Cisco Aironet Antennas and Accessories—Complete the Wireless Solution

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Every wireless Local Area Network (LAN) deployment is different. When engineering an in-building solution, varying facility sizes, construction materials, and interior divisions raise a host of transmission and multipath considerations. When implementing a building-to-building solution, distance, physical obstructions between facilities, and number of transmission points involved must be accounted for.

Cisco is committed to providing not only the best access points, client adapters, and bridges in the industry—it is also committed to providing a complete solution for any wireless LAN deployment. That's why Cisco has the widest range of antennas, cable, and accessories available from any wireless manufacturer.

With the Cisco FCC-approved directional[1] and omni-directional[2] antennas, low-loss cable, mounting hardware, and other accessories, installers can customize a wireless solution that meets the requirements of even the most challenging applications.

Figure 1 Cisco Offers a Complete Range of Antennas for Client Adapter, Access Point, and Bridge Equipment that Enable a Customized Wireless Solution for Almost Any Installation.

1. An antenna that concentrates transmission power into a direction that increases coverage distance at the expense of coverage angle. Directional antenna types include yagi, patch, and parabolic dish antennas. A yagi is a type of cylindrical directional antenna. A patch antenna is a type of flat antenna designed for flush wall mounting that radiates a hemispherical coverage area. A parabolic dish antenna is a concave or dish-shaped object. Often refers to dish antennas. Parabolic dish antennas tend to provide the greatest gain and the narrowest beam width making them ideal for point-to-point transmission over the longest distances.

2. An antenna that provides a 360-degree transmission pattern. These types of antennas are used when coverage in all directions is required.

Client Adapter Antennas

Cisco Aironet wireless client adapters come complete with standard antennas that provide sufficient range[3] for most applications at 11 Mbps. To extend the transmission range for more specialized applications, a variety of optional, higher-gain[4] antennas are provided that are compatible with selected client adapters. (See Table 1.)

3. A linear measure of the distance that a transmitter can send a signal.
4. A method of increasing the transmission distance of a radio by the concentration of its signal in a single direction, typically through the use of a directional antenna. Gain does not increase the signal strength of a radio, but simply redirects it. Therefore, as gain increases, the decrease in angle of coverage is inversely proportional.

Table 1 Cisco Aironet Client Adapter Antenna Features

Feature	AIR-ANT3351	AIR-ANT3342
Description	POS diversity dipole[1]	Diversity dipole "Rabbit Ear"
Application	Indoor diversity antenna[2] to extend the range of Aironet LMC client adapters	Indoor diversity antenna to extend the range of Aironet LMC client adapters
Gain	2.2 dBi[3]	2.2 dBi
Approximate Indoor Range at 1 Mbps[4]	350 ft. (107m)	350 ft. (107m)
Approximate Indoor Range at 11 Mbps[4]	100 ft. (51 m)	100 ft. (51m)
Beam Width	360 H 75 V	360 H 75 V
Cable Length	5 ft. (1.5m)	1 ft. (0.3m)
Dimensions	Base: 7 x 2 in. (18 x 5 cm) Height: 8 in. (20 cm)	4 x 3 in. (8.6 x 6.5 cm)
Weight	9.2 oz. (261g)	5 oz. (142g)

1. A type of low-gain (2.2 dBi) antenna consisting of two (often internal) elements.
2. An intelligent system of two antennas that continually senses incoming radio signals and automatically selects the antenna best positioned to receive it.
3. A ratio of decibels to an isotropic antenna that is commonly used to measure antenna gain. The greater the dBi value, the higher the gain and, as such, the more acute the angle of coverage.
4. All range estimations are based on an integrated client adapter antenna associating with an access point under ideal indoor conditions. The distances referenced here are approximations and should be used for estimation purposes only.

Access Point Antennas

Cisco Aironet access point antennas are compatible with all Cisco RP-TNC-equipped access points. The antennas are available with different gain and range capabilities, beam widths[3], and form factors. Coupling the right antenna with the right access point allows for efficient coverage in any facility, as well as better reliability at higher data rates. (See Table 2.)

