CW-ANT-T-D4-N Antenna Installation Guide

Cisco Aironet Antennas and Accessories
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Topics included

1 CW-ANT-T-D4-N Antenna

Topics:

About CW-ANT-T-D4-N antenna.

Antenna information

Introduces the CW-ANT-T-D4-N antenna, detailing its technical specifications, describing azimuth and elevation radiation patterns, highlighting safety precautions, and providing physical dimensions to guide proper selection, deployment, and safe use.

The CW-ANT-T-D4-N is a high-performance, eight-port, tri-band, directional antenna engineered for Wi-Fi 7 outdoor APs. The antenna is designed for high-density deployments. This antenna provides polarization diversity and consistent gain across the 2.4 GHz, 5 GHz, and 6 GHz bands.

Encased in a ruggedized, IP67-rated radome, the antenna features an integrated articulating mount and Self-Identifying Antenna (SIA) technology, ensuring reliable connectivity and streamlined configuration in challenging environments.

CW-ANT-T-D4-N features

These are the features:

- Tri-band directional antenna: Supports 2.4 GHz, 5 GHz, and 6 GHz frequency bands for Wi-Fi 7 deployments.

  Antenna beamwidth specifications:

  - 2.4 GHz: 85° (Azimuth) x 45° (Elevation)
  - 5 GHz: 90° (Azimuth) x 40° (Elevation)
  - 6 GHz: 90° (Azimuth) x 40° (Elevation)

- 8-Port MIMO architecture: Includes four dual-band (2.4/5 GHz) and four (5H/6 GHz) cross-polarized antenna elements.
- SIA and Orientation support: Integrated EEPROM for self-identification and an accelerometer for reporting antenna orientation.
- Ruggedized design: IP67-rated for reliable indoor and outdoor use, including a pressure-release vent.
- Flexible mounting: Includes an articulating bracket (CW-MNT-ART2-00) adjustable ±60° in both azimuth and elevation.
- Wide operating range: Supports temperatures from -40° C to 65° C (-40° F to 149° F).

Technical specifications

Technical Specifications for CW-ANT-T-D4-N Antenna

This antenna is designed for indoor and outdoor use with Wi-Fi 7 APs.

Table 1: Mechanical specifications

Parameters	Descriptions
Antenna type	Directional
SIA Functionality	Available
Nominal input impedance	50 Ohms
Polarization	Linear
Length	304mm
Width	253mm
Depth (thickness)	38mm
Weight (without mount)	2.8 lbs. (1268 g)
Connector type	N-Type female connector
Operating temperature range	-40ºC to 65ºC (-40° F to 149° F) -20° to 50° C (-4° to 122° F) including solar load.
Environment rating	IP66, IP67
Environmental sensors	Supports air pressure sensors

Table 2: Parameters and values

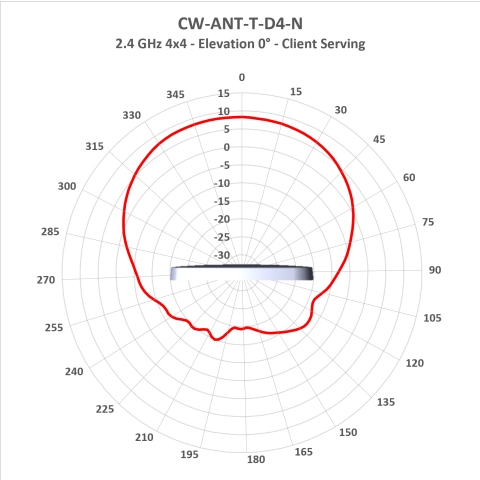
Parameters	Value starting range	Value ending range
Operating frequency range	2400 MHz	2500 MHz
	5150 MHz	5850 MHz
	5925 MHz	7125 MHz
Peak Gain	8 dBi	8 dBi
VSWR	<2.0	<2.0
Isolation (2.4/5 to 5H/6 GHz)	> 35 dB	> 35 dB
Isolation (Same band pairs)	> 20 dB	> 20 dB
Front-to-back ratio	> 20 dB	> 20 d

Parameter	2.4 GHz	5 GHz	6 GHz
Azimuth 3-dB beamwidth	85°	90°	90°
Elevation 3-dB beamwidth	45°	40°	40°

Azimuth and elevation radiation patterns

These illustrations show the CW-ANT-T-D4-N antenna radiation patterns:

