



Lab 10.3.6 Mounting and Installation

Estimated Time: Actual times will vary depending on the amount of supplies and tools.

Number of Team Members: Students will work in teams of two.

Objective

The objective of this lab is to explore wireless installation options and methods for:

- BR350
- AP1200

Scenario

Proper installation techniques are required to complete a safe and professional installation. Students should demonstrate proficiency using drywall or concrete anchors and wood screws. Proper routing and anchoring of Ethernet cables can be covered as well.

Tools and resources

The following are required

- Cordless Drill and screwdriver
- 1200 AP
- 1200 AP mounting Brackets
- BR350 Mounting Kit
- Tie Wraps
- Wood Blocks
- Available flat surface and drop ceiling for practice mounting
- Ceiling enclosure (optional)

Additional resources

<http://www.chatsworth.com/zone/wireless.htm>

<http://www.nema-enclosures.cc/>

http://www.nema.org/index_nema.cfm/606/

<http://ulstandardsinfonet.ul.com/scopes/2043.html>

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- CAUTION** Always consult the instructor before drilling in any surface.
- CAUTION** Never drill additional holes in antennas, APs, or bridges as this will void the warranty
- CAUTION** Make sure any electrical power is turned off
- CAUTION** Always have a person hold the ladder when in use.
- CAUTION** Always create a buffer zone with bright markers or cones
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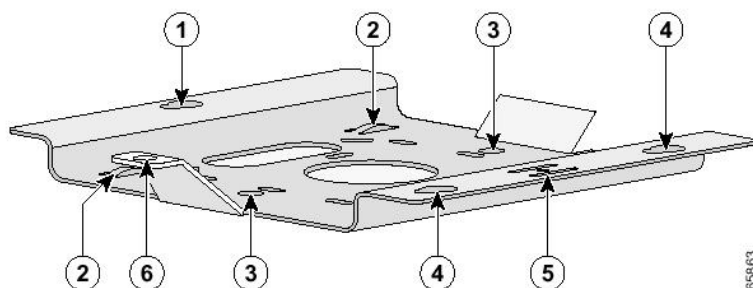
Step 1 AP Installation mounting on surface

The 1200 AP can be mounted on the following surfaces:

- Horizontal or vertical flat surfaces, such as walls or ceilings
- Suspended ceilings

The 1200 AP meets Underwriters Laboratories (UL) 2043 certification, and has an extended operating temperature of (-20 to 55°C or -4 to 131°F). Keep this in mind when deciding where to mount the AP.

The AP ships with a detachable mounting bracket and the necessary mounting hardware. Because it is detachable, the mounting bracket can be used as a template to mark the positions of the mounting holes for the installation. Then install the mounting bracket and attach the AP when ready. The mounting bracket provides a professional look to the installation.



1	Access point mount	4	Access point mounts
2	Cable tie points	5	Locking detent
3	Ceiling mount holes	6	Security hasp



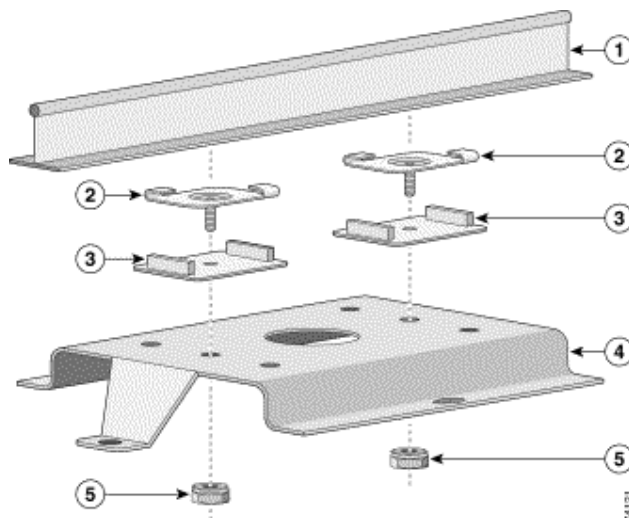
Mounting on a horizontal or vertical surface

Follow these steps to mount the AP on a horizontal or vertical surface.

- a. Use the mounting bracket as a template to mark the locations of the four mounting holes.
- b. Drill one of the following sized holes at the locations marked:
 - 3/16 in. (4.7 mm) if using wall anchors
 - 1/8 in. (6.3 mm) if not using wall anchors
- c. Install the anchors into the wall if using them. Otherwise, go to Step 4.
- d. Secure the mounting bracket to the surface using the #8 fasteners.
- e. Attach the AP to the mounting bracket.