3. The angle of signal coverage provided by a radio; it may be decreased by a directional antenna to increase gain.

Table 2 Cisco Aironet Access Point Antenna Features




Feature	AIR-ANT3213	AIR-ANT3194	AIR-ANT1728	AIR-ANT2561
Description	Pillar mount diversity omni-directional	Omni-directional ceiling mount	High gain omni-directional ceiling mount	Omni-directional ground plane
Application	Indoor, unobtrusive medium-range antenna	Indoor short-range antenna, typically hung from crossbars of drop ceilings	Indoor medium-range antenna, typically hung from crossbars of drop ceilings	Flat, circular, medium-range indoor antenna
Gain	5.2 dBi	2.2 dBi	5.2 dBi	5.2 dBi
Approximate Indoor Range at 1 Mbps[1]	497 ft. (151m)	350 ft. (107m)	497 ft. (151m)	497 ft. (151m)
Approximate Indoor Range at 11 Mbps[1]	142 ft. (44m)	100 ft. (31m)	142 ft. (44m)	142 ft. (44m)
Beam Width	360 H 75 V	360 H 75 V	360 H 75 V	360 H 80 V
Cable Length	3 ft. (0.91m)	9 ft. (2.74m)	3 ft. (0.91m)	3 ft. (0.91m)
Dimensions	10 x 1 in. (25.4 x 2.5 cm)	Length: 9 in. (22.86 cm) Diameter: 1 in. (2.5 cm)	Length: 9 in. (22.86 cm) Diameter: 1 in. (2.5 cm)	Diameter: 12 in. (30.5 cm)
Weight	1 lb. (460g)	4.6 oz. (131g)	4.6 oz. (131g)	9 oz. (255g)

1. All range estimations are based on an external antenna associating with an integrated client adapter antenna under ideal indoor conditions. The distances referenced here are approximations and should be used for estimation purposes only.

Table 2 Cisco Aironet Access Point Antenna Features (continued)

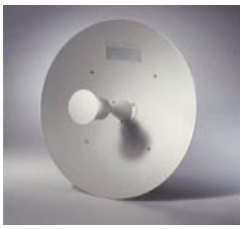
Feature	AIR-ANT3549	AIR-ANT1729	AIR-ANT2012	AIR-ANT5959
Description	Hemispherical patch wall mount	Patch wall mount	Diversity patch wall mount	Diversity omni-directional ceiling mount
Application	Indoor, unobtrusive, long-range antenna (may also be used as a medium-range bridge antenna)	Indoor, unobtrusive, medium-range antenna (may also be used as a medium-range bridge antenna)	Indoor/Outdoor, unobtrusive medium range antenna	Indoor unobtrusive antenna, best for ceiling mount. Excellent throughput and coverage solution in high multipath cells and dense.
Gain	8.5 dBi	6 dBi	6.5 dBi	Two separate 2dBi omnidirectional elements. Minimum gain 2.0. Maximum 2.35 gain.
Approximate Indoor Range at 1 Mbps[1]	Access Point: 700 ft. (213m) Bridge: 2.0 miles (3.2 km)	Access Point: 542 ft. (165m) Bridge: 1.1 miles (1.8 km)	547 ft. (167 m)	350 ft. (105m)
Approximate Indoor Range at 11 Mbps[1]	Access Point: 200 ft. (61m) Bridge: 3390 ft. (1032m)	Access Point: 155 ft. (47m) Bridge: 1900 ft. (580m)	167 ft. (51m)	130 ft. (45m)
Beam Width	60 H 55 V	75 H 65 V	80 H 55 V	80 H 55 V
Cable Length	3 ft. (0.91m)	3 ft. (0.91m)	3 ft. (0.91m)	3 ft. (0.91m)

Bridge Antennas

Cisco Aironet bridge antennas allow for extraordinary transmission distances between two or more buildings. Available in directional configurations for point-to-point transmission and omni-directional configuration for point-to-multipoint implementations, Cisco has a bridge antenna for every application. (See Table 3.)