Table 3: Radiation patterns for 2.4 GHz



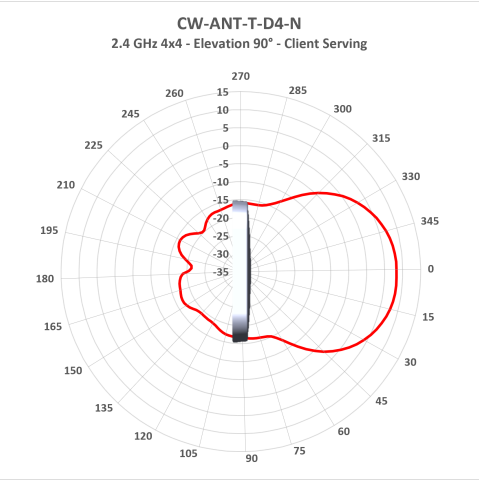
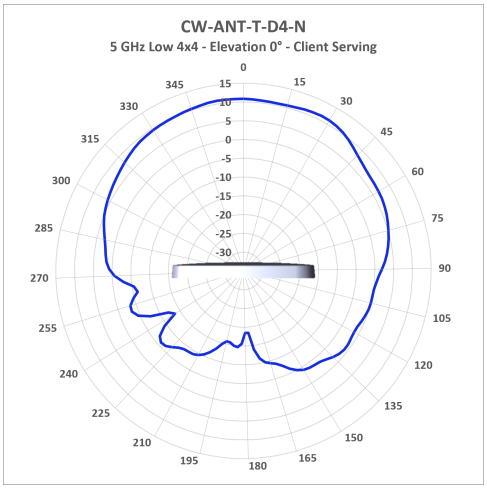
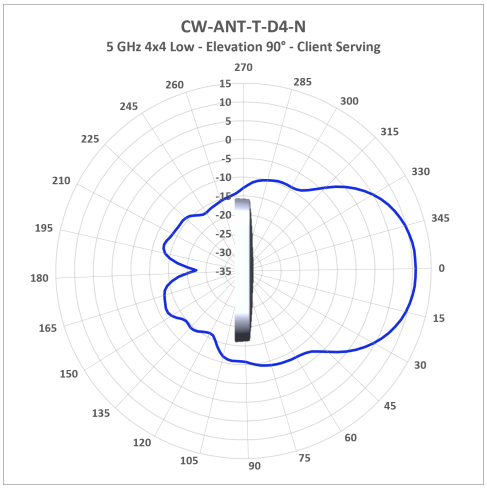
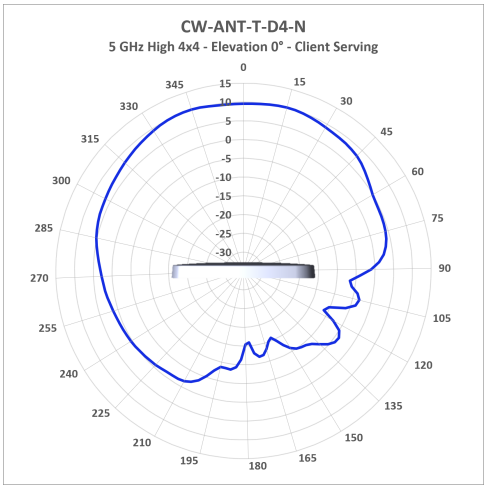
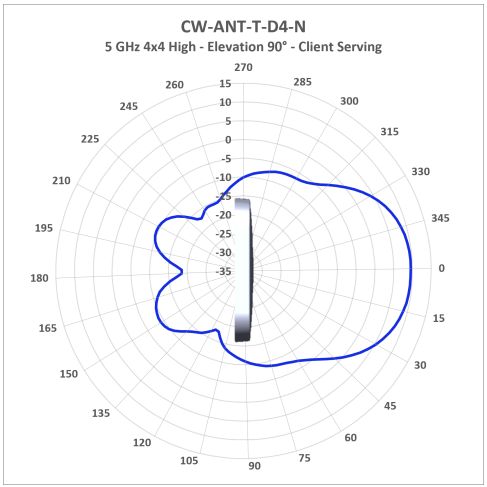


