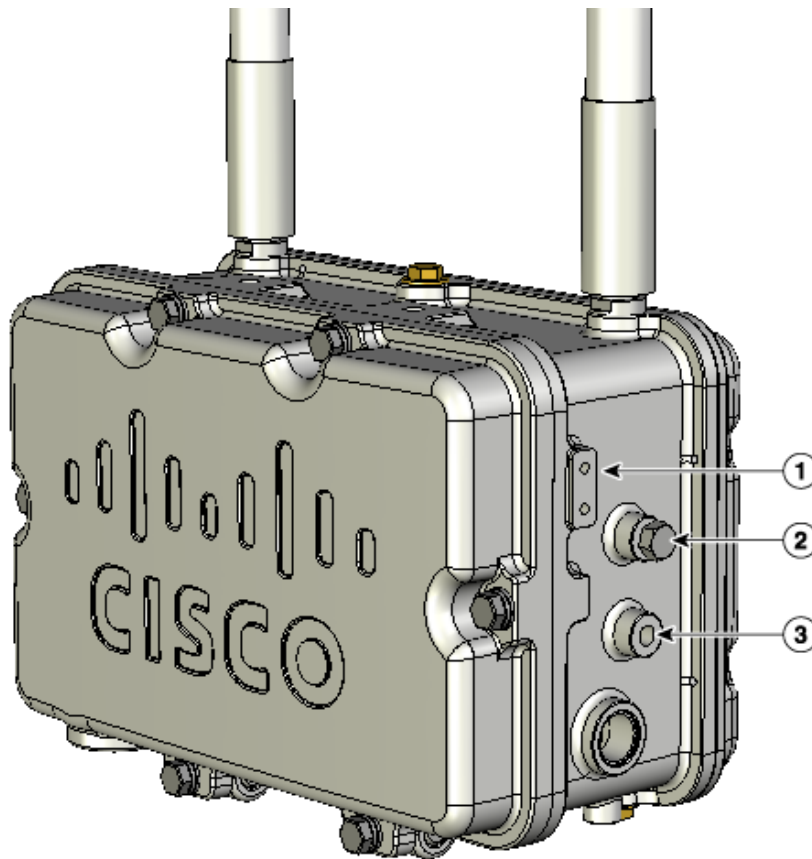
- Step 9** Hand-tighten the bolts and the nut (do not overtighten).
- Step 10** Adjust the top edge of the mounting bracket until it is horizontal and tighten the bolts and the flange nut (see [Figure 2-13](#)) to 13 to 15 ft lbs (17.6 to 20.3 Nm).

 **Note** The mounting bracket can be adjusted up to 45° to compensate for tilted horizontal streetlight poles.

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- 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



1	Ground lug screw holes location	3	Second bolt hole location
2	M8 x16 bolt (without flat or lock washers) (supplied with pole mount kit)		

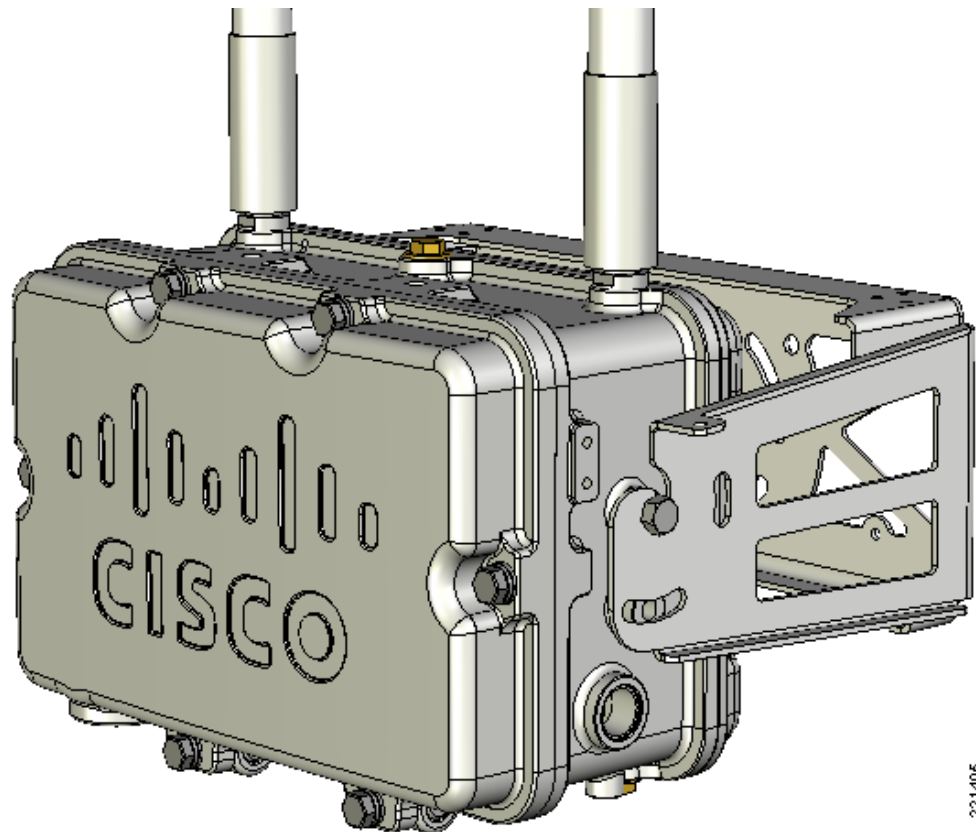
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- Step 12** Position the two bolts on the access point into the access point quick-mount notch on the mounting bracket (see [Figure 2-15](#)).



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 2-46 and the “[Powering the Access Point](#)” section on page 2-50.

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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

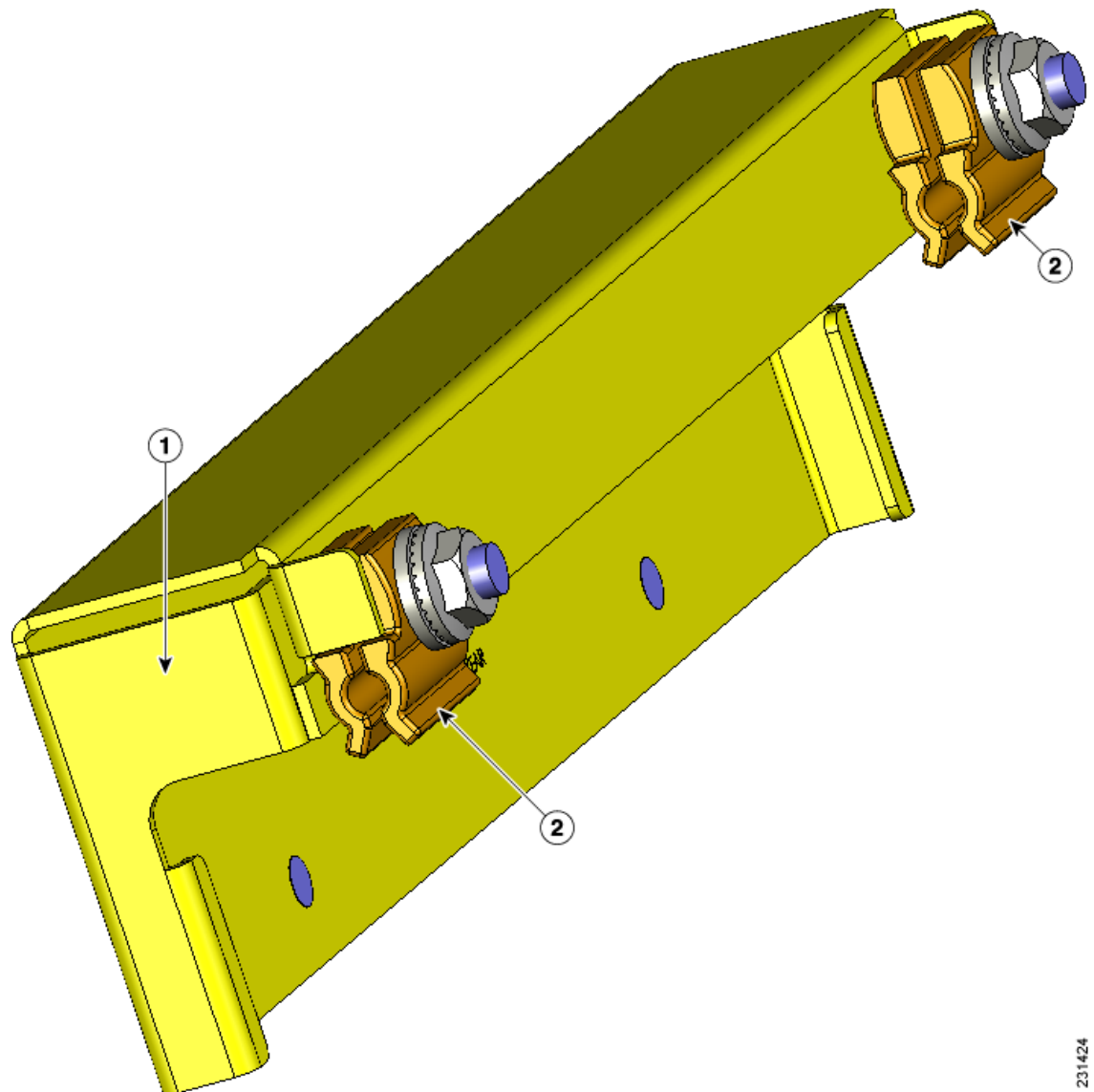
**Note**

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

To mount the access point preform 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.