Note The installation can be made more secure by mounting it to a stud or major structural member and using the appropriate fasteners. On a vertical surface, mount the bracket with its security hasp facing down.

1	Suspended ceiling T-rail
2	Caddy fastener
3	Plastic spacer
4	Mounting bracket
5	Keps nut





Single Band



Dual Band

Mounting on a suspended ceiling

Note To comply with NEC code, a #10-24 grounding lug is provided on the mounting bracket

Follow these steps to mount the AP on a suspended ceiling or as directed by the instructor.

- a. Determine where to mount the AP.
- b. Attach two caddy fasteners to the suspended ceiling T-rail.
- c. Use the mounting bracket to adjust the distance between the caddy fasteners so that they align with the holes in the mounting bracket.
- d. Use a standard screwdriver to tighten the caddy fastener studs in place on the suspended ceiling T-rail. Do not overtighten.
- e. Install a plastic spacer on each caddy fastener stud. The legs of the spacer should contact the suspended ceiling T-rail.
- f. Attach the mounting bracket to the caddy fastener studs and start a Keps nut on each stud.
- g. Use a wrench or pliers to tighten the Keps nuts. Do not overtighten.
- h. Attach the AP to the mounting bracket.

Attaching the AP to the mounting bracket

Follow these steps to attach the AP to the mounting bracket:

- a. Line up the three mounting pins on the AP with the large ends of the keyhole-shaped holes on the mounting bracket.
- b. Insert the AP into the keyhole shaped holes and maintain a slight pressure to hold it in place.
- c. Slide the mounting pins for the AP into the small ends of the keyhole-shaped holes on the mounting bracket and push the connector end of the AP. You will hear a click when the locking detent contacts the AP and locks it into place.
- d. Attach and adjust the antenna(s) or antenna cables.
- e. Connect the Ethernet cable to the Ethernet port of the AP.
- f. Insert the 1200 series power module cable connector into 48 VDC power port of the AP, if using a local power source.

Securing the AP to the mounting bracket

The security hasp on the mounting bracket allows the AP to lock to the bracket to make it more secure. When the AP is properly installed on the mounting bracket, the holes in the security hasps line up so a padlock can be installed.

Known compatible padlocks are Master Lock models 120T or 121T.