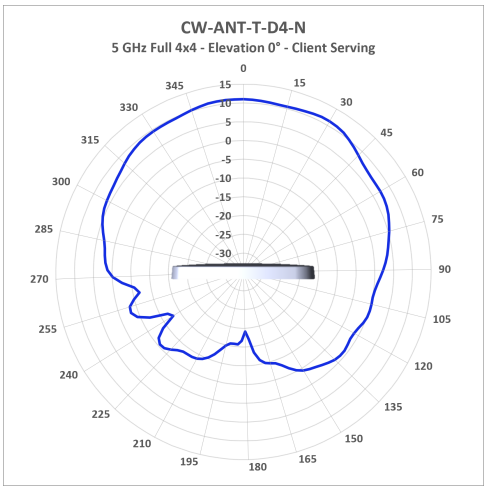
Table 4: Radiation patterns for 5 GHz











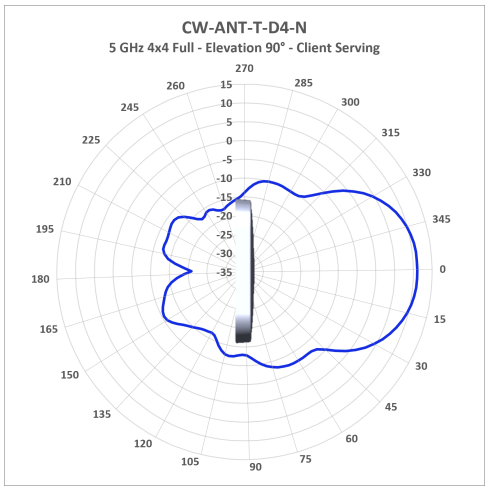
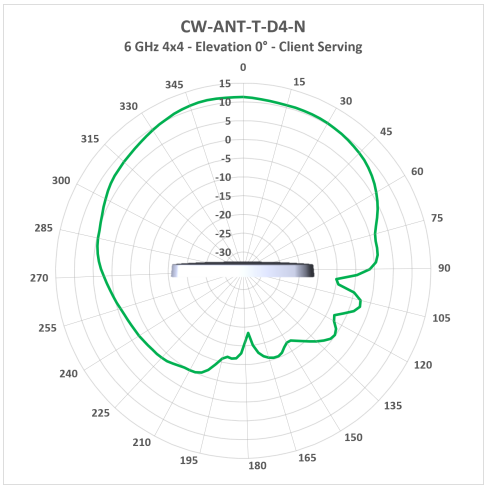
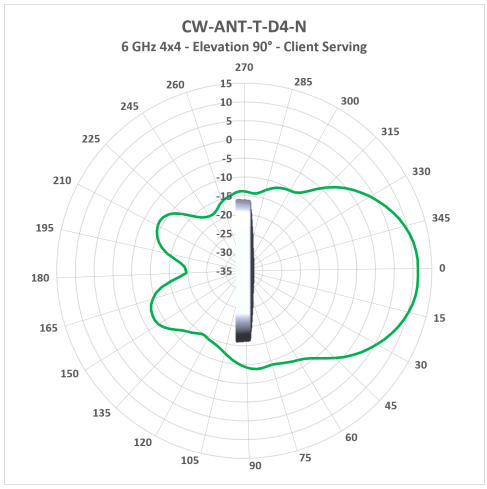


Table 5: Radiation patterns for 6 GHz





Safety precautions

Safety notes

Each year, hundreds of people are killed or injured when attempting to install an antenna. In many of these cases, the victim was aware of the danger of electrocution but did not take adequate steps to avoid the hazard.

For your safety and to help you achieve a sound installation, read and follow these safety precautions.

Before you install:

- If you are installing an antenna for the first time, for your safety and that of others, seek professional assistance. Your Cisco sales representative can explain which mounting method to use for the size and type of antenna you are about to install.
- Select your installation site with safety and performance in mind. Remember that electric power lines and phone lines look alike. For your safety, assume that any overhead line can kill you.
- Call your electric power company. Tell them your plans and ask them to look at your proposed installation. While it may seem like a minor inconvenience, it could save your life.

- Plan your installation carefully and thoroughly before you begin. Successful raising of a mast or tower is essentially a matter of coordination. Assign each person a specific task and 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.
- When installing your antenna, remember:
  - *Do not* use a metal ladder.
  - *Do not* work on a wet or windy day.
  - *Do* dress properly: shoes with rubber soles and heels, rubber gloves, long-sleeved shirt, or jacket.
- If the assembly starts to drop, get away from it and let it fall. The antenna, mast, cable, and metal guy wires are all conductors of electrical current. The slightest touch of these parts to a power line completes an electrical path through the antenna and the installer.
- If any part of the antenna system should contact a power line, do not touch it or remove it yourself. Instead, call your local power company. They would remove it safely.
- If an accident occurs with the power lines, call for qualified emergency help immediately.