REVIEW DRAFT – CISCO CONFIDENTIAL**Figure 2-16** Clamp Bracket with Cable Clamps

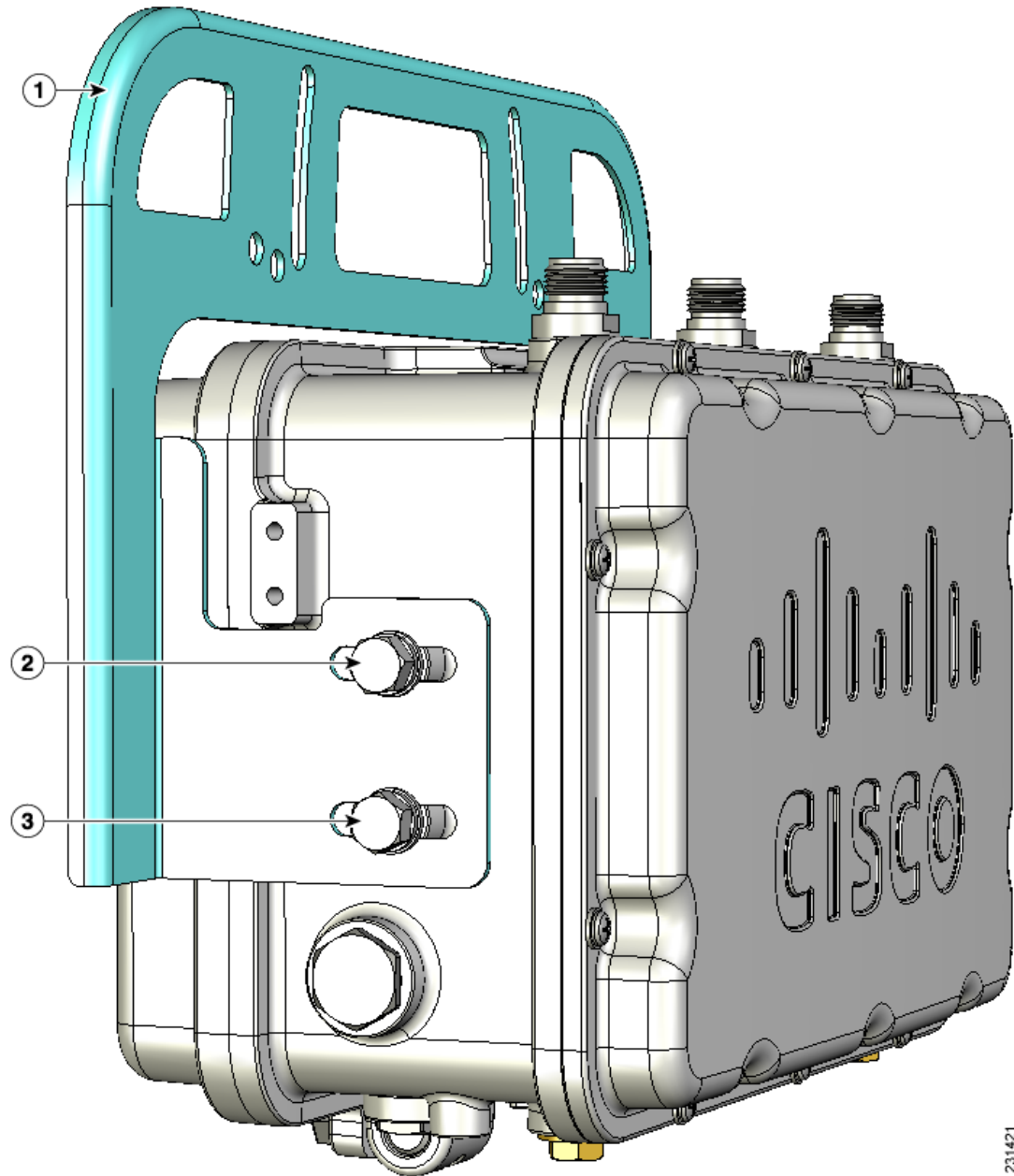
231424

1 Cable strand bracket	2 Two cable clamps, flat washer, and M8 flange nut.
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Step 2 Attach the strand bracket to the access point using two M8 x16 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.

REVIEW DRAFT – CISCO CONFIDENTIAL**Figure 2-17 Strand Bracket Attached to Access Point**

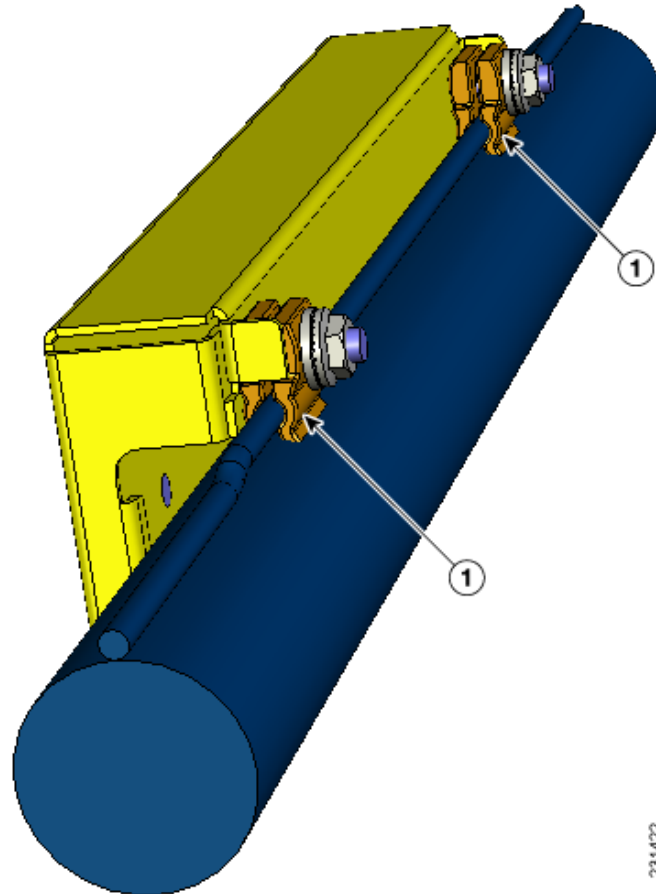
231421

1	Strand bracket	3	Second M8 x16 bolt (with flat and lock washers)
2	First M8 x16 bolt (with flat and lock washers)		

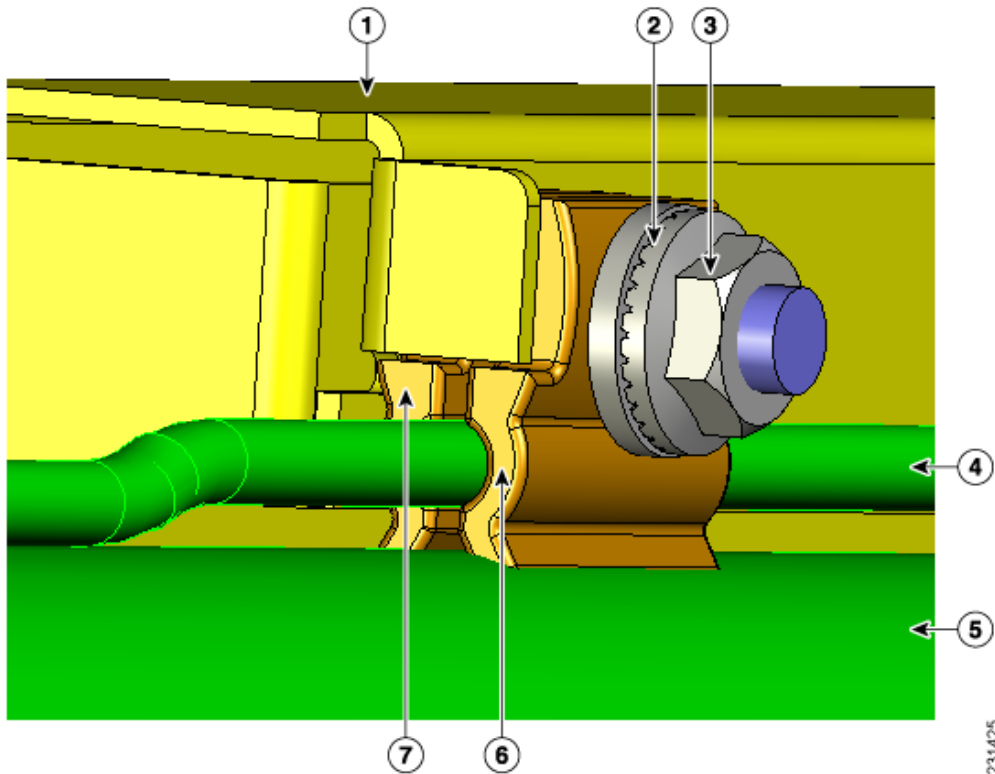
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- Step 3** Place the clamp bracket on the strand support cable (see [Figure 2-18](#)). On each cable support bolt, ensure that one cable clamp is placed on each side of the support cable (see [Figure 2-20](#)). Tighten the two M8 flange nuts to 13 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
-