Table 3 Cisco Aironet Bridge Antenna Features

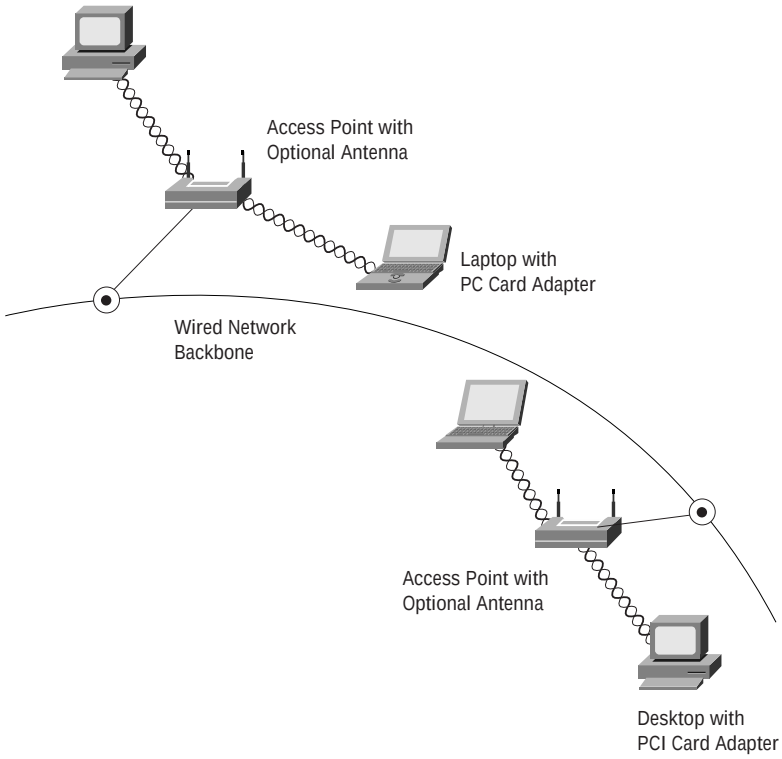


Feature	AIR-ANT2506	AIR-ANT4121	AIR-ANT1949	AIR-ANT3338
Description	Omni-directional mast mount	High-gain omnidirectional mast mount	Yagi mast mount	Solid dish
Application	Outdoor short-range point-to-multipoint applications	Outdoor medium-range point-to-multipoint applications	Outdoor medium-range directional connections	Outdoor long-range directional connections
Gain	5.2 dBi	12 dBi	13.5 dBi	21 dBi
Approximate Range at 2 Mbps[1]	5000 ft. (1525m)	4.6 miles (7.4 km)	6.5 miles (10.5 km)	25 miles (40 km)
Approximate Range at 11 Mbps[1]	1580 ft. (480m)	1.4 miles (2.3 km)	2.0 miles (3.3 km)	11.5 miles (18.5 km)
Beam Width	360 H 75 V	360 H 7 V	30 H 25 V	12.4 H 12.4 V
Cable Length	3 ft. (0.91m)	1 ft. (0.30m)	3 ft. (0.91m)	2 ft. (0.61m)
Dimensions	Length: 13 in. (33 cm) Diameter: 1 in. (2.5 cm)	Length: 40 in. (101 cm) Diameter: 1.3 in. (3 cm)	Length: 18 in. (46 cm) Diameter: 3 in. (7.6 cm)	Diameter 24 in. (61 cm)
Weight	6 oz. (17g)	1.5 lb. (0.68 kg)	1.5 lb. (0.68 kg)	11 lb. (5 kg)

1. All range estimations are based on use of 50 foot (15m) low-loss cable and the same type of antenna at each end of the connection under ideal outdoor conditions. The distances referenced here are approximations and should be used for estimation purposes only.

Figure 2 Optional, Higher-Gain Antennas Can be Used to Extend the Range of Access Points



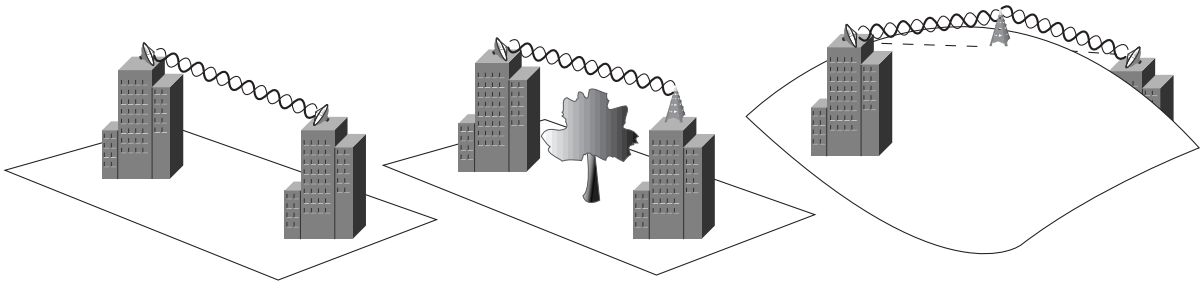
Low-Loss Antenna Cable

Low-loss cable extends the length between any Cisco Aironet bridge and the antenna. With a loss of 6.7 dB per 100 feet (30m), low-loss cable provides installation flexibility without a significant sacrifice in range. (See Table 4.)

Table 4 Cisco Aironet Low-Loss Antenna Cable Features

Feature	AIR-420-003346-020	AIR-420-003346-050	AIR-420-003346-075	AIR-420-003346-100
Cable Length	20 ft. (6m)	50 ft. (15m)	75 ft. (23m)	100 ft. (30m)
Transmission Loss	1.3 dBi	3.4 dBi	5.0 dBi	6.7 dBi

Figure 3 With Cisco Aironet Bridge Antennas, the Right Mounting Hardware, and Qualified Installation, Wireless Links over Great Distances and Obstacles are Possible.



Accessories

To complete an installation, Cisco provides a variety of accessories that offer increased functionality, safety, and convenience. (See Table 5.)

Table 5 Cisco Aironet Accessory Features

Feature	420-002537-018	420-002537-060	420-003354	420-003745	430-002662
Description	18 in. (46 cm) bulkhead extender	60 in. (152 cm) bulkhead extender	Lightning arrestor	Optional antenna adapter cable	Yagi articulating mount
Application	Flexible antenna cable that extends access point cabling typically within an enclosure	Flexible antenna cable that extends access point cabling typically within an enclosure	Helps prevent damage due to lightning-induced surges or static electricity	Used to add higher-gain antennas to universal and multistation clients for longer-range applications	Adds swiveling capability to mast-mounted yagi antennas

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