Safety warnings

Translated versions of the following safety warnings are provided in the Safety Warnings for Cisco Aironet Antennas, which is available at http://www.cisco.com.

Warning

- Installation of the antenna near power lines is dangerous. For your safety, follow the installation directions.
- In order to comply with international radio frequency (RF) exposure limits, dish antennas should be located at a minimum of 8.7 inches (22 cm) or more from the bodies of all persons. Other antennas should be located a minimum of 7.9 inches (20 cm) or more from the bodies of all persons.
- Do not work on the system or connect or disconnect cables during periods of lightning activity.
- This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.
- 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, as they may cause serious injury or death. For proper installation and grounding of the antenna, refer to national and local codes (for example, U.S.: NFPA 70, National Electrical Code, Article 810; in Canada: Canadian Electrical Code, Section 54).

Antenna dimensions

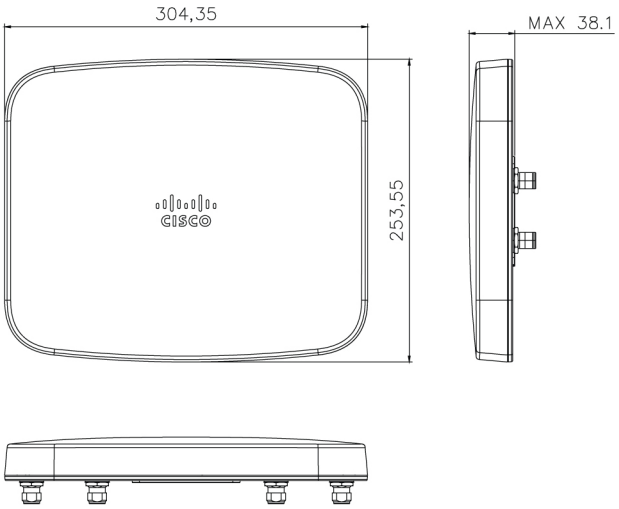
CW-ANT-T-D4-N is

- Tri-Band
- Articulate N-Male
- Directional antenna.

The antenna is designed with a compact form factor suitable for wall or pole mounting. All dimensions are in millimeters (mm).

- Length: 304 mm
- Width: 253 mm
- Depth (Thickness): 38 mm
- Weight (without mount): 2.8 lbs. (1268 g)

Figure 1: Antenna dimensions



2 Install the Antenna

Topics:

CW-ANT-T-D4-N installation.

This chapter describes the installation instructions of CW-ANT-T-D4-N antenna.

Package contents

Each antenna package contains these items:

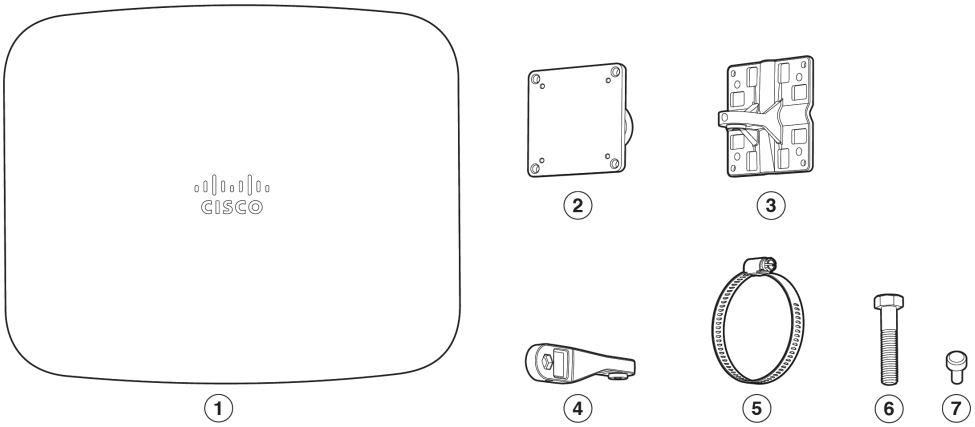


Table 6: Antenna package contents

Item #	Antenna package contents	Quantity
1	8-port triband directional antenna	1
2	Bracket for AP	1
3	Bracket for wall or mast	1
4	Bracket arm	1
5	Hose clamp	2
6	Screw (M8 x 40)	2
7	Screw (M5 x 13.5)	4
8	Nut (M8 x 18 x 8)	2
9	Washer (10.5 x 18 x 1.0)	2

Installation procedure

Outlines the procedures for installing the CW-ANT-T-D4-N antenna on walls and poles, and addresses considerations related to RF obstructions and interference affecting device performance.