REVIEW DRAFT – CISCO CONFIDENTIAL**Figure 2-19** Location of Strand Clips

1	Strand clamp bracket	5	Fiber or cable bundle
2	Flat washer	6	Cable clip
3	M8 flange nut	7	Cable clip
4	Strand support cable		



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.

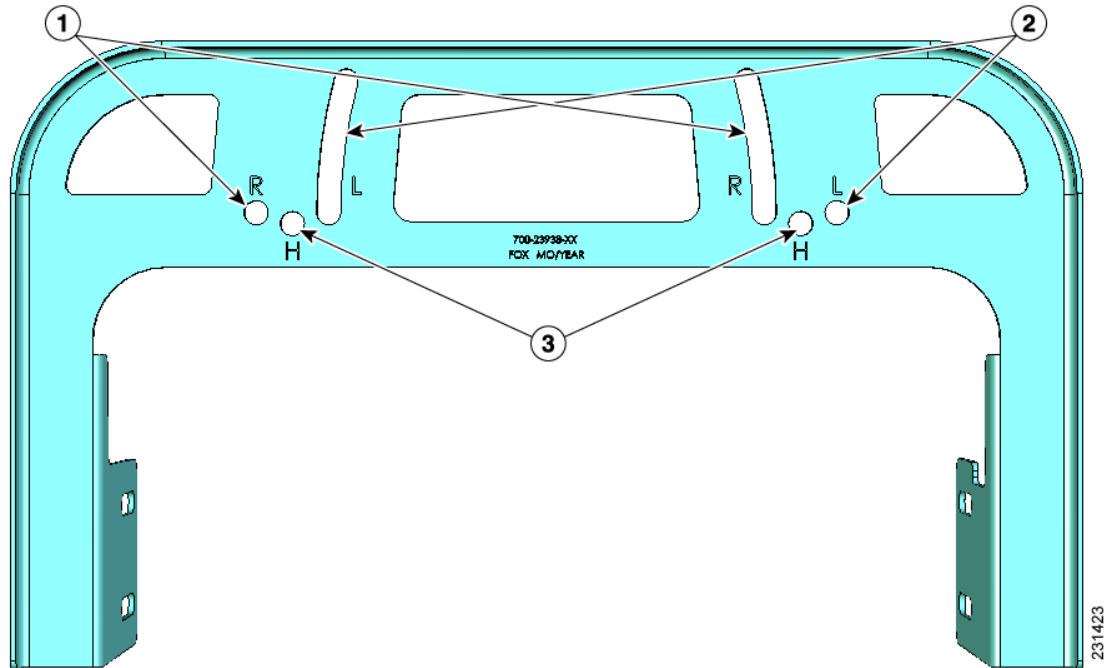
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Step 4 Select the appropriate hole pair (see [Figure 2-20](#)) for the orientation of the cable strand where you will mount your access point.

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.

Figure 2-20 Strand Bracket Support Holes

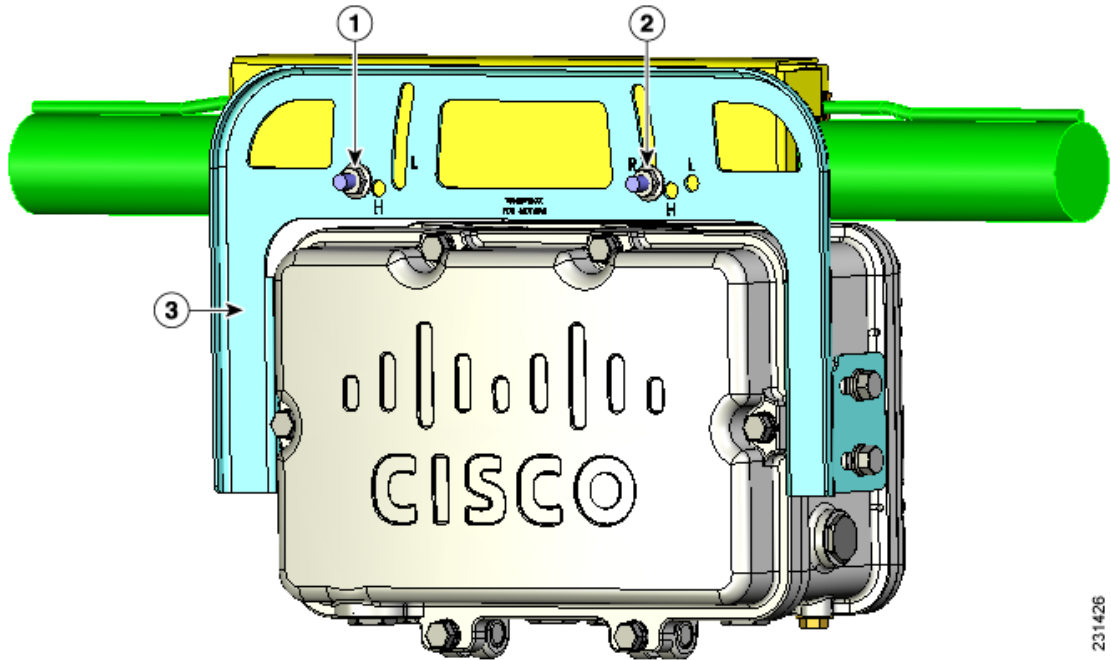


1	R fixed and adjustable support holes	3	H fixed support holes
2	L fixed and adjustable support holes		

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- 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