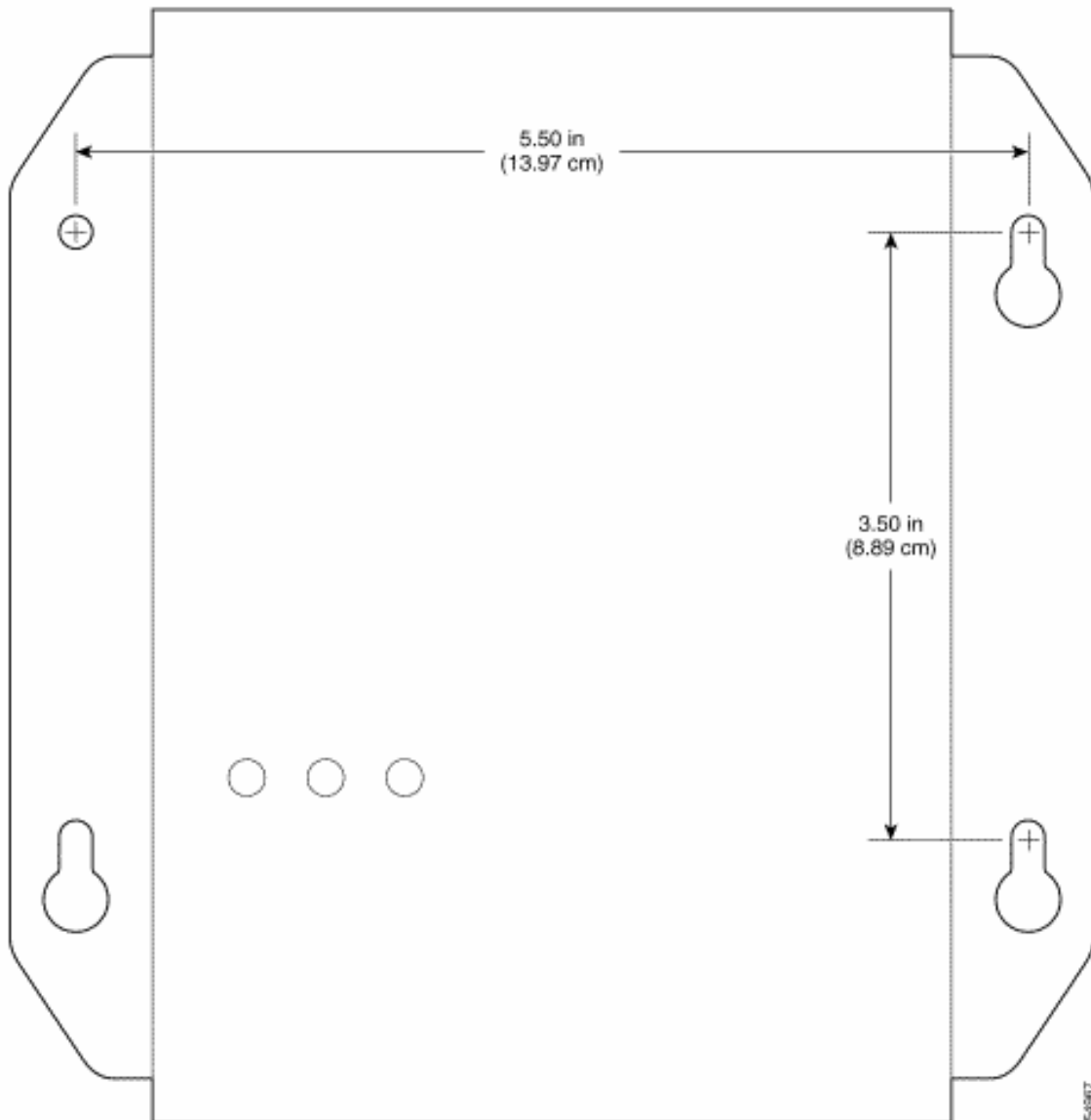
Other options

The AP can be mounted using nylon or metal tie wraps. Also, wood blocks can be attached to steel beams. $\frac{3}{4}$ " Plywood can be attached to concrete walls to provide a buffer against moisture. Attaching a mounting bracket to wood is much easier than mounting directly to steel or concrete.

Step 3 Bridge installation indoors

Mount the bridge or AP to a wall using the mounting kit and the mounting template. The kit contains the following parts:

- Four #6 - #10 plastic wall anchors
- Four #8 x 0.88" sheet-metal screws



- a. If the original mounting template cannot be found, create a mounting template to drill four holes in the wall. Take the BR350 and trace the outline of the bridge and the holes on a separate piece of cardstock or paper. Or, check it with the one shown above.
- b. Mark the holes on the wall.
- c. Drill the holes. The holes should be 3/16 in. (0.48 cm) in diameter and 1 in. (2.54 cm) deep.
- d. Tap the wall anchors into the holes.
- e. Drive three screws into the wall anchors corresponding to the key-holes in the mounting template, leaving a small gap between the screw head and the anchor.
- f. Position the keyholes of the case over the screws and pull down to lock it in place.
- g. Drive the remaining screw into the fourth wall anchor and tighten all mounting screws.
- h. Connect the Ethernet cable to the AP or bridge.
- i. If the AP or bridge has removable antennas, connect the antennas or antenna cables to the AP or bridge.

Step 4 Using enclosures to mount APs and bridges

Enclosures can be used to mount APs and bridges indoors and outdoors. There are many types and styles of enclosures

Below is a sample wall enclosure:



Alternative AP installation in drop ceiling (optional)

Using a Ceiling Mounted enclosure, the Cisco 350, 1100, or 1200 with the standard dipole (rubber duck) can be safely installed in a drop ceiling grid. This saves time and cost of installing other antennas.



Ceiling Mounted Enclosures from Chatsworth include:

- AAT-CAP-35 - Faceplate for Cisco® 350
- AAT-CAP-11 -Faceplate for Cisco® 1100
- AAT-CAP-12 – Faceplate for Cisco® 1200

Consult with the local, state, and federal guidelines for the proper enclosure. Below are NEMA Rating levels.

NEMA	Use	Protection Against
1	indoor	hand contact with enclosed equipment. low cost enclosure but suitable for clean and dry environments.
2	indoor	limited amounts of falling dirt and water
3	outdoor	Wind-blown dust, rain, and sleet; ice which forms on the enclosure.
3R	outdoor	falling rain and sleet; ice which forms on the enclosure
4	indoor	windblown dust and rain, splashing water, and hose directed water; ice which forms on the enclosure
4X	indoor / outdoor	corrosion, windblown dust and rain, splashing water, and hose directed water; ice which forms on the enclosure
6	Indoor / outdoors	occasional temporary submersion
6P	Indoor / outdoors	occasional prolonged submersion. Corrosion protection
12	Indoor / outdoors	dust, falling dirt, and dripping non-corrosive liquids
13	indoor	dust, spraying of water, oil, and non-corrosive coolant