The procedures provide information about installing the CW-ANT-T-D4-N antenna. The CW-ANT-T-D4-N antenna can be mounted in these places:

- Wall
- Pole

Because the antennas transmit and receive radio signals, they are susceptible to RF obstructions and common sources of interference that can reduce throughput and range of the device to which they are connected.

Note

You need to purchase the CW-CAB-004-N4-N4 connector cable bundle to connect the CW9177E to CW-ANT-T-D4-N.

Installation guidelines

Installation guidelines to follow while installing the antenna.

Optimal performance factors

Antennas transmit and receive radio signals that are susceptible to RF obstructions and common sources of interference, which can reduce the throughput and range of the connected devices.

These guidelines ensure optimal performance:

- Keep the antenna away from metal obstructions such as
  - heating,
  - air-conditioning ducts,
  - large ceiling trusses,
  - building superstructures, and
  - major power cabling runs.

  Tip

  Use a rigid conduit to lower the antenna away from these obstructions.

- In an outdoor environment, connect the antenna to a lightning arrestor and ensure proper grounding.
- Due to the tight side lobe configuration, the antenna does not support RRM. Configure the channel and power for it statically.
- Australian regulatory restrictions are applied when the device is configured for the -Z domain with the country set as Australia. This results in a band lock on radios that are enabled.

Location considerations

The density of the materials used in a building's construction determines the number of walls the signal can pass through and maintains adequate signal strength.

Consider these before choosing the location for your antenna:

- The density of the materials used in a building's construction determines the number of walls the signal can pass through and maintains adequate signal strength. Consider the following before choosing the location for your antenna:
  - Signals penetrate paper and vinyl walls with little change to signal strength.
  - Signals penetrate only one or two solid and precast concrete walls without degrading signal strength.
  - Signals penetrate three or four concrete and woodblock walls without degrading signal strength.
  - Signals penetrate five or six walls constructed of drywall or wood without degrading signal strength.
  - Signals are likely to reflect off a thick metal wall and may not penetrate it at all.
  - Signals are likely to reflect off a chain-link fence or wire mesh spaced between 1 and 1 1/2 inches. (2.5 cm and 3.8 cm) The fence acts as a harmonic reflector that blocks the signal.
- Install the antenna away from microwave ovens and 2-GHz cordless phones. These products can cause signal interference because they operate in the same frequency range as the device.

Important safety instructions

DANGER

IMPORTANT SAFETY INSTRUCTIONS: Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Read the installation instructions before using, installing, or connecting the system to the power source.

Use the statement number provided at the end of each warning statement to locate its translation in the translated safety warnings for this device. SAVE THESE INSTRUCTIONS Statement 1071

DANGER

Only skilled person should be allowed to install, replace, or service this equipment. Refer to Statement 1089 for description of skilled person. Statement 1090

DANGER

To reduce the risk of electric shock, refer to national and local codes for proper installation and grounding of antennas. Statement 1052

Note

To reduce the risk of electric shock, the chassis of this equipment needs to be connected to permanent earth ground during normal use. Statement 0445

Mount the antenna on a pole

Mount the antenna securely on a pole, ensuring correct alignment and connections to optimize signal strength and device stability.

Attach and align the antenna to a mounting pole to ensure secure installation and optimal wireless performance.