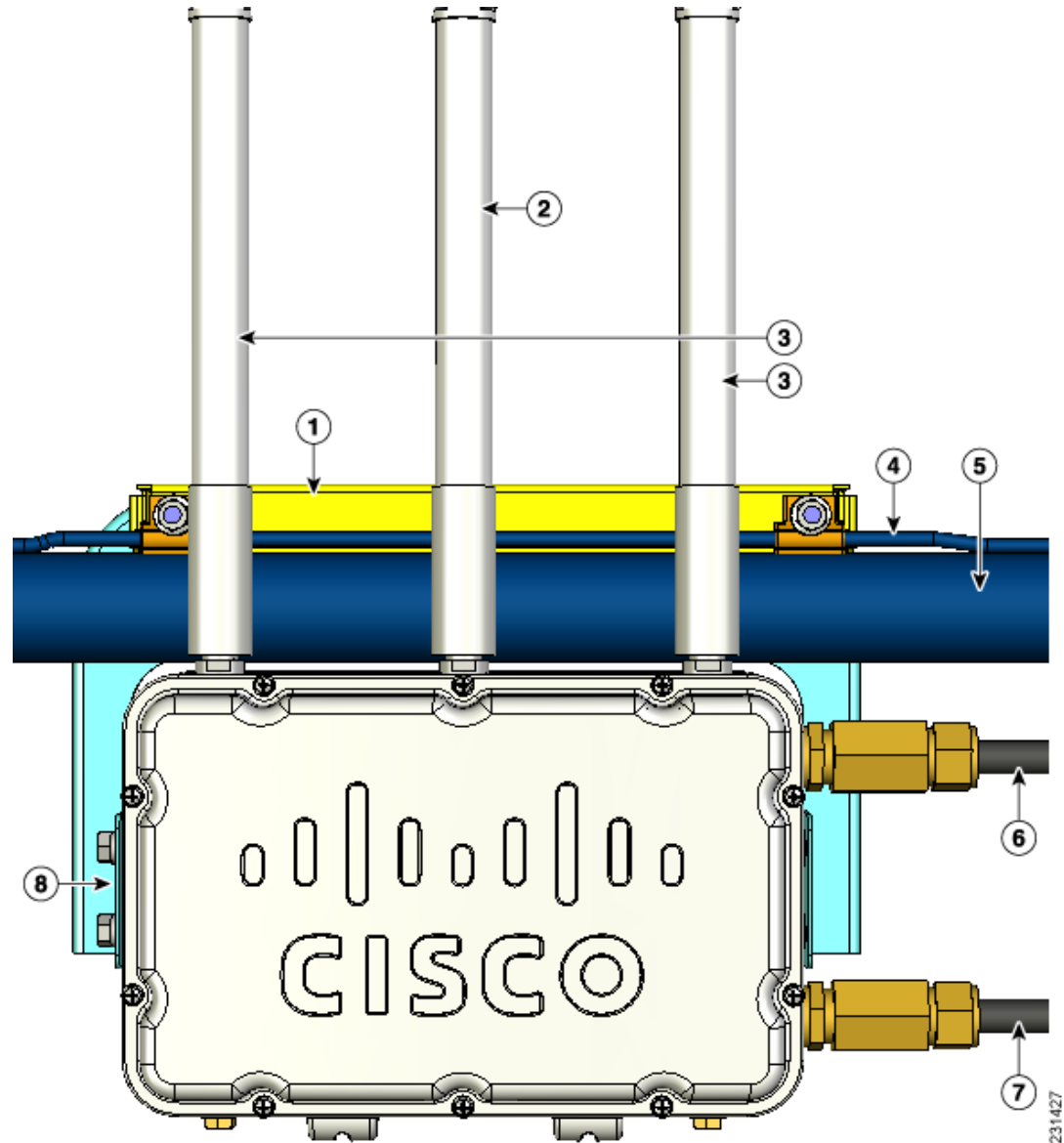
231426

1	Left support bolt and M8 flange nut	3	Strand bracket
2	Right support bolt and M8 flange nut		

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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



1	Clamp bracket with cable clamps (part of strand mount kit)	5	Cable strand (only one strand shown)
2	5-GHz antenna ¹	6	Fiber-optic cable connection
3	2.4-GHz antennas ¹	7	Cable POC power input
4	Support cable	8	Strand mount bracket (part of strand mount kit)

1. Illustration shows antennas for an access point with two radios.

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- Step 7** Continue with the “Grounding the Access Point” section on page 2-46 and the “Powering the Access Point” section on page 2-50.
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Opening the Access Point Hinged Cover

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

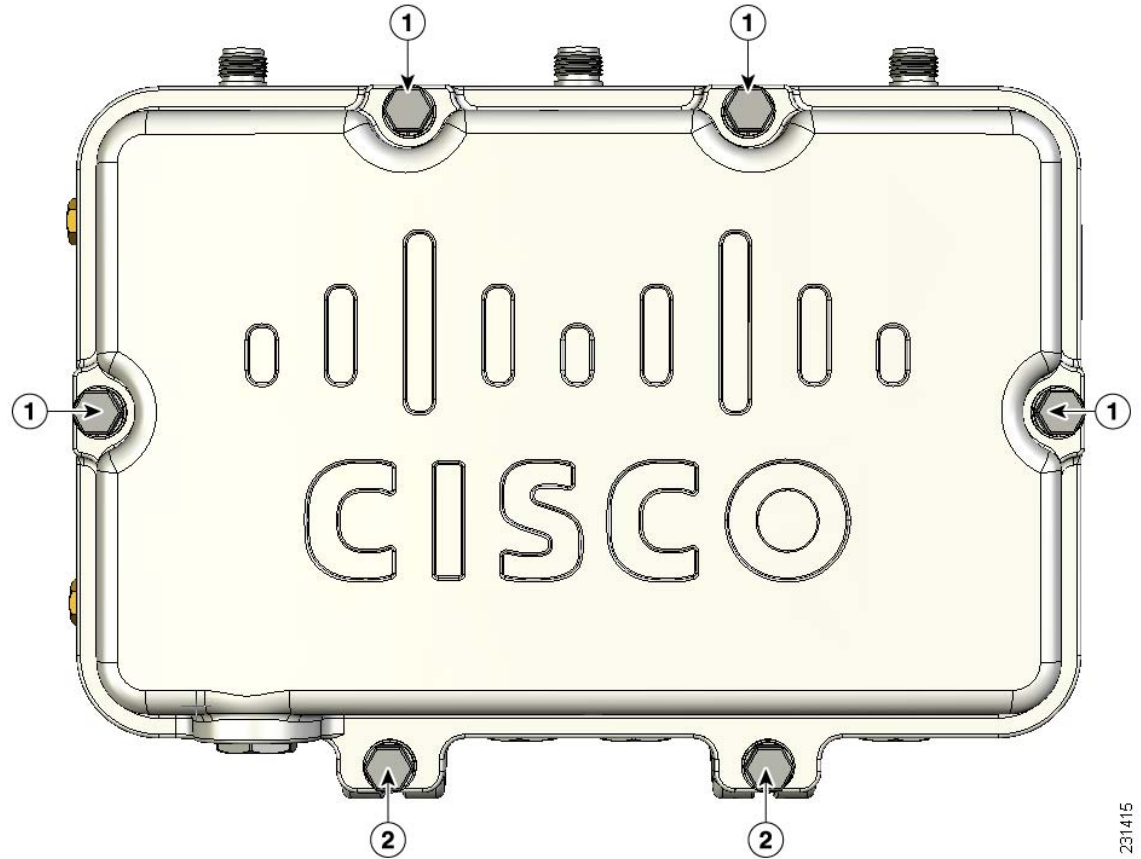
- Installing a cable POC Stinger connector
- Installing fiber-optic SFP module and fiber cable take-up reels

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.

REVIEW DRAFT – CISCO CONFIDENTIAL**Figure 2-23 Access Point Front View**

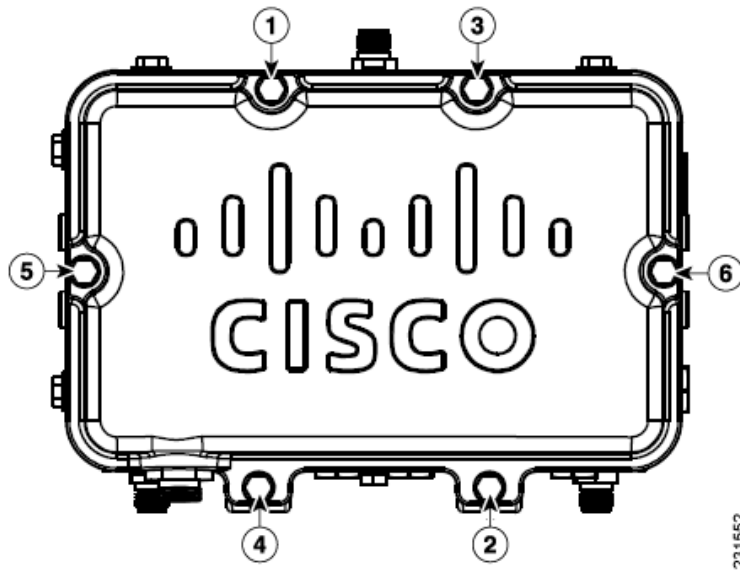
231415

1	M8 x32 bolts	2	Cover hinge M8 x32 bolts
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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).

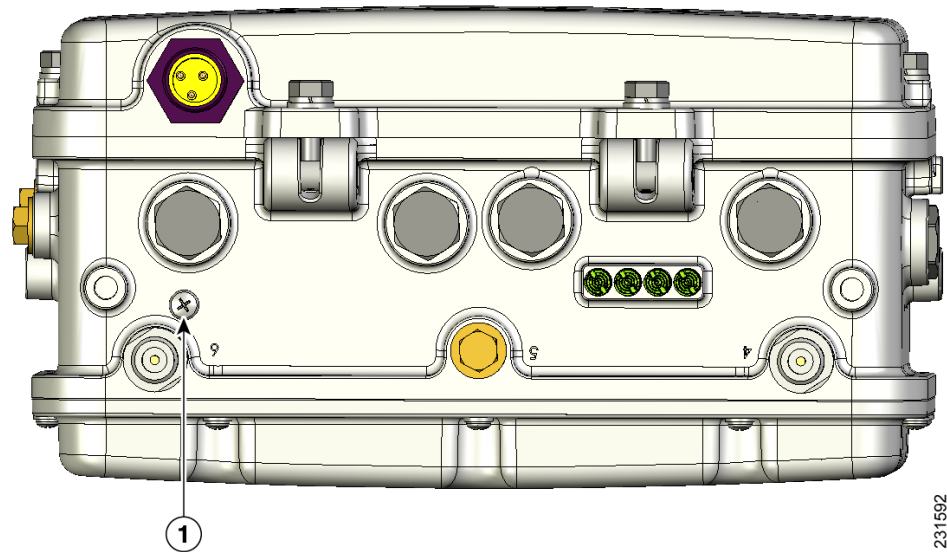
REVIEW DRAFT – CISCO CONFIDENTIAL**Figure 2-24 Hinged Cover Bolt Tightning Sequence - New Picture Needed**

REVIEW DRAFT—CISCO CONFIDENTIAL**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.

Figure 2-25 **Reset Button Location**



1	Reset button location
----------	-----------------------

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 loose the screw.
- Step 2** Use a straighten 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).
-

REVIEW DRAFT – CISCO CONFIDENTIAL**Disabling Backup Battery Power**

To disable battery backup power, follow these steps:

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

Step 2 Use a straighten paper clip and push the reset button for greater than 10 seconds.

- 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).

Installing the Access Point in Hazardous Locations

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 order

When you select the hazardous location option as part of the ordering process, Cisco configures the system to contain the new components. A conduit adaptor and assembly instructions is placed in the shipping box that provides 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.
- Two PG13 - 1/2 NPT adapters are provided. The adapter connects the conduit to the access point's AC power 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.

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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, Division 2. Statement 1062

**Warning**

When used in a Class I, 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 hazardous location certifications:

- IEC 60079-0
- IEC 60079-15
- CAN/CSA E60079-0
- CAN/CSA E60079-15
- UL 60079-0
- UL 60079-15
- EN 60079-0
- EN 60079-15

Compliance Label

Table 4 shows the access point hazardous location compliance label.

Figure 26 Hazardous Location Compliance Label

ILLUSTRATION TO BE ADDED

Table 4 interprets the information on the compliance label.

REVIEW DRAFT – CISCO CONFIDENTIAL**Table 4** *Interpreting the Hazardous Compliance Label*

Label Marking	Description
Class I, Division 2, Groups A, B, C, D	<p>Defines the environment in which the access point can be used:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> - A—Acetylene - B—Hydrogen - C—Ethylene - D—Propane
Class I, Zone 2, Group II	<p>Classification for Europe and the rest of the world. Group II is a gas group which includes IIA, IIB, IIC:</p> <ul style="list-style-type: none"> • IIA = propane • IIB = ethylene • IIC = acetylene & hydrogen
AEx nA II T5	<p>Defines North American explosive atmospheres for the class and division:</p> <ul style="list-style-type: none"> • 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	<p>This marking is the same as AEx line except it is for the IECEx certification. IECEx certification is the international scheme for explosive atmosphere.</p>
-40 < Ta < 55C	<p>The operating temperature range for the access point in all countries.</p>
Type 4, IP67	<p>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, protected against the effects of temporary immersion in water.</p>
CSA Certificate 1945576	<p>CSA certification number</p>

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Label Marking	Description
IECEX Certificate XXXXXX	IECEX certificate number. Technical evaluation has been completed and quality assessment is in progress. Certificate will be issued when quality assessment is complete.
II 3 G Ex nA II T5	<p>EU marking to indicate the product complies with the ATEX directive:</p> <ul style="list-style-type: none"> • Ex—EU symbol to denote explosive atmosphere • II— Equipment group. Group II identifies surface (non-mining) equipment • 3—Equipment category. Category 3 is equivalent to Zone 2 • G—Type of flammable substance, G identifies Gas (vs. D is for dust) • nA—Non-sparking • T5 —Temperature code defining < 100 degrees C, maximum surface temperature

Installing the Conduit Adapter

Follow these steps to install the conduit adapter on the access point AC power port.

-
- Step 1** TBD NEED A PROCEDURE FOR THIS.
- Step 2**
-

Routing and Connecting AC Power to the Access Point

You must route AC power to the access point using rigid steel conduit. When you install the conduit, be sure to comply with the local electrical codes for your area.

Once the conduit is installed, follow these steps to connect the conduit to the access point's power port and connect them to the AC terminal block.

-
- Step 1** TBD NEED A PROCEDURE FOR THIS ALSO
- Step 2**
-

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.

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Grounding the Access Point

See the “[Grounding the Access Point](#)” section on page 2-46 for grounding instructions.

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 2-14](#)).
 - 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 x10 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 2-32](#)), 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

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- 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**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.

**Warning****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 depress the reset button for 10 seconds or more (see the [“Disabling Backup Battery Power”](#) section on page 2-42).

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 2-27](#)) using a 13 mm wrench or socket. For all other deployments, remove the fiber-optic connector plug (item 5 in [Figure 2-27](#)) using an adjustable wrench, the 22 mm socket, or the Sealcon S-22-WR wrench.

Step 4

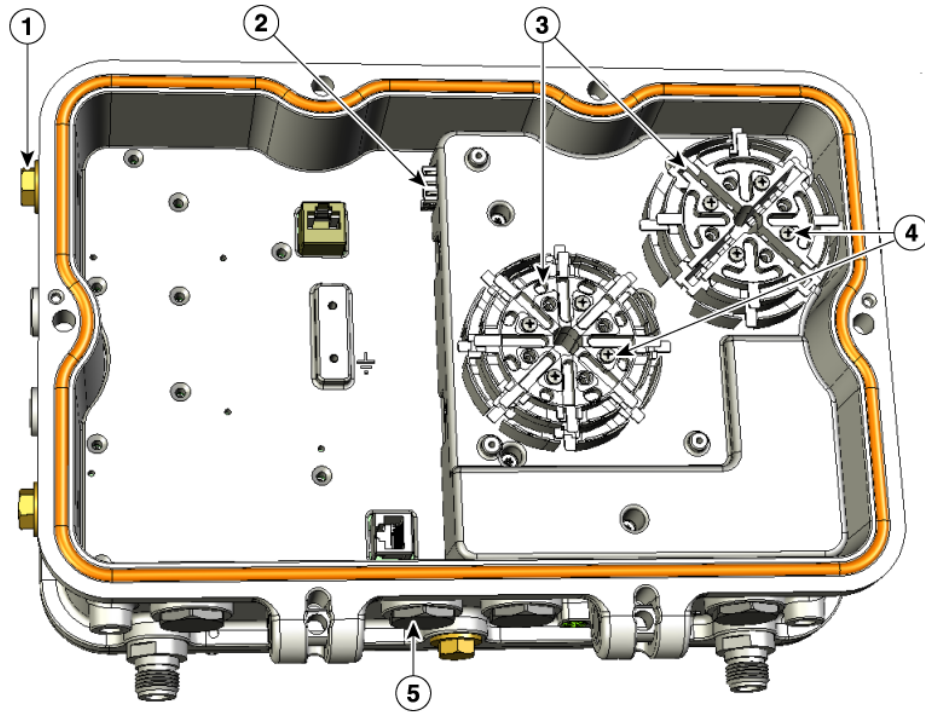
Place the two large reels with the small reels on top as shown in [Figure 2-27](#).

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 2-27](#)).

REVIEW DRAFT – CISCO CONFIDENTIAL**Figure 2-27 Fiber-Optic Cable Components**

231591

1	SCTE 5/8 plug	4	Four screws for each reel assembly
2	SFP module slot	5	Fiber-optic connector plug
3	Fiber reels (large reel with small reel on top)		

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- Step 7** Loosen the round end of the liquid tight connector by turning counterclockwise, but do not remove (see [Figure 2-28](#)).

Figure 2-28 *Liquid -Tight Adapter*



1	Thread end	2	Round end
----------	------------	----------	-----------

- 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 2-28](#)), 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).

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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 2-50](#)
- AC power
 - 100 to 480 VAC—[Connecting Streetlight AC Power, page 2-55](#)
 - 120 VAC—[Connecting an AC Power Cable to the Access Point, page 2-58](#)
- External 12 VDC
 - [Connecting a DC Power Cable to the Access Point, page 2-59](#)
- POC—40 to 90 VAC (Quasi-AC)
 - [Connecting a Cable POC Power to the Access Point, page 2-63](#)

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 2-46).

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).

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Tip To forward bridge traffic, add a switch between the power injector and controller. Refer to the *Deployment Guide: Cisco Mesh Networking Solution* for more information.

- Step 4** Ensure that the antennas are connected and that a ground is attached to the access point before you apply power to the access point.
- Step 5** Connect a shielded outdoor-rated Ethernet (CAT5e or better) cable between the power injector and the access point's PoE-in connector (see [Figure 2-29](#)).
- Step 6** Connect the Ethernet cable to the access point PoE-in port (see “[Connecting an Ethernet Cable to the Access Point](#)” section on page 2-51).
- Step 7** Continue with the “[What to Do Next](#)” section on page 2-65.

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.