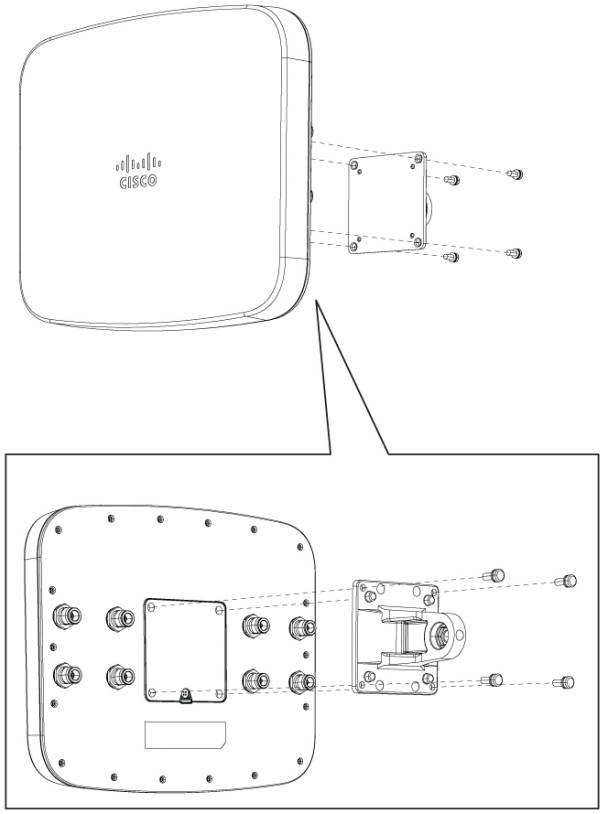
This procedure is performed during the installation of a wireless antenna where a pole mounting is required. Proper mounting ensures the antenna is stable, aligned for best coverage, and securely connected to the access point.

Note

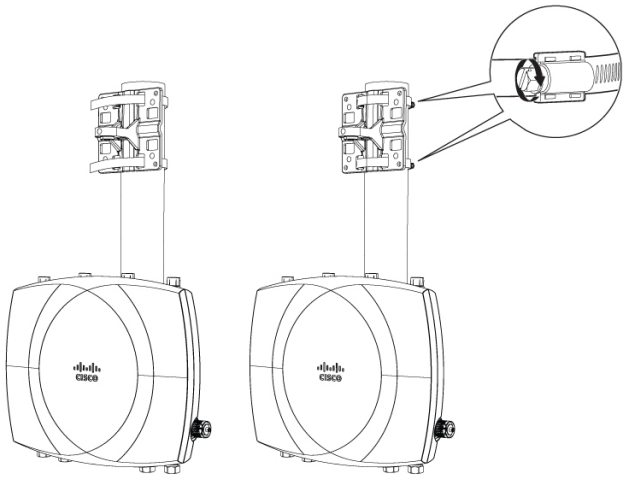
- You will require CW-CAB-004-N4-N4 connector cable bundle to connect the AP to the antenna.
- The mount kit supports mast dimensions from 50 mm to 127 mm (2 inches to 5 inches) in diameter. Use the hose clamps supplied in the kit for mounting on a mast.
- For best results, install the antenna above the access point and no more than 51 cm (20 inches) from the center of the access point enclosure.

Procedure

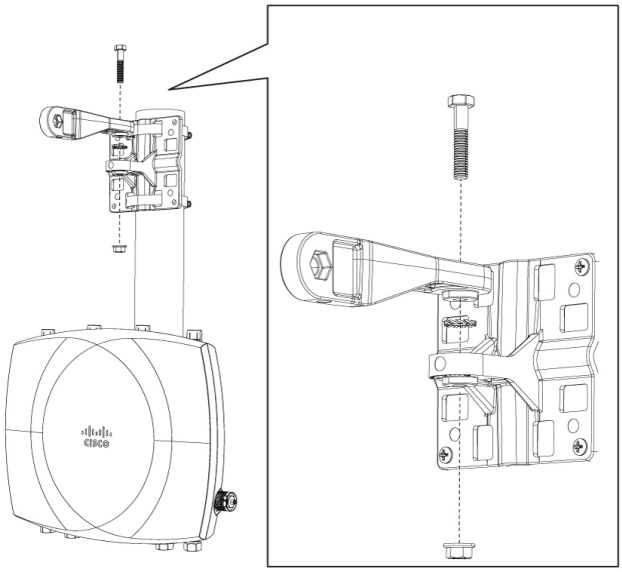
1. Secure the pole clamp assembly to the mounting pole at the desired height and tighten the fasteners.