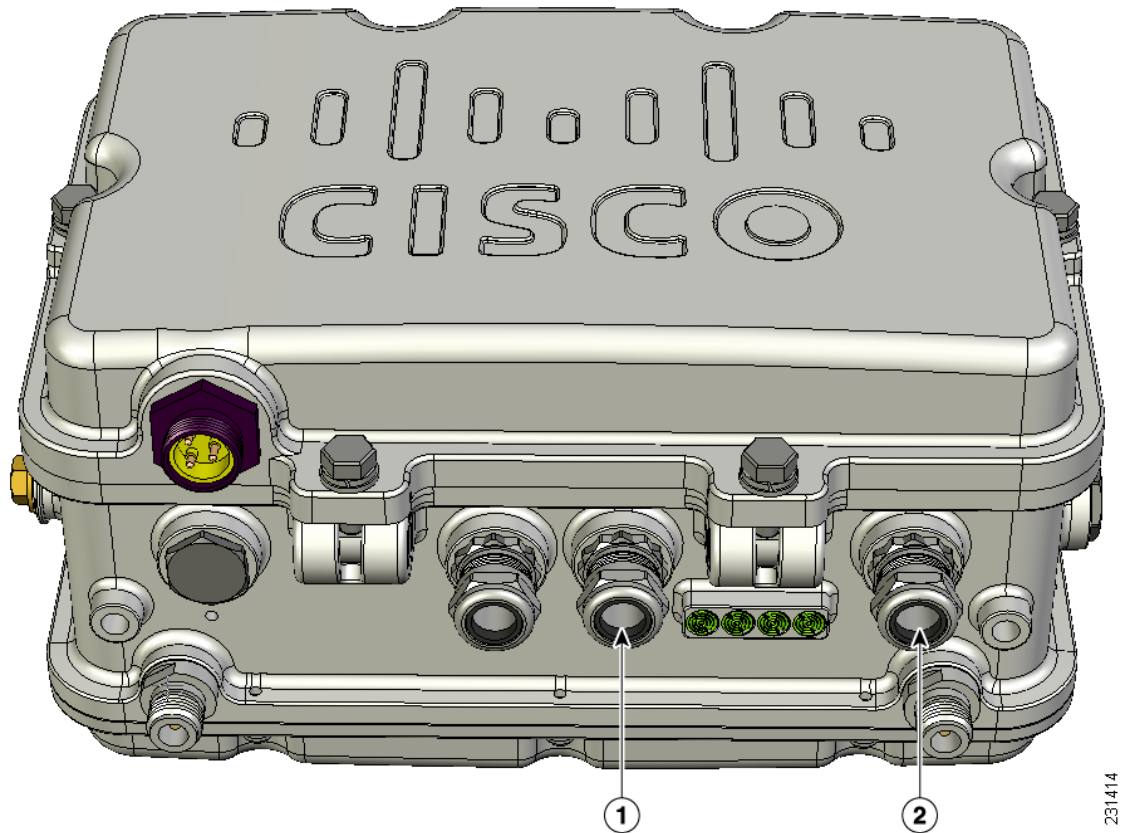
**Warning**

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 2-46).
- 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 2-29](#) for the location).

REVIEW DRAFT – CISCO CONFIDENTIAL**Figure 2-29** Location of Ethernet Liquid -Tight Adapters

1 PoE-out port

2 PoE-in port

- Step 4** Loosen the round end of the liquid tight adapter by turning counterclockwise, but do not remove (see [Figure 2-30](#)).

Figure 2-30 Liquid Tight Adapter

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1	Thread end	2	Round end
----------	------------	----------	-----------

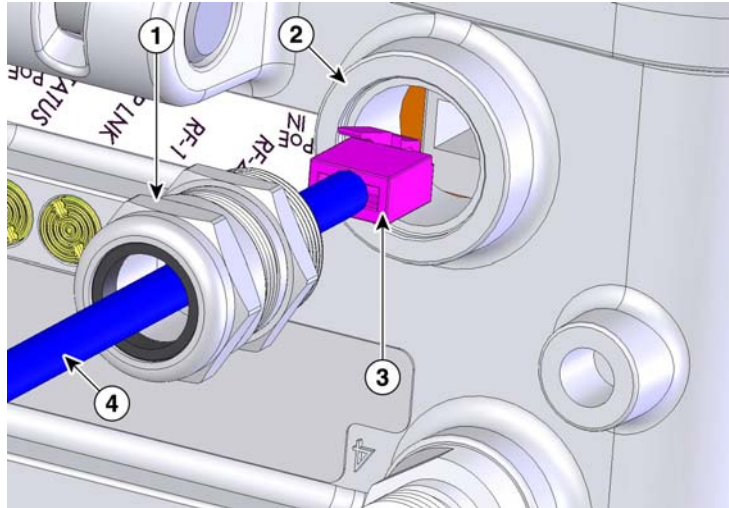
Step 5 Insert the unterminated end of the Ethernet cable into the round end of the liquid tight adapter (see [Figure 2-30](#)), and pull several inches of cable through the adapter.

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 2-31](#)).

REVIEW DRAFT – CISCO CONFIDENTIAL**Figure 2-31** Inserting RJ-45 Connector into the Ethernet Port Opening in Case

1	Liquid tight adapter	3	RJ-45 connector
2	Ethernet port opening in access point case	4	Shielded outdoor-rated Ethernet (CAT5e or better) cable

- 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.

REVIEW DRAFT – CISCO CONFIDENTIAL**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**

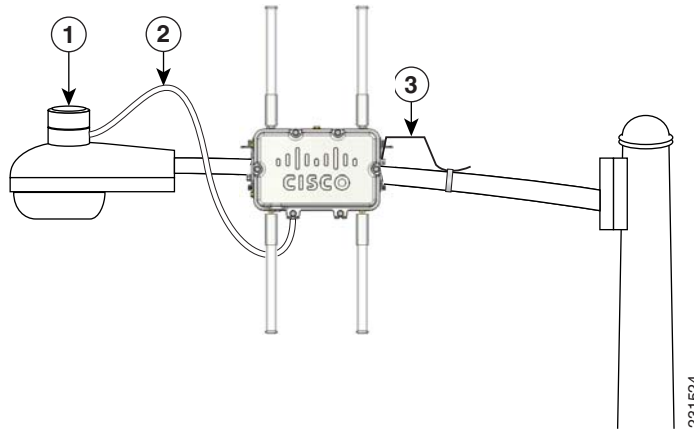
For your safety, when connecting the access point AC power connector, always connect the access point end of the cable **FIRST**. When removing the AC power connector, always disconnect the access point end of the cable **LAST**.

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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 2-32) and connected to the streetlight pole (for instructions see [Grounding the Access Point](#), page 2-46).

Figure 2-32 Using the Streetlight Power Tap Adapter



1	Outdoor light control	3	6-AWG copper grounding wire
2	Streetlight power tap adapter		

- Step 5** Refer to [Figure 2-32](#). 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 VAC, 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 VAC, 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**.

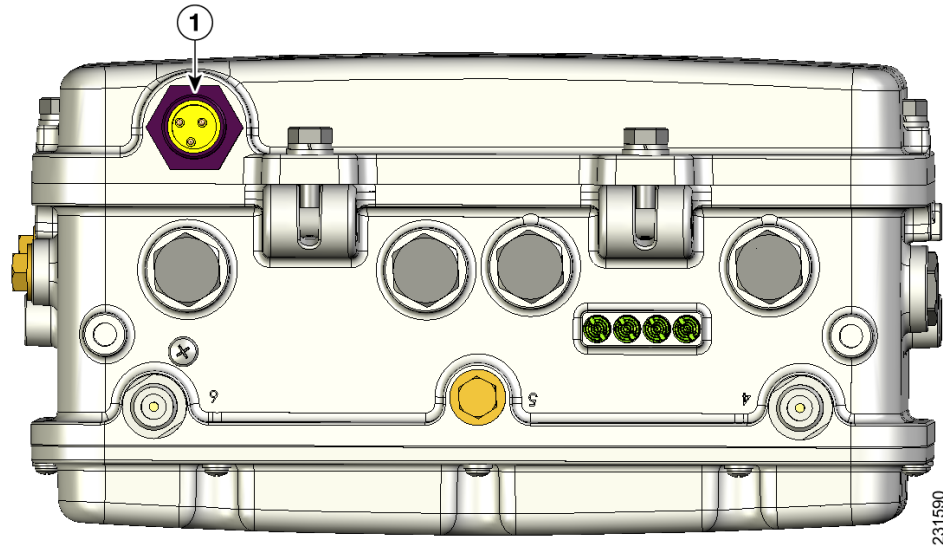
**Note**

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

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- Step 9** Connect the streetlight power tap adapter to the access point AC power connector, as shown in [Figure 2-33](#). Hand-tighten the connector.

Figure 2-33 AC Power Connector



-
- | | |
|----------|--------------------|
| 1 | AC power connector |
|----------|--------------------|
-

- Step 10** Plug the streetlight power tap adapter into the outdoor light control fixture, as shown in [Figure 2-32](#).
- 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.
-

REVIEW DRAFT – CISCO CONFIDENTIAL**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 2-46](#)).
- 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).

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- 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 2-33](#)). 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 2-46).
- 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**

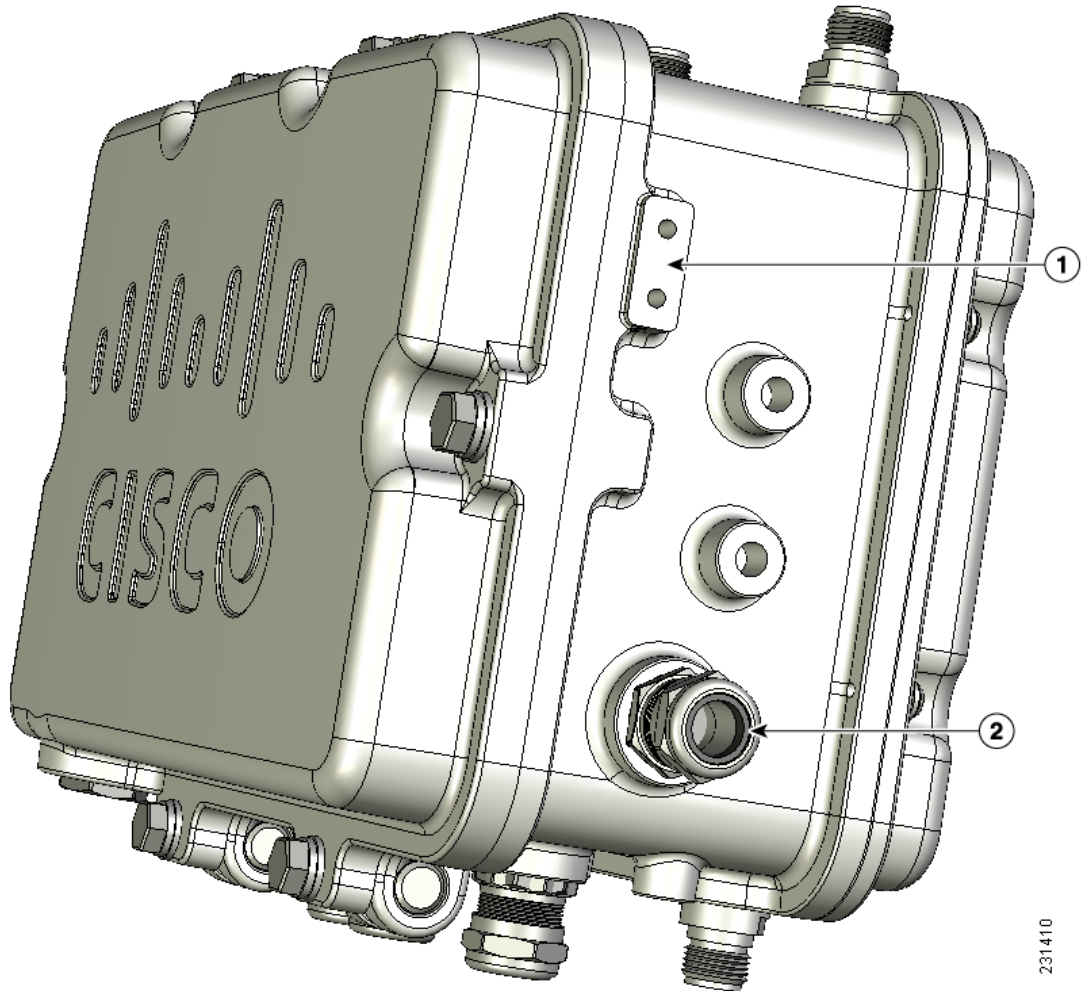
When installing DC power to the access point, always connect the access point end of the cable *first*. When removing the DC power connector, always disconnect the access point end of the cable *last*.

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.)

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- 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 2-34](#) for the location of the DC power connector).

Figure 2-34 Location of the DC Power Liquid Tight Adapter



231410

1	Ground lug screw holes	2	DC power connector with liquid tight adapter
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- Step 4** Loosen the round end of the liquid tight adapter by turning counterclockwise, but do not remove (see [Figure 2-35](#)).

Figure 2-35 *Liquid Tight Adapter*



1	Thread end	2	Round end
----------	------------	----------	-----------



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 2-35](#)), 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.

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- 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 2-36](#)).

Figure 2-36 Two-Position Terminal Strip

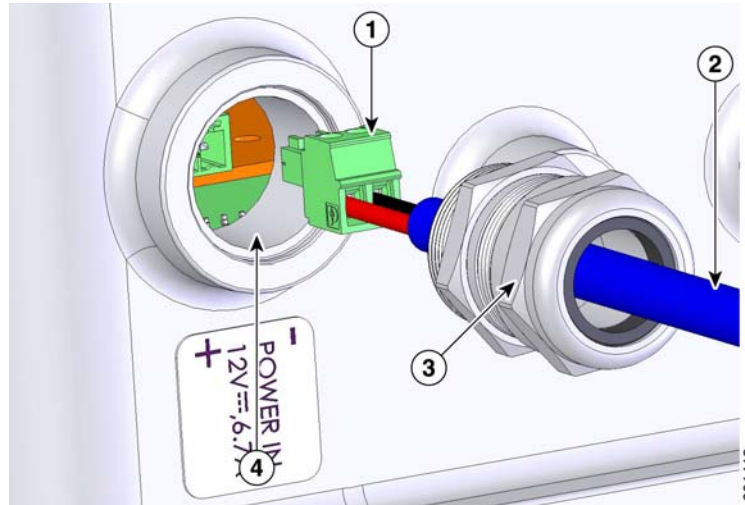


1	Securing screws	3	Wire opening for DC +
2	Wire opening for ground (DC return)		

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- 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 2-37](#)).

Figure 2-37 Inserting the Terminal Strip into the DC Power Opening in the Access Point Case



1	Two-position terminal strip	3	Liquid tight adapter
2	DC power cable	4	DC power opening in access point case

- 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 2-46).

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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 2-38).

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 2-38).

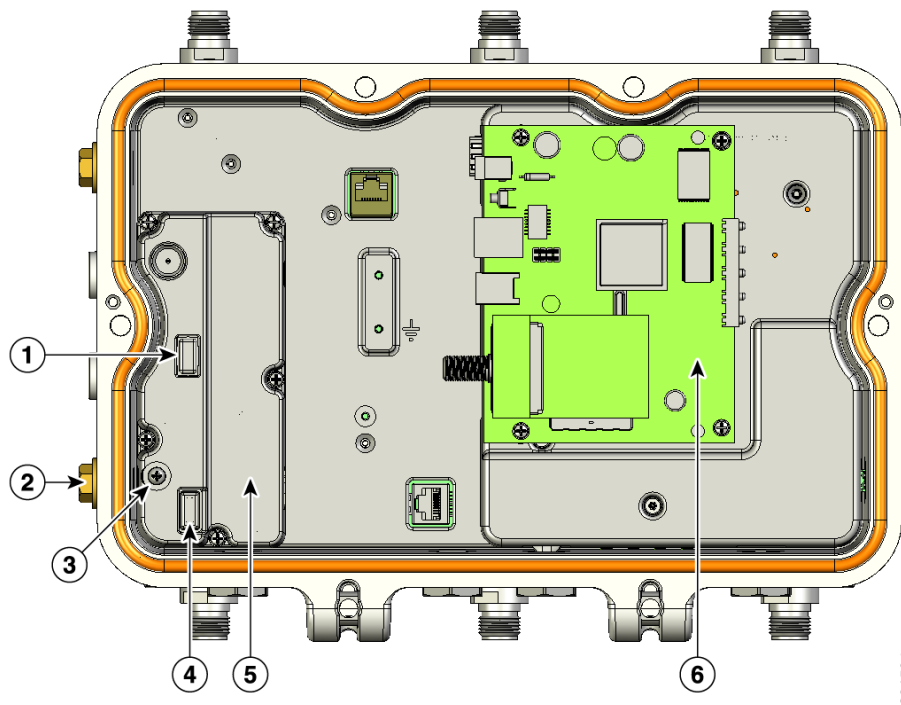


Note The cable modem MAC address is located on the bottom of the access point under the LEDs.

Step 6 Use an adjustable wrench to remove the cable connector plug (see Figure 2-38) from the access point.

Step 7 Locate the stinger set-screw on the RF splitter (see Figure 2-38).