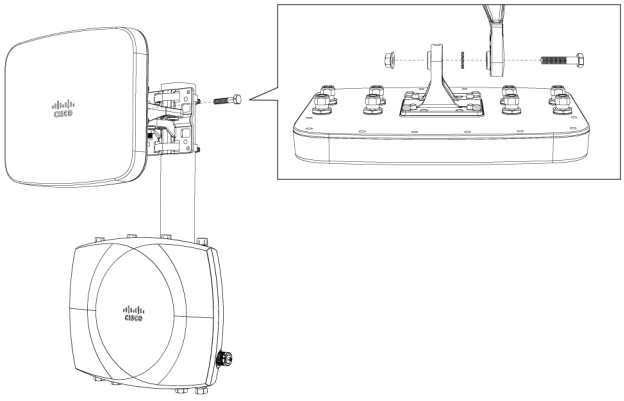
2. Attach the antenna mounting bracket to the pole clamp assembly.



3. Align the antenna assembly with the mounting bracket and insert the attachment bolt through the pivot point.



4. Adjust the antenna to the desired angle and tighten the adjustment knob securely to lock the position.



5. Connect the cables to the access point by matching each cable color to its corresponding port color on the AP. Ensure all cables are securely connected to their respective ports.

Note

Adjust the antenna to a 15-degree tilt angle and tighten the adjustment knob securely to maintain the desired position and ensure optimal signal coverage.

The antenna is securely mounted on the pole, properly aligned, and connected to the access point, ready for operation.

Mount the antenna on a wall

Mount the antenna securely on a wall, ensuring correct alignment and connections to optimize signal strength and device stability.

Attach and align the antenna to a wall-mounted bracket to ensure secure installation and optimal wireless performance.

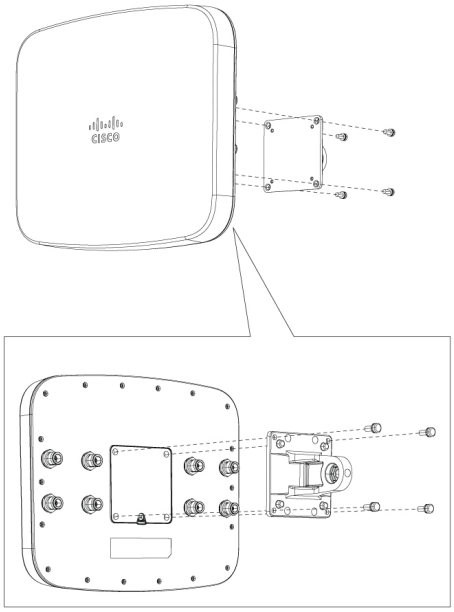
This procedure is performed during the installation of a wireless antenna where wall mounting is required. Proper mounting ensures the antenna is stable, aligned for best coverage, and securely connected to the access point.

Note

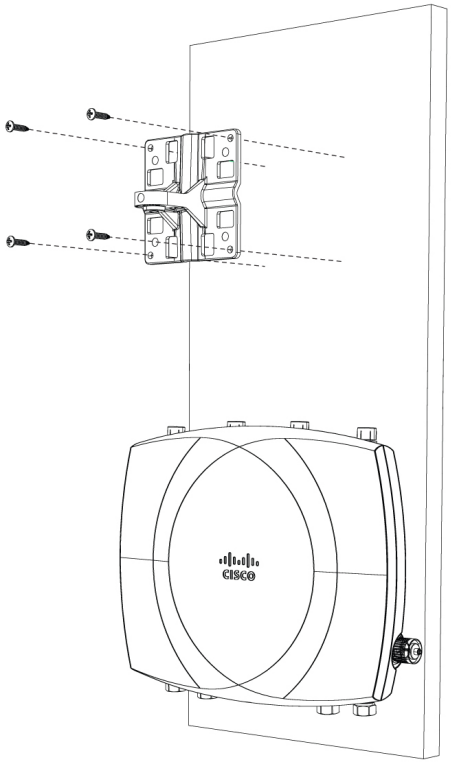
- You will require CW-CAB-004-N4-N4 connector cable bundle to connect the AP to the antenna.
- For best results, install the antenna above the access point and no more than 51 cm (20 inches) from the center of the access point enclosure.