Figure 2-38 Stinger Connector Location and RF Splitter Components

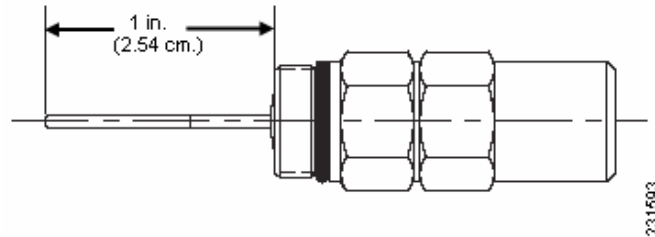


231594

1	RF splitter attenuator	4	RF splitter shunt
2	Cable connector plug	5	RF splitter
3	Stinger set-screw	6	Cable modem

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- 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 2-39](#)) to 0.75 ± 0.1 in. (1.91 ± 0.25 cm).

Figure 2-39 Cable Stinger Connector Pin

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

- 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).
-

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.

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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



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CHAPTER **3**

Troubleshooting

This chapter provides troubleshooting procedures for basic problems with the access point. For the most up-to-date, detailed troubleshooting information, refer to the Cisco Technical Support and Documentation website at the following URL:

http://www.cisco.com/en/US/products/hw/wireless/tsd_products_support_category_home.html

Sections in this chapter include:

- [Guidelines for Using the Access Points](#), page 3-2
- [Controller MAC Filter List](#), page 3-3
- [Using DHCP Option 43](#), page 3-4
- [Monitoring the Access Point LEDs](#), page 3-4
- [Verifying Controller Association](#), page 3-5
- [Cable Modem LEDs](#), page 3-7
- [Connecting to the Access Point Locally](#), page 3-8
- [Access Point Power Injector](#), page 3-9

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Guidelines for Using the Access Points

You should keep these guidelines in mind when you use the access points:

- The access point can only communicate with controllers and cannot operate independently.
- The access point does not support Wireless Domain Services (WDS) and cannot communicate with WDS devices. However, the controller provides functionality equivalent to WDS when the access point associates to it.
- The access points only supports Layer 3 LWAPP communications with the controllers.

In Layer 3 operation, the access point and the controller can be on the same or different subnets. The access point communicates with the controller using standard IP packets. A Layer 3 access point on a different subnet than the controller requires a DHCP server on the access point subnet and a route to the controller. The route to the controller must have destination UDP ports 12222 and 12223 open for LWAPP communications. The route to the primary, secondary, and tertiary controllers must allow IP packet fragments.

- Before deploying your access points, ensure that the following has been done:
 - Your controllers are connected to switch ports that are configured as trunk ports.
 - Your access points are connected to switch ports that are configured as untagged access ports.
 - A DHCP server is reachable by your access points and has been configured with Option 43. Option 43 provides the IP addresses of the management interfaces of your controllers. Typically, a DHCP server can be configured on a Cisco switch.
 - Optionally a DNS server can be configured to enable CISCO-LWAPP-CONTROLLER.<local domain> to resolve to the IP address of the management interface of your controller.
 - Your controllers are configured and reachable by the access points.
 - Your controllers are configured with the access point MAC addresses and the MAC filter list is enabled.
 - Your switch must forward DHCP requests.
- The access point PoE-out port should be connected only to a single peripheral customer device, such as a camera or sensor gateway. Cisco recommends that the PoE-out port not be connected to a switch or hub.
- After the access points are associated to the controller, you should change the bridge group name (BGN) from the default value. With the default BGN, the MAPs can potentially try to connect with other mesh networks and slow down the convergence of the network.

Important Notes

Convergence Delays

During deployment, the access points can experience convergence delays due to various causes. The following list identifies some operating conditions that can cause convergence delays:

- A RAP attempts to connect to a controller using any of the wired ports (cable, fiber-optic, PoE-in, or PoE-out). If the wired ports are operational, the RAP can potentially spend several minutes on each port prior to connecting to a controller.

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- If a RAP is unable to connect to a controller over the wired ports, it attempts to connect using the wireless network. This results in additional delays when multiple potential wireless paths are available.
- If a MAP is unable to connect to a RAP using a wireless connection, it then attempts to connect using any available wired port. The access point can potentially spend several minutes for each connection method, before attempting the wireless network again.

Bridge Loop

The access point supports packet bridging between wired and wireless network connections. The same network must never be connected to multiple wired ports on an access point or on two bridged access points. A bridge loop causes network routing problems.

Controller DHCP Server

The controller DHCP server only assigns IP addresses to lightweight access points and wireless clients associated to an access point. It does not assign an IP address to other devices, including Ethernet bridging clients on the mesh access points.

MAP Data Traffic

If the signal on the access point backhaul channel has a high signal to noise ratio (not good), it is possible for a MAP to connect to the controller but not be able to pass data traffic, such as pinging the access point. This can occur because the default datarate for backhaul control packets is set to 6 Mbps, but the default datarate for data traffic is 24 Mbps.

Controller MAC Filter List

Before activating your access point, you must ensure that the access point MAC address has been added to the controller MAC filter list and that **Mac Filter List** is enabled.



Note

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

To view the MAC addresses added to the controller MAC filter list, you can use the controller CLI or the controller GUI:

- Controller CLI—Use the **show macfilter summary** controller CLI command to view the MAC addresses added to the controller filter list.
- Controller GUI—Log into your controller web interface using a web browser, and choose **SECURITY > AAA > MAC Filtering** to view the MAC addresses added to the controller filter list.

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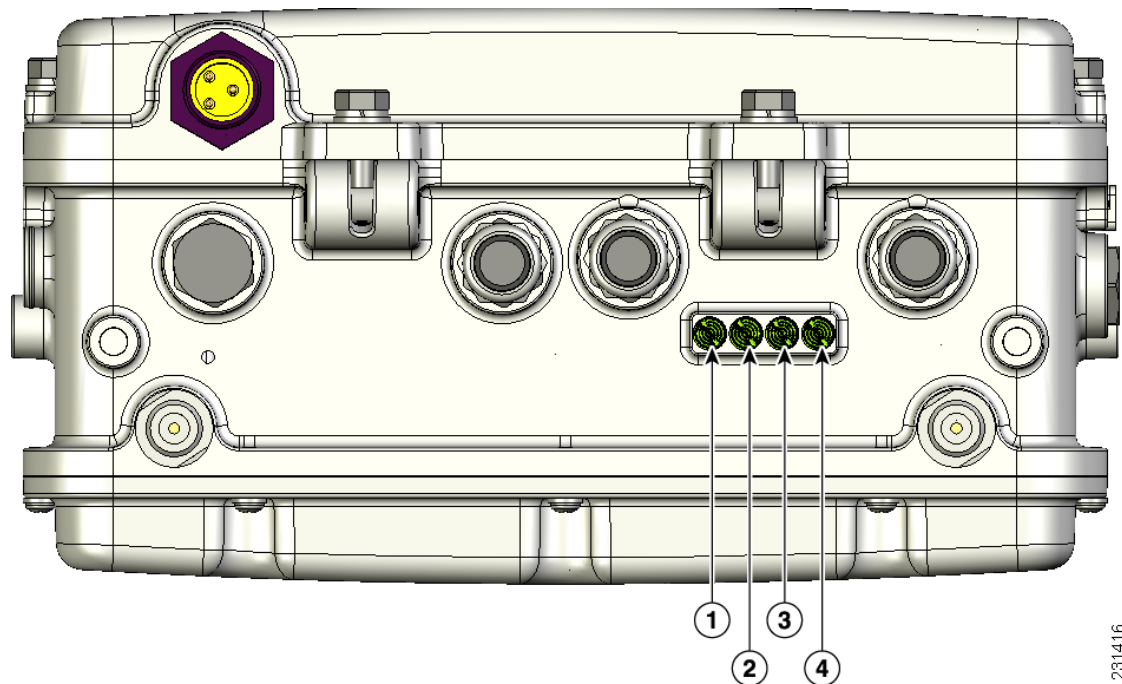
Using DHCP Option 43

You can use DHCP Option 43 to provide a list of controller IP addresses to the access points, enabling the access point to find and join a controller. Refer to the product documentation for your DHCP server for instructions on configuring DHCP Option 43. For additional information, refer to the “[Configuring DHCP Option 43](#)” section on page F-1.

Monitoring the Access Point LEDs

If your access point is not working properly, look at the LEDs on the bottom of the unit. You can use them to quickly assess the unit’s status. [Figure 3-1](#) shows the location of the access point LEDs.

Figure 3-1 Access Point LEDs on the Bottom of the Unit



1	Status LED—access point and software status	3	RF-1 LED—802.11b/g radio status
2	Uplink LED—Ethernet, cable, or fiber status	4	RF-2 LED—802.11a radio status

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