Procedure

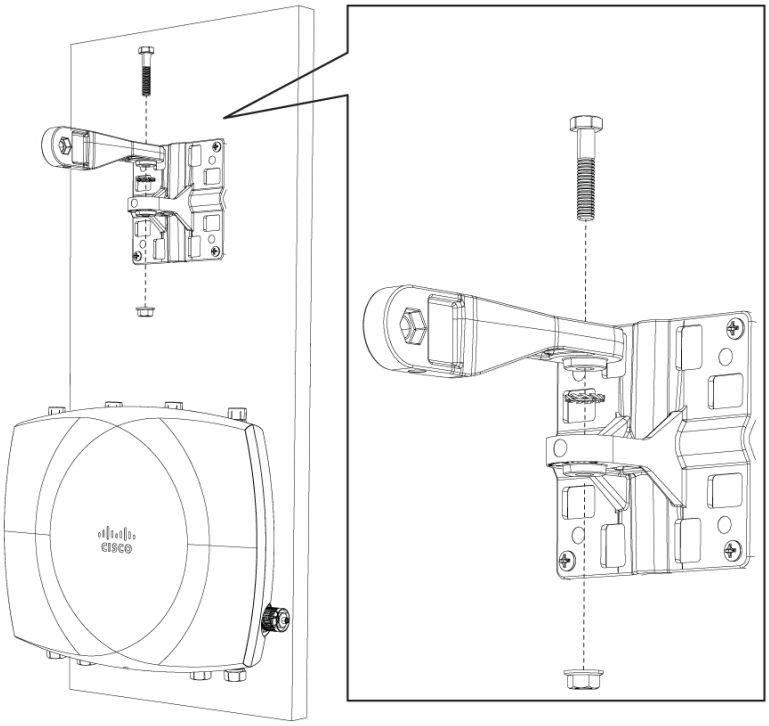
1. Attach the antenna mounting bracket assembly to the back of the antenna and tighten the screws.



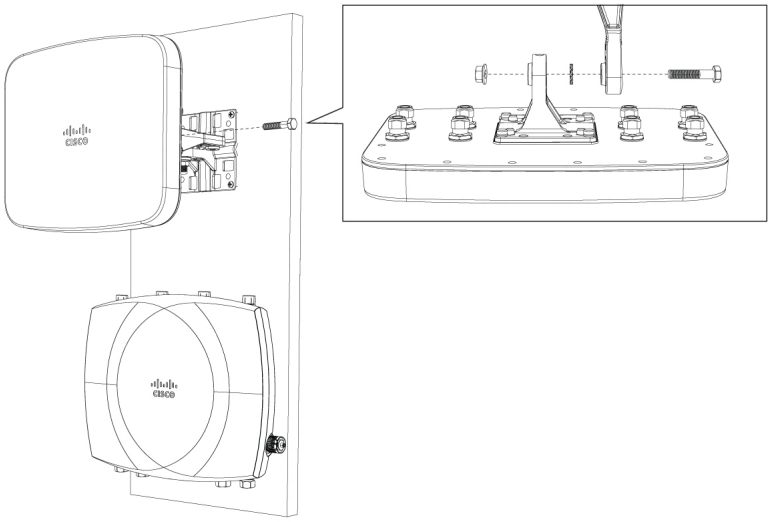
2. Secure the wall-mount bracket to the wall at the desired height and tighten the fasteners.



3. Insert the attachment bolt through the wall-mount bracket pivot point and secure it with the nut.



4. Align the antenna assembly with the wall-mount bracket, insert the side attachment bolt, and tighten it to lock the antenna position.



5. Connect the cables to the access point by matching each cable color to its corresponding port color on the AP. Ensure all cables are securely connected to their respective ports.

> **Note**
>
> Adjust the antenna to a 15-degree tilt angle and tighten the adjustment knob securely to maintain the desired position and ensure optimal signal coverage.

The antenna is securely mounted on the wall, properly aligned, and connected to the access point, ready for operation.

Connect the antenna cables to the access point

Provides step-by-step instructions for connecting and securing antenna cables between the access point and antenna, including proper routing, connector matching, and assembly techniques for completing RF cable installation.

Connect the antenna cables between the access point and antenna to complete the RF connections for the installation.

Use these steps after the access point and antenna are positioned and securely mounted.

Procedure

1. Attach the cable bundle to the antenna and the access point.
2. Route and secure the cable bundle to the pole so that the cables exiting the connectors are not bent or kinked.
3. Match each connector to the corresponding port on the antenna and the access point using the color ring and port letter.
4. Hand-tighten each connector.

   Note

   Do not use a wrench to tighten the connectors.

5. Slide the rubber boot over each connector assembly.